

December 2006

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Recommended Citation

Durfee, Antonina; Shinnar, Rachel; and Gonzalez, Perla, "A Cross-Cultural Examination of Instant Messaging Acceptance in Mexico and the U.S." (2006). *AMCIS 2006 Proceedings*. 20.
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A Cross-Cultural Examination of Instant Messaging Acceptance in Mexico and the U.S.

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Abstract: Instant messenger (IM) is gaining popularity as a communication channel both within and outside the workplace. This research-in-progress proposes to examine the adoption of IM across cultures. Using the technology acceptance model (TAM; Davis, 1989) we propose to examine the adoption of IM among university-level business students in the U.S. and Mexico. This study will serve a dual purpose; first, it will test TAM's applicability across cultures and second, it will examine the impact of external variables on technology acceptance. These include subjective norm and national culture (i.e., uncertainty avoidance, individualism, power distance, and femininity/masculinity). This research in progress includes a literature review, research hypothesis, and proposed model, a data collection instrument, and detailed methodology.

Keywords: Technology adoption, instant messenger, cross cultural

INTRODUCTION

This study proposes to examine the adoption of instant messenger (IM) technology among university students in the U.S. and Mexico using the technology acceptance model (TAM; Davis, 1989). With IM's increased popularity as communication platform in and outside the workplace, it becomes more important to examine its adoption across cultures. This study will address two main research questions: First, it will test TAM's applicability across cultures and second, it will examine the impact of external variables on technology acceptance. These include subjective norm and national culture. We open this manuscript with a literature review on IM, TAM, and national culture. We then discuss the potential impact of cultural value orientations on technology adoption and accompany this discussion with our research hypothesis. We continue by presenting our model and conclude by describing the methodology and data collection instrument.

BACKGROUND

Instant Messenger

Instant Messenger (IM) is a computer mediated communication technology, which allows people to carry out real time, private, text-based conversations over the Internet (Boneva, et al. in press). IM is gaining popularity, in fact, 74% of teenagers in the U.S. who had Internet access, had used IM, and 35% of them used IM daily (Shiu & Lenhart 2004). Initially introduced by Mirabilis (Stafford, 2003) and later acquired by AOL, IM versions are now available through MSN, AOL, Yahoo, Windows and others (Boneva, et al. in press). These versions include new functions that go beyond the initial text-based short message communication of the 1990s (e.g., real time video and audio chats, short messaging, email and forwarding service, history keeping, sending offline messages, invisible presence functions, buddy lists). IM promises to change the business community by offering an easy to use, instantaneous, and inexpensive communication platform. It is not expected to override e-mail communication but rather compliment it in a more informal way. In fact, 99% of adults with Internet access use e-mail as their communication medium of choice, but only 47% used IM (Pew International Project, 2004).

Technology Acceptance Model

The TAM has received substantial theoretical and empirical support and has been used extensively in information technology research since its introduction by Davis (1989) (See figure 1). Based on the theory of reasoned action (Fishbein & Ajzen, 1975), the TAM takes a social psychology approach to explaining user acceptance of new technologies. It proposes that individuals' behavioral intentions to use technology are shaped by perceived usefulness and perceived ease of use. The TAM has been used to examine technology acceptance outside North America with contradictory findings (Straub, Keil & Brenner, 1997; McCoy, Everard, & Jones, 2005). In order to examine TAM's cross-cultural transferability we propose that in the North American *and* in the Mexican samples:

H1a-b: (a) perceived usefulness and (b) perceived ease of use of IM will be positively related to behavioral intentions to use IM.

H1c: Behavioral intentions to use IM will predict actual use of IM.

