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THE EFFECTS OF WEBSITE PERSONALIZATION ON USER INTENTION TO RETURN THROUGH COGNITIVE BELIEFS AND AFFECTIVE REACTIONS

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Abstract

This study developed a fine-grained, multidimensional view of perceived personalization of website design based on and extending upon previous research. Moreover, we have drawn from the vast body of research on elaboration likelihood model, the technology acceptance model (TAM), and flow theory to (i) develop an integrated model of the stimuli of personalization, and the alternative modes of influence processes which lead to the intention to continue to use a website (i.e. user intention to return); (ii) empirically test the integrated model (iii) suggest a personalization model that enhances the positive environmental and psychological determinants of user intention to return. In particular, we investigate the role of information personalization, presentation personalization, and navigation personalization in influencing the cognitive and affective determinants of the intention to continue to use a website. Our findings have important implications for Information Systems (IS) research and managerial decision making on personalization implementation issues in website design.

Keywords: Personalization, User Intention to Return, Cognitive Belief, Affective Reaction.

1 INTRODUCTION

Personalization has become a progressively prominent issue in the digital services sector, which has seen a proliferation of unique and responsive features designed to attract and retain a large number of diverse internet users. Prior research has provided valuable insights into how one form of personalization, e.g. information personalization or interface personalization, impacts on user evaluations of a website. Since only limited resources are available when designing personalization features, and it is not appropriate for companies to blindly invest in highly complex websites. Emphasis should instead be placed on the development of those features, or a combination of features, that have a reasonable probability of generating business value to the company.

With this objective in mind, research on personalization has gradually shifted its orientation from a strong focus on design issues, towards a more in depth analysis of the aspirations and reactions of the user. To address this lacking, we have developed a fine-grained, multidimensional view of personalization both based on and extending upon previous research. Moreover, we have drawn from the vast body of research on Elaboration Likelihood model (ELM) and the technology acceptance model (TAM) to (i) develop an integrated model of the environmental stimuli of personalization, and the internal decision processes which lead to the intention to continue to use a website (i.e. user intention to return); (ii) empirically test the integrated model (iii) suggest a personalization model that enhances the positive environmental and psychological determinants of user intention to return. In particular, we investigate the role of information personalization, presentation personalization, and navigation personalization in influencing the cognitive and affective determinants of the intention to continue to use a website. Our findings will bear important implications for Information Systems (IS) research and managerial decision making on personalization implementation issues in website design.

2 LITERATURE REVIEW

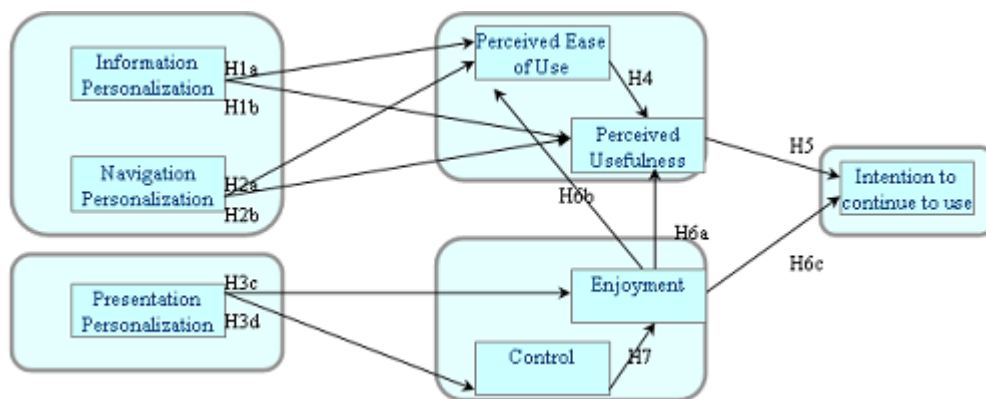
Elaboration likelihood model (ELM) was chosen as the major theory in this study because of several reasons. First, ELM relates directly to influence processes and their impacts on human perceptions and behavior. Second, ELM classifies influence mechanisms or routes into central and peripheral types based on the type of information processed by a given user (e.g. task-relevant arguments or simple cues), explains circumstances under which user may be more influenced by one route than the other (Petty and Cacioppo 1986; Bhattacharjee and Sanford 2006). The procedure followed by ELM researchers is exemplified in a study by Petty and Cacioppo (1979b). Environmental psychology also states that emotional response to the environment mediate the relationship between the environment and one's behavior (Mehrabian and Russell 1974). Eroglu et al (2001) used S-O-R framework and categorized the signs and symbols used in online stores to understand how they affect customer's organism and behaviors. The website design factors were categorized as having either low or high task relevance. High task relevant cues enable the browsing or searching task by providing the necessary flexibility to find information easily, such as re-organized the structure of the elements. Low task relevant cues are not essential in accomplishing the searching or browsing task on the Web Portal, e.g. background colors. Information personalization and navigation personalization are high task relevant since they directly improve user's effectiveness and efficiency in retrieving information. They also make the website ease to use by giving Internet users more flexibility and control. Therefore, we propose that information personalization and navigation personalization will improve PU and PEU. They will also have an impact on enjoyment and control because user may experience flow during the personalization process (Koufaris 2002). Eroglu et al. (2001) found that the presence of low task relevant cues positively affect the organism, e.g. pleasure. Chinese Internet users ought to experience higher enjoyment when the low task relevant feature presents. Therefore, the presentation personalization can arouse the enjoyment.

