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Does Content Relevance Lead to Positive Attitude toward Websites? Exploring the Role of Flow and Goal Specificity

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ABSTRACT

It is common practice to have Websites interact with consumers by delivering personalized services, among which content relevance is most widely adopted on Internet advertising. However, little is known about the impact of relevance on consumers' psychological states and the underlying mechanism of relationship between relevance and attitude toward Websites. Building upon flow theory and Hoffman and Novak's (1996) conceptual model, this study investigates the role of flow and relevance in influencing attitude toward Websites. The findings show that the link between content relevance and attitude toward Web sites is mediated by consumers' flow experience. In addition, goal specificity moderates the effect of relevance on flow experience. Under the conditions of high goal specificity, the relevance effect on flow is magnified. Theoretical and practical implications of this study are discussed.

Keywords

Web personalization, content relevance, goal specificity, attitude toward Website, flow theory

INTRODUCTION

The development of information technology (IT) has made it possible for Web personalization widespread. Recently, most e-commerce Web sites are interacting with customers by delivering kinds of personalized offerings, among which content relevance is one of the most frequently adopted strategies in advertising services. To maximize potential business opportunities, Internet Content Providers tend to use content-based analysis to detect consumers' interest or processing goals, and then deliver relevant messages to users in real time. For example, Google AdSense automatically searches for the content of Web pages and delivers advertising which is relevant to users' potential shopping goals. In the IS field, Tam and Ho (2006) investigated the impact of Web personalization on users' cognitive processing. They found that content relevance can help Web sites gain competitive advantages by increasing users' recall or decision making. Although the practice of content relevance is quite popular over the Web, little is known about its impact on consumers' psychological states and the underlying process it exerts on attitude toward the Web site. Therefore, more work needs to be done for better understanding the issues of content relevance.

The first objective is to explore the process that content relevance exerts its impacts on attitude towards Web sites by identifying potential factors mediating the relevance-attitude relationship. We propose that flow experience is a crucial intervening variable between the linkage of content relevance and attitude toward Web sites. The concept of flow, defined as the optimal psychological state occurring during network navigation, was first introduced into computer-mediated environment (CME) by Hoffman and Novak (1996). It has been identified as a key characteristic of consumer behavior in CMEs. According to Hoffman's conceptual framework, flow is the "glue" that holds online consumers in the Web-based environment. They argued that the flow experience is the psychological process through which CME exerts its effect on consumers. In addition, prior studies suggested that the marketing objective of Web sites should be providing "flow experience" for consumers who are engaged in the interaction with e-marketers (Ghani, Sunpnick and Rooney, 1991; Webster, Trevino and Ryan, 1993). Hence, it can be inferred that content relevance, a new computer-mediated environment of Web personalization, affects consumers' attitude via users' flow experience. To the best of our knowledge, only a

conceptual model has been proposed while no empirical study has been conducted to test the role of flow. In this study, we test the mediating role of flow experience on the relationship between content relevance and attitude toward the Web site.

The second objective is to examine situational factors which may influence the effect of relevance on customers' flow experience. Flow experience is associated with a person's interaction with tasks, such as climbing mountain, playing games (Csikszentmihalyi, 1975, 1988). Under the computer mediated environments, flow is also situated in a particular online task (Chen, Wigand and Nilan, 1999). Web site agents need to be sensitive to users' tasks in order to provide personalized services. Generally, there are dichotomous online behaviors according to goal specificity (Janiszewski, 1998). Consumers with high goal specificity are goal-oriented, with an identified task and actively seek for particular information; whereas consumers with low goal specificity are less goal-oriented, with no specific target and usually browse the Web site. In this study, we investigate whether customers' goal specificity influence the effect of content relevance on flow experience.

HYPOTHESES

Relevance and Flow Experience

Relevance is defined as the degree to which the content of message is relevant to the Web page and users' processing goal (Tam and Ho, 2006). Relevance is thought to be the "fundamental and central" concept in information science (Schamber, Eisenberg and Nilan, 1990). In marketing field, relevance has been found to be an effective strategy for promotion. For example, many CD stores provide related products such as earphones and CD writers to entice consumers to purchase more. Tam and Ho (2006) suggested that content relevance enhance users' cognitive performance. In addition to its impact on cognition, we believe that content relevance also has impact on users' emotional process. We focus on flow experience, an important construct in e-commerce environment, and expect that content relevance have positive effect on consumers' flow experience.