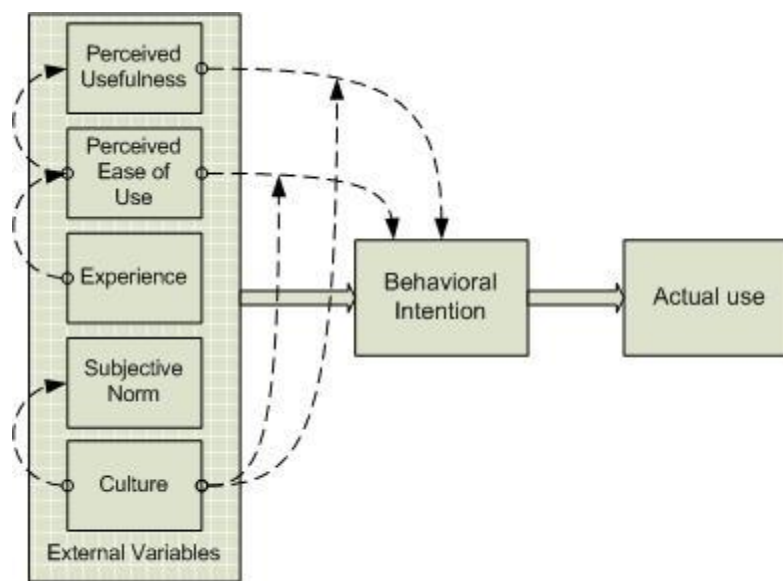


Figure 1. Technology acceptance model (adapted from Davis (1989))

External Variables

Some of the research using the TAM has examined the impact of contextual variables. In this study, we will examine subjective norm and national culture some in terms of their influence on usefulness and perceived ease of use of IM and behavioral intentions to use IM.

Subjective norm.

Subjective norm refers to a "person's perception that most people who are important to him think he should or should not perform the behavior in question" (Fishbein & Ajzen, 1975, p. 302). The importance of social pressure on technology acceptance research has been examined in several studies with inconsistent results (e.g., Huang, Lu & Wong, 2003; Igbaria, Parasuraman, & Baroudi, 1996; McCoy, Everard, & Jones, 2005). Subjective norm was found to be positively related to computer use in general in a North American sample (Igbaria, Parasuraman, & Baroudi, 1996), as well as positively related to perceived usefulness of using email in a Chinese sample (Huang, Lu, & Wong (2003), yet unrelated to behavioral intentions to use email in a Uruguayan sample (McCoy, Everard, & Jones, 2005). Therefore, we propose the following hypotheses:

H2: Subjective norm will be positively related to behavioral intentions to use IM in the North American and in the Mexican sample.

National culture

Culture consists of a set of taken for granted assumptions including rules of behavior and values which shape individual attitudes and perceptions (Hofstede, 1980). “Values form the core of culture...values tell us what to care about, what to strive for, and how to behave” (Thiederman, 1991, p. 81). The impact of national culture and cultural values on TAM has received some attention in recent years (Bagchi & Cerveny, 2000; Calhoun, Teng & Cheon, 2002; Huang, Lu & Wong, 2003; Kambayashi & Scarbrough, 2001; Koezegi, Vetschera, & Kersten, 2004; Parboteeah, Parboteeah, Cullen & Basu, 2005; Reining & Mejias, 2002; Straub, Keil, & Brenner, 1997) but most of these studies used group level cultural values as assumptions in their *post hoc* explanation of research findings *without* directly measuring cultural value orientations of study participants.

Investigators in the field recommend that studies addressing individual-level models such as TAM be used with individual-level culture measures (Calhoun, Teng & Cheon, 2002; McCoy, Galleta, & King, 2005; McCoy, Everard, & Jones, 2005) so as to ensure that these are consistent with the general cultural pattern of their society. The cultural values to be examined in this study include uncertainty avoidance, individualism/collectivism, power distance, and femininity/ masculinity.

Uncertainty avoidance.

Uncertainty avoidance refers to the degree to which the members of a society are uncomfortable with or threatened by ambiguous or unstructured situations (Hofstede, 1980). Recent studies rank Mexico and the U.S. moderately on the uncertainty avoidance scale (House, Javidan, Hanges, & Dorfman, 2002), or rank the U.S. slightly above the mean and Mexico below the mean on uncertainty avoidance (Fernandez et al., 1997). Uncertainty avoidance has been found to be related to PC adoption (Bagchi & Cerveny, 2000), and perceived usefulness of technology (Parboteeah, et al., 2005). In terms of technology-communication, high uncertainty avoidance was linked to individual preference for richer communication mediums such as fax over e-mail. Given that technological innovations could increase perceptions of uncertainty, we believe that degree of uncertainty avoidance will impact behavioral intentions regarding the use of IM. Therefore we propose that:

H3a-b: High uncertainty avoidance will be negatively related to (a) perceived usefulness of IM and (b) perceived ease of use of IM.

Individualism/collectivism.

