

The Influence of Culture on Usability Perception of International Websites

Isabel Oller*

The effect of cultural values in web site usability adoption has attracted growing interest in the last few years. This research is grounded in the belief that Cultural Orientation is a discerning variable concerning the attitude towards of an International Web Site. This paper applies individual-level measurement of cultural orientation provided by Dorfman and Howell (1998) to the recent findings of perception and usability research in order to predict the effectiveness of an international website. The findings suggest that cultural orientation affects on users' information expectations and perceived website usefulness, and positively correlates on how users reacts to an international web site.

Field of Research: Marketing and International Consumers

1. Introduction

According to the International Telecommunications Union as of December 31, 2009, the number of users interacting with internet increased 399.3 percent since year 2000. In fact, North American consumers spent \$172 billion shopping online in 2005, up from \$38.8 billion in 2000. By 2010, consumers are expected to spend \$329 billion each year online, according to Forrester Research. What's more, the percentage of U.S. households shopping online was expected to grow from 39 percent in 2009 to 48 percent in 2010 (www.CIO.com). For that reason, web sites are increasingly being deployed for organizations to communicate their business marketing and strategic objectives and to positively impact on individuals' reactions. Companies seek for web sites to be efficient dynamic and engaging.

For consumers to spend time on the web, sites must meet specific criteria regarding effectiveness, productivity, safety, satisfaction so as to ultimately lead to a business transaction (ISO/IEC 9126-1). In this context, the usability of a site is expected to be a core objective to be addressed for companies in designing their web sites. Usability plays an important role since it is the capability of the software product to be understood, learned, used and attractive to the user, when used under specified conditions (ISO 9241-11).

Linked to that, the site must play two roles (Bevan, 1999) a detailed software design activity, and an overall goal that the software meets user needs (similar to the ISO 9241-11 concept of usability). It is expected that the degree to which a web site is considered more user friendly, the effectiveness in turn increases as the site meets user needs.

*Professor Isabel Oller, Department of Business and Technology, La Salle, Universitat Ramon Llull, Barcelona, Spain. Email: ioller@salle.url.edu

Given the tremendous amount of efforts organizations have devoted to the use of international web sites and the current lack of design guidelines, it is critical to identify the variables that affect applicants' perceptions on the effectiveness of an international web site.

The purpose of our study is to investigate whether cultural aspects influence the perceived usability of international web sites. Previous studies mostly focused on the impact of gender in the usability of a web site. This case the study is on the impact of cultural values on the usability of an international web site, designating English as the preferred language with the product and service customized for an international user. For this research, we use the general theoretical frames of the technology acceptance model (TAM) to investigate the variables that may influence on Individual Orientations' perceptions of an international web site since the Technology Acceptance Model (TAM) has been the most cited and influential model for understanding the acceptance of information technology and has received extensive empirical support since its inception (V. Venkatesh and F.D. Davis, 1996). Since, numerous TAM studies have consistently found support for the relationship between perceived usefulness and attitude and/or behavioral intention (V. Venkatesh and F.D. Davis, 1996), our research hypothesis is based on cultural orientation as a variable that influences on the impact of individuals' perceived usefulness and perceived ease of use of an international web site.

This case this study, we adopted the individual-level measurement of cultural orientation model since previous studies relates them to IT adoption.

The individual-level cultural model was first proposed by Dorfman and Howell (1998) that provided the individual-level measurement of cultural orientation based on the Hofstede's original five dimensions. In this paper, we use the three dimensions based on Bagchi et al. (2003) that showed that (1) high individualism; (2) low power distance; and (3) low uncertainty avoidance dimensions of Hofstede's cultural construct at the national level are related to IT adoption. Definitions of each dimension are:

1.1. Uncertainty avoidance

It is the degree to which a person prefers structured over unstructured situations.

1.2. Power distance

It is the degree to which masculine value prevail over feminine values.

1.3. Individualism

It is the degree of acting as individuals rather than as member of cohesive groups.

The specific elements of the model with these three latent constructs of open cultural orientation (Hwang, 2004) and related hypothesis are shown in the proposed research model in Figure 1.

