Guidelines Integrating Cultural Theories with Technology Acceptance Theories: A Review

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Abstract. The literature review was carried out by searching related sources of publications, such as journals, books, conference papers, and reports. These references were accessed either electronically or physically (from the library). The references involved are ranged from 1975 to 2016. This review provides a comprehensive discussion and appraisal on cultural theories; review on technology acceptance theories; and analysis of previous studies of national culture on technology acceptance. This review provides evidence that is examining the influence of national culture on different countries (cultures), information systems; context is promising different findings.

Keywords. Authors, Should, Use Keywords, According to the nzjchi thesaurus available online. Keywords must be separated by commas.

1 Introduction

Existing models that capture the national cultural impact on technology acceptance are limited and lacking, because they only explore acceptance in general, without focusing on any particular medium. Therefore, this study has specifically reviewed the crucial significant constructs that influence technology acceptance among users. In other words, new policies and strategies should be formulated based on the findings of this study, in a way to avoid weaknesses and exploit the strengths of national culture impact. These findings could be used as guidelines to conduct further studies on culture impact on technology acceptance.

The literature review provides a framework for defining the concepts and creating the importance of a study, shares the findings of other previous related studies and on-going arguments (Creswell 2009). As defined by Fink (2005), a literature review is an explicit, systematic, and reproducible process for identifying, evaluating, and synthesising the existing related work conducted by researchers, scholars, and practitioners.

2 Review on Cultural Theories and Models

In the following sections, we will review the main cultural theory.
2.1 Hofstede's Cultural Theory

In a six-year study carried out by Hofstede in the late 1970's, interviews were conducted among 120 IBM employees in 53 different countries. The study identified a pattern in the manner people think, feel, and act. This in turn led to the development of a theory that defined four dimensions of culture which include: power distance, individualism versus collectivism, uncertainty avoidance, femininity versus masculinity (Hofstede 1980). In a later work Hofstede and Bond (1988) included a fifth cultural dimension, termed Confucian dynamism, namely long versus short-term time orientation. Dutch cultural anthropologist Hofstede observed that there were patterns of similarities and differences in the collected data. Therefore, Hofstede hypothesised in his theory that world cultures vary along consistent and fundamental dimensions (Hofstede 1980). Hofstede identified five dimensions of culture which are:

a. Power distance: refers to the degree to which the less powerful members of a society accept and expect that power is distributed unequally. The fundamental issue here is how a society handles inequalities among people. People in societies exhibiting a significant degree of power distance accept a hierarchical order in which everybody has a place and which needs no further justification. In societies with low power distance, people strive to equalise the distribution of power and demand justification for inequalities of power (Hofstede et al. 2010).

b. Individualism versus collectivism: the high side of this dimension, called Individualism, can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of themselves and their immediate families only. Its opposite, collectivism, represents a preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular in-group to look after them in exchange for unquestioning loyalty. Society's position on this dimension is reflected in whether people's self-image is defined in terms of “I” or “we” (Hofstede et al. 2010).

c. Masculinity versus femininity: masculinity side of this dimension represents a preference in society for achievement, heroism, assertiveness and material reward for success. Society at large is more competitive. Its opposite, femininity, stands for a preference for cooperation, modesty, caring for the weak and quality of life (Hofstede et al. 2010).

d. Uncertainty avoidance: indicates the degree to which the people of society feel uncomfortable with uncertainty and ambiguity (unknown). The primary issue is how a society deals with the fact that the future can never be known: should we try to control the future or just let it happen? Cultures exhibiting high uncertainty avoidance maintain rigid codes of belief and behaviour and are intolerant of unorthodox behaviour and ideas. Low uncertainty avoidance cultures maintain a more relaxed attitude in which practice counts more than principles (Hofstede et al. 2010).

e. Long versus short-term time orientation: is the variety of focusing on time for being
long-term or short-term oriented. Cultures with a short-term orientation have a strong concern with establishing the absolute truth. They are normative in their thinking; exhibit much respect for traditions, a relatively small propensity to save for the future, and a focus on achieving immediate results. In cultures with a long-term orientation, people believe that truth depends on very a lot on the situation, context and time. They show an ability to adapt traditions to changed conditions, a strong propensity to save, invest, thriftiness, and perseverance in getting results (Hofstede et al. 2010).

2.2 Hall's Inter-Cultural Communication Theory

Hall has developed the concept of "high/low context culture", “polychronicity”, and “territoriality”. Hall produced many works related to cross-cultural issues and was considered as a founding father of inter-cultural communication.

