Personal values and intention to accept ICT

Abstract

This work-in-progress develops an integral model of individuals' intention to accept Information and Communication Technology innovations (ICTIA model). It captures the influence of different external and internal variables on ICT's acceptance and use at the first stages of the acceptance process. The model focuses on the association between (1) ICT perceived attributes and perceived characteristics of using ICT, (2) individual's personal variables, specifically personal values, (3) environmental variables, and (4) their evaluations in the first stages of the ICT acceptance process. The innovation of the ICTIA model is that it focuses on the association between individual's personal values and the evaluations of the ICT acceptance. In this work-in-progress, we use the personal values conceptualized and measured by Kahle (1983).

The ICTIA model can help firms better deploy and manage their ICT investments by better understanding their customers. Marketing communication can incorporate these personal values that influence the evaluation of the ICT acceptance.

The proposed model will be empirically tested using data collected through two surveys designed to capture a cross-sectional snapshot and a dynamic longitudinal picture of the underlying phenomena. Data will be collected in two waves that are six months apart from over 2500 (American, French, Lebanese, Moroccan, Tunisian and Algerian) potential adopter of mobile Internet, Home PC, Internet connection at home, Facebook, Internet banking, mobile banking, and playstation. Questions will be asked about these ICTs acceptance intention or about reasons of non acceptance intention.

Key-words:
ICT acceptance intention, ICTIA,TAM, TPB, TRA, TIB…

Référence : 42

Antoine HARFOUCHE

Doctorant au CREPA
Université Paris-Dauphine
Place du Maréchal de Lattre de Tassigny
75775 PARIS Cedex 16
Tél. : +33 (0)1 44 05 44 05
Fax : +33 (0)1 44 05 49 49
Antoine.harfocuhe@dauphine.fr

Michel KALIKA

Directeur général de l'Ecole de Management de Strasbourg
Ecole de Management de Strasbourg
61 avenue de la Forêt Noire
67085 STRASBOURG Cedex
Tél : +33 (0)3 90 41 42 00
Fax : +33 (0)3 90 41 42 70
michel.kalika@em-strasbourg.eu

Introduction

While individual-level Information and Communication Technology (ICT) acceptance has been an area of substantial research interest since three decades, research efforts have led to mixed outcomes. Studies in this domain are reaching a stage of chaos and knowledge is becoming increasingly fragmented (Bagozzi 2007). According to a large number of researchers, what is needed, today, is a theory that can bring unity and precise how the many splinters of knowledge cohere and explain ICT acceptance process (Bagozzi 2007, Benbasat & Barki 2007).

The purpose of this work-in-progress is to develop, at the individual level, an integral model of intention to accept ICT innovations. The objective of the model is to summarize the technology acceptance literatures in a global unified theory: the ICTIA theory (ICT Individual Acceptance theory) that outlines constructs that shape the intention to accept ICT. It captures the influence of different external and internal variables on ICT acceptance and use at the first stages of the acceptance process. The model focuses on the association between (1) ICT perceived attributes and perceived characteristics of using ICT, (2) individual's personal variables, specifically personal values, (3) environmental variables and (4) their evaluations in the first stages of the ICT acceptance process. The innovation of the ICTIA model is that it focuses on the association between individual's personal values and the evaluations of the ICT acceptance.

In this work-in-progress, we use the personal values conceptualized and measured by Kahle (1983). We argue here that the inclusion of an individual difference variable - personal value - would help understanding the evaluation process. We propose that personal values serve as a key moderator in the evaluation of the consequences of ICT acceptance.

The ICTIA model can help firms better deploy and manage their ICT investments by better understanding their customers. Marketing communication can incorporate these personal values that influence the evaluation of the ICT acceptance.

In this work-in-progress, we begin by reviewing the technology acceptance literatures and the culture and values literatures. Then, we summarize it in a global unified model (TCTIA) by adding personal values to the evaluation of the consequence and outcomes of ICT acceptance.

The figure 1 summarizes the basic concept underlying this work-in-progress. It includes three levels: (1) in the first level, the key constructs that shape the ICT acceptance are outlined. At the second level, (2) the impact of these constructs on evaluation of the ICT acceptance is outlined, and the influences of the personal values - List of Values (LOV) - on the evaluations of ICT acceptance intention are highlighted.

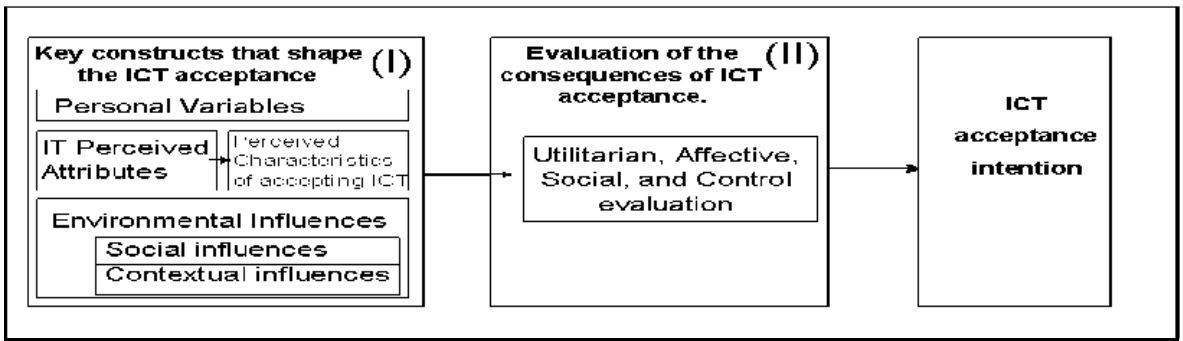

Figure 1. The basic concept underlying this paper

1. Constructs that shapes the ICT acceptance process

Everybody knows that explaining human behavior is a very complex and difficult task (Ajzen 1991). To highlight our perspective of the complexity and multidisciplinary nature of the acceptance process, we developed our model by drawing from established bases of research in (1) social psychology[1], (2) marketing (consumer behavior), and (3) Information Systems and Human-Computer Interaction (HCI). The Appendix I summarizes most important IS models cited in this research.

A large number of models have demonstrated the strong relationship between intention and behavior. The relation between intention to accept and acceptance of ICT is out of the scope of this research. Our purpose is to outline constructs that shape the intention to accept ICT in the first stages of the ICT acceptance process.

According to Schwaerz & Chin (2007), ICT acceptance "involves a holistic conjunction of a user's behavioral interaction with the ICT over time and his or her psychological understanding / willingness or resistance / acceptance that develops within a specific social / environmental / organizational setting". Acceptation process may be conceptualized as a temporal sequence of activities

[1] The theoretical models employed to study individual acceptance and usage behavior in psychology provides generalized insights into human behaviors.

that lead to initial adoption and subsequent continued usage of an ICT innovation at the individual adopter level.

Key constructs that shape the ICT acceptance decision process are numerous. Based on Schwaerz & Chin's (2007) definition and on Rogers (1983), we divide these key constructs into three categories: (1) ICT's perceived attributes and characteristics; (2) individual differences and psychological processes, and finally (3) the environmental influences like contextual factors and communications concerning the ICT innovation received by the individual from his social environment. Theses constructs are summarized in figure 2.

