

Chapter 2: Literature Review

2.1 Introduction

This chapter is included of backgrounds and literatures in Technology acceptance Model, Hofstede cultural Dimensions and previous researchs including of cultural role on TAM. This chapter will prove the unique work of this paper.

Framework, definitions and hypothesis development for this study, will mention and discuss in this chapter.

2.2 Technology Acceptance Model

Technology Acceptance Model (TAM) is one of the most influential extensions of Ajzen and Fishbein's theory of reasoned action (TRA) that has been widely used to predict user acceptance and use based on perceived usefulness and ease of use. According to TRA, an individual's behavioural intention, which results in actual behaviour, is influenced by person subject norm and attitude, and the attitude is influenced by individual beliefs (Ajzen & Fishbein, 1980).

According to the Davis (1989), TAM hypothesizes that behavioural intention is a significant determinant of actual system use, and that behavioural intention is determined by two relevant beliefs, perceived usefulness and perceived ease of use. In TAM, an individual's principle determines the attitude toward using the system. The attitude develops the intention to use. Perceived usefulness is related to productivity but perceived ease-of-use is related to effort (Venkatesh, 1999). This intention influences the decision of actual technology usage. These causalities were largely studied and accepted (Suh and Han, 2002; Morris and Dillon, 1997; Teo, Lim, Lai, 1999).

The most significant results of Davis study was the strong relation between Usefulness and Usage. Users of a technology try to cope with difficulties of a system, although difficulty of use can discourage adoption of a useful system, no amount of ease of use can give back for a system that does not perform a useful function. TAM used in several IS studies and proved useful determining technology acceptance, especially to explain computer usage behaviour. This justifies why TAM is suitable for studies in computer acceptance. Given the rising popularity of Electronic_ Commerce technology such as Internet banking and Mobile Banking and the dynamic user behaviors identified above, the TAM is a suitable framework for this study. There are other widely used and well known frameworks, such as “uses and gratification” or “diffusion of innovation”, but the TAM is considered the best fit for this study because other frameworks focus on different levels of analysis (macro, mezzo, or micro) or different topics of emphasis (diffusion mechanisms, etc.). If modified appropriately, the TAM is the most effective tool for a study like this one, which investigates factors relating to usage and adoption, such as cultural dimensions. (Suh et al., 2002; Morris et al., 1997; Teo et al., 1999).

The TAM was stimulated by the theory of reasoned action(1980), which argues that both the attitude toward an action and subjective norms have an impact on behavioral intention, which in turn affects how people perform an action. The TAM was an early attempt to apply psychological factors to information systems and computer adoption. It assumed that perceived usefulness and perceived ease of use were major influences on an individual's attitude toward using technology and, thus, ultimately, were related to actual use (Davis, 1989).

Technology Acceptance Model (TAM) has been widely used to predict user acceptance and use based on perceived usefulness and ease of use (Davis, 1989). TAM conceives that behavioural intention is a significant determinant of actual system use, and that behavioural intention is determined by two main beliefs, perceived usefulness and perceived ease of use. The perceived usefulness refers to “the degree to which an individual believes that using a particular system would enhance his/her job performance”. The perceived ease of use refers to “the degree to which an individual believes that using a particular system would be free of physical and mental efforts.” In TAM, an individual’s belief settles on the attitude toward using the system and, in turn, the attitude develops the intention to use. This intention influences the decision of actual technology usage. With the bang of the Internet and convergence technologies, researchers have modified TAM to demonstrate the empirical evidences of it in the convergence context. In fact, many researchers have proposed various extended TAM. For instance, Moon and Kim (2001) suggest a model where perceived playfulness was described as one of the antecedents of attitude toward Web surfing. They noted that most prior TAM research had focused only on extrinsic motivation, not on intrinsic motivation. Morris and Dillon (1997) found that TAM contributes to the prediction of individual usage of software. The motivational model that was adapted by Davis, Bagozzi, Warshaw (1992) employs two key constructs: extrinsic and intrinsic motivation. According to Venkatesh and Speier (1999), extrinsic motivation refers to the performance of an activity. Extrinsic motivation is perceived to help achieve valued outcomes that are distinct from the activity itself, such as improving job performance, pay, etc. Intrinsic

motivation refers to the performance of an activity for no reason other than the process of performing it. In the case of technology acceptance studies, perceived usefulness is an example of extrinsic motivation. Davis et al. (1992) found that perceived enjoyment was significantly related to the perceived ease of use. In the research on the usage intentions for information systems, Heijden (2004) adds perceived an enjoyment to TAM model. Cheong and Park (2005) also develop a more comprehensive version of TAM to better reflect mobile Internet context.