Hall has separated his theory into two overarching categories: personal space and territory. Personal space describes the immediate space surrounding a person, while territory refers to the area which a person may "lay claim to" and defend against others. His theory on territoriality has been applied to animal behaviours as well; defending territory is said to be a means of "propagation of the species by regulating density (Moore & Nina 2010)."

"Polychronicity" is a term that describes people who prefer to work on multiple activities at the same time. Examples of polychronic behaviours include: cooking food while watching television, browsing the internet while driving a car, and talking on the phone while sitting in meetings. Polychronicity is in contrast to those who prefer monochronicity (doing one thing at a time). The polychronic-monochronic concept was first developed by Edward T. Hall in 1959 in his anthropological studies of time use in different cultures (Bluedorn et al. 1999).

2.3 Hall's Cultural Iceberg Model

In 1976, Hall came out with an iceberg metaphor model of culture, where some aspects of the culture are visible, above the water, but most of these cultural aspects are hidden beneath the surface. The visible external and conscious part of the culture are what can be seen which is the tip of the iceberg and includes behaviours and some beliefs. The invisible or internal subconscious part of the culture is below the surface of a society and includes some beliefs, values and thought patterns that underlie behaviour. Hall suggests that the only way to learn the internal hidden culture of others is to participate in their culture (Hall 1976) actively. The Hall's cultural Iceberg model is shown in Figure 2.1 as below.
2.4 Trompenaars Cultural Model

Trompenaars and Hampden-Turner (1998) developed a cultural model with seven dimensions. The model is to illustrate national cultural differences in organisations. They provided a tool to illustrate how national culture differs and how to measure these differences. Cultural differences do matter, according to their research. Attempting to harmonise cultural differences has the potential to bring a competitive advantage to companies who globalise their products. There are seven universal dimensions of culture, as follows:

a. **Universalism versus Particularism**

“What is more important – rules or relationships?”

Culture plays a significant role when it comes to the importance of either a law or in personal relationships. Everyone should follow the people who live in a universalistic culture share in their beliefs laws set forth. They also believe in the honour of contracts and agreements; furthermore, those rules are used to determine the difference between right and wrong. In a particularism culture, an emphasis is put on friendships. This culture believes that particular situations should be evaluated when determining what is right or what is wrong.

b. **Individualism versus Communitarianism**

“Do we function as a group or as individuals?”

This is the way people interact, as a community or as individuals. In communitarianism culture, people do things in groups or pairs. They also often use words like “we” and “us” rather than “I” and “me.” Even vacations are enjoyed in an organised group or among extended family. In individualism culture, people are more likely to accept personal responsibility, achieve goals alone, and even decisions by management/government are made on the spot.

c. **Specific versus Diffuse**
“How far do we get involved?
Some people find themselves dealing with the moral question of to what degree is responsibility specifically assigned or diffusely accepted. For some cultures, individuals live a socially private life. Other cultures tolerate and who are open to a publicised social life. In a diffusely orientated culture, there is overpopulation, a reduced amount of public space that's hard to access, and there are indirect communications. Indirect communication makes it possible to refrain from saying what is meant.

d. Affectivity versus Neutrality
"Do we display our emotions“?
The display of emotion is also a major difference among cultures. In an Affective culture, a release of tension flows easily and sometimes profusely. They have a transparency to their thoughts and feelings and often communicate in both verbal and nonverbal techniques. Their display of emotion is often heated and contains animated expressions with the fluent dramatic delivery of proclamations or beliefs. In a neutral culture, individuals often show a lack of emotion which bottles up. When pressured continuously, a rare explosion of emotion is triggered. People within this kind of culture often hide emotions, feelings and even thoughts. Even facial emotions are rarely seen.

e. Nature Orientation
“Do we control our environment or work with it?”
Nature orientation refers to the way people try to control nature, be controlled by nature, or learn to live in peace and harmony with nature. A strong directive management ethic system is an example of mastery orientation. Living in harmony and letting nature win are examples which lead to a passive or collaborative individual (Gould et al. 2000).

f. Achieved Status versus Ascribed Status
“Do we have to prove ourselves to receive status or is it given to us?”
This refers to the degree to which an individual earns their status, as well as to the degree status is simply given to them. In achieved status, titles are given to individuals who prove themselves to be worthy of such a title, as in Mr. or Sir. It is also displayed in hierarchy cultured rankings, such as Knight or Friar. In business, it is often based on sex (male vs. female). However, it is ideally based upon one’s performance in a position they hold.

