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Cultural Differences and Information Technology Acceptance

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Abstract

One of the main streams of research in the IS field is the explanation and prediction of Information technology (IT) adoption and usage. Even though several theories have been developed to address this phenomenon a consensus about the determinants of IT usage has emerged among researchers in the IS field. Specifically, the Technology Acceptance Model (TAM) (Davis, 1989) is considered to be the most parsimonious model in explaining IT use at the individual level. However, since individuals are conditioned by their culture, we propose to extend TAM such as we can understand the mechanism by which cultural differences could explain and predict behavior toward IT. Therefore, we integrate in our research model six cultural value-dimensions well established in the literature pertaining to comparative and cross-cultural management and showing a high variability between countries, which are "individualism/collectivism", "power distance", "masculinity/femininity", "uncertainty avoidance" (Hofstede, 1997), "monochronic/polychromic time" (Trompenaars, Hampden-Turner, 1998, Hall, 1989) and "high context/low context"(Hall, 1989). A cross-sectional survey will be conducted in two subsidiaries of a multinational organization in two countries expected to be different enough in national cultural values. Questionnaires will be addressed to workers using the organizational e-mail system.

Keywords: Technology Acceptance Model – Cultural-value dimensions – Cross-Cultural Management – Information Technology.

Introduction

One of the main streams of research in the IS field is the explanation and prediction of Information technology (IT) adoption and usage. Even though organizations may adopt the IT that best fits their business activities, they cannot guarantee performance leveraging unless the organization members appropriately use it. According to Agarwal (1999) "...Acquiring appropriate IT is a necessary but not sufficient condition for utilizing it effectively" (p.85). Therefore, understanding individual acceptance of IT and especially usage is an important issue (Igbaria, 1990, Melone, 1990, Davis, 1989). Even though several theories have been developed to address this phenomenon a consensus about the determinants of IT usage has emerged among researchers in the IS field. Specifically, TAM is considered to be the most parsimonious model in explaining IT use at the individual level. Since its development, TAM (Davis, 1989) has been replicated and extended by a quite large number of studies aiming either at retesting its robustness or at extending it by incorporating antecedents or moderating variables to the main constructs (e.g.Venkatesh, Morris, Davis,G.B., Davis,F.D., 2003,Venkatesh, Morris, 2000, Lucas, Spitler, 2000, Karahanna, Straub, 1999, Dishaw, Strong, 1999, Adams, Nelson, Ryan, 1992, Davis, Warshaw, 1989). Nevertheless, in their endeavor to better explain and predict IT use, few researchers (e.g. Straub et al., 1997, Rose, Straub, 1998, Srite, 2000) have explored and (in lesser extent) tested the impact of cultural factors on the behavior of use (for a review of IS cultural studies see Myers, Tan, 2002, Ein-Dor et al., 1993). Therefore, given this gap in the literature the present research aims at testing the influence of national culture on the adoption and use of IT. By studying IT use cross-culturally, we intend to shed light on effect of cultural context on usage behaviors thus, extending TAM to cross-cultural settings.

Theoretical base

In order to address our main research question: "to what extent does national culture influence information technology acceptance?" we review the literature pertaining both to theories of culture and information technology acceptance.

The concept of 'national culture'

Even though originally rooted in anthropology, a population-level discipline, culture has been defined and researched by many other disciplines such as cross-cultural psychology. 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). Even though previously the objective reality view of culture predominated (Berry et al., 2002), recently the symbolic view of culture is predominant. In this view Hofstede (1997) defines culture as "the collective programming of the mind which distinguishes the members of one group or category of people from another" (p.5). Several sets of dimensions have been developed to characterize the concept of national culture. Table 1 provides an overview of the most known cultural dimensions found in several fields of studies.