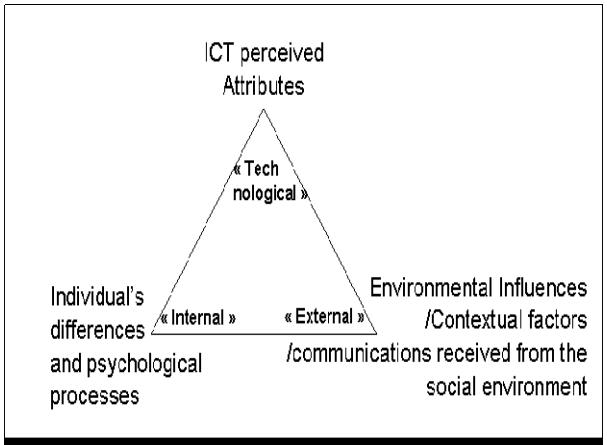

Figure2 Key constructs that shape the ICT acceptance decision process

Over years, in order to understand the impact of these technological, internal, and external forces that affect the ICT acceptance decision, researchers isolated them in fragmented models. In this paper, we will integrate a large number of these models and variables in a one unified model that can provide a universal map of the ICT acceptance process at the individual level.

1.1. ICT's perceived attributes and Perceived characteristics of ICT acceptance

Rogers in the Diffusion of Innovation Theory (IDT summarized in table 1, e.g. Rogers, 1962; 1971; 1983, p.232; 1995, p.15-16; 2003) indicates five ICT characteristics that are associated with ICT acceptance process: relative advantage, compatibility, complexity or ease of use, observability and trialability. After analysing 105 researches related to this theory, Tornatzky & Klein (1982) identified five more characteristics: cost, communicability, divisibility, profitability, and social approval. They noted that communicability and divisibility are closely related to observability and to trialability.

Based on the TRA's (e.g. Fishbein & Ajzen 1975) assumption that consumers think about an ICT in terms of their consequences not their attributes[2], Moore & Benbasat (1991, p. 195) redefined the Rogers' five variables in term of use. They presented the full set of perceived characteristics of using an innovation (PCI) by adding image and voluntariness of use, and by dividing observability into visibility and result demonstrability (e.g. Moore & Benbasat, 1991, p. 202). They argued also that the ICT innovation's relative cost or perceived cost has a great effect on acceptance behavior. But they didn't include it in their research because they were studying the individual level adoption of an ICT innovation within organizations. Table 2 summarizes the definition of these concepts

In an adaptation of TRA, the Technology Acceptance Model (TAM1, summarized in table 3), the most frequently cited model in IS, originally proposed by Davis (Davis 1989, 1993, Davis et al. 1989), specifies two cognitive variables, perceived usefulness (PU) and perceived ease of use (PEU) as determinants towards acceptance intentions and acceptance of ICT. PU is equivalent to Rogers' relative advantage (1983, Moore & Benbasat 1991), to Compeau & Higgins' outcome expectations (1995b), to Davis et al.'s extrinsic motivation (1992), to Thompson et al.'s (1991) job-fit, and to Venkatesh et al.'s (2003) performance expectancy. Perceived Ease Usefulness (PEU) is similar to perceived complexity (Rogers 1983, Thompson et al 1991), to effort expectancy (UTAUT, Venkatesh et al. 2003), and to Thompson et al.'s complexity (1991).

Recently, IS researchers have also included hedonic criteria and affective ICT attributes like: perceived enjoyment (PE, Van der Heijden 2004, Sun & Zhang 2006), perceived affective quality of ICT (Zhang & Li 2004), Heightened enjoyment (Agarwal & Karahanna 2000), and perceived playfulness (Sun & Zhang 2006). These variables include the pleasure derived from the consumption or use of the ICT or entertainment potential of the ICT (Table 4 summarizes these constructs).

Consumer behavior literature distinguishes between utilitarian, hedonic, social and control attributes. This is why, we divide the perceived characteristics of using ICT into four different criteria: (1) the utilitarian criteria refers to PU (outcome or performance expectation, job fit, relative advantage, extrinsic motivation) (2) the hedonic criteria which is the pleasure derived from the use of the ICT or entertainment potential of the ICT and refers to Perceived Affective Quality (PAQ), (3) the social criteria refers to image or status gains (ISG), result demonstrability (RD) and visibility (V), and (4) control ICT's acceptance criteria like trialability (TRI), relative cost (RC), declining cost (DC), voluntariness of use (VU), and complexity or PEU.

[2] According to TRA (Theory of Reasoned Action) there are two kinds of attitudes: individual's attitude towards the ICT and attitudes concerning ICT acceptance and use. According to Fishbein & Ajzen (1975), attitudes toward an innovation do not strongly predict innovation acceptance and use. Only the individual's attitude concerning the acceptance and use determine innovation acceptance. Individual's attitude towards the innovation influence innovation acceptance indirectly through their influence on other variables.

1.2. Individual differences and psychological determinants

Researchers have studied a range of individual user characteristics that influence the adoption such as attitude, beliefs, motivation, knowledge, resources (money, time, and processing capabilities), personality, values and lifestyle, demographic variables, education, computer experience, personality characteristics… In this study, we will not consider all these variables while focusing on the impact of the individual values on the evaluation process. Between all of these individual characteristics, only (a) the potential users' personal values, (b) and three trait variables specific to ICT will be considered, because it plays a key role in the adoption process.

1.2.1. Personal values

Values[3] express and represent desirable goals that motivate people and appropriate ways to attain these goals (Engel, Blackwell & Miniard, 1986). People have a limited number of values which are structured in a value system. Values are important in the ICT acceptance process because they give meaning and direction to behavior (Antonides & Raaij 1998). Cultural values are an important set of individual difference moderators in ICT acceptance (Hofstede 2000, Straub 1994, Van Birgelen et al. 2002, Straub et al. 1997, Straub et al. 2002, and Strite & Karahanna 2006). But little research has been devoted to the relationship between individual personal values and the usage of ICT. Because our concern in this work-in-progress is on individual intention to accept mobile Internet services, the focus will be on personal values. This is why we will use the personal values measured at the individual or micro level.

Kahle's (1983) conceptualized and measured nine-item list of values (LOV) in five domain. Shiffman et al. (2003) used it to examine the relation between values and the use of Internet and they found that there is a relation between selected Internet activities and specific personal values. Kahle's (1983, 1984, 1984b) nine-item list of values (LOV values: security, self-respect, fun and enjoyment in life, excitement, sense of accomplishment, being well respected, warm relationships with others, sense of belonging, self-fulfillment) has become popular and has been included in studies concerning the automobiles consumption decisions and the choice of leisure activities. It can even predict the consumer behavior trends more often than does the Mitchell's (1983) VALS (values and life style) scoring systems (Kahle, Beatty & Homer 1986). It has been widely used in consumer behavior and in marketing but not in HCI and IS.

This is why, we will examine the impact of these (I) nine personal values on the (II) utilitarian, affective, social, and control evaluation of (III) ICT acceptance intention.

1.2.2. Personal trait variables specific to ICT

There are three trait variables specific to ICT that refer to comparatively stable characteristics of individuals and are invariant to situational stimuli: computer playfulness (CP, Webster & Martocchio 1992, Moon & Kim 2001), personal innovativeness in ICT (PIIT, Agrawal & Prasad 1998, Agrawal & Karahanna 2000) and computer self efficacy (CSE, Compeau, & Higgins 1995). Table 5 summarizes the definition of these three concepts.

