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# Cognition and Culture in ICT Experience

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# Cognition and Culture in ICT experience

## ABSTRACT

Chinese and western have two totally different systems of thought, holistic and analytic, respectively. Rooted in national culture, system of thought forms different cognitive processes toward the performance of using the technology. In this study, we empirically investigate the cognitive pathways underneath the proposed acceptance model in the two cultures. The findings suggest that culturally patterned cognitive processes make people in China and Canada have two contrast preferences on the causal relationships in the model to decide use of information communication technologies.

## Keywords

Culture, cognition system, technology acceptance

## INTRODUCTION

The objective of this study is to enrich the understanding of cultural aspects in ICT development, deployment, and acceptance in China and Canada. An effort has been made in this study to entail how culturally pattern cognitive systems have profound impact on individual behavior across countries. Many studies have developed theories to explain individual acceptance and usage decisions of information communication technologies (ICT) and empirically examined these theories under different user groups, technologies, and organizational contexts. Most of these existing studies, however, were conducted in North American. Given the increasing globalization of business and telecommunication systems, there is a rising concern of how to extend critical success factors in IT implementation beyond the cultural boundaries. Previous research has shown that people with different cultural backgrounds hold different values on technology and change (Veiga et al., 2001), and power of the research theory varies in different cultural contexts (Straub et al., 1997).

Researchers argue that beliefs and perceptions, which influence their acceptance behaviors toward technology, reflect value of different cultures (Png et al., 2001; Tan et al., 1995; Veiga et al., 2001). Although its potential impact on individual IT acceptance behavior has been identified long time ago (Ives et al., 1980), a small and still fragmented body of research has been conducted with the perspective of culture differences in information system (IS) field (Martinsons & Davison, 2003).

In a very recent study, Leidner and Kayworth (2006) reviewed a wide range of literature on the relationship of IT and culture, and categorized prior studies into six culture themes 1) IS Development, 2) IT Adoption and Diffusion, 3) IT Use and Outcomes, 4) IT Management and Strategy, 5) IT's Influence on Culture, and 6) IT Culture. Indeed, according to their work, culture's impact on IT adoption has high research priority at both of organizational and national level. At the national level, the common theoretical base of this theme is Hofstede's theory of cultural values. The dominate arguments have been that the four cultural dimensions, play distinct roles in influencing people's technology acceptance behaviors. For example, using Hofstede's work on culture and social richness theory, Straub (1994) discussed that culture effects, especially high uncertainty avoidance, determinate the discrepancy in the selection of electronic communication media among Japanese and American knowledge workers. In a similar vein, Straub et al.(1997) compared the prediction of TAM model on e-mail acceptance across three different countries: Japan, Switzerland, and the United States. The results indicate that the validity of TAM model diversifies in different countries which have specific patterns in the social values and beliefs. In a study to establish relationships between cultural variable and IT adoption factors, Bandyopadhyay and Fraccastoro (2007) demonstrated that social influence variables based in culture provide additional explanatory power to affect technology usage for a collectivist culture, India.

While there seems to be general support of the notion of cultural dimensions applying to explain different power of acceptance models to predict IT adoption (Straub et al., 1997) or how specific cultural related variables among model paradigms become markedly influential across countries (Al-Gahtani et al., 2007; Bandyopadhyay & Fraccastoro, 2007), it has yet to provide insights to analyze cognitive mechanisms underneath the acceptance models. For example, how would culture influence relationships between individual perceptions and beliefs in the technology acceptance model (TAM)? As a less instrumental construct and more external force, it is more likely to predict the outcomes such as the time of IT adoption, breadth of IT diffusion, and the objective of adoption (Leidner & Kayworth, 2006). However, its outcomes, social values and beliefs, would shape and manage individual's behaviors consistent with other members of the culture (Schutz & Luckmann, 1974). In psychological study, researchers found out that "social differences that exist among different cultures affect not only their beliefs about specific aspects of the world...even the nature of their cognitive processes" (Nisbett et al., 2001).