The elaboration likelihood model (Petty and Cacioppo, 1986) stipulates that elaboration of message (e.g., advertising) take place via two routes: a central route and a peripheral route. Usually, advertising on the Web page is processed via peripheral route, because users may focus on his or her primary tasks and allocate little cognitive resource to secondary information such as advertising. However, if the content of advertising is relevant to their shopping goals, users are more likely to scrutinize the content of advertising. As a consequence, the relevant Web site may be elaborated via the central route.

Internet advertising with relevant content to the Web page may not disturb users, but enhance the possibility to capture more attention from users. Hence, compared to irrelevant Webpage, it will be more likely for online users to be attracted in the content of the Web page. According to the definition proposed by Hoffman and Novak (1996), flow is a kind of psychological state which is characterized by a seamless sequence of interactivities, intrinsic enjoyment, a loss of self-consciousness and self-reinforcing. In this study, "flow" is a kind of experience and psychological state where the person is absorbed in the online interactions. Relevant message on the Web may "hook" users and thereby increase the experience of flow.

It is expected that the higher level of relevance of information on the Web page, the higher level of flow experience (i.e., the consumer is completely absorbed in their online shopping activities). Relevant messages on the Web site can heighten users' flow experience to a larger extent than irrelevant ones. Therefore,

H1: Content relevance will be positively associated with users' flow experience.

Flow Experience and Attitude Toward the Web site

Prior literature has provided support that flow experience can lead to an increased positive affect, satisfaction and acceptance of information technology (Trevino and Webster, 1992; Ghani et al., 1991; Koufaris, 2002). Chen (2006) suggested that positive affect is the very consequence of flow experience, which is an enjoyable, positive psychological state. The positive mood of the user may diffuse and therefore help to form a positive attitude toward the Web site. In the e-commerce environment, it may be inferred that in order to enhance the likelihood of final purchasing behavior, Web sites should try to enhance customers' flow experience by engaging them in the Web personalization (Ghani et al., 1991; Webster et al., 1993). Thus, we propose that flow experience, during online interaction, can lead to positive attitude toward the Web site.

H2: Flow experience will be positively associated with attitude toward the Web site.

The Mediating Effect of Flow Between Relevance and Attitude Toward the Web site

Though content relevance is a common practice in e-commerce Web site design, little is known about the mechanisms or processes about why relevance influences attitude toward the Web site. In this study, we explore the potential factor mediating the relevance-attitude relationship. To reveal the mechanism that links the physical world of Web designing and the psychological world of users' feelings and states, we hypothesize that the beneficial effect of relevance on attitude toward Websites will be mediated by flow experience. The positive effect of relevance on attitude toward Websites is caused by an increased flow experience.

According to flow theory, flow is the "glue" that may hold the consumer in the Web-based environment (Csikszentmihalyi, 1988; Hoffman and Novak, 1996). It is a process of self-reinforcing because the greater immersion can lead to greater motivation to explore the Web site (Petty and Cacioppo, 1986). When users are exposed to a Web site with more relevant information, they will be more likely to be involved in the relevant content which is associated with their interests. Content relevance could facilitate a sense of engagement or intrinsic enjoyment experience. Such positive experience, in turn, can reduce negative feeling and critical thoughts toward Web sites. Therefore,

H3: The relationship between relevance and attitude toward the Web site is mediated by user's flow experience. That is, relevance will increase positive attitude via users' flow experience.

The Moderating Role of Goal Specificity

Previous studies have suggested a dichotomous model of goal specificity: searching versus browsing (Janiszewski, 1998). Searching is high goal-oriented with an identified task such as actively seeking for specific targets, whereas browsing is less goal-oriented without a clear goal, and the user acts based on his or her own personal preferences (Park and Kim, 2000; Hoffman and Novak, 1996).

We argue that the effect of content relevance on flow experience is influenced by the user's goal specificity. Specially, customers who have specific goals will focus more on goal-relevant information, because they are actively seeking for specified targets. For these customers, a Web site with relevant information can more easily immerse them in the e-commerce environment. As a result, it can lead to more flow experience. In contrast, if customers have low level of goal specificity (i.e., browsing), they are more likely to be disturbed because they just surf around the Web site for fun. Therefore, we hypothesize that there is a moderating effect of goal specificity on the relationship between content relevance and flow experience.

