



Online consumer behavior: Comparing Canadian and Chinese website visitors

Ebrahim Mazaheri ^{a,*}, Marie-Odile Richard ^{b,1}, Michel Laroche ^{c,2}

^a Laurentian University at Georgian College, 1 Georgian Drive, Barrie, ON, Canada, L4M 3X9

^b École d'Optométrie, University of Montreal, 3744 Jean-Brillant, Montreal, Canada, H3T 1P1

^c Royal Bank Distinguished Professor, Department of Marketing, John Molson School of Business, Concordia University, 1455 de Maisonneuve West, Montréal, Québec, Canada, H3G 1M8

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ABSTRACT

Zajonc's (1980) theory of emotions and Mehrabian and Russell's (1974) stimulus–organism–response (SOR) framework inform the development of a model of online customer behavior. The model examines the impacts of the three types of emotions (pleasure, arousal, and dominance) on perceptions of site atmospherics (informativeness, effectiveness, and entertainment). In turn, the associations of site atmospherics on site attitudes, site involvement, service attitudes, and purchase intentions are investigated. The model is compared between Canadian and Chinese customers based on Hofstede's (1991) cultural value dimensions. The findings supported the model and revealed several non-invariant paths between the groups. Particularly, the impact of pleasure (dominance) on the other behavioral variables was higher for Canadian (Chinese) compared to Chinese (Canadian) customers. Moreover, the impacts of low (high) task relevant cues were stronger for Chinese (Canadian) customers compared to their Canadian (Chinese) counterparts. Discussion centers on the theoretical and practical implications of the findings.

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1. Introduction

Many experts elaborate on how the internet changes the buying environment (Varadarajan and Yadav, 2002). The most important change is the greater availability of information. Thanks to the internet, customers are able to collect information on choice alternatives, prices, details, and features of products like never before. Given that one's purchase decision is based on information obtained in the pre-purchase stage, marketers need to investigate information search behavior (Bhatnagar and Ghose, 2004). Customers surf a website if they perceive it as informative, useful and entertaining. Therefore, the most important challenge for website designers is how to develop sites that customers perceive as “informative” and “entertaining”.

Psychologists suggest that emotions are associated with customers' information-processing strategies. Forgas (1998) reports that positive affect induces less systematic attention to stimulus information and greater reliance on top-down inferences. On the other hand, negative affect leads customers to be more careful and systematic in processing information (Clore et al., 1994; Schwarz, 1990). Therefore, investigating the impacts of emotions on perceptions of site characteristics is important.

Consistent with the use of the Mehrabian and Russell (1974) stimulus–organism–response framework (SOR) by Eroglu et al. (2001) in an online marketing, past studies show that website interfaces such as site background music, color, and text font impact emotions (Davis et al., 2008). Surprisingly, only few studies investigate the influence of emotions on other variables. Thus, the study here tries to fill this gap by proposing that aroused emotions from the site initial exposure associate with perceptions of site atmospherics which in turn impact attitudes, involvement, and purchase intentions.

The second goal is to compare the model between Chinese and Canadian cultures. Given the wide reach of the Internet and the fact that culture impacts responses to store atmospherics (Davis et al., 2008), it is crucial to explore the role of culture in reactions to online store atmospherics (Cole and O'Keefe, 2000; Chan and Tai, 2001).

The article is organized as follows. First, from the literature the model is developed. We discuss the influences of the three types of emotions on perceptions of environmental cues. Then, the impacts of these environmental cues on site attitudes, site involvement, service attitudes, and purchase intentions are discussed. Next, we develop hypotheses on path invariances between the two cultures; describe the data and empirical analyses used to test the model and hypotheses. Finally, results, conclusions, discussions, limitations and future research directions are discussed.

2. Conceptual framework

This section describes the model. See Fig. 1 for a summary of the model.

* Corresponding author. Tel.: +705 728 1968x1079.

E-mail addresses: emazaheri@laurentian.ca (E. Mazaheri), odile10@hotmail.com (M.-O. Richard), laroche@jmsb.concordia.ca (M. Laroche).

¹ Tel.: +1 514 738 3520.

² Tel.: +1 514 848 2424x2942; fax: +1 514 848 4576.