g. Sequential Time versus Synchronic Time
“Do we do things one at a time or several things at once?”
This concept deals with questions such as “Is time thought of as sequential (chronological order), or as synchronic (the future, past and present mixed together)?” Furthermore, one may wonder, whether the past, present or future is the key when trying to determine one’s actions (Gould et al. 2000). Structured time, tasks, and everyday activities are done one at a time in a Sequential Time culture. Just the opposite is true of a synchronic time culture; individuals multi-task and have the notion that time is flexible and there is no need to be in a hurry.
Reviews on the cultural theories showed the intimate stage of each cultural theory, and the definition provided with regards of each cultural dimension. This study attempts to make a comparison in order to select the most appropriate cultural theories, dimensions for this study. Table 1 shows all cultural theories/models, along with reflecting all dimensions in each theory, as below.

Table 1. National cultural theories with dimensions

<table>
<thead>
<tr>
<th>No</th>
<th>Name of Cultural Theory</th>
<th>Dimensions/ Factors</th>
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<tbody>
<tr>
<td>1</td>
<td>Hofstede's Cultural Theory</td>
<td>Power distance&lt;br&gt;Individualism versus collectivism&lt;br&gt;Uncertainty avoidance&lt;br&gt;Masculinity versus femininity&lt;br&gt;Long versus short-term time orientation</td>
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<tr>
<td>2</td>
<td>Hall’s Inter-cultural Communication Theory</td>
<td>High/low context style&lt;br&gt;Polychronism versus monochronism&lt;br&gt;High versus low territoriality</td>
</tr>
<tr>
<td>3</td>
<td>Hall’s Cultural Iceberg Model</td>
<td>Behaviors&lt;br&gt;Beliefs&lt;br&gt;Values and thought patterns</td>
</tr>
<tr>
<td>4</td>
<td>Trompenaars Cultural Model</td>
<td>Universalism versus particularism&lt;br&gt;Individualism versus communitarianism&lt;br&gt;Specific versus diffuse&lt;br&gt;Affectivity versus neutrality&lt;br&gt;Nature orientation&lt;br&gt;Achieved status versus ascribed status&lt;br&gt;Sequential time versus synchronic time</td>
</tr>
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</table>

The theories of Hofstede and Hall are dominant in most of the theoretical literature relevant with comparisons to different cultures, particularly in business communications fields (Cardon 2008). Hofstede's cultural theory is considered to be the most suitable for empirical research as it evaluates each individual member of a certain culture (Ta’amneh 2012). Although, some of Hofstede’s four dimensions find some similarities in Trompenaars and Hampden-Turner’s seven dimensions, such as individualism versus collectivism that are individualism versus communitarianism and universalism versus particularism in Trompenaars’ model. Other dimensions are completely different, which makes it impossible to convert one model in the other. However, Hofstede’s power index, for example, does not only relate to how status is accorded but also to the acceptable power distance within a society, an area that is not touched upon by Trompenaars’s model. Furthermore, Hofstede’s and Hall’s context dimension are the more cited in international business studies (Reis et al. 2011). Regarding Hall’s iceberg cultural model, it gives us a general description of the structure of any culture, but it does not give a specific description of the values and
behaviours of the culture (1976).
Hofstede’s cultural theory is identified as the most common in IS researches (Wei 2007; Alkailani et al. 2012). Similarly, according to Alkailani et al. (2012) till now, Hofstede’s cultural theory is considered as the most robust measure of national culture. Hall’s cultural theory is one of the prevailing theoretical theories for understanding the business communications cross-cultures (Cardon 2008). This study managed to measure high/low context style cultural dimension over other cultural dimensions, and as asserted by Hall (1976), that factor is more effective at influencing social presence during communication amongst virtual teams. Nishimura et al. (2008) point out that studying the high/low context styles of Hall’s cultural dimension, with other cultural dimensions, such as Hofstede’s, could prove that this dimension is applicable, interrelated, and associated culturally.

3 Review on Technology Acceptance Theories

Research on IT acceptance and use has been explored extensively because IT and tools have been widely used. Explaining user acceptance of a new technology is often described as one of the most mature research areas in the IS research field.