Individualism refers to the degree to which members of a society focus on satisfying personal interests. Individualistic societies value personal freedom and are more achievement-oriented and competitive. People in these societies derive their identity from individual achievement (Thiederman, 1991). The emphasis in a collectivist society is on the needs, objectives, and points of view of an in-group rather than the individual (Hofstede, 2001). Collectivism is associated with “high levels of personal interdependence...conformity, [and] readiness to be influenced by others” (Marín & Marín, 1991, p. 11).

Recent studies found that while the American sample ranked higher than the Mexican sample, both samples ranked above the mean for individualism (Fernandez et al., 1997). High individualism has been associated with PC adoption (Bagchi & Cerveny, 2000). However, Parboteeah et al., (2005) found individualism to be negatively related to perceived usefulness of information technology. They felt that this surprising result could be explained by the effect of subjective norm on adoption decision, especially in the early stages of an adoption. Given the importance of the group and social pressure in collectivist societies, we propose the following hypothesis:

H4: Collectivism will be positively related to behavioral intentions to use IM when subjective norm is positively related to behavioral intentions.

Power distance.

Power distance refers to the degree to which the members of a society accept the unequal distribution of power in society (pluralist vs. elitist) (Hofstede, 2001). Individuals from high power distance cultures are not likely to question authority or seek participation in decision making in the workplace because they accept the unequal power distribution at work. North

American culture is ranked low on power distance and Mexico is ranked high on this dimension (Fernandez et al., 1997; Hofstede, 1980).

In their multinational sample, Bagchi and Cerveny (2000) found low power distance to be associated with PC adoption. High power distance in a Chinese sample was identified to reduce the likelihood of using e-mail given its leveling effect of power and hierarchy manifestation (Huang, Lu & Wong, 2003). Japanese managers, coming from a high power distance culture, exhibited greater preference for hierarchical use of IT than British managers (Kambayashi & Scarbrough, 2001). Given the informal nature of IM as a communication channel, and the fact that technologies that might change power or status distribution are less likely to be accepted, we propose the following hypothesis:

H5: High power distance will be negatively related to behavioral intentions to use IM.

Masculinity/femininity.

Cultures high on masculinity emphasize work goals, assertiveness, materialism (e.g., earnings, promotion), and are more technically oriented, while feminine cultures stress personal goals, such as employment security, nurturing human relationships, and concern for others (Hofstede, 1980). Recent studies categorize the U.S. as a feminine culture and Mexico as a culture high on masculinity (Fernandez et al., 1997). Parboteeah, et al., (2005) identified a positive relationship between the masculinity/femininity construct in their multinational sample: Masculine-oriented cultures perceived technology as being more useful than feminine-oriented cultures did, given that technology is perceived to be useful in accomplishing work-related tasks. Based on these studies we propose that:

H6a-c: Masculinity will be positively related to (a) perceived usefulness, (b) perceived ease of use of IM and (c) behavioral intentions to use IM.