1.3. Environmental influences

Environmental influences are the physical or social stimuli external to the user that influence the ICT acceptance. It includes the communications about the ICT, received by the individual from his social environment and the stimuli created by marketers. It also includes the influences of contextual and situational factors.

1.3.1. Perceived social influences

A lot of prior research presented evidence that perceived social influences (friends and family Influences FFI and Workplace Referents' Influences WRI) play a key role in ICT acceptance especially in the first stages of the-acceptance process (Triandis 1971, Thompson et al. 1991, Karahana et al. 1999) and/or when users' knowledge concerning the ICT were apt to be vague (Hartwick & Barki 1994). Venkatesh et al.' (2003) social influence is similar to Triandis (1980) and Thompson et al.'s (1991) social factors (MPCU, Thompson et al. 1991), and Ajzen' subjective norms (TRA e.g. Ajzen 1991, TPB e.g. Fishbein & Azjen 1975, C-TAM-TPB e.g. Taylor & Todd 1995, and Mathieson 1991).

According to Fishbein & Azjen (1975), Ajzen (1991), and Taylor & Todd (1995), a person's subjective norms (SN) may be influenced indirectly (for example, when the person infers that others think he or she should use a system) or directly by other individuals (for example, when referents tell the person that they think he or she should use a system). The direct compliance effect of subjective norms on intention to accept ICT was identified in TRA, TPB, C-TAM-TPB, and MPCU theories. It was also proved by Hartwick & Barki (1994) in mandatory context, but not in voluntary usage contexts. Venkatesh & Brown (2001) proved also that the acceptance intention is influenced by messages and stimuli conveyed via mass media and secondary sources (News, Newspapers, TVs and radios) (Secondary Sources' Influences, SSI). In addition, TAM2 reflects the impact of two additional theoretical mechanisms: internalization and identification. Social influences, also, includes the personal

[3] According to Engel, Blackwell & Miniard (1986), values present consumer beliefs about life and acceptable behavior. Peter & Olson (1999) defined values as mental representations of important, basic or fundamental life goals, needs and end states that individuals are trying to achieve in life. Values express and represent desirable goals that motivate people and appropriate ways to attain those goals (Engel, Blackwell & Miniard 1986).

network exposure (PNE, e.g. Valente 1995, p. 70, Hsieh et al. 2008). Indeed, individuals' ICT acceptance intention can be influenced also by how other members in their individual's personal network respond to this ICT innovation (Valente 1995, p. 70, Hsieh et al. 2008). The personal network exposure (PNE) accounts for the observed aggregate ICT acceptance behaviors in one's personal network.

As summarized in table 6, perceived social influences combine SN, which includes friends and family influences (FFI), secondary sources' influences (SSI), and workplace referents' influences (WRI), with personal network exposure (PNE).

1.3.2. Contextual factors

Most scholars are convinced that external control factors vary from context to context (Ajzen 1985) and depend on the situation. External control factors consists of a large number of constructs like: MPCU's Thompson et al.'s (1991) facilitating conditions (Venkatesh 2003), Igbaria et al.'s (1996) end user support (Igbaria et al. 1996) and Coyle' (2001) security and privacy environment. Hartwick & Barki (1994) proved that control evaluation is also related to the resources available for the individual (such as: money, time, and information) versus ICT's negative attributes or barriers inhibiting acceptance (such as: high cost and difficulty of use)

2. The user evaluations of the consequences of ICT acceptance

The most frequently used approach to capturing the user evaluations of ICT acceptance has been the measure of behavioral attitudes and their specific ICT antecedents. TRA, TPB, TAM1, DTPB, DTRA and TAM2 considered attitudes[4] toward accepting ICT as the reflection of underlying behavioral cognitions/beliefs. They adopt Fishbein's (1968) expectancy value formulation: each belief associates the ICT with a certain attribute and overall attitude is determined by the subjective values of the ICT's attributes in interaction with the strength of the associations. Based on Fishbein & Ajzen's TRA (1975), scholars linked the ICT attributes to the acceptance behavior by the behavioral beliefs. Karahana et al (DTRA, 1999), Taylor & Todd (DTPB, 1995), and other scholars measured the different dimensions of attitudinal belief toward ICT acceptance using Moore & Benbasat's PCI (1991).

Like the TRA, all these models and constructs focus on the cognitive aspect of the acceptance decision or posit that cognitive beliefs predict individuals' attitude, which has an affective component (Affect as post cognitive. eg. Sun & Zhang 2006). Recently a multi-component[5] view of attitude (Venkatesh & Brown 2001) emerged which propose that in order to understand the ICT acceptance, we need to consider the user cognitions and affect. Based on the TRA and the TPB, researchers have added to the utilitarian and to the affective, the social and control reaction variables by including normative and control beliefs (that includes perceived facilitation). All these researches proved that ICT acceptance evaluation is influenced by utilitarian, by affective, by social outcome as well as by control. Figure 3 summarizes the antecedents of the ICT evaluation process.

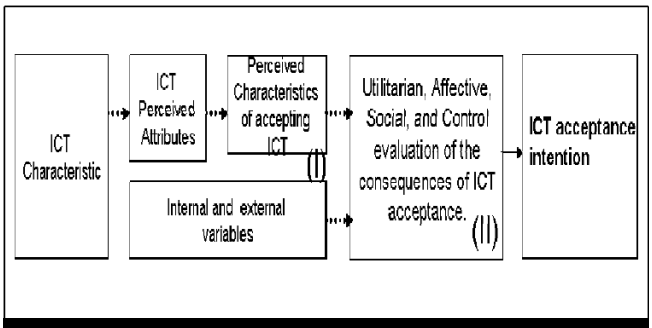

Figure 3. The basic concept underlying the ICT evaluation

The ICT acceptance process involves careful weighting and evaluation of utilitarian[6], hedonic[7], and social[8] ICT acceptance consequences. In addition, the user evaluates control variables like the cost, security and privacy, the support and the facilitating conditions.

Evaluation of the utilitarian consequences of accepting ICT is based primarily on cognition. The evaluation of hedonic consequences of accepting ICT is determined primarily by feelings and affect. The evaluation of the ICT acceptance's social attributes is determined by the perceived social influence and secondary sources (Venkatesh & Brown 2001), and by personal network exposure (PNE). The control evaluation is determined by the evaluation of barriers and constraints such as resources[9]

[4] IS researches define Individual's attitude toward behavior as the person's favourable / unfavourable evaluation of this behavior (Venkatesh & Brown 2001).

[5] Triandis (1980) argued for the separation of the affective and the cognitive components of attitude. Affect design the general moods (happiness, sadness) and specific emotions (fear, anger, envy) associated by an individual with a particular act (Ajzen, 2001, p.211).

[6] Prior research has emphasized the importance of the utilitarian outcomes which are defined as the extent to which using an ICT enhances the effectiveness of an individual activities. These attributes are very strong predictors of ICT acceptance (Venkatesh & Brown 2001).

[7] Research describes hedonic outcomes as the pleasure derived from the usage of the ICT.