There are several models have been developed to explain users’ acceptance and use. The models originate from different theoretical disciplines, such as psychology, sociology and IS. Researchers in the area of IT acceptance are usually of selecting their favoured model from among these theories and have ignored the contributions from alternative models (Kijsanayotin 2008). Table 2 summarises the existence technology models with introducing its key determinant constructs, as shown as below:

<table>
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<tr>
<th>No</th>
<th>Technology Acceptance Theory/Model</th>
<th>Key determinant constructs/Definition</th>
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<tbody>
<tr>
<td>1</td>
<td>Theory of Reasoned Action (TRA)</td>
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<td></td>
<td>Developed by Fishbein &amp; Ajzen (1975).</td>
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<td>Drawn from social psychology, TRA is one of the most fundamental and influential theories of human behaviour. TRA suggests that a person’s behaviour is determined by his/her intention to perform the behaviour and that this intention is, in turn, a function of his/her attitude toward the behaviour and his/her subjective norm. TRA 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 had employed TRA in the context of other behaviours (Davis 1989).</td>
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<td></td>
<td>Attitude Toward Behavior</td>
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<td>The individual's positive or negative feelings (evaluative affect) about performing the target behaviour (Fishbein &amp; Ajzen 1975)</td>
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<td>Subjective Norm</td>
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<td></td>
<td>The person’s perception that most people who are important to him think he should or should not perform the behaviour in question (Fishbein &amp; Ajzen 1975).</td>
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<td>2</td>
<td>Technology Acceptance Model (TAM)</td>
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<td></td>
<td>Davis et al have developed one of the most popular used acceptance models. (1989). TAM</td>
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<td></td>
<td>Perceived Usefulness</td>
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<td></td>
<td>The degree to which a person believes that using a system would enhance his/her job</td>
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<td></td>
<td>The model has been widely applied to a diverse set of technologies and users. TAM is tailored to IS contexts and was designed to predict IT acceptance and usage on the job. Unlike TRA, the final conceptualization of TAM excludes the attitude construct in order to explain intention better parsimoniously. TAM2 extended TAM by including subjective norm as an additional predictor of intention in the case of mandatory settings (Venkatesh &amp; Davis 2000).</td>
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<td>3</td>
<td>Theory of Planned Behavior (TPB)</td>
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<td>Ajzen (1991) extended TRA by adding the construct of perceived behavioural control, to develop the TPB. In TPB, perceived behavioural control is theorised to be an additional determinant of intention and behaviour. Ajzen (1991) presented a review of several studies that 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.</td>
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<td>4</td>
<td>Decomposed Theory of Planned Behavior (DTPB)</td>
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<td>Taylor et al. (1995) developed this model, which is a related model with the TPB. 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 underlying belief structure within technology adoption contexts.</td>
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<td>5</td>
<td>Technology Acceptance Model 2 (TAM2)</td>
<td>Technology Acceptance Model 2 (TAM2)</td>
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<td>Davis conducted this work with the collaboration of another author like Venkatesh which is referred to as (Venkatesh &amp; Davis, 2000). In the study, the authors incorporated some factors like usage, intention to use, perceived usefulness, experience, social influence processes (subjective norm, voluntariness, and image), cognitive instrumental processes, gob relevance, output quality, result demonstrability, and perceived ease of use.</td>
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<td>6</td>
<td>Motivational Model (MM)</td>
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<td></td>
<td>Extrinsic Motivation</td>
<td>Extrinsic Motivation</td>
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<td><strong>This model was developed by Deci &amp; Ryan (1985). A significant body of research in psychology has supported general motivation theory as an explanation for behaviour. Several studies have examined the motivational theory and adapted it for specific contexts. Vallerand (1997) presents an excellent review of the fundamental tenets of this theoretical base. Within the information systems domain, Davis et al. (1992) applied the motivational theory to understand new technology adoption and use (Davis et al. 1992; Venkatesh &amp; Speier 1999)</strong></td>