Besides generally accepted finding relating to software internationalization and localization, further research is needed to investigate cultural influences on application design's preferences and the perceived usability of software products for multicultural societies (Galdo & Nielsen, 1996).

The very limited studies on users' cultural background and the relationship with aspects concerning positive perceptions on effectiveness, efficiency, or satisfaction (or combination of these) when using a website have led us to believe that there is a need for research in this area.

Of particular concern in this paper is the question of whether, based on users' experience with an international web site that accommodates cultural characteristics, a person is likely to revisit or make a recommendation to other users in the future.

2. Research Model

In order to understand individual cultural perception on an international website, the proposed research model as shown in Fig.1, consists of the cultural condition, the perceived ease of use, the perceived usefulness, the behavioral intention and the use behavior. The proposed research model intends to capture the relationship among these model dimensions.

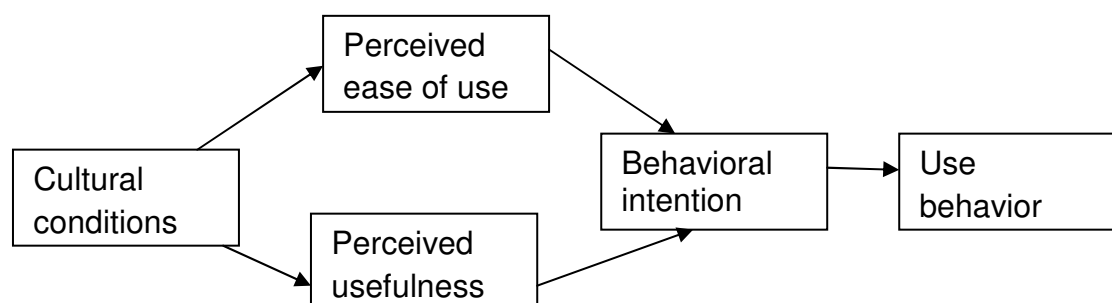


Figure 1: Research Model

The suggested relationships among cultural conditions variables and perceived, usefulness, perceived ease of use, intention to use, and use behavior dimensions are shown in Fig.1. Definitions of the TAM dimensions are given below.

2.1. Cultural conditions

The extent to which users' cultural background affects on users' beliefs on perception of ease of use and usefulness of an international web site.

2.2. Perceived usefulness

The extent to which a user believes that the international web site will provide access to useful information and the extent to which the user believes the web site accommodates users' cultural characteristics.

2.3. Perceived ease of use

The extent to which a user believes that the international web site is easy to navigate, well organized and interactive.

The quality of users' experience when interacting with a site will encourage the individual to have positive feeling: the system is easy to use, finding information is clear, and a desire to will use this site again.

2.4. Intention to use

The strength of the user's intention to use the web site and to recommend the use of the international web site to others.

2.5. Use behavior

The extent to which users believe that using the site would enable them to quickly get the right information is expected to be highly correlated to users' encouragement to initiate a transaction.

3. Research Design

3.1. Method

This research adds to the Technology Acceptance Model (TAM) variables (Venkatesh et al., 2003) the effect of individual-level cultural orientation. The data is obtained via cooperative evaluation, a cross-cultural questionnaire and a usability survey. The data obtained via users' interviews or cooperative evaluation, possibly the most useful form of usability testing (Nielsen, 1993) involves an evaluator observing a test participant working with a system. Participants verbalize their thoughts and actions as they work through a task sheet. The assumption for this research is that cultural specific variables influence to users' perceptions of a web site. Depending on their cultural background, users may focus either on aspects relating to effectiveness, efficiency or satisfaction (or combinations of these) when using the web site.

3.2. Procedure and Instruments

Each observation session took place with a single participant in a User lab booked for the study. For each user, the web site system was setup to default home page to ensure consistent and coherent results. The web site was open on the default language home page, designating English as the preferred language with the product and service customized for an international user. A Cross-Cultural Questionnaire and usability survey was administered to each user at the end of the User lab test to collect a large Item pool to generate the main data collecting instrument for the main study. Each session took twenty minutes to complete. During the first two minutes, the test was explained to the participant who then read through the task sheet and had the opportunity to ask questions about the study. Every effort was made to put the participant at ease and to make him or her aware that the purpose of this research was to investigate the Web site. During the realization of the task, questions were asked to students to get feedback on their expectations and perceptions.