Their model employs perceived playfulness, content's quality, system quality, Internet experience and perceived price level, in addition to perceived usefulness and ease of use. For the mobile services, Nysveen et al. (2005) investigate the consumers' intention to use mobile services, which shows the four overall influences on usage intention: motivational influences, attitudinal influences, normative pressure, and perceived control. Similarly, Fogelgren-Pedersen (2005) found that connection stability and geographic coverage are one of the significant variables of perceived relative advantage in mobile Internet. Also, in the worldwide mobile Internet user survey, Fife (2005) found that perceived enhanced utility of mobile services are the strong value motivating use of mobile technology. While these studies found the significant perceived variables, they still do not find variables specific to mobile Internet. Viswanath Venkatesh, Morris, B.Davis, D.Davis (2003) worked on this issue and eight prominent models are discussed, the eight models and their extensions are empirically compared, a unified model is formulated that integrates elements across the eight models, and the unified model is empirically validated. Using data from four organizations over a six-month

period with three points of measurement, the eight models explained between 17% and 53% of the variance in user intentions to use information technology. Next, a unified model, called the Unified Theory of Acceptance and Use of Technology (UTAUT), was formulated, with four core determinants of intention and usage, and up to four moderators of key relationships. UTAUT provides a useful tool for managers needing to assess the likelihood of success for new technology introductions and helps them understand the drivers of acceptance in order to proactively design interventions targeted at populations of users that may be less inclined to adopt and use new systems. Results of Venkatesh et al. (2003) discussion about eight model and comparison of them was mentioned as below:

Table 2.1 Model and Theories of Individual Acceptance		
	Core Constructs	Definitions
<p>Theory of reason Action(TRA)</p> <p>Drawn from social Psychology.TRA is one of the most fundamental and inflectional theories of human behaviour.</p> <p>It has been used to predict a wide range of behaviours .Davis et al.(1989) applied TRA to individual acceptance of technology and found that the variance explained was largely consistent with studies that employed TRA in context of other behaviours</p>	Attitude toward behavioural	"an individual's positive or negative feelings (evaluative affect) about performing the target behavior" (Fishbein and Ajzen 1975, p. 216).
	Subjective Norm	"the person's perception that most people who are important, to him think he should or should not perform the behaviour in
<p>Technology Acceptance Model(TAM)</p> <p>TAM is tailored to IS contexts, and was designed to predict information technology acceptance and usage on the job. Unlike TRA, the final conceptualization of TAM excludes the attitude construct in order to better explain intention parsimoniously. TAM2 extended TAM by including subjective norm as an additional predictor of intention in the case of mandatory settings (Venkatesh and Davis 2000). TAM has been widely applied to a diverse set of technologies and users.</p>	Perceived Usefulness	"the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis 1989, p. 320)
	Perceived Ease of Use	"the degree to which a person believes that using a particular system would be free of effort" (Davis 1989, p. 320).
	Subjective Norm	Adapted from TRA/TPB. Included in TAM2 only

Table 2.1 continued		
	Core Constructs	Definitions
<p>Theory of Planned Behaviour</p> <p>TPB extended TRA by adding the construct of perceived behavioural control is theorized to be an additional determinant of intention and behavioural .Ajzan(1991) presented a review of several studies they successfully used TPB to predict intention and behaviour in a wide variety of settings. TPB has been successfully applied to the understanding of individual acceptance and usage of many different technologies (Tailor and Todd, 1995). A related model is the Decomposed Theory of Planned Behaviour (DTPB). In terms of predicting intention, DTPB is identical to TPB. In contrast to TPB but similar to TAM, DTPB “decomposes” attitude, subjective norm, and perceived behavioural control into its the underlying belief structure within technology adaption contexts.</p>	Attitude toward behavioural	Adapted from TRA
	Subjective Norm	Adapted from TRA
	Perceived Behavioural Control	“The perceived ease or difficulty of performing the behavioural (Ajzan, 1991) . In the context of IS research ,”perceptions of internal and external constraints on behavioural (taylor and Todd,1995)
<p>Combined TAM and TPB</p> <p>It is a combination of TPB TAM to provide a hybrid model (Taylor and Todd,1995)</p>	Attitude toward behaviour	Adapt from TRA/TPB
	Subjective Norm	Adapt from TRA/TPB
	Perceived behavioural control	Adapt from TRA/TPB

Table 2.1 continued		
	Core Constructs	Definitions
<p>Innovation Diffusion Theory (IDT) Grounded in sociology, IDT (Rogers 1964) has been used since the 1960s to study a variety of innovations, ranging from agricultural tools to organizational innovation (Tornatzky and Klein 1982). Within information systems, Moore and Benbasat (1991) adapted the characteristics of innovations presented in Rogers and refined a set of constructs that could be used to study individual technology acceptance. Moore and Benbasat (1996) found support for the predictive validity of these innovation</p>	Relative Advantage	"the degree to which an innovation is perceived as being better than its precursor" (Moore and Benbasat 1991, p. 195).
	Ease of use	"The degree to which an innovation is perceived as being difficult to use" (Moore and Benbasat 1991, 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 (Moore and Benbasat 1991, p. 195).
	visibility	The degree to which one can see others using the system in the organization (adapted from Moore and Benbasat 1991).
	Compatibility	"the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters" (Moore and Benbasat 1991, p. 195).
	Results demonstrability	"The tangibility of the results of using the innovation, including their observability and communicability" (Moor and Benbasat 1991, p.203).