TAM and flow theories explain the cognitive and affective decision process to determine to continue to use the website. Research on flow indicates that an interaction as an stimulating experience is likely

to induce a flow experience, which in turn leads to more exploratory behavior (Koufaris et al. 2001). Active involvement of the user participating in an interaction creates a strong bonding experience. Previous study has presented that higher interactivity generated higher flow scores amongst respondents (Hoffman and Novak 1996; Russell and Miriam 2004). All three theories (i.e. ELM, TAM, and flow theory) have at their core a number of emotional and cognitive responses to the environment that influence an individual's behavior. The context of online environment allows them to come together to help us better understand online user behavior (Koufaris 2002).

3 RESEARCH MODEL

Figure 1. Resesarch Model



3.1 Personalization and Cognitive Beliefs

The relevant information and customized content can offer much convenience to users (Chau and Lai 2003). Information personalization provides relevant content, which is elaborated to a larger extent resulting in more and stronger memory traces (Tam and Ho 2006). Media richness suggests content richness and responsiveness (Palmer 2002). Therefore, if personalized information can provide richer content and larger range of choices to user will lead to more perceived usefulness.

H1a: Information personalization is positively related to perceived usefulness.

The labeling and structure of hyperlinks will affect the effective utilization of website. Daft and Lengel (1986) argued from the media richness perspective that structural characteristics of information exchange media play a key role in the effective utilization (Mithas et al. 2006). Website structure reorganization has the potential to reduce user information overload, searching complexity, and browsing time. Therefore, we propose:

H2a: Navigation personalization is positively related to perceived usefulness.

Information personalization can make the website more easy to use because users can choose their own sets of interested information and use the web portal free of effort. Personalization of the presentation and structure can help user better organize the information according to their own usage behavior (Kamis et al. 2008). Website success is significantly associated with navigation characteristics, i.e. organization, arrangement, layout, and sequencing (Palmer 2002). Daft and Lengel (1986) argued from the media richness perspective that structural characteristics of information exchange media play a key role in the effective utilization (Mithas et al. 2006). Personalization will of information and organization of the website will facilitate the website use. Therefore, we propose:

H1b: Information personalization is positively related to perceived ease of use.

H2b: Navigation personalization is positively related to perceived ease of use.

3.2 Personalization and Affective Reactions

The provision of multimedia elements, such as backgrounds or interesting themes will increase attractiveness (Bellizi 2000; De Wulf et al. 2006). As shown in literature about brick-and-mortar stores, colors can help guide customer and make the shopping environment more comfortable and enjoyable (Gutman and Alden 1985; Oh et al. 2008). In website design research, previous literature finds that the number of pictures has a positive relationship with consumers' perception of store interactivity, which has the potential to bring an entertaining store image to the consumer (Geissler 2001; Oh et al. 2008). Therefore, we expect a higher level of presentation personalization with more choices of interface features, e.g. colors, backgrounds, etc.