Within the context of our present work, an increasing number of North American universities integrate Internet-based learning medium as a substantial part of their programs and collaborate with their partners in developing countries to provide distance learning programs. Students take their courses in a virtual environment where the learners interact with learning materials (such as readings, slides, assignment, exercises, etc.), classmates and/or instructors through Internet and web technologies. Despite the many challenges yet to be overcome, the advantages of online learning have been consistently emphasized for the successful implementation of the systems. Some of these major advantages include flexibility and broader accessibility (Lee et al., 2005), improved students' performance (Alavi, 1994), reflective evaluation of the learning experience (Hiltz, 1995), and higher computer self-efficacy (Piccoli et al., 2001), as well as a more student-centered learning environment (Cardler, 1997).

What appears critical is to understand the different cognitive processes embedded in cultures in order to disclose conceptual paradigm of acceptance behavior under different cultures, and then propose suitable modifications and enhancements for theoretical models. In this way, researchers would take account of culture differences to highlight proper factors, thereby defining a set of relationships that are country-specific. Thus, we propose to examine the effects of culture in a research model and test it in China and Canada. According to Hofstede's work, China and Canada have significant difference in their cultures. Given this fact, it should not be surprising, if it turned out to be the case that acceptance determinates may differ because of their cognitive processes characterized by their own cultures.

In this paper, we address these issues by analyzing discrepancies on causal relationships between perceptions and behaviors toward ICT in two contrast cultures from the social-psychological view. In addition, we explore the mediation role of beliefs under the two systems of thought in order to verify the impacts of culture's differences on individual's cognitive preferences. A discussion of findings provides insights and implications to future research at the end.

This paper is organized as follows: the next section presents a review of the theoretical bases. This section provides a review of culture and its effects on systems of thought and their implications for acceptance behaviors, according to psychological research. The following section proposes, successively, research hypotheses and model. After description of methodology and data analysis, a discussion of findings is followed. The final section provides the practical and academic implications of this study and presents the conclusion of our work.

## **THEORETICAL BACKGROUND**

The theoretical bases of this study draw from psychosocial arguments on relationships between culture and people's cognitive systems and behavior models in IS research filed.

### **Culture and systems of thought**

Hofstede defines culture is "the collective programming of the mind that distinguishes one group or category of people from another" and culture is a construct that "is not directly accessible to observation but inferable from verbal statements and other behaviors and useful in predicting still other observable and measurable verbal and nonverbal behavior" (Hofstede, 1993; Hofstede, 2001).

The assumption of universality of cognitive processes across cultures had been adopted by mainstream of psychology of the 20<sup>th</sup> century, and the analogy of this assumption to the computer has been implicit and usually explicit for the past 30 years (Nisbett et al., 2001). In the analogy, human being's brain, inferential rules and information processing procedures as well as outputs are equal to hardware, software, as well as individual beliefs and behaviors, respectively. In addition, it presumes that the mechanism of information processing such as categorization, reasoning, inductive and deductive inference is the same among all human groups (Nisbett et al., 2001).

However, inferential rules and reasoning mechanism appear to be malleable in pervious research. Indeed, remarkable differences exist in knowledge of the use of inferential rules and cognitive processes socialized from birth into different world views and habits of thought within different given cultures. In prior research, China and Greece have been identified to demonstrate the effects of culture on the cognitive process. As two of great cultures, Greek civilization nurtured civilizations of western countries such as Canada, U.S, as while Chinese civilization gave rise to the civilizations of East Asia. From the perspective of culture characteristic, Greeks emphasize the individualism concerning the location of power in the individual and personal freedom. The need to develop their own power motivates them to discovery the rules of nature in a systematic way. On the other hand, Chinese perceive themselves as part of a closely knit collectivity emphasizing reciprocal social obligation and the expectations of the group. In the Chinese value, the ideal state of being is *harmony*, "as when the occupants of a social group...perform their functions and do not transgress the boundaries of duty or expectations that

accompany those functions” (Munro, 1985, pp. 20-21). Indeed, Confucianism emphasizes the obligation but has no encouragement to “entail some consequence for action” (Munro, 1969).