Table 2.1 continued		
	Core Constructs	Definitions
<p>Social Cognitive Theory (SCT)</p> <p>One of the most powerful theories of human behavior is social cognitive theory (Bandura 1986). Compeau and Higgins (1995) applied and extended SCT to the context of computer; while Compeau and Higgins (1995) also employed SCT, it was to study performance and thus is outside the goal of the current research. Compeau and Higgins'(1995) model studied computer use but the nature of the model and the underlying theory allow it to be extended to acceptance and use of information technology in general. The original model of Compeau and Higgins (1995) used usage as a dependent variable but in keeping with the spirit of predicting individual acceptance,</p>	Relative Advantage	"The performance-related consequences of the behavior. Specifically, performance expectations deal with job-related comes (Compeau and Higgins 1995)
	Outcome Expectations /Performance	The personal consequences of the behaviour. Specifically, personal expectations deal with the individual esteem and sense of accomplishment (Compeau and Higgins 1995).
	Self-efficacy	Judgment of one's ability to use a technology (e.g., computer) to accomplish a particular job or task.
	Affect	An individual likes for a particular behaviour (e.g., computer use).
	Anxiety	Evoking anxious or emotional reactions when it comes to performing a behavior (e.g., using a computer).

Comparison between these eight models will give an interesting results that was showed in the of Venkatesh et al. (2003) study. Table 2.2 will show this comparison.

Table 2.2			
Model Comparison Studies	Theories/Models Compared	Context of Study (Incl. Technology)	Findings
Davis et al.(1989)	TRA, TAM	Within subjects model comparison of intention and use of a word processor	The variance in intention and use explained by TRA was 32% and 26%, and TAM was 47% and 51%, respectively.
Mathieson(1991)	TAM, TPB	Between-subjects model comparison of intention to use a spreadsheet and calculator	The variance in intention explained by TAM was 70% and TPB was 62%
Taylor and Todd(1995)	TAM, TPB/DTPB	Within- subjects model comparison of intention to use a computing resource center.	The variance in intention explained by TAM was 52% and TPB was 57%, and DTPB was 60%
Plouffe et al.(2001)	TAM, IDT	Within- subjects model comparison of behavioral intention to use and use in the context of a market trail of an electronic payment system using smart card	The variance in intention explained by TAM was 33% and IDT was 45%

In 2008, *Ima, I., Kim, Y., Han, H.* did a revising research on Venkatesh work. They claimed that in previous study there seem to be two critical factors that are overlooked or have received inadequate attention—perceived risk (PR) and technology type. PR has been recognized as an important factor and was modelled as a precursor of perceived usefulness (PU), and a sub construct of others, such as trust (or as its precursor). In their study PR and technology type, consider as additional to the moderating variables in UTAUT and was tested how they moderate the effects of PU and PEU on users' intention to use a technology. It was shown the PR and technology type were moderating variables. Kim (2006) added two new constructs, Perceived Cost Savings and Company's Willingness to Fund, and two causal relationships, Job Relevance and Experience, as moderating effects to previous existing model and proved that there is a strong significant relationships between PCS and CWTF and behavioral intention to use a technology. Also moderating effects of job relevance was proved; also found that an individual's intention to use mobile wireless technology was significantly affected by CWF. Kim claimed that a company must provide technology to their employees to help them perform their jobs. Finally, the individuals adopt a technology if it is within their prior experience, which was found to be significant moderator between CWF and BI. Prior studies based on TAM did not examine the direct link from self-efficacy to behavioural intention assuming the full mediation of perceived ease of use but Khalifa (2008) integrated the theory of planned behaviour (Fishbein and Ajzen, 1975; Ajzen and Madden, 1986) and the technology

acceptance model (TAM) (Davis, 1989) to explain the adoption of m-commerce as a new technology. He added subjective norm to the main block of TAM as a factor that has positive direct effect on the individual's intention and Self-efficacy as a positive direct effect on the individual's intention to adopt m-commerce.

During the years researchers examined different items and their relations with TAM models, they have used original framework of TAM and found relation between them.

In paper by June Lu et al.(2008) was worked on different aspects of new technology in china, such as WMDS, these items are type of technology ,functionality of that technology, interface design, Personal innovativeness in information technology (PIIT), Facilitating conditions, Social influences ,security, trust , privacy and reliability of that technology. The result of this paper showed that intention to use WMDS via mobile phones in China was dependent on an individual's perceptual beliefs about the target services in terms of their usefulness and eases of use, and also relied on PIIT and mobile trust belief.

According to Dong-Hee Shin(2007) , who work on Wi-Bro acceptance in Korea, users' perceptions are significantly associated with their motivation to use Wi-Bro. Specifically, perceived quality and perceived availability are found to have significant effect on users' extrinsic and intrinsic motivation. These factors play as enhancing factors to attitudes and intention.