H4: The relationship between relevance and users' flow experience will be moderated by goal specificity. When the goal specificity is high (searching), the effect of relevance on flow experience will be stronger than when it is low (browsing).

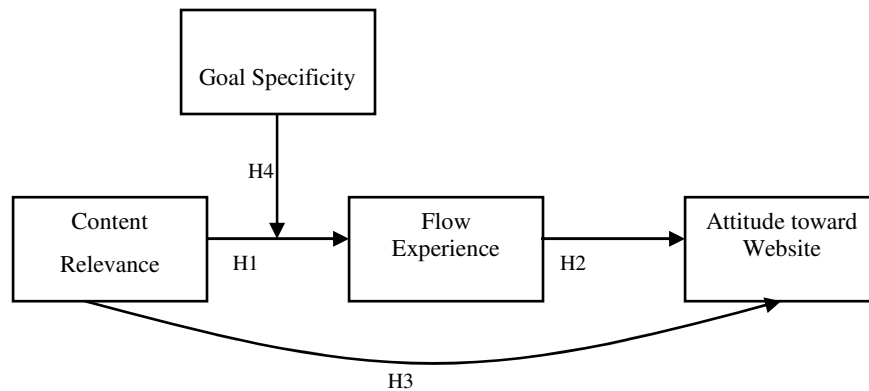


Figure 1. Research Model

METHODOLOGY

Experimental Design and Subjects

A laboratory experiment, in which a 2 (relevance) \times 2 (goal specificity) between subject design was employed to test hypotheses, was conducted. There were two levels of manipulation of relevance: Web page with relevant and irrelevant ads. Goal Specificity also included two levels: searching and browsing task. A total of 224 subjects were recruited from a University in Hong Kong and randomly assigned to one of the four experimental conditions. Each subject was paid HK\$ 50 (about US\$ 6.50) for participation.

Materials and Procedure

An online shopping Web site was developed specifically for this study. Three categories of digital products were presented on the experimental Web site: MP3 players, digital mobiles, and digital cameras. We chose these products because they were familiar to college students in Hong Kong. Moreover, 18 ad banners, including nine digital ad banners (relevant) and nine snack ad banners (irrelevant), were created specifically for this study.

A preliminary test was conducted to ensure that the brands of banners and products had a similar level of familiarity to subjects. Two raters were asked to fill in the familiarity survey for each of digital products. Only brand names with medium level of familiarity were used on the experimental Web site. In addition, in order to eliminate the price effect of different products, we set three levels of price (high, medium, and low) for each product so as to differentiate users' need. Price was controlled at $\pm 5\%$ within each level of price. To eliminate any potential confounding effects, the attributes of digital products and ads, such as brand name, image, logo, font size and color were held constant on the experimental Web site. Finally, Latin square design was employed to balance the order effect on the computer screen, because the marketing literature suggested that brand name, price, and presentation order might influence consumers' online shopping behavior.

During the formal experiment, subjects were required to read the experimental instruction carefully and input their demographical information. Subjects were then randomly assigned to either a searching or a browsing task via computer systems. Half of the subjects received a searching task, and other half was required to conduct a browsing task. The experiment administrator instructed the subjects to imagine themselves in an online shopping scenario. When the subject indicated a complete understanding of the experiment instructions, they then entered nine online shopping trips on the Web site. The first three were practices, and the next six were formal shopping activities. Usually the shopping tasks last for 10 minutes. After the subject finished the online shopping task, they attended a 3-minute distraction task in order to clear their working memory. After that, they were asked to fill in questionnaires. The subjects were debriefed after all the tasks.

Independent Variables

Content relevance was manipulated in the Web site by providing relevant or irrelevant ad banners. In the relevant condition, the content of advertising was relevant to the content of the shopping Web site and users' processing goals. Manipulation check of relevance was measured by five items (Tam and Ho, 2006).

Goal specificity was manipulated with different experimental instructions at the beginning of experiment. In case subjects switched modes during the experiment, the subjects were required to imagine themselves in a real online shopping scenario and to try their best to play their roles successfully by following the instructions. For searching tasks, subjects were presented a shopping list of six products to purchase online for convenience. They were asked to save as much time as possible to complete the task correctly. For browsing tasks, subjects were allowed to choose freely any brand from six products, and they were told that there was no right or wrong answers because their decisions were based on personal preferences. Manipulation check of goal specificity was measured by three items adopted from previous study (Tam and Ho, 2006).