Table 1. Overview of the most known Cultural Dimensions

Cultural Dimensions	**Authors**
Power Distance	Hofstede (1997)
Individualism/Collectivism	Hofstede (1997)
Masculinity/Femininity	Hofstede (1997)
Uncertainty Avoidance	Hofstede (1997)
Long-term Orientation	Hofstede, Bond (1997)
Confucian Work Dynamism	Chinese Culture Connection (1987)
Conservatism	Schwartz (1994)
Intellectual autonomy	Schwartz (1994)
Affective autonomy	Schwartz (1994)
Hierarchy	Schwartz (1994)
Egalitarianism	Schwartz (1994)
Mastery	Schwartz (1994)
Harmony	Schwartz (1994)
Universalism/Particularism	Trompenaars, Hampden-Turner (1998)
Individualism/Communitarianism	Trompenaars, Hampden-Turner (1998)
Neutral/Emotional	Trompenaars, Hampden-Turner (1998)
Specific/Diffuse	Trompenaars, Hampden-Turner (1998)
Achievement/Ascription	Trompenaars, Hampden-Turner (1998)
Attitudes to time	Trompenaars, Hampden-Turner (1998)
Attitudes to environment	Trompenaars, Hampden-Turner (1998)
Communication context	Hall (1989), Hall, Hall, (1987)
Perception of space	Hall, Hall (1987), Hall (1989)
Monochronic and polychronic time	Hall (1989)
Nature of people	Kluckhohn, Strodtbeck (1961)
Person's relationship to nature	Kluckhohn, Strodtbeck (1961)
Person's relationship to other people	Kluckhohn, Strodtbeck (1961)
Primary mode of activity	Kluckhohn, Strodtbeck (1961)
Conception of space	Kluckhohn, Strodtbeck (1961)
Person's temporal orientation	Kluckhohn, Strodtbeck (1961)

The current research will use the following dimensions: "individualism/collectivism", "power distance", "masculinity/femininity", "uncertainty avoidance" (Hofstede, 1997), "time perception (monochronic/polychronic)" (Trompenaars, Hampden-Turner, 1998, Hall, 1989) and "high context/low context" (Hall, 1989). Several reasons lead us to investigate national culture through these six dimensions. First, these dimensions rely on variables that are more directly linked to social and organizational process: they focus on human values, rather than on general beliefs about the way we see the world. Indeed, "culture is primarily a manifestation of core values" (Straub et al., 2001), therefore, in order to better capture the relationship between culture, and behavior, Triandis suggests using values (Triandis, 1972). Second, the first four dimensions (Hofstede's cultural dimensions) constitute the most used and recognized dimensions as a whole or separately in studying cross-cultural issues in management and organizations. Provided its global coverage in terms of respondents, it seems that Hofstede's study has been unrivalled (Smith and Bond, 1999). In fact, the identification of the cultural dimensions was based upon a field study covering a sample of forty countries in which more than 116000 questionnaires were collected. Hofstede's work has also been validated directly or indirectly by many other researches in different settings (Chinese culture connection, 1987, Shackleton, Ali, 1987, Hofstede, Bond, 1984). The studies that have been conducted since Hofstede's work

(by Schwartz, 1994, Trompenaars, Hampden-Turner, 1998 and the Chinese Culture connection group, 1987) exploring the national culture through values, sustained and amplified his findings rather than contradicted them (Smith, Bond, 1999). Finally, besides, relying upon Hofstede's framework, two other dimensions are integrated: time perception and high versus low context. The former is the only dimension that appears in almost all the six cited cultural studies (Table 1). Thus, it would be useful to integrate it in order to better describe the national culture to be investigated. The latter, pertaining to the nature of the communication context, hasn't been covered by the studies depicted in table 1, except by Hall (1989). However, cross-cultural studies of styles of communication, briefly reviewed by Smith and Bond (1999), reveal a divergence between societies in several aspects of communication and provide evidence sustaining Hall contention about high/low context (e.g. Gudykunst et al. 1988). Taking into account the context of communication is also related to the nature of the phenomenon in the current study, which focuses on acceptance of electronic communication media.