Given the markedly differences in the social-psychological aspects in these two cultures, corresponding cognitive differences has been identified in previous work and grouped under the label of holistic and analytic thought for Chinese and Greeks respectively (Nisbett et al., 2001). Holistic thought is defined “*as involving an orientation to the context or field as a whole, including attention to relationships between a focal object and the field, and a preference for explaining and predicting events on the basis of such relationships. Holistic approaches rely on experience-based knowledge rather than on abstract logic and are dialectical, meaning that there is an emphasis on change, recognition of contradiction and of the need for multiple perspectives, and a search for the ‘Middle Way’ between opposing propositions*” (Nisbett et al., 2001, p. 293). On the other hand, analytic thought is defined “*as involving detachment of the object from its context, a tendency to focus on attributes of the object to assign it to categories, and a preference for using rules about the categories to explain and predict the object’s behavior. Inferences rest in part on the practice of decontextualizing structure from content, the use of formal logic, and avoidance of contradiction*” (Nisbett et al., 2001, p. 293).

In information system (IS) field, several models rooted in the system of analytic thought have been proposed to investigate the IT acceptance behavior, for example, the technology acceptance model (TAM). As one of the most influential models, TAM has been criticized for its propensity to “instrumentality and cognitive complexity beliefs” (Agarwal & Karahanna, 2000, p. 666). Indeed, it lacks of the notion on the experience-based individual behavior toward new information technologies, which doesn’t reflect Chinese system of holistic thought.

### **Technology Acceptance Model**

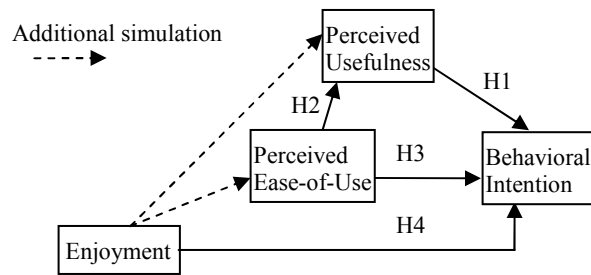
The theoretical grounding for this research derives from the technology acceptance model (TAM). As one of the most popular behavior models, TAM has been employed to explain user behavior across a broad range of technologies and user populations, while at the same time being parsimonious and theoretically justified. In the TAM, Davis (1989) proposes that technology use intention are predicted by perceived ease of use and perceived usefulness, and then the influence of other factors on technology acceptance is mediated by the two individual beliefs. Perceived ease of use (PEU) refers to the degree to which an individual believes that using a particular system would be free of effort, whereas perceived usefulness (PU) is defined as the degree to which an individual believes that using a particular system would enhance his or her job performance (Davis, 1989).

### **Holistic Experience**

The original core formulation of TAM dose not refer to preference of factors related to human and social change processes. However, in the following research experience-driven factors have been identified to create favorable user perceptions in a wide range of system use contexts, such as game-based training (Venkatesh, 1999), hedonic information systems (Heijden, 2004) and online games (Hsu & Lu, 2004). In this tradition, a series of constructs describing self-fulfilling, subjective enjoyment and fun-aspect of the interaction with the technology have been empirically confirmed to be determinants of use. For example, Agarwal and Karahanna (2000) proposed a conceptual construct labeled cognitive absorption to incorporate holistic experiences with technology. The state of flow, the holistic experience that people feel when they act with total involvement, has been applied to explain the technology adoption (Ha et al., 2007). Enjoyment defined by Davis et al.(1992), an intrinsic motivation related variable, captures the enjoyable experience of using the computer, apart from any performance consequences that may be anticipate.

### **RESEARCH MODEL AND HYPOTHESES**

The research model used in this study is based on TAM excluding the attitude construct and including enjoyment construct. In addition to the TAM variables, such as PEU, PU and behavioral intention, this study includes enjoyment as the antecedent of the adoption behavior toward e-learning system to compare the culture’s impacts. Agarwal and Karahanna (2000) argue that factors that represent user’s positive holistic experiences and subjective enjoyment of the interaction with the technology also relate to technology use.



**Figure 1. The Research Model**

In the vein of the different systems of thought, the research model is proposed to investigate different pathways of cognitive processes constructed by perceptions from TAM and holistic factor (enjoyment) for both Chinese and western cultures. Thus, our goal is not just test the explanation power of the research model; rather, we seek to examine possibly different cognitive paths within the model for the two cultures.