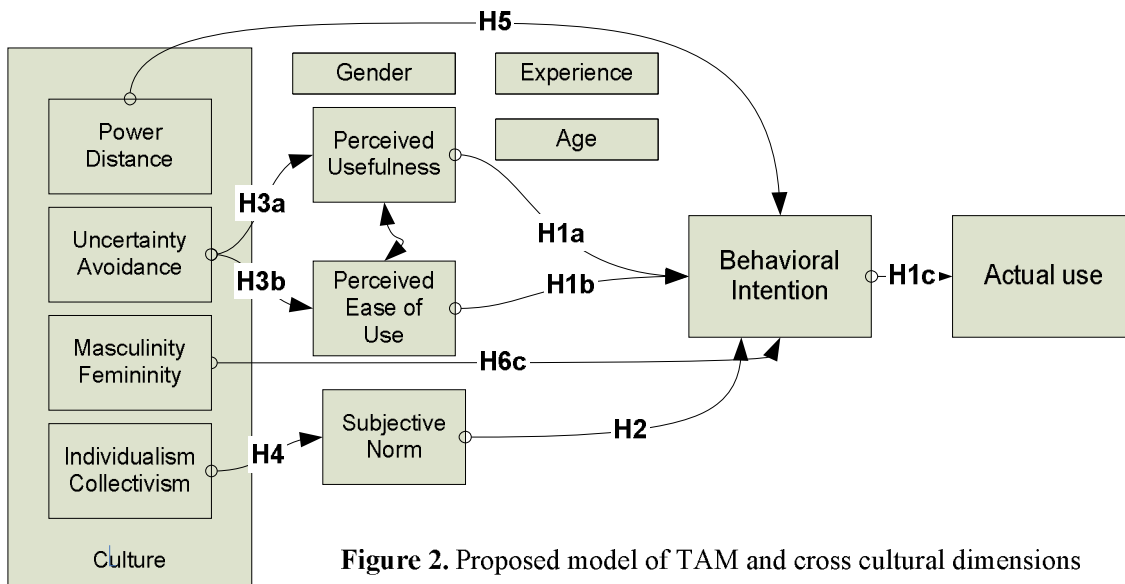


Figure 2. Proposed model of TAM and cross cultural dimensions

METHODOLOGY

An internet-based survey was made available to all business majors at a mid-sized state university located in the South Eastern U.S. and at a mid-sized public university in Mexico’s Yucatán peninsula. The survey consisted of 58 questions. The American students completed the survey in English and the Mexican students in Spanish. The Spanish version was translated by a native speaker and then back translated by a second translator to ensure no loss of meaning. Data was analyzed using SPSS through a multiple regression analysis.

INSTRUMENTS

The Dorfman and Howell (1988) scale was used to assess cultural value orientations at the individual level. This scale covers the four dimensions of uncertainty avoidance, individualism/collectivism, power distance, and femininity/masculinity. It was tested and deemed reliable, exhibiting convergent and discriminant validity (McCoy, Galleta, & King, 2005). The TAM and subjective norm scales were obtained from Huang, Lu, and Wong (2003) which includes subjective norm, perceived usefulness, perceived ease of use, attitude towards use, and behavioral intention to use. Experience in using the internet and IM, as well as some demographic questions were also included in the instrument. To assess the reliability of the questionnaire, Cronbach (1970) alpha coefficients for the various subscales were calculated. Cronbach's alpha is a numerical coefficient of reliability and the most widely used measure of internal consistency (Reynaldo and Santos, 1999). An alpha coefficient of .70 or greater for an existing instrument is considered an acceptable measure of reliability (Nunally, 1978, Reynaldo and Santos, 1999). In the current study, Table 1 shows that the Cronbach's alpha for all subscales met or exceeded the required lower limit.

Construct	Cronbach's alpha
Individualism/collectivism	.763
Uncertainty Avoidance	.837
Masculinity/femininity	.895
Power distance	.792
Behavioral intention	.955
Perceived usefulness	.906
Perceived ease of use	.847
Subjective norm	.895
Attitude	.916

Table 1 Construct Reliabilities

ANALYSIS:

A total of 1543 responses were collected from the American university; 60.5% of the respondents were female, 53.1% were employed part time, and their average age was 20.8 years (ranging from 18-41). In terms of using IM, 52.3% reported using IM many times daily, and 70.5% chose convenience as the main reason for use. Average number of years of experience using the internet was 9 (ranging from 1-11) and average number of years using IM was 7.7 (ranging from 0 to 11). Data from the Mexican sample are expected to be received in time for inclusion in the conference presentation and paper.

REFERENCES

1. Bagchi, K. and Cerveny, R. (2000) The impact of national level indicators on PC adoption. *Proceedings of the 8th International Symposium on Modeling Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)*, August 29 – September 1, San Francisco, CA, USA, IEEE Computer Society, 570-574.
2. Boneva, B. S., Quinn, A., Kraut, R. E., Kiesler S., Cummings J. and Shklovski I. (in press) Teenage communication in the instant messaging era, in R. Kraut, M. Brynin, S. Kiesler (Eds.) *Computers, phones and the Internet: Domesticating information technology*, Oxford University Press, pp. 612-672.
3. Calhoun, K. J., Teng, J. T. and Cheon, M. J. (2002) Impact of national culture on information technology usage behavior: An exploratory study of decision making in Korea and the USA. *Behaviour & Information Technology*, 21, 4, 293-302.
4. Cronbach, L. J. (1970). *Essentials of Psychological Testing* (2nd ed.). New York: Harper and Row.
5. Davis, F. D. (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, 3, 318-339.
6. Dorfman, P. W. and Howell, J. P. (1988) Dimensions of national culture and effective leadership patterns: Hofstede revisited. *Advances in International Comparative Management*, 3, 127-150.