H3c: Presentation personalization is positively related to enjoyment.

Both design and media richness theories suggest a concept of user interactivity with the system or medium (Palmer 2002; Palmer and Griffith 1998). Daft and Lengel (1986) argued from the media richness perspective that structural characteristics of information exchange media play a key role in the effective utilization (Mithas et al. 2006)

H3d: Presentation personalization is positively related to control.

3.3 Cognitive Beliefs and User Intention to Return

The most widely used theoretical model for explaining system usage, i.e., the Technology Acceptance Model (TAM) has been tested in many empirical studies in predicting the intention to use the Web. Perceived usefulness has been proved to be the important factor for a new customer's intention to return (Koufaris 2002). The cognitive beliefs can be successfully applied in the context of Web portal in predicting user intention to return. We expect that customer believes that personalizing the Web portal will enhance their browsing effectively. Echoing TAM research, this study argues that the degree to which the website is perceived to be easy to use affects the perception of the usefulness and the intention to continue to use this website (Chau and Lai 2003). Therefore, we propose

H4: Perceived ease of use is positively related to perceived usefulness.

H5: Perceived usefulness is positively related to user intention to return.

3.4 Affective Reactions, Cognitive Beliefs, and User Intention to Return

Control usually has been deleted in studies using the M-R model for theoretical reasons as well as lack of empirical support (Donovan et al. 1994; Koufaris 2002). Davis et al. (1992) and Koufaris (2002) found that both usefulness and enjoyment were significant determinants of behavioral intention. But the correlation between enjoyment and perceived usefulness was not examined. Venkatesh (2000) showed that enjoyment influenced usefulness via perceived ease of use and did not assess its direct effect. Previous research found that enjoyment was positively related to perceived ease of use (PEU) (Yi and Hwang 2003). In Web Portal, the emotion aroused during personalization process, plays a more important role in facilitating effective and efficient use of the website. Users with a high level of perceived control are likely to feel more a high comfort level with the activity. Thus they would be more inclined to feelings of enjoy using the website more frequently (Manuel and Joaquina 2004). Therefore, we propose that:

H6a: Enjoyment is positively related to PU.

H6b: Enjoyment is positively related to PEU.

H6c: Enjoyment is positively related to intention to return.

H7: Control is positively related to enjoyment.

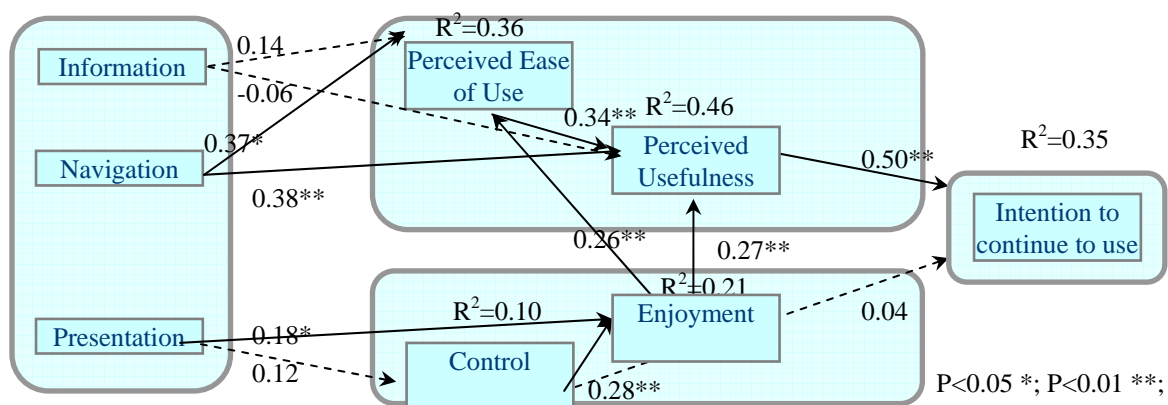
4 RESEARCH METHODOLOGY AND RESULTS

Student sample is a typical segment of Internet Users (Li et al. 2006). Therefore, we invite both undergraduate and postgraduate students from different disciplines from a University in Hong Kong to participate in the survey. The website selected for current study is Personalized Web Portal, i.e. iGoogle.com or MyYahoo.com. They are selected because these two sites comprehensively incorporate information personalization, presentation personalization and navigation personalization. By the beginning of October, a total of 209 responses received. The overall response rate is around 55%. There are 183 valid questionnaires used for final data analysis. The non-response bias was not significant between early and late responses.