<td><strong>The perception that users want to perform an activity “because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions (Davis et al. 1992).”</strong></td>
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<td><strong>7</strong></td>
<td><strong>Model of PC Utilisation (MPCU)</strong></td>
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<td><strong>MPCU has been developed by Triandis (1980). It is Derived largely from Triandis’s (1977) theory of human behaviour; this model presents a competing perspective to that proposed by TRA and TPB. Thompson et al. (1991) adapted and refined Triandis’s model for IS contexts and used the model for predicting personal computer (PC) utilisation. However, the nature of the model makes it particularly suited to predict individual acceptance and use of a range of information technologies. Thompson et al. (1991) sought to predict usage behaviour rather than intention.</strong></td>
<td><strong>Job-fit</strong></td>
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<td><strong>The extent to which an individual believes that using technology can enhance the performance of his or her job (Thompson et al. 1991).</strong></td>
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<td><strong>Complexity</strong></td>
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<td><strong>Based on Rogers and Shoemaker (1971), “the degree to which an innovation is perceived as relatively difficult to understand and use (Thompson et al. 1991).”</strong></td>
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<td><strong>Long-term Consequences</strong></td>
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<tr>
<td><strong>Outcomes that have a payoff in the future (Thompson et al. 1991).</strong></td>
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<td><strong>Effect Towards Use</strong></td>
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<td><strong>“feelings of joy, elation, or pleasure, or depression, disgust, displeasure, or hate associated with an individual with a particular act (Thompson et al. 1991).”</strong></td>
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<tr>
<td><strong>Social Factors</strong></td>
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<td><strong>“the individual’s internalisation of the reference group’s subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations (Thompson et al. 1991).”</strong></td>
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<td><strong>Facilitating Conditions</strong></td>
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<td><strong>Objective factors in the environment that</strong></td>
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<tr>
<td>Page</td>
<td>Theory</td>
<td>Description</td>
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<td>8</td>
<td>Innovation Diffusion Theory (IDT)</td>
<td>Rogers (1983) developed IDT. Grounded in sociology; Rogers (2003) has been used IDT since the 1960s to study a variety of innovations, ranging from agricultural tools to organisational innovation. Within ISs, 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 characteristics.</td>
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<td></td>
<td>Relative Advantage</td>
<td>The degree to which an innovation is perceived as being better than its precursor (Moore &amp; Benbasat 1991).</td>
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<td></td>
<td>Image</td>
<td>The degree to which use of an innovation is perceived to enhance one’s image or status in one’s social system (Moore &amp; Benbasat 1991).</td>
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<td></td>
<td>Visibility</td>
<td>The degree to which one can see others using the system in the organisation (Moore &amp; Benbasat 1991).</td>
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<td></td>
<td>Compatibility</td>
<td>The degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters (Moore &amp; Benbasat 1991).</td>
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<td>Results Demonstrability</td>
<td>The tangibility of the results of using the innovation, including their observability and communicability (Moore &amp; Benbasat 1991).</td>
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<td></td>
<td>Voluntariness of Use</td>
<td>The degree to which use of the innovation is perceived as being voluntary, or of free will (Moore &amp; Benbasat 1991).</td>
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<td>9</td>
<td>Social Cognitive Theory (SCT)</td>
<td>One of the most powerful theories of human behaviour is the SCT (Bandura 1986). SCT was developed by Bandura (1982). Compeau and Higgins applied and extended SCT to the</td>
</tr>
<tr>
<td></td>
<td>Outcome Expectations-Performance</td>
<td>The performance-related consequences of the behaviour. Specifically, performance</td>
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</table>
context of computer utilisation (Compeau & Higgins 1995, 1999). Compeau and Higgins’ model studied computer use but the nature of the model, and the underlying theory allows it to be extended to acceptance and use of IT in general. The original model of Compeau and Higgins used usage as a dependent variable (Compeau & Higgins 1995).