In 2005, Kim et al. Work on a Value-based Adoption of a technology such as mobile banking. A Value-based Adoption Model (VAM) would be able to capture the monetary sacrifice element and present adoption as a comparison of benefits and costs. By combination of Value-based Adoption Model (VAM) of M-Internet and by integrating the most relevant findings of the technology adoption and value literature, Kim(2005) designed its framework by dividing it to benefits and sacrifices. He suggested that customers' evaluation of a product includes both cognitive and affective elements, and that products are purchased for their utilitarian and hedonic benefits, so it can be proved that usefulness and enjoyment as the benefit components of perceived value. Perceived sacrifices are both monetary and non-monetary. Monetary spending includes the actual price of the product, and it is generally measured based on customers' perceptions of the actual price paid. Non-monetary costs usually include time, effort and other unsatisfactory spending for the purchase and consumption of the product. Yang (2004) did a research that examines different items that could affect technology acceptance. Innovation, past adaption behaviour, knowledge, technology cluster, age, gender and specialization were items that were tested in relation with technology acceptance in Yang study. He provided insights into the relationships between PU, PEOU, AT, consumer innovation adoption behaviour, and demographic variables and also offers empirical data to support the suitability of the TAM through examining the emerging M-commerce technology and application. PU is found to predict consumer adoption of M-commerce. Consumer innovativeness introduced into the TAM research to expand the scope of TAM

applicability to M-commerce that is yet to accumulate a critical mass in the diffusion process.

According to the López-Nicolás, Molina-Castillo, Harry Bouwman (2008), social factors are the important factors that influence on people's decision to adopt a new technology such as mobile services. They try to evaluate the impact of different determinants on Behavioural Intention in the adoption of advanced mobile services, by combining acceptance models with diffusion theory models theory. In particular, we assumed that social influence may be a key element in people's intention to use the services and applications. Social influence was defined as the degree to which individuals believed that others thought they should use advanced mobile services. The views of friends and relatives have a significant impact on using mobile services, López-Nicolás et al. proved that as a manager, that PEOU and behavioural intention depended significantly on social influences, so for bringing new services and technologies for organisations, notice to the employee's cultural background is important.

In a study by Amin (2008) who used original TAM model to finding factors affecting the intentions of customers in Malaysia to use mobile banking, proved that bank managers should create favourable perceptions concerning the usefulness and ease of use among mobile phone credit card customers. Creating these positive perceptions might be achieved by offering free seminars to customers about the ease of use of the system – Malaysian consumers often take up marketing initiatives of this type. Additionally, the banks should provide a mini-guide at all branches that provides succinct and

cogent information concerning the efficiency, effectiveness and risk-free attributes of the mobile phone credit card system.

In 2009 GU, Lee, Suh, integrated the fragmented models such as the extended TAM and the trust-based TAM into a unified model of mobile banking. They found that self-efficacy is the strongest antecedent of perceived ease-of-use, which directly and indirectly affected behavioural intention through perceived usefulness, also was found the structural assurances are the strongest antecedent of trust, which could increase behavioural intention of mobile banking. Gu et al. research was listed most important work on technology acceptance that used TAM as base. For example Taylor and Todd (1995) selected computing resource center and worked on usefulness, ease of use, attitude and behavioural intention, they worked on Subjective norm and Perceived behavioural control as their study antecedence (complete list of work on TAM was brought in Appendix A)

2.3 Hofstede Cultural dimensions:

“the collective programming of the mind which distinguishes the members of one group or category of people from another is defined as culture”

(Hofstede, 1997, p. 5)

Culture has been defined according to several perspectives. Definitions go from the most complex and the most comprehensive (e.g. Kluckhohn, 1962) to the most simple (e.g. Triandis, 1972, Hofstede, 1997). According to Kluckhohn (1962), “Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiments in artifacts” (p.73).

Hofstede cultural dimensions served as the most influential culture theory among social science research (Nokata and Sivakumar, 2001). In addition, Hofstede cultural framework has also received strong empirical support by Sondergaard work (1994). Geert Hofstede research gives insights into other cultures so that it will be more effective when interacting with people in other countries. If understood and applied properly, this information should reduce level of nuisance, concern, and distress. But most important, Geert Hofstede will give the 'edge of understanding' which translates to more successful results.

In 1980 Hofstede offered his famous description of cultural dimensions. Geert Hofstede collected and analyzed a large data base of employee values scores of IBM between 1967 and 1973 .it was included more than 70 countries. He first used the 40 largest countries and then extended the analysis to 50 countries and 3 regions. From the preliminary findings, and later researches, Hofstede developed a model that identifies four primary Dimensions to define in differentiating cultures:

First dimension was Power Distance Index (PDI), second was Individualism/collectivism (IND), third dimension was Masculinity/femininity, and finally he offered Uncertainty Avoidance (UAI). Geert Hofstede added another dimension after carry outing an additional international study with an examination instrument developed with Chinese employees and managers. Description of each Hofstede cultural dimensions is listed below:

Power Distance Index (PDI) that is the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally (Hofstede, 1980). This will be a symbol of inequality. He suggests that a society's level of inequality is approved by the followers as much as by the leaders. Power and inequality are extremely fundamental facts of any society and anybody with some international experience will be aware that all societies are unequal, but some are more unequal than others.