Constr	Load	Std.Error	T	AVE	IP	PP	NP	PU	PEU	ENJ	CO	LOY
IP	0.85	0.0365	23.14	0.72	0.85							
PP	0.81	0.0423	19.12	0.74	0.58	0.83						
NP	0.85	0.0335	25.27	0.72	0.36	0.37	0.89					
PU	0.85	0.0223	38.14	0.80	0.25	0.31	0.53	0.90				
PEU	0.87	0.0267	32.71	0.80	0.37	0.37	0.47	0.53	0.90			
ENJ	0.92	0.0134	68.81	0.86	0.24	0.32	0.28	0.48	0.42	0.93		
CON	0.85	0.0524	16.17	0.76	0.19	0.26	0.25	0.31	0.34	0.37	0.87	
LOY	0.94	0.0123	76.43	0.85	0.18	0.25	0.35	0.54	0.36	0.31	0.26	0.92

Table 1 Construct validity (construct correlations and the squared roots of AVEs)

Figure 2 Hypotheses testing results



PLS was applied because of the exploratory nature of the study on Personalization. Convergent validity is evidenced when item show significant high correlations with within a construct compared to the convergence of items relevant to other constructs. A good convergent validity is demonstrated if factor loadings are significant and greater than 0.707, and AVE is above 0.5. Good discriminant validity is demonstrated in this study as all the scores of the square roots of the AVEs are greater than the correlations between corresponding constructs.

5 DISCUSSIONS

This study has addressed two related research questions: what and how personalization features have impacts on the cognitive beliefs and affective reactions determining user intention to continue to use a website. Users experience greater enjoyment when the level of presentation personalization is perceived to be higher. Users also appreciate navigation personalization very much since it enhances the perceived usefulness and perceived ease of use of a website and gives users the experience of control. Among all the decision variables, perceived usefulness is found to be the most important

antecedent factor determining the decision to continue using a website. Website design factors are generally categorized as having either low or high task relevance. High task relevant cues enable the browsing or searching task by providing the necessary flexibility to find information easily, such as by re-organized the structure of the search elements. Low task relevant cues are not essential for accomplishing the searching or browsing task on the Web Portal, including such features as the choice of background color. Information personalization and navigation personalization are high task relevant since they directly improve user effectiveness and efficiency in retrieving information. The changing of layout in the presentation may not have salient impact as navigation personalization may have. Personalization also makes the website easier to use by giving Internet users more flexibility to configure information content, structure, and interface to users' needs. Navigation personalization is closely related to the cognitive factors of perceived usefulness and ease of use. Presentation, however, is not highly relevant to information seeking tasks in Web Portal. Presentation personalization, therefore, is not related to perceived usefulness and perceived ease of use, but is related to enjoyment by providing aesthetic interface.

With regards to the insignificant and negative impact of information personalization observed in this research, previous studies suggest an inverted-U relationship between website complexity and communication effectiveness (Geissler et al. 2001; Stevenson et al. 2000), and also perceived website complexity and satisfaction (Nadkarni and Gupta 2007). Thus it is likely that when users come to the Web Portal, especially for the first time, the initial information design does not correspond with their needs, and often provides them with more information than they can process effectively.

In TAM3, it is expected that the determinants of perceived ease of use will not influence perceived usefulness (Venkatesh and Bala 2008). Venkatesh (2000) argued that the perceptions of control and enjoyment related to a system, and anxiety regarding the ability to use a system did not provide a basis for forming perceptions of the instrumental benefits of using that system. However, this study finds that navigation personalization and enjoyment can enhance user intention to return by increasing the perceived ease of use and perceived usefulness. This finding complements the TAM research by emphasizing the different role played by cognitive beliefs and affective in the context with rich personalization features, e.g. Web Portal. It is possible that in the environment with more personalization features, which enhance interactivity and user involvement, enjoyment will help improve the perceived usefulness and perceived ease of use of the Web Portal.

