Journal of Business Research 62 (2009) 756–760

Contents lists available at ScienceDirect

Journal of Business Research

The role of perceived control and gender in consumer reactions to download delays ☆

Pratibha A. Dabholkar [a,*], Xiaojing Sheng [b,1]

[a] University of Tennessee, 307 Stokely Management Center, Knoxville, TN 37996, USA
[b] University of Tennessee, 310 Stokely Management Center, Knoxville, TN 37996, USA

ARTICLE INFO

Article history:
Received 2 November 2007
Accepted 6 June 2008

Keywords:
Perceived control
Gender differences
Download delays
Attitudes
Intentions
Online marketing

ABSTRACT

An empirical study finds that perceived control strongly mediates the effects of perceived speed of a Web site download on consumers' attitudes and intentions to use the Web site. Moreover, results show that men are more likely to react positively to the perceived speed of a Web site download, whereas women are more likely to base their reactions on perceptions of control in the context of download delays. In contrast to past online research, the gender differences are intrinsic in two ways—they are context independent, and they are not caused by length of Internet experience, extent of Internet usage, or type of Internet connections.

1. Introduction

A significant criticism that consumers raise about their online shopping and information search experiences is excessive download delays, i.e., time taken for a Web site or Web page to download (eMarketer, 2006; Ewalt, 2002). In view of these concerns, previous research on download delays has explored the impact of such delays on consumer attitude toward e-retailers (e.g., Rose et al., 2005) and on consumer evaluation of Web sites (e.g., Dellaert and Kahn, 1999). Research has also examined how long consumers are willing to wait for a Web site to download (e.g., Otto et al., 2003).

However, little research has been done to understand the underlying effect of perceived control when Web sites load slowly (for an exception, see Dabholkar and Sheng, 2008a). Although Pavlou and Fygenson (2006) have tested the effect of controllability, the complex role of perceived control in the context of download delays needs in-depth, empirical examination. Second, although gender differences have been found in general Internet use (e.g., Danaher et al., 2006; Hargittai and Shafer, 2006), little research has been done to examine whether men and women react differently to download delays (for an exception, see Dabholkar and Sheng, 2008b). Finally, gender differences related to the role of perceived control have not been studied in the online context.

To fill these gaps in the literature, one purpose of this study is to empirically investigate the complex role of perceived control as an underlying mechanism for consumer reactions to download delays. The second objective is to examine gender differences in conjunction with the role of perceived control in the context of download delays. Consumer reactions are encapsulated in terms of attitudes toward using Web sites and intentions to use Web sites, as both are of critical concern to online marketers.

2. Conceptual framework

2.1. The role of perceived control in consumer reactions to download delays

The notion of perceived control is particularly relevant in attitudinal and behavioral research related to Internet shopping (Bobbitt and Dabholkar, 2001). The reason is that even though one typically avoids the uncertainties in dealing with employees, the Internet itself is fraught with uncertainties which create a feeling of a lack of control. Perceived control has been defined as the degree of control that a consumer feels during an interaction with a service provider, either through an employee or a technology-based self-service (e.g., Dabholkar, 1990; Hui and Bateson, 1991). In the context of download delays, *perceived control* can be viewed as the amount of control that a consumer feels s/he has in using a Web site.

The positive relationship between perceived speed and perceived control is intuitive in the context of service delivery, both offline and online. In studying technology-based self-service, Dabholkar (1990) proposed that for customers comfortable with technology, participation in service delivery increases perceptions of speed, which in turn increase perceptions of control. Similarly, although they did not examine perceptions of speed or control, Pavlou and Fygenson (2006)

☆ The authors gratefully acknowledge James Li's help in creating the realistic Web site used for the experiment and in data collection.
* Corresponding author. Tel.: +1 865 974 1656; fax: +1 865 974 1932.
E-mail addresses: pratibha@utk.edu (P.A. Dabholkar), xsheng4@utk.edu (X. Sheng).
[1] Tel.: +1 865 974 4871; fax: +1 865 974 1932.