3.3. Sample

Based on their home country, age, and years of studies, a sample of 50 users was collected as part of the study. To ensure that the results were valid and specific to the research in question, the subject sample was controlled to the greatest degree possible. All were aged between 18 and 30 years, and all had previous experience with the Microsoft Internet Explorer, and all were university students. All participants

were volunteers expressing interest in the project and received no grade or monetary incentives. The main aim of the study was to discover how individual-level orientation affects how a user reacts to an international web site. This was possible by determining whether users from different culture groups experienced different grades of satisfaction when using this site.

3.4. Metrics

In this research, the PLS path modeling was applied for efficiency evaluation. The partial least squares approach to structural equation modeling in Modern Methods for business research, 295-358 (Chin, 1998). The results from the PLS analysis drives the computation of three indicators. The Cronbach's Alpha used the most to assess the reliability of a set of indicators. In later phases of research, threshold should be higher than 0.8 or 0.9 (Nunnally, 1978). The Indicator Reliability must be approximately 0.5 or greater. Average Variance Extracted (AVE) measures the amount of variance captured by a latent construct in relation to the variance due to random measurement error, the acceptable threshold is greater than 0.5 (Fornell and Lacher, 1981). Results are shown in Table 1. Likewise, the categories of items used in the cross-cultural survey were derived from the Values Survey Model 2008 Questionnaire (Hofstede, 1988). Questions within the usability survey were scored on five-point scales (1-2-3-4-5).

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
BU	1,0000	1,0000	0,9826	1,0000	1,0000	0,9826
CC	1,0000	1,0000	0,0000	1,0000	1,0000	0,0000
EE	0,8074	0,9246	0,7343	0,8799	0,8074	0,5602
ITU	0,9822	0,9910	0,7898	0,9819	0,9822	-0,6024
PE	0,9815	0,9953	0,7700	0,9937	0,9815	0,7537

Table 1: PLS Path Modeling Results

4. Discussion

The proposed research model was deemed appropriate for the data collection measuring users' perception of an international web site. Overall and results are in Table 1 and in Figure 2. Assumptions are not rejected as expected. The study reveals that users' behavior is affected by users' cultural background. Cultural conditions affect users' perception of usefulness and ease of use of the site. However, results indicate that the clear and easy interaction with the system is negatively correlated to the intention to use the site again. This variance may be due to the fact that the user will take the action right away instead of using the site again. Results indicate that users' perceived usefulness of a site would encourage them to use the site again and to take an action. Results are consistent with users' opinions,

likes and dislikes, collected during the site test. Though the positive correlation on individual-level orientation affecting user's site interactions, it still remains to be determined how it affects it and to what degree.