<table>
<thead>
<tr>
<th>10</th>
<th>Unified Theory of Acceptance and Use of Technology (UTAUT)</th>
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<td></td>
<td>Venkatesh et. al. (2003) proposed a new IT acceptance and use model which aims to unify eight prominent competing for IT acceptance and use models. According to their work, the new model successfully integrates all constructs in previous models and can explain variance for the prediction of IT behavioural intention and use behaviour better than the previous models.</td>
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<tr>
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<th>Performance Expectancy</th>
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<tr>
<td></td>
<td>The degree to which an individual believes that using the system will help him or her to attain gains in job performance (Venkatesh et. al. 2003).</td>
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<thead>
<tr>
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<th>Effort Expectancy</th>
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<td></td>
<td>The degree of ease associated with the use of the system (Venkatesh et. al. 2003).</td>
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<tr>
<th></th>
<th>Social influence</th>
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<tr>
<td></td>
<td>Adapted from (TRA, TAM, and TAM2)</td>
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<th>Facilitating conditions</th>
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<td></td>
<td>Adapted from MPCU</td>
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Outcome Expectations-
Personal
The personal consequences of the behaviour. Specifically, personal expectations deal with the individual esteem and sense of accomplishment (Compeau & Higgins 1995).

Self-efficacy
Judgment of one’s ability to use 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 behaviour (e.g., using a computer).

TAM is the most popularly employed theory for examining an individual’s acceptance of technology (Law 2007; Molyneaux et al. 2008; Gibson & O’Donnell 2009; and Lai & Li
Many researchers applied the TAM to different types of technologies and in different contexts, especially in the organisational context (Lee et al. 2003), while some others compared the TAM theory with some challenging theories, such as the TRA and the TPB. They all confirmed that the TAM theory has a predictive ability (Law 2007). Ramayah and Jantan (2004) explore the applicability of the TAM in Malaysia. They indicate that all their studies verify that the TAM theory is capable of investigating and describing the technology acceptance. Furthermore, they suggested that there is a need to conduct more researches to help in understanding the phenomenon of technology acceptance at the individual level. Similarly, Venkatesh and Bala (2008) assert that the TAM is the most accepted theory to examine technology acceptance due to its exploratory power and structure. The IDT is also a theory employed to study technology acceptance. Both the TAM and IDT are similar in viewing IT as a specific innovation, and that its perceived attributes determine a particular IT acceptance. However, the advantage of the TAM is that it is not limited in its views of innovation diffusion as a particular type of communication (Fong & Yip 2006). Recently, the TAM has become very common and has constantly been extended. However, the original TAM is robust when sufficient subjects are selected for the analysis (Hernandez et al. 2008).

Riemenschneider et al. (2002) find that the application of multiple regression across all constructs in the same study indicated that both internal and external behavioural control were insignificant particularly within the context TPB. DTPB has been criticised by Al-Majali (2010), who extended DTPB to examine the internet banking adoption in Jordan. He utilised the model and tried to provide a thorough model to understand the previous circumstances of internet banking adoption in Jordan. The results showed that compatibility fails to affect user's attitude toward internet banking. The finding also confirmed that subjective norm is an important for positive behaviour intention toward internet banking. According to Ta’amneh (2012), when a study attempts to explore the influence of culture on user's acceptance, it should rely on TAM rather than DTPB, though DTPB provides more exploratory power than TAM. Jordan has a technology penetration, specifically in the field of mobile access. More than 98% of the Jordanians are carrying a mobile device (Al-Sa’di et al., 2014).

Venkatesh and Davis (2000) reported that TAM2 determine to perceive usefulness utilising all variables, which make forerunner change in measuring perceived usefulness. However, these variables failed to predict perceive ease of use. It has been found that the social influence measures and the cognitive instrumental measures predict user acceptance. While, Wilson and Lankton (2004) integrated constructs from TAM and MM in their study. They concluded that all three models performed reasonably well in the goodness-of-fit test. Nevertheless, the integrated model was not clearly statistically better than TAM and MM as they had anticipated. The perspective of employing the MM, is to measure the individual's motivation, where are determinants of user's behaviour (Vallerand & Bissonnette 1992).

Ajzen (2002) found that factors such as social influence, job-fit, complexity, and long-term consequences correlated with PC use. Al-Khalidi and Wallace (1999) tested the MPCU usage by knowledge workers in Saudi Arabia. The study found that long-term consequences and complexity traced insignificant effect.
Regarding the SCT, it aims to measure the social behaviour effect on users’ perceptions ability to perform a specific task. In SCT, the user’s skills are not important, but the important is the judgment ability (Stajkovic & Luthans 1998). Compeau and Higgins (1995) carried out a study to experiment an extension model of SCT; the results did not completely support the model. Endler et al. (2001) discover the insignificant relationship between perceived control and self-efficacy. Also, Makoul and Roloff (1998) assert the inconsistency between the main factors of SCT.

Venkatesh et al. (2003) come up with a comprehensive acceptance theory, which is UTAUT. This has been done through incorporating TRA, TAM, TPB, DTPB, IDT, SCT, and MM. However, one of the limitations of this study is the inability of the higher loading factors to contain all elements in the model as hypothesised.