[8] Social outcomes are defined as the public recognition that would be achieved as a result of the adoption of the ICT.

[9] According to Hartwick & Barki (1994), the greater the resources (money, time and information) that one has, and the

versus cost and the existence or not of facilitating conditions, security and privacy. Figure 4 and 4bis summarize the different constructs that users evaluate before deciding to accept or to reject an ICT. These constructs affect directly the utilitarian, affective, social, and control evaluation of the consequences of ICT acceptance.

fewer the impediments or obstacles that one faces, the greater one's perceived control (PBC).

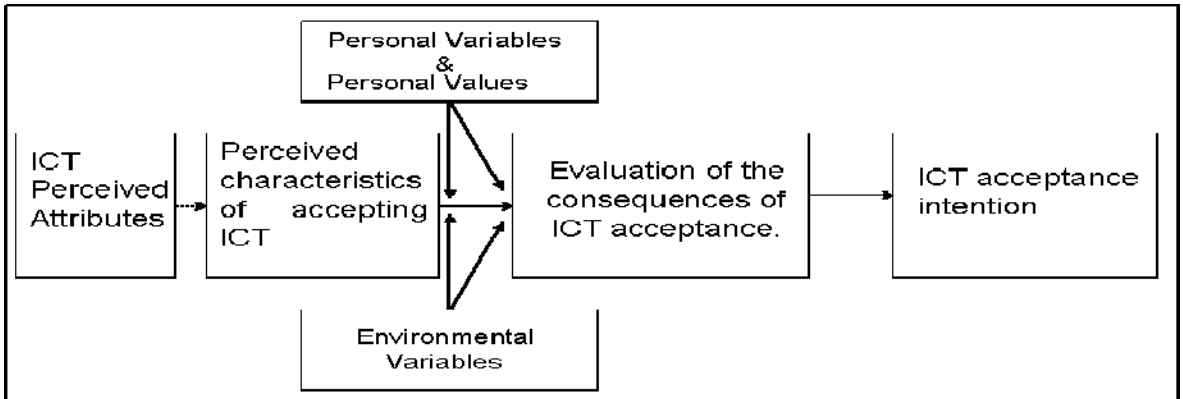

Figure 4. The users evaluations of the consequences of the ICT acceptance

2.1. The ICT individual acceptance intention Model (ICTIA model)

Based on the above literature review and discussions, we present a general model of various elements involved in the mental processes of the individual's acceptance of an ICT in his environment. The ICTIA model reflects the theoretical findings about (1) personal variables, ICT acceptance outcomes, and external variables like the social influence and contextual control; (2) the interaction between these key constructs and the consequences evaluation; (3) the impact of the utilitarian, affective, social and control evaluation on ICT acceptance intention, and (4) the moderating effect of the individual personal values on the relation between utilitarian, affective, social and control evaluation and ICT acceptance intention.

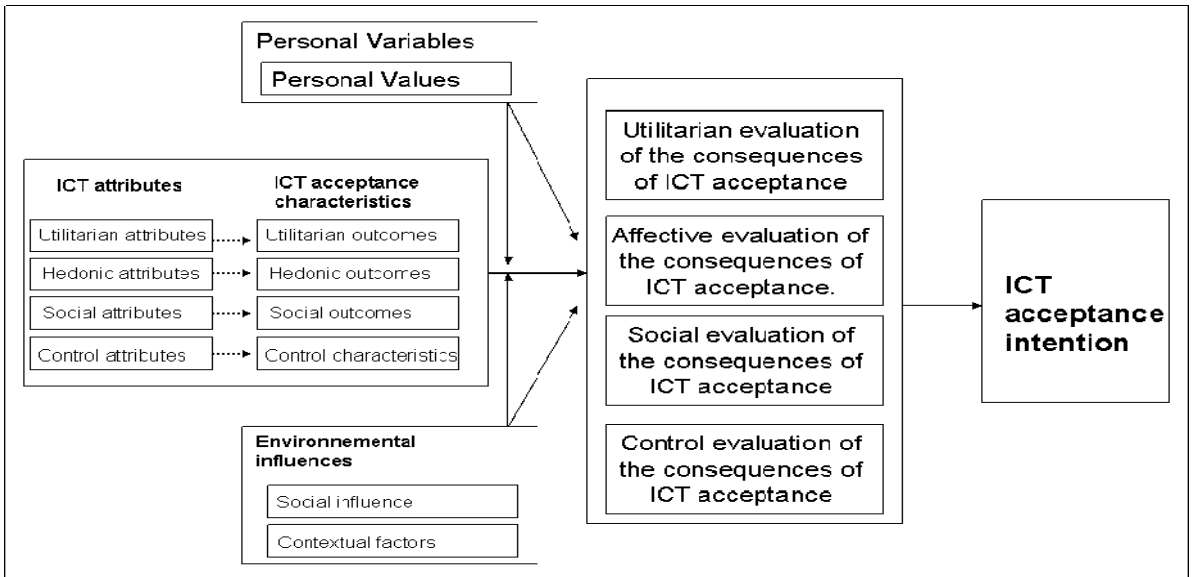

Figure 4bis Users evaluation of the consequences of ICT acceptance

2.2. Discussions of the ICTIA Model

This ICTIA model is general enough to be applied to a large number of situation and contexts. The ICTIA Model asserts that ICT acceptance intention (AI) is a direct function of perceived utilitarian consequences (PUC), perceived affective consequences (PAC), perceived social consequences (PSC), and perceived control consequences (PCC). More formally, ICT acceptance intention (AI) is a weighted function of the utilitarian, affective, social and control evaluation. Thus, according to the ICTIA model:

$$\mathbf{AI = W_1\,PUC + W_2\,PAC + W_3\,PSC + W_4\,PCC}$$

Each of the determinants of ICT acceptance intention, i.e., PUC, PAC, PSC, and PCC, is, in turn, determined by underlying ICT's outcomes. These are referred to as ICT utilitarian outcomes, ICT hedonic outcomes, ICT social outcomes and ICT control characteristics. These relation-

ships are typically formulated using an expectancy-value model (Fishbein 1968) which attaches a weight to each outcome. This weight varies from one person to another. Some users place more weight on one of these outcomes than on others. The cause for such weights is the value system that the individual has.