Dependent Variables

Attitude toward Website was measured by two items (Hong, Thong and Tam, 2004). Flow Experience was measured by 12 items adopted from previous study (Jiang and Benbasat, 2004; Webster et al., 1993).

Control Variables

We used multiple methods to control the possible confounding variables and improve the internal validity of the study. Demographic factors including age, gender, and education levels were controlled. In addition, variables including individual PC experience and online shopping experience were measured by items in the questionnaire and these variables were also controlled in data analysis.

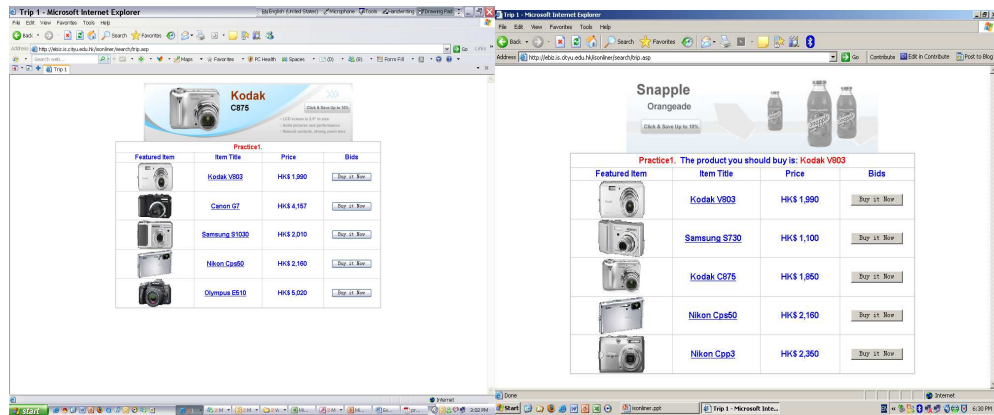


Figure 2. Experimental Web Interface

DATA ANALYSIS AND RESULTS

Manipulation Check

Two hundred twenty four, including 81 male (36%) and 143 female (64%), college students were recruited. Their average age was 21.4. Most of them (80%) have more than six years Internet experience. Manipulation checks of relevance and goal specificity were performed after the subjects completed online shopping sessions. Subjects exposed to the relevant Web site (3.92) indicated higher level of relevancy than subjects in the irrelevant conditions (1.88), $t_{(222)}=13.61, p<.000$. In addition, subjects in the searching task reported higher level of goal specificity (5.68) than subjects in the browsing task (5.18), $t_{(222)}=2.97, p<.05$. Thus, the manipulations on content relevance and goal specificity appeared to be successful in this study.

Variables	Mean	s.d.	1	2	3	4
1. Content Relevance	2.93	1.51	0.92			
2. Goal Specificity	5.43	1.25	-0.07	0.84		
3. Flow (enjoyment)	4.15	1.10	0.13	0.15*	0.83	
4. Attitude to Web	5.94	1.79	0.17*	0.05	0.42**	0.91

Note: N=224. * $p<.05$, ** $p<.01$

Table1. Means, Standard Deviations, Correlations and Reliability

Reliability and Validity

Table 1 shows the means, standard deviations, correlations among the variables and reliability. Cronbach alpha measures of internal consistency reliability of constructs were acceptable (all above .70, see diagonal value in Table 1). To test the validity of items, we used principal components factor analysis and varimax rotation (see Table 2). Convergent validity was examined by checking loadings whether items within a construct correlate highly amongst themselves. Discriminate validity was tested by examining the factor loadings whether items loaded more highly on their own construct than on other constructs (Cook and Campbell, 1979). Factor analysis yielded 4 components with eigenvalues above 1. The results indicated that convergent and discriminate validity of items in this study was acceptable.

Items	Factor			
	1	2	3	4
Relev1	.892	.091	-.041	.019
Relev2	.807	-.006	-.087	.024
Relev3	.888	.098	.004	.027
Relev4	.856	.036	-.062	.135
Relev5	.880	.023	.030	.058
GS1	-.007	.068	.917	.049
GS2	-.025	.014	.888	.099
GS3	-.090	.116	.794	-.115
Flow1	.141	.754	.085	.219
Flow2	-.016	.669	-.018	.151
Flow3	.069	.880	.040	.070
Flow4	.022	.866	.140	.110
Atti1	.097	.222	-.017	.925
Atti2	.092	.289	.046	.903
Eigenvalue	4.19	3.11	2.08	1.24
Variance explained (%)	29.90	22.21	14.87	8.85
Cumulative variance (%)	27.11	46.47	62.93	75.83

Table 2. Validity of Items

Hypotheses Tests

Content relevance demonstrated a direct, statistically significant, positive relationship with users' flow experience ($R^2 = .017$, $\beta = .13$, $p < .05$). Relevant messages on the Web site heighten users' flow experience to a larger extent than do irrelevant ones. Therefore, H1 was supported.