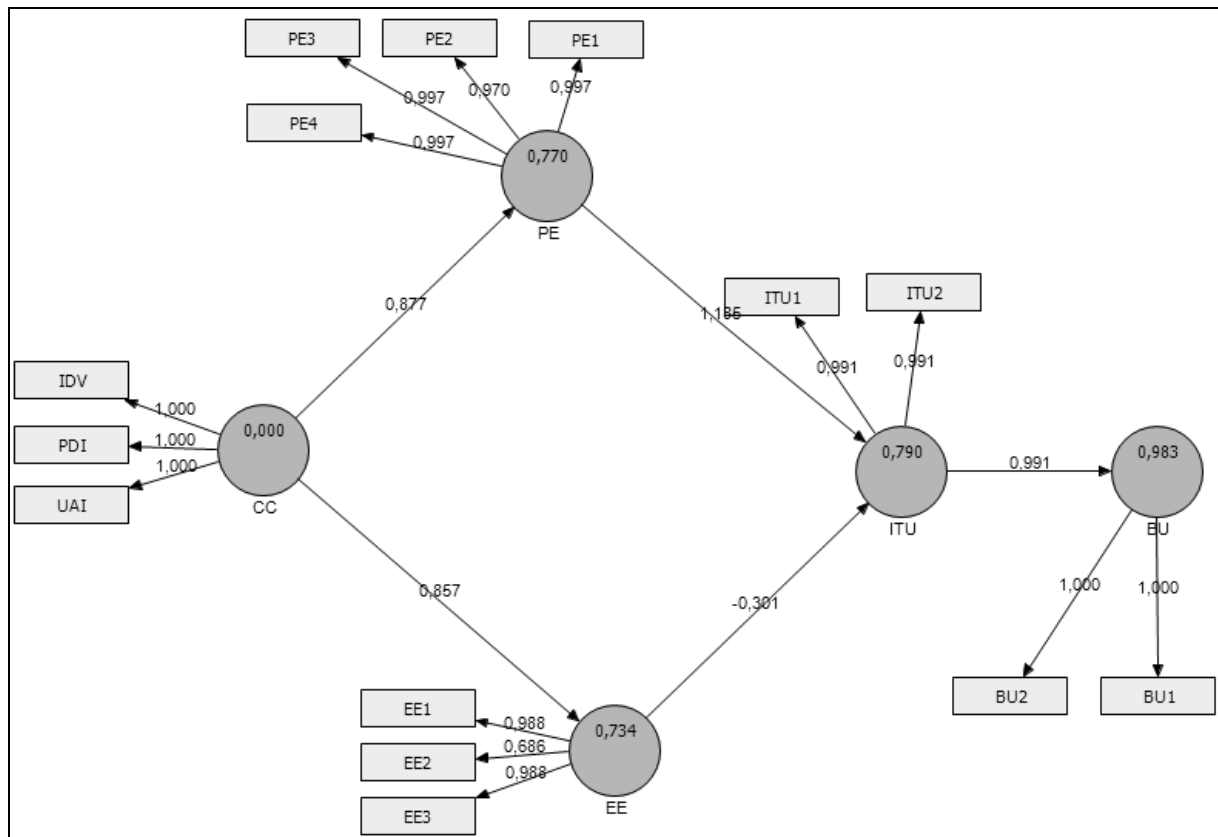


Figure 2: Research Model Results

5. Conclusion and Next Steps

Results show that users' individual cultural background affects users' perception of a site and of the importance of creating a site with a diverse cultural audience in mind. The study illustrates the underlying relationships between website adoption, the existing TAM variables (Ease of learning - How fast can a user who has never seen the user interface before learn it sufficiently well to accomplish basic tasks?; Subjective satisfaction - How much does the user like using the system?), individual-level cultural orientation, and usability (people avoid complex memory, planning, and decision-making in favor of acting upon information immediately available perceptually, well-known information).

Though the hypothesis is confirmed, further research needs to be done to identify other variables, as for example social, contextual and educational aspects that may affect to users' perception of an international site.

5.1. Implications for managers

Organizations are interested in designing their sites globally in order to be used for international users. Positive perceptions, including satisfaction, interface usefulness

of one site will encourage users to ultimately initiate an action as for example an e-business transaction. For organizations, determining the variables that affect the users' positive perception of an international site leads to better understand the relevance of a well-designed site and to take necessary corrective actions to improve it.

5.2. Implications for researchers

For academic researchers, this study contributes to a theoretical understanding of the factors that promote the use of an international web site. The users' cultural background is a discerning variable that organizations should consider in designing their web sites. Future researchers could develop a deeper study over educational and social aspects that lead a user to have a positive perception of a site.

5.3. Limitations

Further confirmatory research needs to be done with a broader sample of subjects. Likewise, the think-aloud protocol though is less useful for gathering quantifiable data, it allows to achieve concrete information on, for example, the amount of information they can find, how they go about finding information, how they interact with the system, the number of errors subjects make and subjects' information expectations: how the system works, how the information is organized, how much information is available, how this information can be accessed.

From the research standpoint, co-operative evaluation, therefore, facilitates the observation of: users working on the site, problems they encounter, steps they take to overcome errors, actions they repeat, their satisfaction with the site's functions and the extent to which the site corresponds to their expectations and needs.