Abbasi et al. (2011) point out that many studies have adapted and extended the original TAM, and which have been verified to be constructive in producing satisfactory reliabilities across technologies, settings and time of estimation. However, there are some weaknesses in cultural studies of the extended TAM, such as by Straub et al. (1997), Rose and Straub (1998), and McCoy et al. (2005). For example, Straub et al. (1997) investigate the TAM across Japan, Switzerland and the US. The findings show a similar variance of 10% in the behavioural usage in Switzerland and the US, but it was extremely different in Japan, which had a variance of only 1%. Therefore, the applicability of the TAM is different across cultures. Also, many studies of the extended TAM were constrained in the north-American and Western cultures, which limit the generality and reliability of the model across cultures. In an attempt to overcome the limitations of the TAM, a few studies, such as those conducted by Oh et al. (2003), Hu et al. (2003), Seyal et al. (2004), Choi and Geistfeld (2004), Hsu and Chiu (2004), Choudrie and Lee (2004), Wu et al. (2007), McCoy et al. (2007), Teo et al. (2008), and Taamneh (2012), recently examined the TAM across non-Western countries. Although the results of these studies support the validity and reliability of the TAM theory, but there are still some limitations in these studies in realizing the diversity of the individual-level acceptance which, according to Srite and Karahanna (2006), and Li et al. (2009), may be held differently within the same culture and setting of a country. Abbasi et al. (2011) argue that as individuals are conditioned by their culture, therefore, it is essential to identify whether culture, at the national, organisational and individual level, has an impact on the models of the TAM. Therefore, to provide a better understanding of the reliability of the TAM across non-Western cultures (developing cultures), and to investigate cultural issues within organisational settings, it is crucial to develop an integrated model based on the TAM, specifically for a developing country.

McCoy et al. (2007) investigate the applicability of the TAM in several countries and revealed that despite the success of the TAM in measuring users’ adoption behaviours, it is possibly not applicable in all cultures. It was discovered that the TAM is not suitable in certain cultural orientations which have low uncertainty avoidance, high masculinity, high power distance, and high collectivism. Finally, they cautioned future researchers against applying the TAM in 20 countries. However, Jordan was not one of the countries in the list. Quoting Meister and Compeau (2002), Li (2009) indicates that the TAM has the ability to clarify a minimum 40% variance in usage intentions and 30% of system usage. On the other hand, Rose and Straub (1998) tested the efficiency of the TAM in Middle Eastern countries, such as, Egypt, Jordan, Saudi Arabia, Lebanon, and the Sudan. It was reported that the model explained a variance of 40% in those countries. Therefore, studies applied the TAM
to various fields of technology, such as tourism, online shopping, marketing, and psychology (Jan & Contreras 2010). Meta-analysis is a popular quantitative method that combines the quantitative results of many studies; it is used in the social and behavioural sciences. As this study is related with the human-computer association, it employs the meta-analysis technique. In a meta-analysis of the TAM, an analysis concerning types of users and usage was achieved. The findings verified the value of using students as surrogates for professionals in some TAM researches. The TAM is valid and powerful (King & He 2006). Another meta-analysis was performed by Schepers and Wetzels (2007) on the TAM to build a better understanding of the role of social influence. According to the TAM results, social influence is considered to be the moderating effect of culture. It is confirmed that social influence has a significant effect on the perceived usefulness, behavioural intention to use, and actual system use.

Understanding of the TAM could be improved by addressing three overriding issues. Firstly, the behavioural intention to use and the actual use of technology are based on the adoption of specific applications. For example, in educational settings, studies have used the adoption of word processors, power point, and E-Learning System (ELS). These studies are employed for measuring technology acceptance in their study settings. Therefore, these study approaches are not suitable for complicated environments that use a specific technology, such as the Enterprise Resources Planning (ERP). Secondly, the generalisation of populations is based on the results of the mode. The literature indicates that almost half of the TAM studies used students as the sample. However, it is not feasible to judge all types of users just by student samples because of compatibility. Thirdly, the practical proof gleaned from different TAM researches yielded mixed signals, where there were incompatible results in terms of the level of importance and direction of the relationships between TAM variables, as well as unreliable relationships. The existence of moderating variables is the only potential reason for these discrepancies, which influence technology acceptance incompatibility in the independent variable levels (Ahmad et al. 2010).