Individualism (IND) is another dimension that collectivism is its opposite that is the degree to which individuals are integrated into groups (Hofstede, 1980). On the individual culture, it was found that societies in which the ties between individuals are loose, that can be meant every person is expected to look after him/herself and his/her immediate family. In collectivism cultures, he pronounced that in societies that people from beginning are integrated into strong, cohesive in groups, often extended families (with uncles, aunts and grandparents) which continue protecting them in exchange for unquestioning loyalty(Hofstede,1980). The word 'collectivism' does not carry political meanings; it just refers to the group, not to the state.

Masculinity/Femininity describes to what extent, social gender roles are clearly distinct. Masculine societies emphasize on differentiated sex roles and independence. Male gender is assertive and focused on material values, while women are kind and think about the quality of life. In feminine societies, overlapping gender roles and interdependence are the norm. Men and women are supposed to be focused on material things and concerned with quality of life. (Hofstede, 1980)

Uncertainty Avoidance Index (UAI) comes with a society's tolerance for uncertainty and ambiguity. It shows to what extent people in a society feel uncomfortable or comfortable with culture programs in unstructured situations. Unstructured situations are novel, unknown, surprising, and different from usual. Uncertainty avoiding cultures try to decrease the possibility of such situations by severe laws and rules, safety and security measures, and on the philosophical and religious level by a belief in absolute Truth (Hofstede, 1980). The opposite type, uncertainty accepting cultures, are more tolerant of activities different from what they are used to; they prefer have few rules, and on the philosophical and religious level they are relativist and allow many currents to flow side by side. People within these cultures are more apathetic and thoughtful, and not expected by their environment to express emotions.

Last dimensions that was defined and added to previous one is Long-Term Orientation (LTO) versus Short-Term Orientation: this dimension was found in a study among students in 23 countries around the world, using a questionnaire designed by Chinese scholars, it can be said to deal with Virtue regardless of Truth. Values associated with Long Term Orientation are saving and persistence; values associated with Short Term Orientation are respect for tradition, fulfilling social obligations, and protecting one's face.

2.4 Technology Acceptance in View of Cultural Dimensions

Cross-cultural researchers have traditionally used Hofstede (1980, 1997) definition of culture that focus on the comparison of one culture with others. This is an etic definition of culture. Researchers that follow an etic approach in cross-cultural consumer research generally look for universal or culture-free theories and concepts. They search for variables and constructs common to all cultures that can be directly compared in order to discover how those cultures are different from or similar to each other. This approach is typical of cross-cultural psychology and other comparative social sciences (Luna; Gupta, 2001).

One study that tries to find the moderating effect of culture on the acceptance and adaption of a technology is Pavlou and Chai (2002) work. They used Hofstede cultural dimension in order to better understand what drives e-commerce across cultures, and applied a theory of planned behaviour (TPB) ,there are three types of beliefs in the TPB that affect three perceptual constructs: behavioural beliefs that influence attitudes, normative beliefs that affect subjective norm, and control beliefs that shape perceived behavioural control, perspective to capture behavioural intentions to transact online in two dissimilar countries, China and the United States, they worked on power distance , individualism/collectivism, and long term orientation dimensions. They proved that attitude had a significant effect on transaction intention for the collectivist society of China, but unexpected finding related to the impact of perceived behaviour control, where control has a stronger effect on transaction intention in the U.S. that in the Confucian Chinese society. Perhaps the reason lied in the utilitarian nature of the online consumer

(Jarvenpaa and Todd, 1997), especially in the U.S. As noted by Koufaris (2002) online consumers demand more control, less effort, and higher efficiency.

Harris, Rettie, Kwan (2005) worked on attitude toward a new technology such as mobile commerce between two countries, United Kingdom and Hong Kong. They found significant differences between the UK and Hong Kong in usage of and attitudes to m-commerce services. Harris et al. (2005) used two Hofstede dimensions for doing their research, power distance and individualism/collectivism. They proved that Hedonic M-commerce services and word of mouth recommendation as an influencer to use M-commerce will be more significant for Hong Kong collectivism culture with high power distance than United Kingdom with individualism and low power distance index.

In 1997, Straub; Keil and Brenner applied TAM model across three different countries, the United States, Japan and Switzerland, their aim of study was to examine the cultural differences of different regions on acceptance of a technology such as mobile. Straub et al. (1997) defined Hofstede's cultural dimension and their impact on technology acceptance and adaptation. Uncertainty avoidance, the degree to which members of a society feel uncomfortable with uncertainty and doubt, could affect technology acceptance by influencing choices of computer-based media in opposition to traditional media and cultural differences, in uncertainty avoidance, specifically, could affect the way in which individuals choose media for their communication tasks. With respect to organizational communication behaviour, prior research has focused specifically on uncertainty and ambiguity as principal factors in predicting