### **Technology Acceptance Model**

TAM is an adaptation of theory of reasoned action (TRA), which argues that a person's performance of a specific behavior is determined by his/her evaluative affect on the consequences and analysis of external expectations of performing the behavior (Davis et al., 1989). Davis argues that the relationships in TAM represent a cognitive appraisal of forming intentions to use the technologies. "It should be emphasized that perceived usefulness and ease of use are people's subjective appraisal of performance and effort, respectively." (Davis, 1989, p. 335) Together, these arguments imply that the cognitive paradigm of TAM is closely related with the system of analytic thought. Thus we hypothesize that:

*H1: Perceived usefulness has positive influence on behavioral intention*

*H2: Perceived ease of use has positive influence on the perceived usefulness*

*H3: Perceived ease of use has positive influence on behavioral intention*

### **Constructs of holistic experience**

On the other hand, the discussion on experience-based technology use has become another important stream of research. Pervious studies have extended the TAM with constructs reflecting holistic and positive experience on IT usage such as perceived playfulness (Moon & Kim, 2001), cognitive absorption (Agarwal & Karahanna, 2000; Saadé & Bahli, 2005), flow (Shang et al., 2005), enjoyment (Lee et al., 2005; Yi & Hwang, 2003). In the context of students' acceptance of e-learning system, an individual's subjective feelings of joy, elation, pleasure, and positive holistic experience also play a critical role in explaining user acceptance and usage behavior (Lee et al., 2005). In this study, we use enjoyment as the construct to capture the holistic experience.

From the view of the system of thoughts, the enjoyment construct would be a good fit for cognitive processes with in the system of holistic thought. Thus, we hypothesize:

*H4: Enjoyment has positive influence on behavioral intention*

## **RESEARCH METHODOLOGY**

### **Data collection**

A survey methodology approach was taken at two universities in China and Canada to test the research model. In Changsha China, students of a business college taking a core course were asked to use an e-learning system to help them understand critical knowledge points and rehearse answering questions for the midterm and final exams. In Montreal Canada, undergraduates in an introductory MIS course were asked to use a similar e-learning system embedded static and interactive components to assist them in their studies, assignments and exams. Both systems were developed to be used via the web and students were able to use the e-learning system anywhere, anytime. At the end of the semester, students were invited to fill out the questionnaires. A total of 163 students in Canada and 120 students in China had completed response for all measures.

## Instruments

All the items used to measure the constructs were adapted from prior studies with modification to fit the specific context of the e-learning system. Both of perceived usefulness and ease of used are measured by four items from Davis (1989), respectively, while two items are used measure behavioral intention (Ajzen & Fishbein, 1980). Enjoyment is measured using the scale adapted from Davis et al(1992). All items are phrased on a five-point Likert-type scale with anchors from “Strongly disagree” to “Strongly agree”

## Data analysis

The partial least-squares (PLS) approach to multiple indicator structural equation analysis was used to assess the relationships between the constructs together with the predictive power of the research model. The PLS approach can be used for theory confirmation and to suggest where relationships might exist. For prediction, the PLS approach is more suitable than others, such as LISREL and EQS, because it assumes that all the measured variance in the study were to be explained. In behavioral research of the MIS field, PLS has been wholeheartedly accepted as an important statistical method(Goodhue et al., 2006). Accordingly, partial least squares via PLS-Graph (Chin, 2006) was used to analyze the datasets.

## FINDINGS AND RESULTS

We separately analyzed the two datasets in a two-step analytical procedure. We first examine the measurement model, and then structural model. The measurement model using PLS was assessed in terms of convergent validity, internal consistency, and discriminant validity. The structural model and hypotheses were investigated by examining the path coefficients represented as standardized betas. The explained variance in the dependent constructs was assessed as an indication of the overall predictive strength of the model.

### The measurement model

Convergent validity represents the extent to which the indicators of a measurement are theoretically related should correlate highly(Gefen & Straub, 2005). A composite reliability of 0.7 or above and an average variance extracted(AVE) of greater than 0.7 are acceptable (Fornell & Larcker, 1981). In addition, we introduced Cronbach’s alpha to test reliability. All statistical measures were calculated for both datasets separately, since the data for each group is to be analyzed separately, and then compared. Table 1 summarized the above parameters in our models for each group. All the measures fulfill the recommended levels, with the composite reliabilities are higher than 0.9, AVE ranges from 0.70 to 0.89. In all cases alphas were greater than 0.7, thus demonstrating reliability.