Flow experience also demonstrated a direct, statistically significant, positive relationship with attitude toward the Web site ($R^2 = .18$, $\beta = .42$, $p < .001$), indicating that flow experience leads to a positive attitude toward the Web site. Thus, H2 was supported.

To examine the mediation hypothesis (H3), we used the method recommended by Baron and Kenny (1986). First, we separately tested the direct effect of relevance on attitude toward Web site without the mediator of flow in the equation. The direct link between relevance and attitude toward the Web site was significant ($R^2 = .05$, $\beta = .15$, $p < .05$). However, the link (relevance \rightarrow attitude) was no longer significant when the mediator flow was entered in the equation ($R^2 = .20$, $\beta = .11$, $p = n.s.$) (see Figure 3). In addition, there was a significant link between relevance and flow ($R^2 = .018$, $\beta = .094$, $p < .05$). Moreover, the flow experience significantly affected the attitude toward the Web site with relevance controlled ($R^2 = .21$, $\beta = .38$, $p < .001$). Overall, the results met Baron's four steps criteria (Baron and Kenny, 1996). Flow experience fully mediated the relevance effect on flow experience. Therefore, H3 was supported.

The result shows that there is an interaction between content relevance and goal specificity on users' flow experience ($R^2 = .07$, $\beta = .67$, $p < .05$), indicating a moderating effect for user's goal specificity (see Table 3). To understand the moderation effect, further analysis was conducted (see Figure 4). Specifically, under the conditions of high goal specificity (GS), the effect of relevance on attitude toward Web sites was magnified. Thus, Hypothesis 4 was also supported.

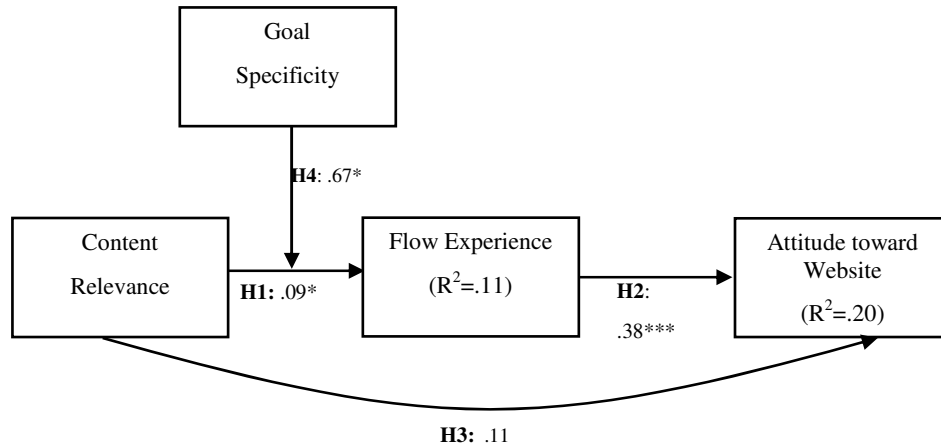


Figure 3. Flow as a Mediator of Relevance and Attitude Toward Website

Models	1	2	3
1. Controls			
Gender	-.16*	-.16*	-.16
Education	.13	.13	.12
Online Experience	.06	.05	.04
Online Shopping Experience	.10	.12	.12
ΔR^2	.06		
2. Main Effects			
Relevance		.12*	-.50
ΔR^2		.01	
3. Interaction			
Goal Specificity			-.15
Relevance \times Goal Specificity			.67*
ΔR^2			.03
R^2	.06	.07	.11