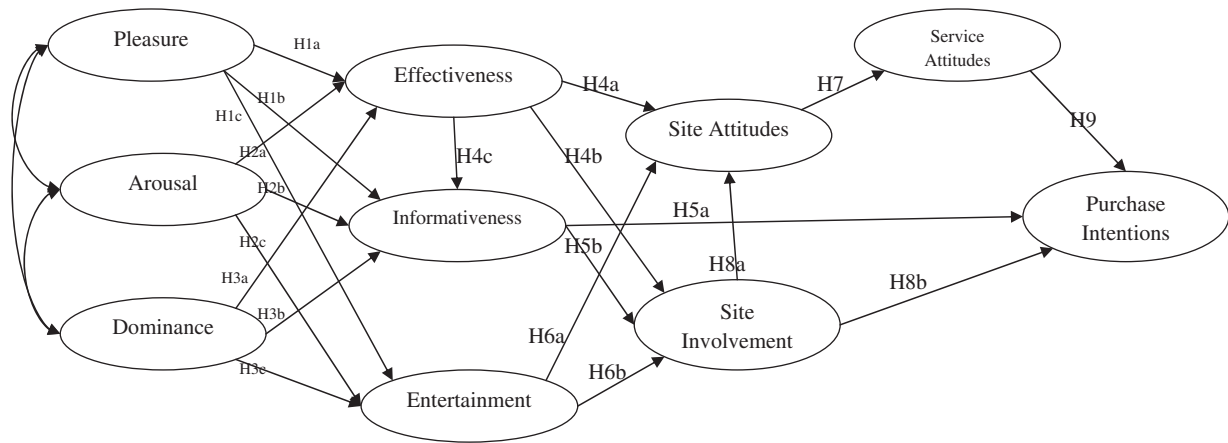


Fig. 1. Proposed model of online consumer behavior. $\chi^2 = 2937$, $df = 1510$, $\chi^2/df = 1.9$, NNFI = 0.977, CFI = 0.979, RMSEA = 0.040.

2.1. Site atmospherics and site interfaces

In retailing contexts, Baker (1987) and Baker et al. (1994) suggest that atmospherics are more influential than other marketing inputs that are not present at the point of purchase. This influence should be more important in online contexts as the environment is a small screen and customers have control over “which web pages to browse, for how long, and how much information to obtain” (Dholakia and Rego, 1998, p. 725).

Online studies focus on the role of site atmospherics on behavior (Eroglu et al., 2003; Hausman and Siekpe, 2009; Richard, 2005). Hausman and Siekpe (2009) use global search feature, humor, language options, gift services, and security indication to manipulate the website environment. Mummalaneni (2005) uses characteristics such as large-small, roomy-cramped, colorful-drab, well organized-unorganized layout, and good-bad displays to measure the site design. Eroglu et al. (2003) use product photos, ordering policy, customer feedback, text color, and employee photographs to manipulate high- and low-task relevant cues. Finally, Richard (2005) measures navigational characteristics, site informativeness, effectiveness, and entertainment as website atmospherics.

Thus, one can divide site environmental features into two categories. First, site features that are manipulated (“interface features”), such as font, text size, background music, and colors. Davis et al. (2008) find that background colors, animated icons, and visual cues influence pleasure and arousal. Previous studies consider these features “stimuli” and believe that they impact emotions automatically and subconsciously (Eroglu et al., 2001).

Second, other studies measure certain site characteristics, such as site informativeness and effectiveness. Customers’ perceptions of these characteristics are important for the company. Customers need to use cognitions to evaluate these characteristics, which are called “atmospherics” in this study. Eroglu et al. (2001) and Richard (2005) categorize the atmospherics into two groups: high- and low-task relevant cues. High-task relevant cues are site descriptors on the screen which facilitate the shopping goal attainment and low-task relevant cues are “relatively inconsequential to the completion of the shopping task” (Eroglu et al., 2001, p. 180).

We choose two high task-relevant cues (site informativeness and effectiveness of information content) and one low task-relevant cue (site entertainment). Eighmey (1997) define the internet as an “infotainment” medium since information and entertainment are two essential elements of websites. Informativeness is the ability of a website to make information available (Hoffman and Novak, 1996). An entertaining website is fun, exciting, cool, and imaginative (Chen and Wells, 1999). Although informativeness is an important characteristic, the way that information is provided and the type of

information are also important. Consistent with Richard (2005), we use “effectiveness of information content” to reflect if the information is accurate, up-to-date, complete, and relevant to visitors (Bell and Tang, 1998).