7. Fernandez, D. R., Carlson, D. S., Stepina, L. P. and Nicholson, J. D. (1997) Hofstede's country classification 25 years later. *Journal of Social Psychology*, 137, 1, 43-54.
8. Fishbein, M. and Ajzen, I. (1975) Belief, attitude, intention, and behavior: An introduction to theory and research, Addison Wesley, Reading, MA.
9. Hofstede G. (1980) Motivation, leadership, and organization: Do American theories apply abroad? *Organizational Dynamics*, 9, 1, 42-63
10. Hofstede, G. (2001) Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations (2nd ed.) Sage, Thousand Oaks, CA.
11. House, R., Javidan, M., Hanges, P. and Dorfman, P. (2002) Understanding cultures and implicit leadership theories across the globe: An introduction to project GLOBE. *Journal of World Business*, 37, 1, 3-10.
12. Huang, L., Lu, M. and Wong, B. K. (2003) The impact of power distance on email acceptance: Evidence from the PRC. *Journal of Computer Information Systems*, 44, 93-101.
13. Igarria, M., Parasuraman, S. and Baroudi, J. J. (1996) A motivational model of microcomputer usage. *Journal of Management Information Systems*, 13, 1, 127-143.
14. Kambayashi, N. and Scarbrough, H. (2001) Cultural influences on IT use amongst factory managers: A UK—Japanese comparison. *Journal of Information Technology*, 16, 221-236.
15. Kim, D., Pan, Y. and Park, H. S. (1998) High- versus low-context culture: A comparison of Chinese, Korean, and American cultures. *Psychology and Marketing*, 15, 6, 507-521.
16. Koezegi, S., Vetschera, R. and Kersten, G. (2004) National cultural differences in the use of perception of internet based NSS: Does high or low context matter? *International Negotiation*, 9, 79-109.
17. Marín, G. and Marín VanOss B. (1991) Research with Hispanic populations, Sage, Newbury Park, CA.
18. McCoy, S., Everard, A. and Jones, B. M. (2005) An examination of the technology acceptance more in Uruguay and the US: A focus on culture. *Journal of Global Information Technology Management*, 8, 2, 27-45.
19. McCoy, S., Galleta, D. F. and King, W. R. (2005) Integrating national culture into IS research: The need for current individual-level measures, *Communications of the Association for Information Systems*, 15, 211-224.
20. Nunally, J.C. (1978), *Psychometric Theory*, 2nd ed., McGraw-Hill, New York.
21. Parboteeah, D. V., Parboteeah, K. P., Cullen, J. B. and Basu, C. (2005) Perceived usefulness of information technology: A cross-national model. *Journal of Global Information Technology Management*, 8, 4, 29-48.
22. Pew International Report (2004). Retrieved February 12, 2006 from www.pewinternet.org/pdfs/PIP_Instantmessage_Report.pdf
23. Reining, B. A. and Mejias, R. J. (2003) An investigation of the influence of national culture and group support systems on group processes and outcomes, *Proceedings of the 36th Hawaii International Conference on System Sciences*, January 6-9, Big Island, Hawaii, USA, IEEE Computer Society, 42-51.
24. Reynaldo, J., & Santos, A. (1999). Cronbach's Alpha: A Tool for Assessing the Reliability of Scales. *Journal of Extension*, 37(2).
25. Shiu, E. and Lenhart, A. (2004) How Americans Use Instant Messaging, *PEW Internet and American Life Project*, Retrieved January 2006 from www.pewinternet.org/pdfs/PIP_Instantmessage_Report.pdf
26. Stafford, T. (2003) Computer self-efficacy and internet use: The case of AOL instant messenger. *Proceeding of the Decision Support Institute Meeting*, Washington, DC. Copyright Atlanta: Decision Sciences Institute, 1-6.
27. Straub, D., Keil, D. and Brenner, W. (1997) Testing the technology acceptance model across cultures: A three country study, *Information and Management*, 33, 1-11.
28. Thiederman, S. B. (1991) Bridging cultural barriers for corporate success: How to manage the multicultural workforce, Lexington Books, New York.