media use. Information richness theory (1984; 1987) imagines that individuals choose a communication medium by matching the information requirements of the task to the information richness of the media. Richness in a medium is a function of the interactiveness of the feedback channel, the personal quality of the source, and the ability of the interface to express innuendoes. For tasks high in uncertainty and doubt (for example, negotiation and conflict resolution), it is thought that people will use rich channels, such as face-to-face communication. For tasks low in uncertainty and ambiguity (for example, information memos and simple information exchange), simpler channels suffice. Electronic media such as E-mail are believed to be rather simple channels because they carry only literally information and not the personal presence or force of the communicator. Totally, one effect on media choice is that cultures in which individuals tend to avoid uncertainty (that is, high uncertainty avoidance index, or UAI) are expected to use electronic media less often since these media are not well suited to uncertainty reduction as face-to-face and other rich channels (Straub et al; 1997). Straub's study showed that Power Distance that is other important dimension of culture can affect technology acceptance. In societies in which managers and workers are separated by a large power distance, the levelling effect of computer-based media is not seen or felt as a desirable feature. In a culture with high power distance index, individuals may show deference to authority by abstaining from using media that do not allow them face-to-face contact (or, at the very least, access to a richer set of cues than simple textual messaging). Thus, the range of use of technologies such as E-mail and other electronic media should be restricted by such social norms. Workers in cultures in which

relatively smaller power distance occur will, accordingly, be able to use such technologies in more communications settings.

Next cultural index that Straub believed has effect on acceptance a new technology is individualism/collectivism. Low individualism (low IDV) possibly affects a culture against computer-based communications because these media mute the group effect. People in collectivist cultures cannot pick up cues about the social situation as readily from computer-based media and, therefore, would be disposed, overall, toward media such as face-to-face across all communications tasks. The last index that Straub (1997) explained its relation with technology acceptance is Masculinity/femininity. High in Mas Index can be translated to the high relationship with interpersonal presence. According to Straub it can be predicted that media not conveying the social presence of the communicator, such as E-mail, would not be favoured in cultures in which masculinity is a strong cultural. By looking at the Straub (1997) study results, it was cleared that TAM would be successful in explaining the U.S. and Swiss experience but not the Japanese experience. This effect may occur in spite of the rational usefulness found in the medium. In case of Japan, cultural tendencies toward more uncertainty avoidance, greater power distances between managers and workers, collectivist opinions, and masculinity may limit E-mail use and disassociate usefulness from use (Straub, 1997). Straub gave a special explanation on cultural dimensions and their effect on using a technology.

Level of UAI	Level of PDI	Level of MAS	Level of IND	Level of use of E-mail
↑	↑	↑	↓	↓
↓	↓	↓	↑	↑

Figure 2.1: Hofstede Cultural Dimensions and Media Choice of E-mail (Straub, 1997)

According to the previous literature, frame work of this study and development of hypothesis will be mentioned in Framework Section.

2.5 Framework:

In purpose of finding the cultural dimensions role in technology acceptance, this paper will follow the Davis (1980), Pavlou & Chai (2002), and Straub et al. (1997) Cultural framework, explanation of relation between TAM and Hofstede cultural dimensions will use McCoy, Everard and Jones (2005) research.

But the unique way of this study is that it is trying to find differences and similarities in behaviours toward TAM in different levels.

Proposed framework is as below:

Perceived Usefulness and Perceived Ease of Use that is Davis (1980) were explained in previous section of this literature.

Subjective norm is seen as a combination of perceived expectations from relevant individuals or groups along with intentions to comply with these expectations. In other words, "the person's perception that most people who are important to him or her think he should or should not perform the behavior in question" (Azjen and Fishbein, 1975). Morris and Venkatesh (2000) investigated age differences in adoption intentions and continued use of information technology using the theory of planned behaviour. They found that

workers were strongly influenced by subjective norm, although age and length of exposure moderated the effects. Based on the TPB, it is expected that subjective norm will have an influence on the intentions of consumers to engage in online transactions.

Perceived behavioural control refers to an individual's perceived ease or difficulty of performing the particular behavior (Ajzen, 1988). It is assumed that perceived behavioural control is determined by the total set of accessible control beliefs. It can have an effect on individual's behavior to use a technology such as Internet Banking.