6 CONCLUSIONS

This study answers the two research questions stated at the beginning of the thesis by finding that navigation personalization, as a distinct aspect of website design, plays an important role in forming users cognitive belief and improve users perceived ease of use and usefulness; information personalization is of great importance since careless design of information personalization will increase users' cognitive load and users will avoid using this feature and cannot enjoy the personalization feature at all; presentation personalization is related to enjoyment feeling in using this website. Therefore, the questions what personalization features and how these features are playing their roles are investigated thoroughly in this study in a Web Portal context. This study provides practical implications to website vendors as well as designers. This research has revealed that to increase the users' intention to visit the personalized Portal website, it is particularly vital to improve its perceived usefulness, which is one of the major antecedents to user intention to return. Navigation personalization features in particular can be an effective tool for heightening a websites perceived usefulness. Web portal designers may learn from this research concerns the importance of paying close attention to information design. In future longitudinal study is expected to investigate the changing role of personalization features as user gains more experience. Other dimensions of personalization from different perspective are also interesting to be investigated, e.g. personalization strategies.

References

- Agarwal, R., and Karahanna, E. 2000. "Time Flies When You're Having Fun: Cognitive Absorption and Beliefs About Information Technology Usage," *MIS Quarterly: Management Information Systems* (24:4), pp 665-694.
- Bellizi, J.A. 2000. "Drawing Prospects to E-Commerce Websites," *Journal of Advertising Research* (40:1-2), pp 43-53.
- Bitner, M.J. 1992. "Servicescapes: The Impact of Physical Surroundings on Customers and Employees," *Journal of Marketing* (56:2), pp 57-71.
- Chau, P.Y.K., and Lai, V.S.K. 2003. "An Empirical Investigation of the Determinants of User Acceptance of Internet Banking," *Journal of Organizational Computing and Electronic Commerce* (13:2), pp 123-145.
- Childers, T.L., Carr, C.L., Peck, J., and Carson, S. 2001. "Hedonic and Utilitarian Motivations for Online Retail Shopping Behavior," *Journal of Retailing* (77:4), pp 511-535.
- Csikszentmihalyi, M. 1975. *Beyond Boredom and Anxiety*.
- Csikszentmihalyi, M., and LeFevre, J. 1989. "Optimal Experience in Work and Leisure," *Journal of personality and social psychology* (56:5), pp 815-822.
- De Wulf, K., Schillewaert, N., Muylle, S., and Rangarajan, D. 2006. "The Role of Pleasure in Web Site Success," *Information and Management* (43:4), pp 434-446.
- Donovan, R.J., and Rossiter, J.R. 1982. "Store Atmosphere: An Environmental Psychology Approach," *Journal of Retailing* (58:1), pp 34-57.
- Donovan, R.J., Rossiter, J.R., Marcoolyn, G., and Nesdale, A. 1994. "Store Atmosphere and Purchasing Behavior," *Journal of Retailing* (70:3), pp 283-294.
- Dysart, J. 1998. "Egenie Site Leads Way in Personalization," *Advertising Age's Business Marketing* (83:10), p 33.
- Gefen, D., Karahanna, E., and Straub, D.W. 2003. "Trust and Tam in Online Shopping: An Integrated Model," *MIS Quarterly: Management Information Systems* (27:1), pp 51-90.
- Geissler, G., Zinkhan, G., and Watson, R.T. 2001. "Web Home Page Complexity and Communication Effectiveness," *Journal of the Association for Information Systems* (2:2), pp 1-46.
- Geissler, G.L. 2001. "Building Customer Relationships Online: The Web Site Designers' Perspective," *Journal of Consumer Marketing* (18:6), pp 488-502.
- Gutman, J., and Alden, S.D. 1985. *Adolescent's Cognitive Structures of Retail Stores and Fashion Consumption: A Mean-End Chain Analysis of Quality*. Lexington: LexingtonBook.
- Hoffman, D.L., and Novak, T.P. 1996. "Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations," *Journal of Marketing* (60:3), pp 50-68.
- Kamis, A., Koufaris, M., and Stern, T. 2008. "Using an Attribute-Based Decision Support System for User-Customized Products Online: An Experimental Investigation," *MIS Quarterly: Management Information Systems* (32:1), pp 159-177.
- Koufaris, M. 2002. "Applying the Technology Acceptance Model and Flow Theory to Online Consumer Behavior," *Information Systems Research* (13:2), pp 205-223.
- Li, D., Browne, G.J., and Chau, P.Y.K. 2006. "An Empirical Investigation of Web Site Use Using a Commitment-Based Model," *Decision Sciences* (37:3), pp 427-444.
- Manuel, J.S.-F., and Joaquina, R.-B., Rey. 2004. "Personal Factors Affecting Users' Web Session Lengths." p. 62.
- Markus, M.L., Majchrzak, A., and Gasser, L. 2002. "A Design Theory for Systems That Support Emergent Knowledge Processes," in: *MIS Quarterly: Management Information Systems*. pp. 179-212.
- Mehrabian, A., and Russell, J.A. 1974. *An Approach to Environmental Psychology*. Cambridge, MA: MIT Press.
- Mithas, S., Ramasubbu, N., Krishnan, M.S., and Fornell, C. 2006. "Designing Web Sites for Customer Loyalty across Business Domains: A Multilevel Analysis," *Journal of Management Information Systems* (23:3), pp 97-127.
- Nadkarni, S., and Gupta, R. 2007. "A Task-Based Model of Perceived Website Complexity," *MIS Quarterly: Management Information Systems* (31:3), pp 501-524.