0148-2963/$ – see front matter © 2008 Elsevier Inc. All rights reserved.
doi:10.1016/j.jbusres.2008.06.001

found that *expectations of speed* in an online context increased the *controllability* that consumers felt in getting information from Web sites. Hence, it is proposed that:

H1. *Perceived speed of a Web site download will have a positive effect on perceived control in using the Web site.*

In offline research, studies (e.g., Hui and Bateson, 1991; Hui and Toffoli, 2002) show that perceived control is a crucial determinant of consumers' affective responses to a service encounter. Perceived control has also been found to influence cognitive evaluations of services within the technology-based self-service context (Dabholkar, 1996) and for the Internet (Yen, 2005). Viewing attitudes as a combination of cognitive evaluations as well as affective responses (cf., Fishbein and Ajzen, 1975), and applying the results of past research in offline contexts, it is expected that the lack of control that consumers feel in using slow loading Web sites would translate into detrimental effects on consumer attitudes. Viewed another way, the greater the control perceived by online consumers (when downloading delays are low or acceptable), the better the attitudinal outcomes. Thus:

H2. *Perceived control will have a positive effect on attitude toward using the Web site.*

In the online context, Pavlou and Fygenson (2006) found that the controllability that consumers felt, in searching for online information or shopping for products, had an *indirect* effect on intentions and behavior. However, in the offline context, Hui and Toffoli (2002) found that perceived control had a *direct* effect on consumers' behavioral responses to the service encounter. In addition, the theory of planned behavior (Ajzen, 1991) predicts *direct* effects of perceived behavioral control on related intentions and behavior. Therefore, if an online consumer feels in control when using a Web site (due to low or acceptable levels of download delays), s/he will form positive behavioral intentions in relation to using that Web site, such as for browsing, shopping, and bookmarking. Therefore, it is proposed that:

H3. *Perceived control will have a positive effect on intention to use the Web site.*

A related research question is whether the perceived speed of a Web site download would also have *direct* effects on consumer attitudes and intentions, as suggested in offline research (e.g., Baker and Cameron, 1996; Taylor and Fullerton, 2000). Therefore, in addition to testing the conceptual model encompassed by H1–H3, this study will investigate direct effects of the perceived speed of a Web site download on attitudes and intentions to use the Web site, and rigorously test whether the mediating effects of perceived control are partial or full.

2.2. The role of gender in consumer reactions to download delays

Research shows that women tend to visit Web sites for longer periods than do men (Danaher et al., 2006). This finding suggests that women are less concerned than men with the time they spend in using the Internet. In addition, women tend to have lower assessments of their own online skills compared to men (Hargittai and Shafer, 2006; Jackson et al., 2001), which may make them more patient than men in using the Internet, and not as concerned with the speed of a Web site download. Finally, the differential use of the Internet by men and women may have some bearing on their reactions to download delays. Women tend to use the Internet mostly for interpersonal communication and educational assistance whereas men tend to use it mostly for information gathering and entertainment (Jackson et al., 2001; Weiser, 2000). This makes it easier for men to switch from one site to another, possibly teaching them to be less tolerant of online delays and more focused on speed. Based on this background, there is consistent evidence that the expected direct, positive effects of perceived speed of a Web site download on consumer attitudes and intentions will be stronger for men than for women.

H4. *The direct, positive effect of perceived speed of a Web site download on (a) attitude toward using the Web site and (b) intention to use the Web site, will be stronger for men than for women.*

In a related issue, offline research suggests that men react directly to the speed of a process, whereas women do not seem to mind a slow process as much as men do, but react negatively if it makes them feel out of control. In an empirical study on consumer evaluations of hair stylists, Dabholkar and Walls (1999) found that saving time in getting to a hair stylist and in not having to wait for a haircut was more important to men, whereas feeling relaxed and in control during the hair styling was more important to women. In essence, time or speed was more important to men, and control was more important to women. Further, in qualitative interviews with the respondents, men said they would stop going to a hair stylist if the process took too long, whereas women said they would not mind a slow process if they were assured and comfortable that the haircut was worth waiting for. The quantitative as well as qualitative findings showed that men based their reactions on perceptions of speed (as proposed in H4 above), whereas women based their reactions on the assurance or control they felt during the process (as proposed in H5 below). The findings also showed that women tended to base their reactions on the control they felt, even if the process was slow, suggesting a stronger mediating effect of perceived control for women in the context of download delays (as proposed in H6 below).