Construct	Composite Reliability		AVE		Cronbach Alpha	
	China(CN)	Canada(CA)	CN	CA	CN	CA
BI	0.91	0.94	0.83	0.88	0.79	0.87
PU	0.92	0.96	0.75	0.86	0.89	0.95
PEU	0.90	0.94	0.70	0.79	0.86	0.91
EN	0.92	0.95	0.79	0.86	0.86	0.92

**BI = Behavioral Intention; PU = Perceived usefulness; PEU = Perceived ease of use; EN = Enjoyment**

**Table 1. Reliability and Convergent validity**

Discriminant validity is the extent to which the measure is not a reflection of some other variable. Discriminant validity is shown, when two thing occur: 1) the squared root of the average variance extracted (AVE) for each construct is higher than the correlation between it and all other constructs (Fornell & Larcker, 1981) and 2) If items have factor loading greater than 0.5 on their own construct, and significantly less than their loading on other constructs, then the discriminant validity is supported (Gefen & Straub, 2005). As summarized in Table 2, the root of AVE for all constructs is supported. In addition, factor loading values from factor analysis were higher than 0.8258.

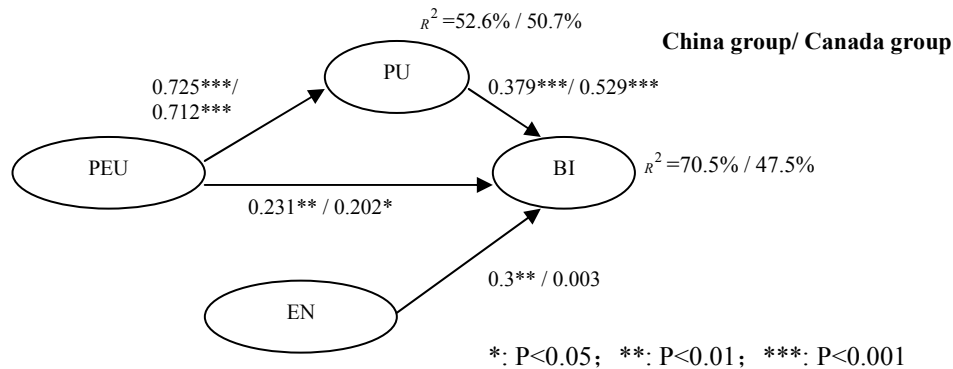
	BI	PU	EN	PEU
BI	<b>0.909/0.940</b>			
PU	0.796/0.675	<b>0.867/0.929</b>		
EN	0.783/0.416	0.829/0.591	<b>0.888/0.923</b>	
PEU	0.725/0.580	0.725/0.712	0.730/0.499	<b>0.838/0.890</b>

**BI = Behavioral Intention; PU = Perceived usefulness; PEU = Perceived ease of use; EN = Enjoyment**

**Table 2. Correlation of Latent Variables (China / Canada)**

**The structural model**

The path coefficients from the PLS analysis are shown in Figure 2. As can be seen, the positive correlations between the constructs suggest that there are grounds for expecting significant effects between them. PEU demonstrated direct, statistically significant, and positive effects on PU (path=0.725 and 0.712,  $p<0.001$ ) for both the China and Canada groups, respectively. As hypothesized, there is a strong positive relationship between PU and BI (path=0.379 and 0.529,  $p<0.001$ ) in both groups. The divergences between two datasets exist, when we calculate the influence of PEU on BI and enjoyment on BI. It was found that PEU influences BI for the China group (path=0.231,  $p<0.01$ ), but not for the Canada group (path=0.202,  $p=0.05$ ). Indeed, the influence of enjoyment on user’s BI for using e-learning system is strong in China group (path=0.3,  $p<0.01$ ), but in Canada group (path=0.003,  $p=n.s$ ). For China group, 70.5% of the variance in BI was explained by models variables, 52.6% of the variance in PU is explained. For Canada group, both the percentages of the variance explained of BI and PU are lower than those of China group, 50.7% and 47.5%, respectively.



**Figure 2. Results of proposed research model**

In summary, results of the hypothesis tests suggest that three of four the hypotheses were supported. Hypothesis 4, which expects stronger influence of perceived ease of use on perceived usefulness in Canada, was not supported statistically. All relationships essentially drawn from the specification of TAM were supported.

**Additional model tests**

As a supplemental analysis, we examined two other acceptance models with the data to determine if enjoyment would increase the explanation power and the posited full mediation of the effects of enjoyment on behavioral intention by beliefs of usefulness and ease of use.