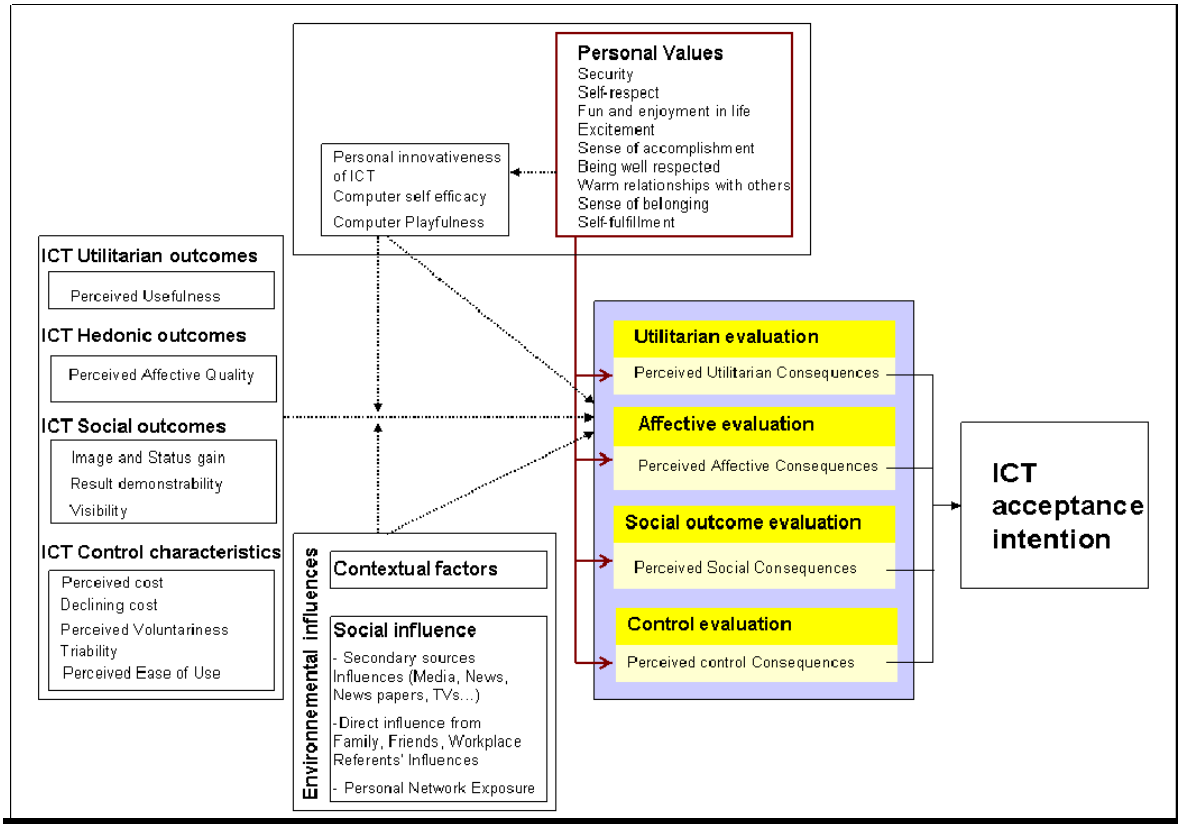

Figure 5. Information & Communication Technology Individual Acceptance Model (ICTIA Model)

Users interconnect meanings about the Perceived characteristics of ICT acceptance with the consequences of this acceptance that lead to the realization of their personal values. When evaluating utilitarian, affective, social and control aspects of ICT acceptance, users connect these aspects to their personal values. These reactions together determine the final intention of ICT acceptance. They accept the ICT innovation if the consequences of this acceptance lead to the realization of their personal values.

2.3. Discussions of the methodology and instrument development

This model will be tested through two surveys designed to capture a cross-sectional snapshot and a dynamic longitudinal picture of the underlying phenomena. In order to accomplish this, data will be collected in two waves that are three months apart. In Phase 1, data will be collected from over 2500 (American, French, Lebanese, Moroccan, Tunisian and Algerian) potential adopter of mobile Internet, Home PC, Internet connection at home, Facebook, Internet banking, mobile banking, and playstation. Questions will be asked about these ICTs acceptance intention or about reasons of non acceptance intention. Three months later, in Phase 2, we will attempt to contact all Phase 1 respondents for a follow-up survey to understand their changing views and follow-up behavior pattern.

The instrument used in this research will featured two broad categories of questions regarding: (1) factors related to ICT acceptance intention, and (2) list of values. The seven point Likert scale were written to elicit factors driving actual acceptance intention, and or future acceptance intent. The questions will be evaluated by experts and peers, and modifications will be made based on their feedback. A pilot study will be conducted next month in a large French University. The pilot study will be used to conduct a preliminary test of the instrument, to solicit comments and suggestions about the instrument from respondents. One hundred university students will compose the pilot study. The instrument will be refined following the pilot study to reduce the duration of the typical interview.

The questionnaire consists of four sections. Section 1 gathers information about the perceptions of respondents toward the utilitarian (perceived utility PU), affective (fun, perceived affective quality PAQ), social (status gains and image, result demonstrability, and visibility), and control (relative cost, declining cost, perceived ease of use, and trialability) of ICT outcomes, the social influ-

ences that combine subjective norms (SN), which includes friends and family influences (FFI), secondary sources' influences (SSI), and workplace referents' influences (WRI), with personal network exposure (PNE) and finally, about personal variables like fear of technological advances (FTA), computer self efficacy (CSE), and personal innovativeness in the Domain of ICT (PIIT) and the respondents acceptance intention. Section 2 consists of measuring the weight or the importance that the individual gives to each variable. Then, in section 3, he is asked to rate each value on how important it is in his daily life, using the scale ranging from 1 (Least important) to 9 (Most important). Finally, section 4 gathers demographic information.

Limitations and Further Research

This work-in-progress presents an integral model of intention to accept ICT innovations at the individual level. This model is general enough to be applied to a large number of situations and contexts. It determines the final intention of ICT acceptance intention. IT captures the influence of different external and internal variables on ICT acceptance and use at the first stages of the acceptance process. It reflects the theoretical findings about (1) personal variables specifically personal values, ICT acceptance outcomes, and external variables like the social influence and contextual factors; (2) the interaction between these key constructs and the ICT acceptance consequences evaluation; (3) the impact of the utilitarian, affective, social and control evaluation on the ICT acceptance intention, and (4) the moderating effect of the individual personal values on the utilitarian, affective, social and control evaluation of ICT acceptance intention. It asserts that ICT acceptance intention (AI) is a direct function of perceived utilitarian consequences (PUC), perceived affective consequences (PAC), perceived social consequences (PSC), and perceived control consequences (PCC). However, it is not without its limitations. First, it is important to recognize that the model does try to include a wider set of influences that may affect acceptance intention than the tradition TAM type of activity. However, there are many other influences other than the ones identified in this model which are also likely to impact acceptance intention (e.g. technology infrastructure, availability of bandwidth, disposable income of users, and fear of technological advances…). Perhaps one of the most interesting innovations from this model is that it adds personal values to the outcome evaluation and to perceived consequences of accepting intention.

References

Agarwal R, Karahanna E. (2000), "Time Flies When You're Having Fun: Cognitive Absorption and Beliefs about Information Technology Usage," *MIS Quarterly*, Vol. 24, N°4, pp. 665-694.

Agarwal R., Prasad J. (1998), "A Conceptual and Operational Definition of Personal innovativeness in the Domain of Information Technology," *Information Systems Research*, Vol. 9, N°2, pp. 204-215.

Ajzen I., Fishbein M. (1980), *Understanding Attitudes and Predicting Social Behavior*, Prentice-Hall, Englewood Cliffs, NJ.

Ajzen I. (1991), "The Theory of Planned Behavior," *Organizational Behavior and Human Decision Processes*, N°50, pp.179-211.

Ajzen I., (2001), "Nature and Operation of Attitudes", *Annual Review of Psychology*, Vol. 52, Issue 1, pp. 27- 32.

Antonides G., Raaij W.F. Van (1998), *Consumer Behavior: A European Perspective*, Chichester Wiley.

Bagozzi R. (2007), "The Legacy of the Technology Acceptance Model and a Proposal for a Paradigm Shift," *Journal of the Association for Information Systems*, Volume 8, Issue 4, Article 7, pp. 244-254.