H5. *The effect of perceived control on (a) attitude (as proposed in* H2*) and (b) intention (as proposed in* H3*), will be stronger for women than for men.*

H6. *The mediating effect of perceived control on the effect of perceived speed of a Web site download on (a) attitude toward using the Web site and (b) intention to use the Web site, will be stronger for women than for men.*

3. Methodology

Download delays were manipulated through a mock travel Web site. Delays on different Web pages in the Web site created three overall combinations of low, medium, and high download delays, with actual times approximately 30, 60, and 90 s for the whole booking process. This was followed by a survey to measure the variables in the proposed hypotheses (Other variables were also measured to address different issues related to download delays, see Dabholkar and Sheng, 2008b,c).

3.1. Sample

Data were collected from 252 university students in the U.S. Almost all the students (96%) had at least five years of Internet experience and most (89.3%) used the Internet for at least 5 hours per week. Almost all of them (98.5%) typically used high-speed Internet connections such as DSL and cable. There were 134 men and 118 women in the sample, making it a roughly equal division by gender, and the average age of the respondents was 23.56.

3.2. Procedure

University computer labs were set up for the study. Participants were told to use and evaluate a new travel Web site. Specifically, they had to go through all the steps of booking a flight and then answer a short survey. It was explained that a simulated payment process would be used. At the end of the online booking process, surveys were handed out, filled, and collected. Debriefing about the research purpose was done only after the complete data collection.

Table 1
Items and factor analysis.

Items for continuous variables	Perceived speed of Web site download	Perceived control in using the Web site	Attitude toward using the Web site	Intention to use the Web site
PS1: Download time on this Web site was acceptable.	**0.90**	0.13	0.17	0.16
PS2: Information on this Web site was obtained quickly.	**0.75**	0.25	0.32	0.01
PS3: The Web site took much longer to download compared to a normal download time. (R)	**0.84**	0.01	0.01	0.22
PC1: I felt I was in charge of my own booking while using this Web site.	0.12	**0.73**	0.16	0.33
PC2: This Web site allowed me to select any flight I wanted.	0.13	**0.87**	0.15	0.01
PC3: I felt in control throughout the booking process on this Web site.	0.09	**0.86**	0.21	0.16
ATT1: How do you feel about using this Web site? (favorable/unfavorable)	0.21	0.26	**0.71**	0.35
ATT2: How do you feel about using this Web site? (good/bad)	0.22	0.24	**0.78**	0.31
ATT3: How do you feel about using this Web site? (pleasant/unpleasant)	0.09	0.16	**0.84**	0.24
ATT4: How do you feel about using this Web site? (like/dislike)	0.11	0.11	**0.84**	0.22
INT1: I would purchase tickets at this Web site	0.14	0.12	0.39	**0.82**
INT2: I would recommend this Web site to others.	0.17	0.14	0.42	**0.79**
INT3: I would bookmark this Web site.	0.17	0.21	0.21	**0.80**

Notes: Factor loadings for each item are shown for each corresponding factor. PS = Perceived speed of Web site download.
PC = Perceived control in using the Web site; ATT = Attitude toward using the Web site; INT = Intention to use the Web site.
(R) = Reverse-coded item.

3.3. Measurement

Perceived speed of the Web site download was captured with three items, modified from research in offline service delivery contexts (Dabholkar, 1996; Hui et al., 2006). Five-point, Likert scales were used, and the wording of the items is shown in Table 1.

Perceived control in using the Web site was measured by adapting existing, validated scales for perceived control from research in an offline context (Dabholkar, 1996) as well as an online context (Yen, 2005). Three items were used, each with a five-point Likert scale (see Table 1).

Attitude toward using the Web site was modified from previously validated scales for attitude toward using information technology (Davis et al., 1989) and technology-based self-service (Dabholkar, 1994). Four seven-point, semantic differential scales were used (see Table 1).