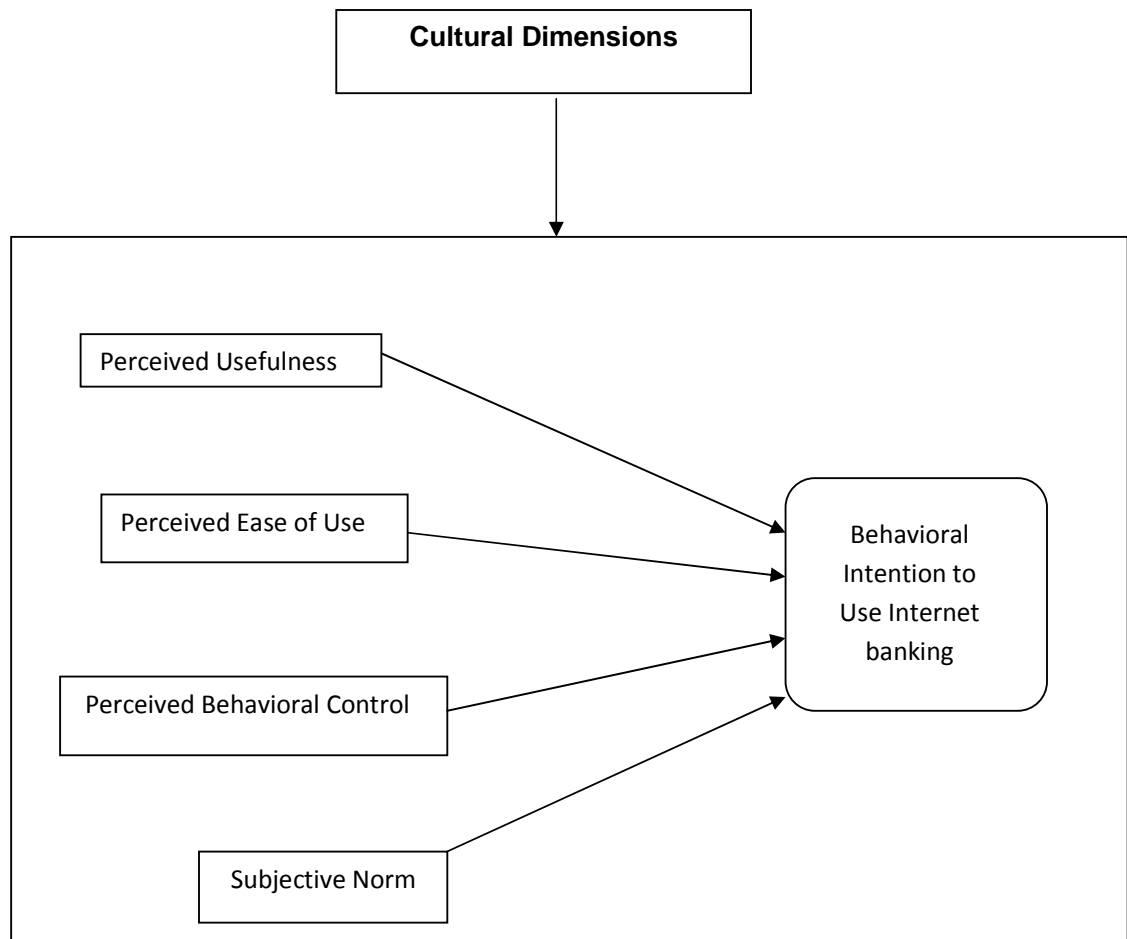


Figure 2.2: Research Model

This paper will use PDI, IND/CLC and UAI as cultural dimension. From Pavlou and Chai research (2005), Individualism/collectivism and Power distance was selected and base on straub (1997), UAI was used, also from McCoy et al. (2005) research was used explanation of relation of UAI, PD and IND/CLV with Technology acceptance Model.

Next section under the literature part will explain designing of the countries table base on Hofstede cultural dimensions and developing t the hypothesis that explains the research hypothesis according to the TAM and Cultural Dimension.

There are two steps in order to develop hypothesis for this paper.

2.6 Design of Countries Table Base on Hofstede Cultural Dimensions

In the first step countries were selected according to the Hofstede Scores (1980). That means base on countries tables that Hofstede defined in his researches, a first design was draw of countries according to their PDI, IND/CLV and UAI .countries were divided according to their score in above three dimensions. For power Distance Index, countries were categorized from Low to Moderate, and Moderate to High. In order to find countries dimension in IDV/CLV again two scales, one Low to moderate and second, moderate to High were defined.UAI for technologies such as Internet Banking and Mobile Banking is an important dimension, because these type of technology that related to the security, privacy and personal information, always carry high

level of UAI between people (Pavlou and Chai, 2002). Because of nature of these technology and situation that people cannot interact directly with the bank staff, was defined as an uncertainty level. So it was very important that countries in these dimensions were scored carefully. This paper used three different scales in order to divided countries according their UAI scores. Countries divided to low, moderate and high level separately from each other, revise the two other indexes that had two levels. In this step again countries were arranged according to their three dimensions while each country found its place in the table that show its PDI level, IND/CLV level and UAI level.

After arrangement countries according to the above direction, a table was designed with twelve cells. The table shows countries with similarities in dimensions in each cell. That means cells of this table show countries with similar cultural dimension in each cell. (Table 2.3)

The first cell of the table showed countries with low PDI, low IND and Low level of UAI (Jamaica)

In cell number two ,defined countries with moderate to high level of power distance, low to moderate level of IND and Low level of UAI.(China, Hong Kong, India, Indonesia, Malaysia, Philippines, Singapore, Vietnam)

Low PDI and IDV, and Moderate level of UAI refer to countries that were in cell number three. (Austria, Iran, Taiwan, Pakistan)

Arab world, Bangladesh, Brazil, Colombia, East Africa, West Africa, Venezuela, Thailand and Ecuador are countries in fourth cell, with high level

of PDI and low level of individualism and moderate level of uncertainty avoidance

Cell number five fills up with countries that have low score in power distance and individualism but high score in UAI, (Argentina, Costarica, Greece, Israel, Japan, Malta, South Korea and Spain).