Benbasat I., Barki H. (2007), "Quo vadis, TAM?," *Journal of the Association for Information Systems*, Vol. 8, Issue 4, Article 3, pp. 211-218.

Compeau D.R., Higgins C.A. (1995), "Computer Self-efficacy: Development of a Measure and Initial Test," *MIS Quarterly*, Vol. 19, N°2, pp. 189-212.

Compeau D.R., Higgins C.A. (1995), "Application of Social Cognitive Theory to Training for Computer Skills," *Information Systems Research*, Vol. 6, N° 2, pp. 118-143.

Cooper R.B., Zmud R.W. (1990), "Information Technology Implementation Research: A Technological Diffusion Approach," *Management Science*, vol. 36, N°2, pp. 123-139.

Coyle F.P. (2001), *Wireless Web: A Manager's Guide*, Addison Wesley, NJ.

Davis F.D., (1993), "User acceptance of information technology: system characteristics, user perception and behavioural impacts," *International Journal of Man-Machine Studies*, Vol. 38, N°3, pp. 475-487.

Davis F.D., Bagozzi R.P., Warshaw P.R. (1992), "Extrinsic and Intrinsic Motivation to Use Computers in the Workplace," *Journal of Applied Social Psychology*, Vol. 22, pp. 1111-1132.

Davis F.D., Bagozzi R.P., Warshaw P.R. (1989), "User Acceptance of Computer technology: A Comparison of two Theoretical Models," *Management Science*, vol. 35, N° 8, pp. 982-1003.

Davis F.D. (1989), "Perceived Usefulness, perceived ease of use and user acceptance of information technology," *MIS Quarterly*, vol. 13, N° 3, pp.319-340.

Engel J.F., Blackwell R.D., Miniard P.W. (1986), *Consumer behavior*, Chicago: the Dryden Press.

Fishbein M., Ajzen I. (1975), *Belief, attitude, intention, and behavior: An introduction to theory and research*, Reading Mass, Don Mills, Ontario: Addison-Wesley Pub. Co.

Hartwick J., Barki H. (1994), "Explaining the Role of User Participation in Information System Use," *Management Science*, Vol. 40, N° 4, pp. 440-465.

Hofstede G. (1980), *Culture's Consequences: International Differences in Work-Related Values*, Sage, Beverly Hills, CA.

Hofstede G. (1983), "Dimensions of national cultures in fifty countries and three regions." *In* J.B. Deregowski, S. Dziurawiec, R. C. Annis (Eds.), *Expiscations in cross-cultural psychology*. Lisse, Netherlands: Swets & Zeitlanger.

Hofstede G. (2000), "The information age across cultures," *Proceedings of 5th AIM conference* – Information Systems and Organizational Change. CD-Rom, 10 pp.

Howard J., Sheth J.N. (1969), *Theory of Buyer Behavior*, J. Wiley & Sons, New York.

Hsieh J. J. Po-An, Rai A., Keil M. (2008), "Understanding Digital Inequality: Comparing Continued Use Behavior Models of The Socio-Economically Advantaged and Disadvantaged," *MIS Quarterly*, March, Vol. 32, No. 1, pp. 97-126.

Igbaria M., Guimaraes T., Gordon G.B. (1995), "Testing the Determinants of Microcomputer Usage Via a Structural Equation Model," *Journal of Management Information Systems*, Vol. 11, N°4, pp. 87-114

Karahanna E., Agrawal R., Corey A. (2006), "Reconceptualizing compatibility beliefs in Technology Acceptance Research," *MIS Quarterly*, Vol 30, N 4, pp.781-804.

Karahanna E., Straub D.W., Chervany N.L. (1999), "Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs," *MIS Quarterly*, Vol. 23, N°2, 183-214.

Kahle L. (1983), *Social values and social change: Adaptation to life in America*. New York, Praeger.

Kahle L. (1984b), "The values of Americans: Implications for consumer adaptation," *In* R.E. Pitts and A, Woodside (Eds.), *Personal values and consumer psychology*, (pp. 77-86), Lexington, MA: Lexington Books.

Kahle L, Beatty S.E. (1984), "The social values of Americans: strategic implications," *Strategy and Executive Action*, N°1, pp. 26-28.

Kahle L., Beatty S.E., Homer P.M. (1986), "Altemative Measurement Approaches to Consumer Values: The List of Values (LOV) and Values and Lifestyle Segmentation (VALS)," *Journal of Consumer Research*, Vol. 13, December, pp. 405-409.

Lewis W., Agarwal R., Sambamurthy V. (2003), "Sources of Influence on Beliefs about Information Technology Use: An Empirical Study of Knowledge Workers", *MISQ*, Vol. 27, N 4, pp. 657-678.

Mathieson K. (1991), "Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behavior," *Information Systems Research*, (2:3), pp. 173-191.

Mitchell A. (1983), *The Nine American Life Styles*, New York: Warner.

Moon J., Kim Y. (2001), "Extending the TAM for a World-Wide-Web Context," *Information and Management*, Vol. 38 N°4, pp.217-230.

Moore G.C, Benbasat I. (1996), "Integrating Diffusion of Innovations and Theory of Reasoned Action Models to Predict Utilization of Information Technology by End-Users," *In* K. Kautz and J. Pries-Heje, *Diffusion and Adoption of Information Technology*, Chapman and Hall, London, pp. 132-146.

Moore G.C., Benbasat I. (1991), "Development of an instrument to measure the perceptions of adopting an information technology innovation," *Information Systems Research*, Vol. 2, N° 3, pp.192-222.

Peter P.J., Olson J.C. (1999), *Consumer Behavior and Marketing Strategy*, Sixth Edition. Boston: McGraw-Hill.

Rogers E.M. (2003), *Diffusion of Innovations*, 5th Ed., Free Press, New York.

Rogers E.M. (1995). *Diffusion of Innovations*, 4th Ed., Free Press, New York.

Rogers E.M. (1983), *Diffusion of Innovations*, 3d Ed., Free Press, New York.

Rogers E.M., Shoemaker F. (1971), *Communication of Innovations: A Cross-Cultural Approach*, 2nd Ed., New York: The Free Press.

Rogers E.M. (1962), *Diffusion of Innovations*, Free Press. New York.

Schwarz A., Chin W. (2007), "Looking Forward: Toward an Understanding of the Nature and Definition of IT Acceptance," *Journal of the association for information systems*, Volume 8, Issue 4, Article 6, pp. 230-243.

Straub D.W. (1994), "The effect of culture on IT diffusion: e-mail and fax in Japan and the US," *Information Systems Research*, Vol. 5, N°1, pp. 23-47.

Straub D.W., Keil P., Brenner A. (1997), "Testing the technology acceptance model across cultures: A three country study," *Information & Management*, Vol. 31, N°1, pp. 1-11.

Straub D.W., Loch K., Evaristo R., Karahanna E., Strite M. (2002), "Toward a theory-based measurement of culture," *Journal of Global Information Management*, Vol. 10, N°1, pp.13-23.

Srite M., Karahanna E. (2006), "The influence of national culture on the acceptance of information technologies: An empirical study." *MIS Quarterly*, N°30, pp. 679-704.