2.2. Emotions

Environmental psychologists find that consumers respond to dimensions of the physical surroundings emotionally and cognitively (Mehrabian and Russell, 1974). Previous studies consider emotions as an important element in human response to environmental settings and as a guide to behavior (Hull and Harvey, 1989). Other studies suggest that site interface features such as colors, lighting, or music impact emotions (Menon and Kahn, 2002; Morin et al., 2007; Vrechopoulos et al., 2004).

Positive and negative affects influence customer information-processing strategies (Clore et al., 1994) in a way that positive emotions are associated with heuristic information-processing strategies and negative emotions with systematic elaboration of information (Clore et al., 1994). For Rapoport (1982) “people react to environments globally and affectively before they analyze and evaluate them in more specific terms” (p.14), and feelings are first aroused which provide a background for more specific images (Rapoport, 1977).

As such, this study proposes that online customers’ emotions impact their perceptions of site informativeness, effectiveness, and entertainment. Thus, depending on the emotional states that arise at the initial exposure to the site, a customer may perceive differently the levels of site atmospherics. This is consistent with Zajonc (1980) who propose that “affect should not be treated unalterably and invariably postcognitive” (p. 172). He argues that affective reactions are independent of perceptual and cognitive operations and can influence responses. We propose that customers’ emotions precede their perceptions of site atmospherics.

Mehrabian and Russell (1974) introduce three types of emotions (PAD: pleasure, arousal, and dominance) to capture emotional responses to environmental stimuli (Richins, 1997). This is the most often used framework to measure emotions in this context. Pleasure is the degree to which someone feels good, joyful, happy, or satisfied, and is an indicator of website “likeability” (Poels and Dewitte, 2008). Arousal is the degree to which someone feels stimulated, active, or alert and is an indicator of website “motivational power” (Poels and Dewitte, 2008). Dominance is the degree to which someone feels controlling, influential, free or autonomous and is an indicator of website “controlling power.”

Russell (1979) states that pleasure and arousal can adequately represent the range of emotions exhibited in response to environmental

stimuli. However, in online contexts, customers are in greater control of choosing and processing information; therefore, dominance becomes a relevant emotional response (Eroglu et al., 2001) and is included in the model.

In this study, we use a “dimensional approach” and hypothesize that three emotional dimensions are positively associated with perceptions of environmental cues, namely site informativeness, effectiveness, and entertainment (H1a to H3c in Fig. 1). Mehrabian and Russell (1974) state that the three types may exhibit correlation. Therefore, we allow covariances among them.

2.3. Attitudes, involvement, and purchase intentions

Eroglu et al. (2001) use Mehrabian and Russell's (1974) stimulus–organism–response (SOR) framework in their conceptual model and suggest that online atmospherics influence the responses of online shoppers through the intervening effects of affective and cognitive states. In line with previous studies (Eroglu et al., 2003; Hausman and Siekpe, 2009; Richard and Chandra, 2005), this study proposes that perceptions of website atmospherics are positively associated with site attitudes and site involvement (H4a to H6b in Fig. 1). We do not hypothesize the association of site informativeness with site attitudes as many studies do not find such relationship (Dholakia and Rego, 1998; Richard, 2005). The study here includes the proposal that the informativeness of the website does not directly impact site attitudes; instead, effectiveness of information content is the one that impacts attitudes.

Effectiveness of information content positively impacts site informativeness (H4c). In other words, if the information provided on the site is accurate, up-to-date, and relevant, customers perceive the site as more informative. In addition, purchasing decisions are directly impacted by the information used (Keaveney and Parthasarathy, 2001). Therefore, the ability of a website to provide information influences purchase intentions. In other words, site informativeness positively influences purchase intentions (H5a).

Following Chan and Li (2010) and Jee and Lee (2002), websites likely reflect the characteristics of traditional advertisements, as they are crafted in the same way an ad is created. Websites are an important source of cues that form attitudes toward the service providers before consumption. Thus, site attitudes associate positively with service attitudes (H7).