- Novak, T.P., Hoffman, D.L., and Yung, Y.F. 2000. "Measuring the Customer Experience in Online Environments: A Structural Modeling Approach," *Marketing Science* (19:1), pp 22-42.
- Nunnally, J.C. 1978. *Psychometric Theory*. McGraw-Hill, New York.
- Oh, J., Fiorito, S.S., Cho, H., and Hofacker, C.F. 2008. "Effects of Design Factors on Store Image and Expectation of Merchandise Quality in Web-Based Stores," *Journal of Retailing and Consumer Services* (15:4), pp 237-249.
- Orlikowski, W.J. 1992. "The Duality of Technology: Rethinking the Concept of Technology in Organizations," *Organization Science* (3:3), pp 398-427.
- Palmer, J.W. 2002. "Web Site Usability, Design, and Performance Metrics," *Information Systems Research* (13:2), pp 151-167.
- Palmer, J.W., and Griffith, D.A. 1998. "An Emerging Model of Web Site Design for Marketing," *Communications of the ACM* (41:3), pp 45-51.
- Russell, W., and Miriam, D. 2004. "From Servicescape to "Cyberscape"." p. 310.
- Song, J.H., and Zinkhan, G.M. 2008. "Determinants of Perceived Web Site Interactivity," *Journal of Marketing* (72:2), pp 99-113.
- Stevenson, J.S., Bruner, G.C., and Kumar, A. 2000. "Webpage Background and Viewer Attitudes," *Journal of Advertising Research* (40:1-2), pp 29-34.
- Tam, K.Y., and Ho, S.Y. 2006. "Understanding the Impact of Web Personalization on User Information Processing and Decision Outcomes," *MIS Quarterly: Management Information Systems* (30:4), pp 865-890.
- Venkatesh, V., and Bala, H. 2008. "Technology Acceptance Model 3 and a Research Agenda on Interventions," *Decision Sciences* (39:2), pp 273-315.
- Wu, C.S., Cheng, F.F., and Yen, D.C. 2008. "The Atmospheric Factors of Online Storefront Environment Design: An Empirical Experiment in Taiwan," *Information and Management* (45:7), pp 493-498.
- Wu, D., Im, I., Tremaine, M., Instone, K., and Turoff, M. 2003. "A Framework for Classifying Personalization Scheme Used on E-Commerce Websites," *System Sciences, 2003. Proceedings of the 36th Annual Hawaii International Conference on*, p. 12 pp.
- Yi, M.Y., and 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* (59:4), pp 431-449.