Intention to use the Web site was measured with three items building on the same research as above (i.e., Dabholkar, 1994; Davis et al., 1989). The items used five-point scales, with endpoints "very likely" and "very unlikely" (see Table 1).

4. Results

4.1. Realism and manipulation checks

A realism check was obtained through verbal feedback after the experiment, when several respondents said they liked the new Web site but it tended to be slow. As the majority of the respondents had faced some level of delay, this feedback was encouraging on two counts—the download delays seemed to have worked and participants thought it was a real Web site.

The 252 respondents were split into 116, 69, and 67 respectively, in the low, medium, and high delay groups. The manipulation check asked participants, "On average, how long did you think it took for each Web page to download (in seconds)?" An ANOVA indicated that the manipulation had worked well, $F=27.49$, $p<0.001$. Moreover, means for the three download delay conditions (7.22, 18.51, and 25.04 seconds respectively) were significantly different.

4.2. Factor analysis and measure validity

Factor analysis for the measures of perceived speed, perceived control, attitude, and intention showed a clear 4-factor structure with strong factor loadings on the appropriate factors (see Table 1). Furthermore, reliabilities of these constructs were fairly high with Cronbach's alpha at 0.83, 0.82, 0.90, and 0.88 respectively. Together, these results suggest that the scales have high internal consistencies and are reliable measures. Finally, correlations among these four constructs ranged from 0.41 (between perceived speed and attitude) to 0.67 (between attitude and intention), thus supporting discriminant validity as none of the values was unacceptably high.

4.3. Hypotheses testing

Regression analysis was conducted to test the hypotheses. As seen in Table 2, perceived speed had a significant positive effect on

Table 2
Summary of regression results for hypotheses testing.

Independent variables →	Men ($n=134$)			Women ($n=118$)		
Dependent variables:	Perceived speed of Web site download	Perceived control in using the Web site	R^2	Perceived speed of Web site download	Perceived control in using the Web site	R^2
Perceived control in using the Web site (testing H1: PS→ PC)[1]	$\beta=0.35^{a}$	–	0.13	$\beta=0.31^{a}$	–	0.10
Attitude toward using the Web site (testing H2: PC→ATT)	–	$\beta=0.41^{a}$	0.17	–	$\beta=0.54^{a}$	0.29
Intention to use the Web site (testing H3: PC→INT)	–	$\beta=0.39^{a}$	0.15	–	$\beta=0.48^{a}$	0.23
Attitude toward using the Web site (testing PS→ATT)[2]	$\beta=0.41^{a}$	–	0.17	$\beta=0.34^{a}$	–	0.11
Attitude toward using the Web site (confirming mediation by PC)[3]	$\beta=0.30^{a}$	$\beta=0.31^{a}$	0.25	$\beta=0.19^{c}$	$\beta=0.48^{a}$	0.33
Intention to use the Web site (testing PS→INT)[2]	$\beta=0.45^{a}$	–	0.19	$\beta=0.28^{b}$	–	0.08
Intention to use the Web site (confirming mediation by PC)[3]	$\beta=0.35^{a}$	$\beta=0.27^{a}$	0.26	$\beta=0.14^{n.s.}$	$\beta=0.44^{a}$	0.25

Notes: [a]($p<0.001$); [b]($p<0.01$); [c]($p<0.05$); n.s. (not significant, $p>0.05$). PS = Perceived speed, PC = Perceived control, ATT = Attitude, INT = Intention (all as in Table 1).
[1, 2, 3]: Steps in testing mediation as per Baron and Kenny (1986).

perceived control 0.35 ($p<.001$) for men, and 0.31 ($p<.001$) for women, thus supporting hypothesis H1 for both men and women. Perceived control had a significant positive effect on attitude 0.41 ($p<.001$) for men and 0.54 ($p<.001$) for women, thus supporting hypothesis H2 for both men and women. Perceived control also had a significant positive effect on intention 0.39 ($p<.001$) for men and 0.48 ($p<.001$) for women, thus supporting hypothesis H3 for both men and women. Moreover, the effects in H2 and H3 appeared to be stronger for women than for men (in terms of beta values and R^2). The differences between the betas were confirmed with the Chow test statistic, which was 13.75 (for H5a) and 9.52 (for H5b), both values greater than $F(1, 250) = 7.88$ (at $p = .005$), thus supporting hypotheses H5a and H5b.