Standardized regression coefficients are shown. N=224. * $p < .05$; ** $p < .01$

Table 3. Moderating Role of Goal Specificity

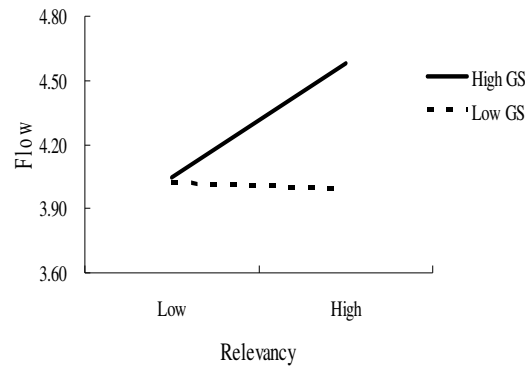


Figure 4. Interaction between Goal Specificity and Relevancy on Flow

To test common method bias, we used Harman's one-factor test (Podsakoff, Mackenzie, Lee and Podsakoff, 2003). An exploratory factor analysis was conducted and no single factor was found when extracting four factors with eigenvalues above 1.0. The first factor accounted for 26.17 percent of the total variance. Hence, the common method bias was not a major problem in this study.

Limitations and Future Study

Before discussing results and the implications of this study, it is necessary to consider some of its limitations. First, subjects in the study were Hong Kong college students. Hence, further studies need to examine the generalizability of our findings. Second, although a laboratory experiment may help to improve internal validity by eliminate confounding factors, it may also limit the generalizability of our conclusion. Therefore, a field study needs to be conducted where online shopping behaviors in the real e-commerce is tested in the future. Last but not least, flow experience is a multidimensional concept (Hofmann and Novak, 1996; Agarwal and Karahanna, 2000) and future research needs to explore possible difference between sub dimensions of flow experience.

CONCLUSION

Theoretical Implications

Overall, this study has two key findings: First, flow experience mediated the relationship between relevance and attitude toward the Web site. Our findings suggest that relevance can increase flow experience, which in turn, may enhance a positive attitude toward the Web site. Consistent with flow theory and Hoffman's framework, this study finds out that flow experience is a valid mediator between relevance and its effect on users. Novak (2000) noted that flow was pertinent in studying online consumers' behavior (Novak, Hoffman and Yung, 2000). Many previous studies have focused on the conceptualization of flow concept (Hoffman and Novak, 1996; Webster et al, 1993; Agarwal and Karahanna, 2000). By introducing the concept of flow into research on Web personalization, this study extends flow theory and Hoffman's conceptual model (1996). It may contribute to the literature of Web personalization within the IS field.

Second, goal specificity is found to moderate the relevance effect on flow experience. When the online user's goal specificity is high (e.g., searching), the effect of relevance on flow experience is stronger than when goal specificity is low (e.g., browsing). This result is consistent with previous findings. For example, Tam and Ho (2006) found that there is an interaction effect between relevance and goal specificity on users' recall performance. This study extends this two-way interaction model on users' emotional indicators such as flow experience. In addition, Novak (2003) showed that flow experience was more prevalent among users who are with goal-directed activities (e.g., searching), rather than just for browsing (Novak, Hoffman and Duhachek, 2003). This study supports this finding by showing that flow is situated in high goal specificity under the context of Web personalization.

Practical Implications

For practical professionals, this study may have implications for Internet advertising delivery strategies. Personalized designing is very popular in the e-commerce environment. Our study reveals the importance of customers' flow experience.

Content relevance enhance positive attitude via users' flow experience. Hence, e-retailers may not only consider delivering personalized service in real time, but also need to improve consumers' flow experience through various methods, such as providing enjoyable online environment.

Another practical implication is that our findings show that the effectiveness of Web personalization depends on users' shopping goals. Practitioners may realize that the online shopping environment is very complex and the effect of personalization rarely occurs in isolation. Actually, our findings suggest that content relevance, which is one of common practice of personalization, shows a positive effect on users' flow experience only when their goal specificity is high. Therefore, online merchants should adopt a more adaptive personalized strategy that is sensitive to the processing goal of users.