Technology acceptance model (TAM)

In the literature pertaining to the IT acceptance we noticed that the most used model by IS academicians and practitioners is the Technology Acceptance Model (TAM) designed by Davis (1989). The TAM takes its roots mainly from the Theory of Reasoned Action explaining behavior across behavioral intentions (Ajzen, Fishbein , 1980). We draw upon an extension of the TAM, which integrates subjective norms (Venkatesh, Morris, 2000) as a determinant of the intention to use the IT. The importance attributed to social norms in determining and predicting behavior varies across cultures (Triandis, 1977), therefore, we expect that integrating subjective norms will strengthen our understanding of differences in behavioral intentions and will allow a better capturing of cultural effect on IT use. Moreover, the cross-cultural TAM can be improved by taking into account a construct such as quality of work life (Srite, Karahanna, forthcoming). Quality of Work Life (QWL) is defined in "terms of employees' perceptions of their physical and mental well-being at work" (Cascio, 2003, p. 28). Introducing QWL enables a better capturing of cultural influence on the acceptance of information technologies especially the impact of masculinity/femininity on intention to use IT.

Conceptual model and hypotheses

Based upon the literature on culture and on the technology acceptance model we draw our research model (Figure 1) and state our hypotheses as fellow:

H1: Individuals with high-context values will have a less strong perception of IT usefulness than those holding low-context values.

Since high-context oriented individuals prefer less coded messages, the electronic communication, implying very explicit content, will not be very useful as a means of communication. It cannot inform the receiver on the context of the message. The receiver will probably seek to know more about the message by other traditional means implying more physical cues (face expression, intonation of the voice).

H2a: The perceived quality of work life will have a greater impact in intended usage of the IT in feminine culture rather than in masculine ones.

The perceived quality of work life refers to the beliefs developed by individuals about the physical and psychosocial work environment. The usage of IT will depend on the perception people develop about the contribution of IT to the improvement of the quality of work life. This relationship will be more accentuated in feminine cultures, where achievement is defined more according to interpersonal contact, rather than in masculine ones, where the focus is on materiality.

H2b: Masculinity/Femininity moderates the relationship between subjective norms and behavioral intention to use

In feminine cultures individuals are expected to pay more attention to the opinions of the others in behaving since they are more people-oriented than in masculine cultures where the most important thing is the goal achievement.

H3a: Individuals characterized by a high level of uncertainty avoidance will use IT less than individuals characterized by a low level of uncertainty avoidance.

Individuals in high uncertainty avoidance cultures are uncomfortable with ambiguous and uncertain situations therefore they will be expected to reduce uncertainty. Since IT doesn't allow the social presence, it could accentuate the feeling of uncertainty. Consequently, people in high uncertainty avoidance cultures will be less oriented to use IT than individuals in low uncertainty avoidance cultures.