Furthermore, as seen in Table 2, perceived speed had a significant positive effect on attitude 0.41 ($p<.001$) for men, and 0.34 ($p<.001$) for women. Although the effect appeared to be stronger for men (in terms of beta value and R^2), the Chow test statistic was 1.86, less than $F(1, 250) = 3.84$ (at $p = .05$). Therefore, hypothesis H4a was not supported. Perceived speed also had a significant positive effect on intention 0.45 ($p<.001$) for men, and 0.28 ($p<.01$) for women. The effect appeared to be stronger for men (in terms of beta value, its significance level, and R^2). This difference in betas was confirmed with the Chow test statistic, which was 3.92, greater than $F(1, 250) = 3.84$ (at $p = .05$), thus supporting hypothesis H4b.

Finally, tests were conducted to see if the effects of perceived speed on attitude and intention were mediated by perceived control. Stringent mediation tests (cf., Baron and Kenny, 1986) require a series of three regressions—the first two of which test the effects of the independent variable *separately* on the mediator and the dependent variable, and the third regression tests the *simultaneous* effects of the independent and mediator variables on the dependent variable to see if the effect of the independent variable is reduced (as compared to the second regression), which indicates a mediating effect.

The first two regressions required to validate mediation were already run (in testing other hypotheses) and were supported (see steps 1 and 2 in Table 2). To complete the last step, perceived speed and perceived control were regressed simultaneously as independent variables, but separately for attitude and intention as dependent variables (see step 3 in Table 2). In doing so, the effect of perceived speed on attitude was reduced from 0.41 ($p<.001$) to 0.30 ($p<.001$) for men, and from 0.34 ($p<.001$) to 0.19 ($p<.05$) for women, when perceived control was added to the equation. Sobel's test statistic for the reduction in beta value was 1.98 for men, greater than $z = 1.96$ (at $p = .05$) and 2.64 for women, greater than $z = 2.58$ (at $p = .01$). Thus, perceived control had a partial mediating effect in both cases. In addition, the mediating effect appeared to be stronger for women (in terms of reduction in beta value, Sobel's test statistic, and the associated levels of significance), thus offering support for hypothesis H6a. Similarly, the effect of perceived speed on intention was reduced from 0.45 ($p<.001$) to 0.35 ($p<.001$) for men, and from 0.28 ($p<.01$) to a non-significant effect for women, when perceived control was added to the equation. Sobels' test statistic was 2.20 for men, greater than $z = 1.96$ (at $p = .05$) and 2.87 for women, greater than $z = 2.58$ (at $p = .01$). As before, the mediating effect appeared to be stronger for women in terms of reduction in beta value, Sobel's test statistic, and the associated levels of significance. In addition, perceived control had only a *partial* mediating effect for men, but a *fully* mediating effect for women, thus supporting hypothesis H6b.

4.4. Tests for independence of gender and Internet related variables

Chi-squared tests were conducted to examine whether Internet experience (number of years), Internet usage (hours per week), and Internet connection (DSL, cable, or dial-up) varied by gender. No gender differences were found for any of these variables as all three χ^2 values were not significant, showing that there was no confounding of gender with Internet related variables.

5. Discussion

5.1. Advancing theory

The study found that perceived control plays a strong mediating role in the effect of perceived speed of a Web site download on attitudes and intentions to use the Web site. In other words, when faced with download delays, not only do perceptions of speed have direct effects on attitudes and intentions, they have an added, indirect effect through perceptions of control. These findings suggest that rather than focusing only on the time it takes for a Web site to download, it is important to consider the control felt by consumers as this has a strong effect on their subsequent attitudes and intentions to use the Web site.