	EN→PU	EN→PEU	EN→BI	PEU→PU	PU→BI	PEU→BI	RSq		
							PU	PEU	BI
Canada				0.713***	0.529***	0.204*	0.508		0.476
			0.003	0.712***	0.529***	0.202*	0.507		0.475
	0.314**	0.499***		0.556***	0.53***	0.203*	0.581	0.249	0.475
China				0.726***	0.569***	0.312**	0.527		0.679
			0.3**	0.725***	0.379***	0.231**	0.526		0.705
	0.643***	0.73***		0.256*	0.569***	0.312**	0.719	0.533	0.679

**Table 3. Test Model Results**

**DISCUSSION AND CONCLUSION**

Motivated by a need to entail how culturally patterned cognitive processes influence individual’s technology acceptance behavior, this study stands on the psychological base to investigate a well-researched model from this new angle. The result of the study clearly demonstrates two different cognitive paradigms underneath the causal relationships in the proposed

research model. In the Chinese culture, people's decision on technology use largely refers to their experience during the interaction. Meanwhile, Canadian's decision on technology use highly relies on links between analytic perceptions generated in the interaction. This study has several significant contributions to the future research.

Firstly, we introduce a novel perspective to review the culture's impact on technology acceptance behavior across countries. Prior cross-national research on information systems, especially on adoption, is heavily based on Hofstede's cultural values (Leidner & Kayworth, 2006; Veiga et al., 2001). This theoretical bias would narrow down the research orientation and make a danger of unduly restricting inquiry on cross-national study. By using analysis of culturally formed cognitive processes, researchers could detail and understand mechanisms of adoption behavior for culturally specific environments and propose appropriate research assumptions. Moreover, this approach facilitates practitioners to design more effective systems efficiently. For example, based on the findings of this study, in future e-learning system design for Chinese users, more experience-oriented features should be included, whereas the design of Canadian version should be more accessible, functional and outcome-oriented.

Secondly, we empirically validated the formulation and prediction power of TAM across countries. Although this line of research has conducted studies in different culture contexts such as Hong Kong (Lee et al., 2005), Canada (Saadé et al., 2007), Arabic country (Selim, 2003), the primary research object of these studies is to empirically examine the validity of their research models in general sense with an assumption to apply them across cultural boundaries. Few of them examined and compared the research models in more than one culture setting, and thus on the whole may not be reflective of the adoption process in difference cultural environments (Raaij & Schepers, 2006). Indeed, the research respondents are barely from mainland China, the origin of Chinese system of thought. There is a pressing need to understand the cross-cultural adoption and use of e-learning systems. A comparison study can give us more insights into impacts of different culture on a same acceptance decision of IT. Even if general theories apply commonly, there may be culture-related empirical differences in measured response sensitivity to various stimuli (Schepers & Wetzels, 2007; Tan & Farley, 1987). For this study, two contrast mechanisms coexist in one research model with culture-specific preferences.

Thirdly, we get a greater depth and breadth on understanding of e-learning activity. Alavi and Leidner (2001) encouraged researchers to formulate research questions in terms of the way in which technology features can engage psychological processes of learning. In our study, we initially describe one psychological approach to investigate individuals' cognitive processes for using e-learning systems. People have a natural wellspring of learning and achievement but their learning procedure is managed by the external education system. The learning component, which embeds the culture-specific instructional strategy, catalyzes students' learning activities in this system, due to the pursuit of study performance or the pleasure dimension of study and play, or both of them.

Several limitations are noteworthy in this study. First, it is important to recognize that the effects of organizational or work group level influences on an individual's perceptions are ignored, in order to focus attention on culturally sensitive beliefs, although organizational norms play a critical role to predict technology use in prior research (Lucas & Spitler, 1999). Second, the different system design features of e-learning systems may affect user's perception and beliefs. Davis (1993) suggests that system characteristics indirectly and directly influence user's attitude towards information technology. For example, two types of interfaces of a photo editing software give different impressions on user's cognitive perceptions during their self-directed learning process to perform tasks (Saadé & Otrakji, 2007). Third, it is also necessary to consider about the respondents and the study settings when future research wants to apply the findings. Since we use students in business schools, the generalizability of the respondents' behaviors to a more general workforce may be limited. The criticism about using students as subjects for research has appeared on many studies. However, it is appropriate to use students as research subjects to measure a system designed for learning, since the mainly users of e-learning systems are students.