REFERENCES

1. Agarwal, R. and Karahanna, E. (2000) Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage, *MIS Quarterly*, 24, 4, 665-694.
2. Baron, R. and Kenny, D. (1986) The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations, *Journal of Personality and Social Psychology*, 51, 6, 1173-1182.
3. Cook, M. and Campbell, D. T. (1979) *Quasi-Experimentation: Design and Analysis Issues for Field Settings*, Houghton Mifflin, Boston.
4. Chen, H. (2006) Flow on the net—detecting Web users' positive affects and their flow states, *Computers in Human Behavior*, 22, 2, 221-233.
5. Chen, H., Wigand, R. and Nilan, M. S. (1999) Optimal Experience of Web Activities, *Computers in Human Behavior*, 15, 5, 585-608.
6. Csikszentmihalyi, M. (1975) *Beyond boredom and anxiety* Jossey-Bass, San Francisco, CA.
7. Csikszentmihalyi, M. (1988) *Optimal experience: Psychological studies of flow in consciousness*, Cambridge University Press, New York.
8. Ghani, J. A., Supnick, R. and Rooney, P. (1991) The experience of flow in computer-mediated and in face-to-face groups, *Proceedings of the Twelfth International Conference on Information Systems*, New York, NY, USA. University of Minnesota, 229-237.
9. Hoffman, D. L. and Novak, T. P. (1996) Marketing in hypermedia computer-mediated environments: Conceptual foundations, *Journal of Marketing*, 60, 3, 50-68.
10. Hong, W. Y., Thong, J. Y. L. and Tam, K. Y. (2004) The effects of information format and shopping task on consumers' online shopping behavior: A cognitive fit perspective, *Journal of Management Information Systems*, 21, 3, 149-184.
11. Janiszewski, C. (1998) The Influence of display characteristics on visual exploratory search behavior, *Journal of Consumer Research*, 25, 3, 290-301.
12. Jiang, Z. H. and Benbasat, I. (2004) Virtual product experience: Effects of visual and functional control of products on perceived diagnosticity and flow in electronic shopping, *Journal of Management Information Systems*, 21, 3, 111-147.
13. Koufaris, M. (2002) Applying the technology acceptance model and flow theory to online consumer behavior, *Information Systems Research*, 13, 2, 205-223.
14. 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, 22-42.
15. Novak, T. P., Hoffman, D. L. and Duhachek, A. (2003) The influence of goal-directed and experiential activities on online flow experiences, *Journal of Consumer Psychology*, 13, 1-2, 3-16.
16. Park, J. and Kim, J. (2000) Contextual navigation aids for two World Wide Web systems, *International Journal of Human-Computer Interaction*, 12, 2, 193-217.
17. Petty, R. E. and Cacioppo, J.T. (1986) *Communication and persuasion: Central and peripheral routes to attitude change*, Springer-Verlag, New York.
18. Podsakoff, P. M., Mackenzie, S. B., Lee, J. Y. and Podsakoff, N. P. (2003) Common method biases in behavioral research: A critical review of the literature and recommended remedies, *Journal of Applied Psychology*, 88, 5, 879-903.
19. Schamber, L., Eisenberg, M. and Nilan, M. S. (1990) A reexamination of relevance: toward a dynamic, situational definition, *Information Processing and Management: an International Journal*, 26, 6, 755 - 776.
20. Tam, K. Y. and Ho, S. Y. (2006) Understanding the impact of web personalization on user information processing and decision outcomes, *MIS Quarterly*, 30, 4, 865-890.
21. Trevino, L. K. and Webster, J. (1992) Flow in computer-mediated communication, *Communication Research*, 19, 5, 539-573.
22. Webster, J., Trevino, L. K. and Ryan, L. (1993) The dimensionality and correlates of flow in human-computer interaction, *Computers in Human Behavior*, 9, 4, 411-426.

APPENDIX

Measurement Items

Content Relevance

1. I found that the banner ads appearing on the Web page were relevant to my tasks.
2. I could get some indications from the banner ads when doing the shopping task.
3. I found that the information of banner ads and products were related.
4. I found that the banner ads on the Webpage were relevant to my interest.
5. Banner ads on the Webpage were consistent with my target product.

Goal Specificity

1. I had ideas on what product I should look for.
2. I knew what my target product was.
3. I knew what information I should access.

Attitudes toward Websites

1. I would dislike/like use a Web site built upon this model to perform similar shopping activities.
2. Using a Web site built upon this model to perform similar shopping activities would be pleasant/ unpleasant.

Flow Experience

1. I was so focused that I completely lost track of time.
2. Time went faster than I thought and I did not even sense it.
3. I feel control during the each shopping task.
4. I thought unrelated things to the shopping task.
5. I was absorbed in what I am doing.
6. I was distracted by unrelated things.
7. My imagination aroused when doing the shopping task.
8. The web page made me curious when doing the shopping task.
9. I was intrinsically interesting when doing the shopping task.
10. I feel bored when doing the shopping task.
11. I was excited when doing the shopping task.
12. I feel fun when doing the shopping task.