Issues to be addressed include, whether a new set of variables must be defined whether cross-cultural and usability questions should be redefined based on previous users' answers and if there is a need to develop more accurate cross-cultural and usability surveys.

References

- Bagchi, K., Cervený, R., Hart, P., & Peterson, M. (2003) The Influence of National Culture in Information Technology Product Adoption, Proceedings of the Ninth AMCIS, 957-965.
- Chin, W.W. (1998) The Partial Least Squares Approach to Structural Equation Modeling. In G. A. Marcoulides (Ed.), Modern Methods for Business Research, Mahwah, NJ: Lawrence Erlbaum Associates, 295-336.
- Chin, W. W. & Frye, T. A., (1998) PLS-Graph (Version 2.91.03.04).
- Davis, F.D. 1989, "Perceived usefulness, perceived ease of use, and user acceptance of information technology", MIS Quarterly, vol. 13, no. 3, pp. 319-340.
- Del Galdo. E. and Nielson, Jacob. (1996) "International User Interfaces", by Katherine Schowalter, USA., pp. 123-177.

- Dorfman, P.W. & Howell, J.P. 1988, "Dimensions of national culture and effective leadership patterns: Hofstede revisited", Advances in international comparative management, vol. 3, pp. 127-150.
- Fornell, C., & Larcker, D. F. (1981). SEM with unobservable variables and measurement error: Algebra and statistics. Journal of Marketing Research, 18(3), 382-388.
- Hoffman, D.L., Kalsbeek, W.D., and Novak, T.R (1996). "Internet and the Web Use in the US," Communications of the ACM, Vol. 39, No. 12, pp. 36-46.
- Hofstede, G. & Hofstede, G.J. 2005, Cultures and Organizations: Software of the Mind, 2nd Ed, McGraw-Hill, New York, USA.
- Hwang, Y. 2004, "The Influence of Individual-level Cultural Orientation on ERP System Adoption", AMCIS 2004 Proc., New York, August, 5-8 2004.
- Jarvenpaa, S.L., and Todd, P.A. (1997). "Consumer Reactions to Electronic Shopping on the WWW," International Journal of Electronic Commerce, Vol. 1, No. 2.
- Leidner, D.E. & Kayworth, T. 2006, "A review of culture in information systems research: Toward a theory of information technology culture conflict", Management Information Systems Quarterly, vol. 30, no. 2, pp. 9.
- Lohse, G.L., and Spiller, R (1998). "Electronic Shopping," Communications of the ACM, Vol. 41, No. 7, pp. 81-87., pp. 59.
- Nielsen, J. (1993). Usability engineering. Boston: Academic Press.
- Nielsen, J. (1996). Top ten mistakes in Web design., The Alertbox: Current Issues in Web Usability Consulted February 14, 2000. <http://www.useit.com/alertbox/9605.html>.
- Nunnally, J.C. (1978). Psychometric Theory, New York: McGraw-Hill. 88.
- Quelch, J.A., and Klein, L.R. (1996). "The Internet and International Marketing," Sloan Management Review, Spring, pp. 60-75.
- Salisbury, W.M., Pearson, R.A., Pearson, A.W., and Miller, D.W. (1998). "Identifying Barriers that Keep Shoppers off the World Wide Web: Developing a Scale to Measure Perceived Security," Communications of the ACM, Vol. 41, No. 7.
- Smith, C.B., and McLaughlin, M.L. (1996). "Art for Sale: Commercial Art Galleries on the World Wide Web. International Communication Association, Chicago." <http://www.usc.edu/dept/annenberg/papers/Webart.html>.
- Tsui, A. S. & Nifadkar, S.S. 2007, "Cross-national, cross-cultural organizational behavior research: Advances, gaps, and recommendations", Journal of management, vol. 33, no. 3, pp. 426.

- Venkatesh, V. and Davis, F.D. (1996) A Model of the Antecedents of Perceived Ease of Use: Development and Test, Decision Sciences, 27, 3, 451-481.
- Venkatesh, V., Morris, M.G., Davis, G.B. & Davis, F.D. 2003, "User acceptance of information technology: Toward a unified view", Mis Quarterly, vol. 27., no. 3, pp. 425-478.