The study on cross-national cognitive process differences is not uncommon in comparative management research. By comparing cultural patterns on cognition, researchers uncovered the paradigms of different managerial behaviors (Abramson et al., 1996; Redding, 1980). However, the cross-national research in IS field has yet to refer the perspective and these findings to enrich our understanding. This study empirically introduces this 'new' perspective of the role of culture in acceptance behavior of information technologies. Furthermore, e-learning has become a critical part of the education, making the investigation of the predictors of user acceptance essential for its success. This study provides insights into the factors that influence the acceptance behavior by integrating the impact of culture. Given the undeniable reality of increasing internationalization of online education, such research has value for organizations that intend to implement e-learning systems successfully across different culture contexts.



## REFERENCES:

1. Abramson, N. R., Keating, R. J., & Lane, H. W. (1996). Cross-national cognitive process differences: A comparison of Canadian, American and Japanese managers. *Management International Review*, 36(2), 123-147.
2. Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage. *MIS Quarterly*, 24(4), 665.
3. Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*. NJ: Prentice-Hall, Englewood Cliffs.
4. Al-Gahtani, S. S., Hubona, G. S., & Wang, J. (2007). Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. *Information & Management*, 44(8), 681-691.
5. Alavi, M. (1994). Computer-Mediated Collaborative Learning: An Empirical Evaluation. *MIS Quarterly*, 18(2), 159-174.
6. Alavi, M., & Leidner, D. E. (2001). Research Commentary: Technology-Mediated Learning--A Call for Greater Depth and Breadth of Research. *Information Systems Research*, 12(1), 1.
7. Bandyopadhyay, K., & Fraccastoro, K. A. (2007). The effect of culture on user acceptance of information technology. *Communication of the Association for Information Systems*, 19, 522-543.
8. Cardler, J. (1997). Summary of current research and evaluation of findings on technology in education. 2007, from <http://www.wested.org/techpolicy/refind.html>
9. Chin, W. W. (2006). PLS - Graph User's Guide Version 3.0 [Electronic Version].
10. Davis, F. D. (1989). Perceived Usefulness, Perceived Ease Of Use, And User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319.
11. Davis, F. D. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies* 38(3), 475-487.
12. Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance Of Computer Technology: A Comparison Of Two Theoretical Models. *Management Science*, 35(8), 982.
13. Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22(14), 1111-1132.
14. Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equations Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39-50.
15. Gefen, D., & Straub, D. (2005). A parctical guide to factorial validity using PLS-Graph: tutorial and annotated example. *Communications of the Association for Information Systems* 16, 91-109.
16. Goodhue, D., Lewis, W., & Thompson, R. (2006). *PLS, Small sample size, and statistical power in MIS research*. Paper presented at the the 39th Hawaii International Conference on System Sciences.
17. Ha, I., Yoon, Y., & Choi, M. (2007). Determinants of adoption of mobile games under mobile broadband wireless access environment. *Information & Management*, 44(3), 276.
18. Heijden, H. V. D. (2004). User acceptance of hedonic information systems. *MIS Quarterly*, 28(4), 695.
19. Hiltz, S. R. (1995). Teaching in a Virtual Classroom. *International Journal of Educational Telecommunications*, 1(2), 185.
20. Hofstede, G. (1993). Cultural constraints in management theories. *Academy of Management Executive*, 7(1).
21. Hofstede, G. (2001). *Culture's Consequences* (2 ed.). Thousand Oaks: Sage Publications.
22. Hsu, C.-L., & Lu, H.-P. (2004). Why do people play on-line games? An extended TAM with social influences and flow experience. *Information & Management*, 41(7), 853-868.
23. Ives, B., Hamilton, S., & Davis, G. B. (1980). A framework for research in computer-based management information system. *Management Science*, 26(9), 910.
24. Lee, M. K. O., Cheung, C. M. K., & Chen, Z. (2005). Acceptance of Internet-based learning medium: the role of extrinsic and intrinsic motivation. *Information & Management*, 42(8), 1095-1104
25. Leidner, D. E., & Kayworth, T. (2006). A review of culture in information systems research: Toward a theory of information technology culture conflict. *MIS Quarterly*, 30(2), 357-399.
26. Lucas, H. C., & Spitler, V. K. (1999). Technology use and performance: A field study of broker workstations. *Decision Sciences*, 30(2), 291.
27. Martinsons, M., & Davison, R. (2003). Cultural Issues and IT Management: Looking Ahead. *IEEE Transactions on Engineering Management*, 50(1).
28. Moon, J.-W., & Kim, Y.-G. (2001). Extending the TAM for a World-Wide-Web context. *Information & Management*, 38 (4), 217-230.
29. Munro, D. J. (1969). *The concept of man in early China*. Stanford, CA: Stanford University Press.