Cell number Six was included Chile, Guatemala, Mexico, Panama, Peru, Portugal, Romania, Russia, Surmania, Turkey, Uruguay , Bulgaria and Elsalvador that index as high power distance, low Individualism and high level of UAI.

Low dimension in power distance and high in individualism with low level of uncertainty avoidance refer to cell number seven that included Canada, Denmark, Ireland, New Zealand, Norway, South Africa, Sweden, The United States, and United Kingdom.

Country in cell number Eight has moderate power distance to high, moderate individualism to high and low level of UAI (Slovakia).

Low level in power distance, high level in individualism and moderate level of UAI are characteristics of cell number Nine (Finland, Germany, Luxemburg, Netherland, Switzerland and Australia). Cell number ten carry moderate to high in power distance index, and moderate to high Individualism index and Moderate level of UAI. (Italy). Number Eleven was low PDI, High individualism and high UAI (Hungry)

And finally, cell number 12 had characteristics of high power distance index, high individual index and high level in uncertainty avoidance (Belgium and France).After preparing the above table of countries, second step of developing hypothesis was started. The table of countries according to their PDI, IDV/CLV and UCA was brought in the bellow:

Table 2.3			
IND	UAI	PDI Low	High
	Low	Cell1: Jamaica	Cell2: China/Honking/India/Indonesia/Philippine/Singapore/ Vietnam/Malaysia
Low	Moderate	Cell3; Iran/Austria/Pakistan/Taiwan.	Cell 4: Arab World/Bangladesh/ Brazil/Colombia/East Africa/West Africa/Thailand/Venezuela/Ecuador.
	High	Cell5: Argentina/Costarica/Greece/Israel/J apan/Malta/Spain/South Korea.	Cell6: Chile/Guatemala/Mexico/Panama/Peru/Portugal/ Romania/Russia/Surmania/Turkey/Uruguay/ Bulgaria/Elsalvador.
High	Low	Cell7: Canada/Denmark/Ireland/New Zealand/Norway/South.AF/Sweden/ US/UK/	Cell8: Slovakia
	Moderate	Cell9:Finland/Germany/Luxemburg/ Netherland/Switzerland/Australia	Cell 10: Italy
	High	Cell 11:Hungry	Cell 12: Belgium/France

2.7 Development of Hypothesis:

According to the figure 2.2, perceived usefulness, ease of use, subjective norm and perceived behavioural control and behavioural intention to use internet banking are this study's constructs. This paper will examine the Hofstede cultural dimensions effects on these constructs. In other word, here will be tried to find cultural effects on Technology Acceptance Model, whether they lead to different behaviours on various level of dimensions that will define in this study for each construct or not. So Main Hypothesis of this study will be:

- Cultural Dimensions have effect on Technology Acceptance Model.

By expended of this Hypothesis, the results can be written as bellow:

2.7.1 Perceived usefulness:

Perceived usefulness refers to the extent to which users feel using a technology will increase their performance. As stated above, culture is expected to affects the relationship between PU and BI. Specific arguments follow using each of the cultural dimensions.

H_a: the cultural dimensions in different levels of PDI (low and high), IND (low and high), and UAI (low, moderate and high) can lead to different behaviours toward usefulness construct in TAM,

2.7.2 Ease of Use:

Perceived ease of Use refers to the Perceived ease of Use refers to whether the user feels using a new technology is free from effort. So, culture is expected to affects the relationship between perceived ease of use and behavioural intention. In next pages each of cultural dimensions will be arguments.

H_b: for next construct, Ease of Use, the cultural dimensions in different levels of PDI (low and high), IND (low and high), and UAI (low, moderate and high) can lead to different behaviours toward ease of use construct in TAM,

2.7.3 Subjective Norm

Subjective norm refers to the influence others around users will have on their decision making to use technology, internet banking. Culture is expected to affects the relationship between subjective norm and behavioural Intention.

Uncertainty Avoidance:

H_c: for Subjective Norm, the cultural dimensions in different levels of PDI (low and high), IND (low and high), and UAI (low, moderate and high) can lead to different behaviours, also interact of these dimensions can lead to different behaviours in Subjective Norm construct in TAM.

2.7.4 Perceived Behavioural Control:

PBC refers to whether users feel using a system is within their control. In users of internet banking feel this is under their control, intention to use internet banking services will be high. This paper expects culture moderate to PBC and BI relationship.

H_d: for Perceived Behavior Control, the cultural dimensions in different levels of PDI (low and high), IND (low and high), and UAI (low, moderate and high) can lead to different behaviors, in Perceived Behavior Control construct in TAM

2.7.5 Behavioural Intention to use Internet Banking (BI)

Behavioral intention refers to an sign of an individual's willingness to make a given behavior.

H_e: for Behaviour Intention, the cultural dimensions in different levels of PDI (low and high), IND (low and high), and UAI (low, moderate and high) can lead to different behaviours, in Behaviour Intention to used Internet Banking construct.

In the next chapter, methods for prove hypothesis, analysis methods and the results of these analyses will be discussed.