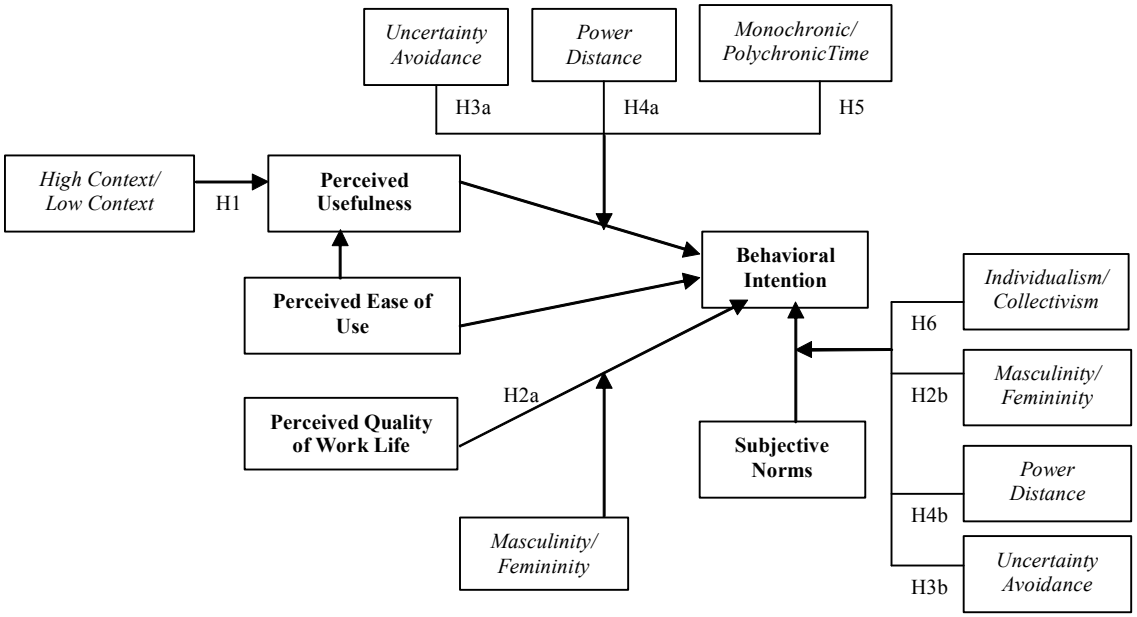

Figure 1. Conceptual model

H3b: Uncertainty avoidance acts also as a moderator of the relationship between subjective norms and behavioral intention

The social influence exerted by important persons will be much more important in determining IT use in cultures seeking to avoid uncertainty than in cultures comfortable with uncertainty. Actually, in order to deal with uncertainty and ambiguity, individuals in strong uncertainty avoidance cultures are very concerned by the establishment and respect of rules therefore the subjective norms will be more important as guidance to behavior than for individuals in weak uncertainty avoidance cultures which rely more on their proper competence to evaluate a situation.

H4a: Individuals in low power distance cultures accept more the IT than individuals in high power distance cultures.

In high power distance cultures, IT could threaten the hierarchy, which reflects "the existential inequality between higher-ups and lower-downs" (Hofstede, 1997, p.37) because it suggests decentralization. Conversely, in low power distance cultures individuals are more interdependent whatever their ranks in the hierarchy; therefore, they will be more favorable to IT, which doesn't contradict their perception of power distribution.

H4b: Power distance moderates the relationship between subjective norms and behavioral intention.

In high power distance cultures, since individuals are not supposed to disagree with their superiors their reliance upon the opinions of superiors will be more marked when assessing the IT than for individuals from low power distance cultures.

H5: Individuals in cultures adopting the monochronic time will be using the IT more than in cultures adopting the ploychronic time.

Individuals adopting the monochronic time are worried about the monitoring of time and prefer do one thing at a time therefore they can view in IT a way to have control over time. Contrarily, individuals holding more fluid attitudes toward time are able to engage in many things at once and pay more attention to interpersonal relationships than to schedules therefore they will be expected to view IT as a constraint since it could threaten their freedom to use time.

H6: Individualism/collectivism moderates the relationship between subjective norms and behavioral intention.

People in individualist cultures are more concerned by their selves than by the group. Therefore, opinions of the members of the group will not have weight in their decision to adopt the IT. Conversely, people holding collectivist values will be more concerned about the maintenance of the group cohesiveness. This is why they will be expected to show more interest in other's opinions about the IT.

Research methodology

The study will be conducted in two subsidiaries of a multinational organization operating in two countries sufficiently varying in term of culture according to Hofstede's cultural dimensions indexes. The sample will be composed of workers (all categories of occupations) using the company e-mail system. The data collection will be conducted through interviews and questionnaires. Most of the questions in the survey will be based on previous well-validated instruments. Data analysis and model testing will be conducted using Partial Least Square (PLS) technique. First, the scale psychometric characteristics will be tested (discriminant validity and reliability). Second, the causal model will be tested (path coefficients). Interviews will be helpful in interpreting results obtained from quantitative analysis.

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