30. Munro, D. J. (1985). Introduction. In Munro (Ed.), *Individualism and holism: Studies in confucian and Taoist values* (pp. 1-34). Ann Arbor: Center for Chinese Studies: University of Michigan.
31. Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and System of Thought: Holistic Versus Analytic Cognition. *Psychological Review*, *108*(2), 291-310.
32. Piccoli, G., Ahmad, R., & Ives, B. (2001). Web-based virtual learning environments: A research framework and a preliminary assessment of effectiveness in Basic IT Skills Training. *MIS Quarterly*, *25*(4).
33. Png, I. P. L., Yan, B. C. Y., & Wee., K. L. (2001). Dimensions of National Culture and Corporate Adoption of IT Infrastructure. *IEEE Transactions on Engineering Management*, *48*(1), 36-45.
34. Raaij, E. M. v., & Schepers, J. J. L. (2006). The acceptance and use of a virtual learning environment in China. *Computers & Education*.
35. Redding, S. G. (1980). Cognition as an aspect of culture and its relation to management processes: An exploratory view of the Chinese case. *Journal of Management Studies*, *17*(2), 127-148.
36. Saadé, R., & Bahli, B. (2005). The impact of cognitive absorption on perceived usefulness and perceived ease of use in on-line learning: an extension of the technology acceptance model. *Information & Management*, *42*(2), 261-386.
37. Saadé, R., Nebebe, F., & Tan, W. (2007). Viability of the "Technology Acceptance Model" in Multimedia Learning Environments: A Comparative Study. *Interdisciplinary Journal of Knowledge and Learning Objects*, *3*, 175-184.
38. Saadé, R., & Otrakji, C. (2007). First impressions last a lifetime: effect of interface type on disorientation and cognitive load. *Computers in Human Behavior* *23*(1), 525-535.
39. Schepers, J., & Wetzels, M. (2007). A meta-analysis of the technology acceptance model: Investigating subjective norm and moderation effects. *Information & Management*, *44*(1), 90.
40. Schutz, A., & Luckmann, T. (1974). *The Structures of the Life-World*. London: UK: Heinemann
41. Selim, H. M. (2003). An empirical investigation of student acceptance of course websites. *Computers & Education*, *40*, 343-360.
42. Shang, R.-A., Chen, Y.-C., & Shen, L. (2005). Extrinsic versus intrinsic motivations for consumers to shop on-line. *Information & Management*, *42*(3), 401-413.
43. Straub, D. W. (1994). The effect of culture on IT diffusion: E-mail and FAX in Japan and the U.S. *Information Systems Research*, *5*(1), 23-47.
44. Straub, D. W., Keil, M., & Brenner, W. H. (1997). Testing the technology acceptance model across cultures: a three country study. *Information & Management*, *33*, 1-11.
45. Tan, B., Watson, R., & Wei, K. (1995). National culture and group support systems: filtering communication to dampen power differentials. *European Journal of Information Systems*, *4*, 82-92.
46. Tan, C. T., & Farley, J. U. (1987). The Impact of Cultural Patterns on Cognition and Intention in Singapore. *Journal of Consumer Research*, *13*(4), 540.
47. Veiga, J. F., Floyd, S., & Dechant, K. (2001). Towards modelling the effects of national culture on IT implementation and acceptance. *Journal of Information Technology*, *16*, 145-158.
48. Venkatesh, V. (1999). Creation of favorable user perceptions: Exploring the role of intrinsic motivation. *MIS Quarterly*, *23*(2), 239.
49. Yi, M. Y., & Hwang, Y. (2003). Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *International Journal of Human-Computer Studies*, *59*, 431-449.