4.0 Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) was originally developed by Fishbein and Ajzen (1975) and has established its application in many fields, including social psychology research. The TRA was published in one of their books entitled "Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research", which hypothesised that behavioural intention is boosted by two main aspects, which are the attitudes of individuals and the significance of social influence (or subjective norms). The TRA makes distinctly delimits of beliefs, attitudes and intentions. However to get a clear idea, the authors have illustrated the constructs in a diagram, and furthermore, the TRA has been tested in the field of MIS. Figure 2 illustrates the TRA. According to this theory, the behaviour of individuals is controlled by their intentions. These intentions are further reinforced by their attitudes, which lead them to accept ‘technology’.
Since the introduction of the TRA, the authors have applied it in a variety of fields, particularly in research areas. Sheppard et al. (1988) assert that the TRA is important and was being robustly employed by researchers for a variety of studies. They concluded that a meta-analysis of 87 separate studies had a total sample of 12,624 observations. Therefore, TRA was found to be important with the highest level of significance.

4.1 Technology Acceptance Model (TAM)
Davis (1989) developed the TAM theory, which is defined as “an IS theory that models how users come to accept and use technology”. It is used to study an individual’s acceptance and adoption of a technology and IS, and to elucidate computer usage behaviour. The TAM was adapted from the TRA. In other words, the TRA is the basis for the TAM (Law 2007). The TRA is more general than the TAM, whilst the TAM is designed to be applied in the context of technology usage only. However, it is ready to be extended to measure any technology (Alrafi 2005). The TAM mainly includes the elements of perceived usefulness; perceived ease of use; user attitudes toward usage; and user behavioural intentions toward use. An individual’s acceptance is determined by two major factors according to the TAM, which is: perceived usefulness, and perceived ease of use. Davis (1989) defines perceived usefulness as "the degree to which an individual believes using the information system would enhance his or her performance", while perceived ease of use is defined as "the degree to which an individual believes that the given information system would reduce the intensity of his or her work". User attitude is defined as “an implicit, drive-producing response considered socially significant in the individual's society”. User behavioural intention to use is defined as “the strength of the prospective adopter's intention to make or to support the adoption decision”. The TAM describes the determinants of technology acceptance, based on the influence of external factors towards the beliefs, attitudes and behavioural intentions of users (Alrafi 2005). Figure 3 illustrates the TAM.

![Diagram of Technology Acceptance Model](http://www.nzjchi.com)
Legris et al. (2003), study extensively on the TAM, and agreed that the TAM is an imperative model that has to be broadened. A collection of 80 articles published during 1980 to 2001 in six journals were explored. The outcome of the review indicates a promising form of the TAM. It also revealed the contradictory findings of the authors as they persistently examined the model extensively. For example, Ma and Liu (2004) carry out a meta-analysis study where 26 studies were analysed, and identified that both perceived usefulness and acceptance designate strong and significant relationships. Furthermore, it was indicated that there is an existence of perceived usefulness and perceived ease of use. However, the relationship between perceived ease of use and acceptance is weak. Hence it failed in proof tests.

Preliminary studies of the TAM by Davis (1989), and Davis et al. (1989) were carried out with 152 participants in four different types of applications. The aim of these studies was to examine, authenticate and confirm the perceived usefulness and perceived ease of use measures. In this case, the test produced two, six-item scales with reliability measures of 0.98 (for perceived usefulness) and 0.94 (for perceived ease of use). However, the outcome reveals that perceived usefulness is an influential predictor of behavioural intention to use, while the computer usage is positively influenced by the behavioural intention to use. The agreed findings were parallel with some previous studies where the behavioural intention was shown to determine the actual system use.

Concurrently, factors, variables or constructs have been incorporated into the TAM ever since it emerged. The primary reason for this was to increase the understanding and comprehension in this area and to enhance the descriptive power of the model. Nevertheless, Veiga et al. (2001), and Ta'amneh (2012) discover that some factors, such as national culture, would be indicators. It has been argued that the TAM has established an extrapolative efficacy over a variety of technological aspects. Therefore, it is the right time to integrate cultural dimensions into the TAM.

5.0 Conclusion

It is important to examine the impact of Hofstede’s cultural dimensions integrally with the high/low context style cultural dimension through a technology acceptance theory, such as TAM. On the other hand, there is a significant moderating effect of culture on technology acceptance. Thus, it is essential to examine the adaptation of the TAM.

It is also conceded that users from a different country have a different culture, and thus, different technology acceptance and use. For instance, Middle Eastern are generally from high power distance, collectivism, low uncertainty avoidance, masculine, short-term time orientation, and high context style cultures. Thus, the cultural value for Middle Eastern seems to be similar to the cultural value of the Asian (Chinese), and is opposite to that of Westerners (Americans). Furthermore, the literature provides evidence that examining the influence of national culture on different countries (cultures), ISs, context is promising different findings.
6 References


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