Sun H., Zhang P. (2006). "The role of affect in IS research: A critical Survey and a research Model," *In*: P. Zhang and Galletta, *Humain-Computer Interaction and Management Information Systems-Foundations*, ME Sharpe, Inc., Armonk, NY.

Taylor S., Todd P.A. (1995), "Understanding Information Technology Usage: A Test of Competing Models," *Information Systems Research*, Vol. 6, N° 2, pp. 144-176.

Thompson R.L., Higgins C.A., Howell J.M. (1991), "Personal Computing: Toward a Conceptual Model of Utilization," *MIS Quarterly*, Vol.15, N°1, pp. 124-143.

Tornatzky L.G., Klein K.J. (1982). "Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings," *IEEE Transactions on Engineering Management*, Vol. 29, N°1, pp. 28-45.

Triandis H.C. (1980), "Values, Attitudes, and Interpersonal Behavior," *In* H.E. Howe (ed.), Nebraska Symposium on Motivation: Beliefs, Attitudes, and Values, University of Nebraska Press, Lincoln, NE, pp. 195-259.

Triandis H.C. (1971), *Attitude and Attitude Change*, John Wiley Sons Inc., New York.

Valente T. (1995), *Network Models of the Diffusion of Innovations*, New York: Hampton Press.

Van der Heijden H. (2004), "User Acceptance of Hedonic Information Systems," *MISQ*, Vol. 28, N°4, pp. 695-704.

Van Birgelen M, Ruyter K.D, Jong A.D., Wtzels M. (2002), "Customer evaluations of after-sale service contact modes: An empirical analysis of national culture's consequences," International Journal of Research in Marketing, Vol. 19, pp. 43-64.

Venkatesh V., Brown S. (2001), "A Longitudinal Investigation of Personal Computers in Homes: Adoption Determinants and Emerging Challenges," *MIS Quarterly*, Vol. 25, N°1, p.p. 71-102.

Venkatesh V., Davis F.D. (2000), "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," *Management Science*, Vol. 46, N°2, pp. 186-204.

Venkatesh V., Morri M.G., Davis G.B., Davis F.D. (2003), "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly*, Vol. 27, N° 3, pp. 425-478.

Warshaw P.R. (1980), "A New Model for Predicting Behavioral Intentions: An Alternative to Fishbein," *Journal of Marketing Research*, Vol. 17, N° 2, pp. 153-172.

Webster J, Martochhio J. (1992), "Microcomputer playfulness: Development of measure with workplace implications," *MIS Quarterly*. Vol. 16, N° 2, pp. 201-226.

Appendix I A summary of referenced theories

<table>
<tr><th colspan="5">Appendix I A summary of referenced theories</th></tr>
<tr><th>Theory</th><th>Sources</th><th></th><th>Original measure
ITEMS</th><th>Results</th></tr>
<tr><td rowspan="2">The Diffusion of Innovations Theory (IDT)</td><td rowspan="2">Rogers (1983)</td><td rowspan="2">The IDT examines three determinants of IT adoption and usage: (1) individual user characteristics (Brancbeau & Wetherbe 1990), (2) information sources and communication channels (Nilikanta & Scammell 1990), and (3) innovation characteristics (Moore 1987, Moore & Benbasat 1993).

According to Rogers (1995), information about the existence of innovations flows through social systems where potential adopters are situated.

This information is processed by adopters to form perceptions about the characteristics of the innovation; such perceptions, among other contextual factors, then serve as the drivers for innovation adoption decisions.</td><td>- Relative advantage
- Compatibility
- Complexity
- Observability
- Trialability
- Cost
- Communicability
- Divisibility
- Profitability
- Social Approval</td><td>Tornatzky and Klein (1982), Agrawal et Prasad (1998), Cooper et Zmud (1990), Crum et al. (1996):

- compatibility and relative advantage are positively related to adoption

- complexity is negatively related to adoption</td></tr>
<tr><td>- Relative advantage
- Compatibility
- Complexity
- Trialability
- Visibility
- Result Demonstrability
- Image</td><td>Moore & Benbasat (1995) :

- all the PCI factors influence the adoption, plus :

-Voluntariness

- Social Norms</td></tr>
</table>

Theory of reasoned action (TRA)	Fishbein & Ajzen (1975; 1980)	The immediate psychological determinant of a behavior is the individual intention to perform it. The intention is determined by the person's attitude and subjective norm concerning the behavior. To reflect the attitude and subjective norm's relative importance, they weighted them respectively. This weight varies according to the situation, the behavior itself, and the person himself. Other external variables like demographic variables, personality characteristics, beliefs concerning objects, attitudes toward objects, task characteristics, and situational variables influence behavior indirectly, that is, through their influence on attitude concerning the behavior, on subjective norm concerning the behavior, or on the relative weight of the two.	**Intention=>Behavior** **- Attitudes** **- Subjective norms** **- External variables**	- Hartwick and Barki (1994) - The Decomposed theory of reasoned action, DTRA (Karahana et al 1999)
Technology acceptance model (TAM)	Davis et al. (1989)	TAM1 posits that potential user's attitude toward using ICT and their beliefs about its perceived usefulness (PU) determine the intention to accept ICT. Attitude is determined by perceived usefulness (PU) and perceived ease of use (PEU).	**Intention=>Behavior** **- Attitudes** **- PU** **- PEU**	Davis et al. (1989): Users' **PU** and **PEU** of the technology influence the use of this technology.

The Theory of Planned Behavior (TPB)	Ajzen (1985, 1991)	TPB extends TRA by adding the perceived behavioral control (PBC) to account situations where individuals do not have complete control over their behavior. PBC reflects perceptions of internal and external constraints on behavior (Ajzen 1985, 1991), or alternatively, beliefs regarding access to the resources and opportunities needed to perform a behavior. Acceptance, adoption or usage of ICT is weighted function of intention to accept and perceived behavioral control. Intention is formed by attitudes, subjective norm and perceived behavioral control components.	**Intention =>Behavior** **- attitudes** **- subjective norms** **-Perceived Behavioral Control**	The Decomposed Theory of Planned Behavior DTPB (e.g., Taylor & Todd 1995)

Appendix II (table 1 to 6)

Table 1 Diffusion of Innovation Theory

Table 1 Diffusion of Innovation Theory IDT (Rogers 1962; 1971; 1983, 1995, 2003)			
	Theory	**Original measured ITEMS**	**Results**
Rogers (1983)	The IDT examines three determinants of ICT adoption and usage: (1) individual user characteristics (Brancbeau & Wetherbe 1990), (2) information sources and communication channels (Nilikanta & Scammell 1990), and (3) innovation characteristics (Moore 1987, Moore & Benbasat 1993).	Rogers (1995): - **Relative advantage** - **Compatibility** - **Complexity** - **Observability** - **Trialability** Tornatzky & Klein (1982): - **Cost** - **Communicability** - **Divisibility** - **Profitability** - **Social Approval**	Tornatzky & Klein (1982), Agrawal & Prasad (1998), Cooper & Zmud (1990). - **compatibility** and **relative advantage** are positively related to adoption - **complexity** is negatively related to adoption
		PCI factors - **Relative advantage** - **Compatibility** - **Complexity** - **Trialability** - **Visibility** - **Result Demonstrability** - **Image**	Moore & Benbasat (1991, 1995, 1996) : - all the **PCI** factors influence the adoption, plus : **-Voluntariness** **- Social Norms**