The finding that the positive effect of perceived speed on attitude was not significantly different for men and women suggests that men's behavior may be strongly affected in the context of download delays rather their attitudes. Indeed, the study found as proposed that the effect of perceived speed of a Web site download on behavioral intentions was stronger for men. In contrast, the effect of perceived control on attitudes and intentions, and the overall mediating role of perceived control, were stronger for women, as proposed. These gender differences extend the offline services literature (e.g., Dabholkar and Walls, 1999), by showing that men and women react differently to delays, in complex, yet understandable ways.

In contrast to past research which suggests that gender differences related to the Internet may be based on differences in Internet usage or experience (e.g., Weiser, 2000), this study found that gender differences were *not* caused by underlying Internet related variables. The fact that there were no gender differences in terms of (1) length of Internet experience, (2) extent of Internet usage, and (3) type of Internet connections, suggests that the differences found between men and women in this study were *intrinsic* gender differences.

Finally, the results suggest that the types of Web sites people tend to use may not always be an issue in considering gender differences in using the Internet. In this study, a travel Web site was used by both men and women. Yet, men tended to react directly to the delay itself, whereas women's reactions to the delay were tempered by the control they felt, showing in another way that the gender differences found in the study were intrinsic, as they were not context-specific.

5.2. Implications for marketing strategy

The results of this study suggest that to avoid the negative consequences of download delays, online marketers should put more effort into increasing perceptions of speed as well as perceptions of control. One way to do both is to reduce Web content and keep Web pages relatively simple, so they will actually load quickly, be perceived as fast, and not cause undue stress (or lack of control). Alternatively, online marketers could use positive, mood-creating music (e.g., Cameron et al., 2003) to reduce perceptions of delays and increase perceptions of control. A third strategy would be to provide specific information on delays or explain the cause of delays (e.g., Dellaert and Kahn, 1999) to increase perceptions of speed and control, and in turn, create better affective and behavioral reactions in the face of download delays.

In addition, for Web sites with a high percentage of male users, the focus should be on minimizing download delays. To do this, complex and rich Web content may have to be sacrificed, but the trade-off would be favorable reactions by male online users toward the Web site. In contrast, for Web sites that have a greater number of female users, online marketers could possibly incorporate richer Web content, but also use soothing colors, relaxing music, or information on delays to make female online users comfortable, so they will not feel out of control even if faced with delays.

5.3. Limitations and future research

Using an experimental approach was not as realistic as studying actual reactions to a Web site, but in compensation, it allowed download delays (and extraneous factors) to be controlled. Although a student sample typically limits generalization, college students represent an important target for Internet marketers. Future research could build on this study with field studies or surveys with a broader demographic and also capture actual online behavior.

Future research could test the base model in this study in different contexts, offline and online. Although offline research has examined the consequences of delays as well as perceived control, no study has systematically tested the mediating role of perceived control in the context of delays. Yet it is likely that this model could apply well to delays in a doctors' office, or for a flight, or numerous other service encounters where delays and a lack of control go hand-in-hand.

Studies could also test whether the intrinsic gender differences found in this study are supported in other contexts—offline as well as for different kinds of Web sites. If so, such verification can lead to a differentiated approach in dealing with delays for market segments that predominantly represent men or women. Other future research could determine the best strategies for reducing perceptions of delays for men, and those that increase perceptions of control for women, whether in Web design or face-to-face service encounters.

References

Ajzen I. The theory of planned behavior. Org Behav Human Dec Process 1991;50: 179–211 (December).

Baker J, Cameron M. The effects of the service environment on affect and consumer perception of waiting time: an integrative review and research propositions. J Acad Mark Sci 1996;24(4):338–49.

Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. J Pers Soc Psychol 1986;51(6):1173–82.

Bobbitt ML, Dabholkar PA. Integrating attitudinal theories to understand and predict use of technology-based self-service: the internet as an illustration. Int J Serv Indust Manage 2001;12(5):423–50.

Cameron MA, Baker J, Peterson M, Braunsberger K. The effects of music, wait-length evaluation, and mood on a low-cost wait experience. J Bus Res 2003;56(6):421–30.