Table 2 Perceived characteristics of using an Innovation (PCI)

Table 2 Perceived characteristics of using an Innovation (PCI)				
Theory	**Concepts**	**Definition**	**Sources**	**Redefined by… as …**
ICT Perceived Attributes	**Relative advantage**	The degree to which an innovation is perceived as being better than its precursor.	Rogers' IDT (1995, p.15).	Moore & Benbasat (1991) redefined r**elative advantage** as the degree to which using the ICT innovation is perceived as being better than using its precursor.
	Compatibility	The degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters.	Rogers' IDT (1995, p.15).	Moore & Benbasat (1991) redefined c**ompatibility** as the degree to which using this ICT is perceived as being consistent with the existing values, needs, and past experiences of potential adopters.
	Complexity	The degree to which an innovation is perceived as being difficult to understand and use.	Rogers' IDT (1995, p.16).	Moore & Benbasat (1991) redefined c**omplexity** as ease of use.
	Trialability	The degree to which an innovation may be experimented with on a limited bases before adoption.	Rogers' IDT (1995, p.16).	Moore & Benbasat (1991) redefined t**rialability** as the degree to which an innovation ICT may be experimented before adoption.
	Observability	The degree to which the results of an innovation are visible and communicable to others.	Rogers' IDT (1995, p.16).	Moore & Benbasat (1991) redefined o**bservability** as the degree to which the results of using the innovation ICT are observable to others. They found that observability has construct ambiguity problems, so they divided it into **visibility** and **result demonstrability.**
	Cost	Introduced by Tornatzky & Klein (1982)	Tornatzky & Klein (1982)	Moore & Benbasat (1991) redefined it as **relative cost** or **perceived cost**.

	Communicability	Closely related to observability.	Tornatzky & Klein (1982)	Moore & Benbasat (1991) redefined it as observability.
	Divisibility	Closely related to trialability.	Tornatzky & Klein (1982)	Moore & Benbasat (1991) redefined it as trialability.
	Profitability	Introduced by Tornatzky & Klein (1982)	Tornatzky & Klein (1982)	Moore & Benbasat did not include this characteristic.
	Social Approval	Closely related to Moore & Benbasat's image (1991)	Tornatzky & Klein (1982)	Moore & Benbasat (1991, p.195) redefined it as **image** or the degree to which use of an innovation ICT is perceived to enhance one's image or status in one's social system.
	Voluntariness of use	The degree to which use of the innovation is perceived as being volunteer, or of free will.	Moore & Benbasat' PCI (1991, p.195)	Moore & Benbasat (1991, p.195) redefined it as the degree to which the use of the innovation is perceived as being volunteer, or of free will.
	Result Demonstrability	Moore & Benbasat' PCI (1991, p.203) found that observability has construct ambiguity problems, so they divided it into **visibility** and **result demonstrability**.	Moore & Benbasat' PCI (1991, p.203)	The degree to which the results of adopting/accepting/using the ICT innovation are observable and communicable to others.
	Visibility	Moore & Benbasat' PCI (1991, p.203) found that observability has construct ambiguity problems, so they divided it into **visibility** and **result demonstrability**.	Moore & Benbasat' PCI (1991, p.203)	The degree to which the ICT innovation is visible in the environment of the adopter.

Table 3 Technology Acceptance Model

Table 3 Technology Acceptance Model TAM (Davis 1989)				
Constructs	**Similar constructs**	**Model**	**Authors**	**Definition**
Perceived usefulness (PU) Davis et al. (1989, p.320) The degree to which a person believes that using a particular system would enhance his or her job performance	**Performance expectancy**	UTAUT	Venkatesh et al. (2003, p.447)	The degree to which an individual believes that using the system will help him or her to attain gains in job performance.
	Extrinsic Motivation	MM	Davis et al. (1992, p. 1112)	The perception that users will 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.
	Job Fit	MPCU	Thompson et al (1991, p. 129)	The extent to which an individual believes that using an ICT can enhance the performance of his or her job.
	Relative advantage	IDT	Rogers (983) Moore & Benbasat (1991, p. 195)	The degree to which an innovation is perceived as being better than its precursor.
	Outcome expectation	SCT	Compeau & Higgins (995b)	The performance related consequences of the behavior. Specifically, performance expectations deal with job related outcomes.
Perceived ease of use (PEU) Davis et al. (1989) The degree to which an individual believes that performing the behavior of interest would be free of effort	**Effort expectancy**	UTAUT	Venkatesh et al, (2003, p.450)	The degree of ease associated with the use of the system.
	Perceived complexity	IDT	Rogers 1983, Thompson et al (1991)	The degree to which an innovation is perceived as being difficult to understand and use.
	Complexity	MPCU	Thompson et al. (1991, p.128)	The degree to which an innovation is perceived as relatively difficult to understand and use.

Table 4 Perceived Affective Quality

Table 4 Perceived Affective Quality (Zhang & Li 2004)				
Constructs	**Similar constructs**	**Model**	**Authors**	**Definition**
Perceived Affective Quality of ICT (Zhang & Li 2004)	**Perceived enjoyment (PE)**	User Acceptance of Hedonic Information Systems	Van der Heijden (2004, p. 697) Lewis et al. (2003, p. 163)	The extent to which fun can be derived from using the system as such or the intrinsic enjoyment of the interaction with the ICT
	Perceived playfulness (PP)	Extended TAM	Sun & Zhang (2006)	The extent to which the activity of using ICT is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated
	Heightened enjoyment	Extended TAM	Agarwal & Karahanna (2000)	Defined and measured the same as perceived enjoyment,

Table 5 Individual Personal stable characteristics specific to ICT

Table 5 Individual Personal stable characteristics specific to ICT		
Construct	**Authors**	**Definition**
Computer playfulness (CP)	Webster & Martocchio (1992), Moon & Kim (2001)	The degree of cognitive spontaneity in microcomputer interactions
Personal innovativeness (PIIT)	Agrawal & Prasad (1998), Agrawal & Karahanna (2000)	An individual trait reflecting a willingness to try out any new ICT
Computer self efficacy (CSE)	Compeau, & Higgins (1995)	The individual's perceptions of his or her ability to use ICT in the accomplishment of a task

Table 6 Social influences

Table 7 Social influences				
Construct			**Authors**	**Definition**
Social Influences	**Subjective Norms (SN)** Ajzen (1991).	**Subjective Norms (SN)**	Ajzen & Fishbein (1980) Taylor & Todd (1995)	Belief of the consumer concerning the expectations of significant others about the behavior multiplied by the consumer's felt need to comply with those expectations he degree of cognitive spontaneity in microcomputer interactions
		Societal Norms (SN)	Warshaw (1980)	Felt pressure from others
		Social Factors (SF)	Triandis (1980) Thompson et al.'s (1991)	The individual's internalization of the reference groups' subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations.
		Social Influences (SI)	Venkatesh et al. (2003)	The general social pressure (in an organizational cultural setting) for an individual to perform a behavior.
	Personal network exposure (PNE)		Valente (1995, p. 70) Hsieh et al. (2008)	The observed aggregate ICT acceptance behaviors in one's personal network.