Dabholkar PA. How to improve perceived service quality by increasing customer participation. In: Dunlap BJ, editor. Developments in marketing science, vol. XIII. Cullowhee, N.C: Academy of Marketing Science; 1990. p. 483 487.

Dabholkar PA. Incorporating choice into an attitudinal framework: analyzing models of mental comparison processes. J Consum Res 1994;21:100 118 (June).

Dabholkar PA. Consumer evaluations of new technology-based self-service options: an investigation of alternative models of service quality. Int J Res Mark 1996;13(1):29–51.

Dabholkar PA, Walls S. Service evaluation and switching behavior for experiential services: an empirical test of gender differences within a broader conceptual framework. J Consum Satisfaction, Dissatisfaction Complaining Behav 1999;12: 123–37.

Dabholkar PA, Sheng X. Perceived download waiting in using web sites: a conceptual framework with mediating and moderating effects. J Mark Theory Pract 2008a;16 (3): 259–70.

Dabholkar PA, Sheng X. Consumer differences in reactions to download delays and satisfaction with web sites. Las Vegas, NV: CS/D&CB, Inc. and the Journal of Consumer Satisfaction, Dissatisfaction, and Complaining Behavior 2008b;163–66.

Dabholkar PA, Sheng X. Perceptions of download delays: relation to actual waits, web site abandoning, and stage of delay. Serv. Ind. J. 2008c;28(10) (forthcoming).

Danaher PJ, Mullarkey GW, Essegaier S. Factors affecting web site visit duration: a cross-domain analysis. J Mark Res 2006;43(2):182–94.

Davis FD, Bagozzi RP, Warshaw PR. User acceptance of computer technology: a comparison of two theoretical models. Manage Sci 1989;35(8):982–1003.

Dellaert BGC, Kahn BE. How tolerable is delay?: consumers' evaluations of internet web sites after waiting. J Int Mark 1999;13(1):41–54.

eMarketer. Online retailers face four-second barrier; 2006 [Online]. Available: http://www.emarketer.com/Article.aspx?id=1004259 [2007, August 15].

Ewalt, D.M., 'Web Rage' in real world; 2002 [Online]. Available: http://www.informationweek.com/showArticle.jhtml [2007, October 5].

Fishbein M, Ajzen I. Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research. Reading, MA: Addison Wesley Publishing; 1975.

Hargittai E, Shafer S. Differences in actual and perceived online skills: the role of gender. Soc Sci Q 2006;87(2):432–48.

Hui MK, Bateson JEG. Perceived control and the effects of crowding and consumer choice on the service experience. J Consum Res 1991;18(2):174–84.

Hui MK, Toffoli R. Perceived control and consumer attribution for the service encounter. J Appl Soc Psychol 2002;32(9):1825–44.

Hui MK, Tse AC, Zhou L. Interaction between two types of information on reactions to delays. Mark Lett 2006;17(2):151–62.

Jackson LA, Ervin KS, Gardner PD, Schmitt N. Gender and the Internet: women communicating and men searching. Sex Roles 2001;44(5/6):363–79.

Otto JR, Najdawi MK, Wagner W. An experimental study of web switching behavior. Human Syst Manage 2003;22(2):87–93.

Pavlou PA, Fygenson M. Understanding and predicting electronic commerce adoption: an extension of the theory of planned behavior. MIS Q 2006;30(1):115–43.

Rose GM, Meuter ML, Curran JM. On-line waiting: the role of download time and other important predictors on attitude toward e-retailers. Psychol Mark 2005;22(2):127–51.

Taylor S, Fullerton GL. Waiting for service: perceptions management of the wait experience. In: Iacobucci D, Swartz TA, editors. The handbook of services marketing and management. Thousand Oaks, CA: Sage Publications; 2000. p. 171–90.

Weiser EB. Gender differences in Internet use patterns and Internet application preferences: a two-sample comparison. Cyberpsychol Behav 2000;3:167–77 (April).

Yen HR. An attribute-based model of quality satisfaction for internet self-service technology. Serv Ind J 2005;25(5):641–59.