In website navigational contexts, site involvement is considered as situational involvement and is comparable to message involvement in advertising (Richins and Bloch, 1986). Highly site-involved customers interact more with the website and try more interactive functions (Yoo and Stout, 2001). These interactions make customers more familiar with the website and increase their site attitudes and purchase intentions (H8a and H8b).

Finally, Oliver (1986) and many other researcher report the association of product attitudes and purchase intention. Therefore, service attitudes positively impact purchase intentions (H9).

3. Cross-cultural comparisons

There are calls for more cross-cultural comparisons of accepted models and theories. Culture reflects the preferences and attitudes of people. Tse et al. (1988) mention that “culture may provide detailed prescriptions (norms) for specific classes of situations...” (p. 82). Thus, culture is an obstacle for generalizing the findings; and replications of studies should be considered in other cultures to observe similarities and differences. Most cross-cultural studies report differences across cultures (e.g. Aaker, 2000; Moon et al., 2008; Steenkamp et al., 1999; Takada and Jain, 1991). Particularly, culture is an influential element in responses to store atmospherics (Davis et al., 2008). Therefore, testing the model across cultures is worthwhile.

Hofstede (1991) defines culture as the “collective programming of the mind which distinguishes the members of one group or category of people from those of another” (p. 4). Most marketing studies adopt this framework in which national cultures are differentiated on five dimensions: power distance, masculinity/femininity, long-term/short-term orientation, uncertainty avoidance, and individualism/collectivism. China and Canada obtain different scores on almost all dimensions (see Table 1). This study uses four dimensions to hypothesize the difference between these two cultures. Given that both countries falls in the middle of the masculinity-femininity scale, we do not anticipate differences on this dimension.

Individualism is the extent to which the members of a society pursue primarily their own interests rather than that of others (Hofstede, 1991). In collectivist societies individuals look after the interests of their group before themselves. Individualist customers are high on self reliance, competitiveness, aggressive creativity, conformity, and insecurity (Hsu, 1983). Canada scores high and China scores low on this dimension.

Many studies in psychology compare the role of emotions across cultures. In general, emotional features are stronger in individualistic societies (e.g. Schimack et al., 2002). Hsu (1983) uses “low emotionality” as one characteristic of collectivism. Moreover, Triandis (1995) states that collectivism emphasizes social norms and duty defined by the group rather than “pleasure” seeking. Steenkamp and Geyskens (2006) hypothesize that in individualistic cultures, the effect of emotional experience is larger than in collectivistic cultures. They use two dimensions of emotions (pleasure and arousal) and find support for “pleasure”.

Based on previous studies, significant differences on the “pleasure” dimension are likely to occur:

H10. The impact of pleasure on (a) site effectiveness, (b) site informativeness, and (c) site entertainment is stronger for Canadians compared to their Chinese counterparts.

Power Distance is the extent to which a society accepts unequal distribution of power (Hofstede, 1991). Larger power distance implies a greater tolerance of disparity of distribution of wealth and power in a society. China scores high and Canada scores low on power distance dimension. At work, the role of the manager in a high power distance culture is to initiate structure and tell people what to do rather than ask for their views. Therefore, in high power distance societies people are more task-oriented and less people-oriented (Hofstede, 1980). In the online context, we hypothesize that dominance should be the most influential element for the customer in a high power distance society.

Thus, for task-oriented customers, feeling of “control” in doing the task is more important compared to people-oriented customers. The task is to obtain the required information from the website.

H11. The impact of dominance on (a) site effectiveness, (b) site informativeness, and (c) site entertainment is stronger for Chinese customers compared to their Canadian counterparts.

Long-term orientation is the extent to which members of a society place great significance on the values of thrift, persistence, and long term alliances (Hofstede, 1991). Societies with short-term orientation value personal steadiness and stability, saving face, favors, and gifts

Table 1
Hofstede scores for Canada and China.

Dimensions	Canada	China
Power distance	39	80
Masculinity	52	66
Long-term orientation	23	118
Individualism	80	20
Uncertainty avoidance	48	30

(Hofstede, 1991). For Hofstede (1991), China scores the highest in long-term orientation and Canada's score is among the lowest. Furrer et al. (2000) find that long-term orientation associate with responsive and reliable service. Thus, customers in long-term oriented societies have higher expectations about the amount of information and effectiveness of information provided in the website. In other words, the influences of site informativeness and site effectiveness on other variables – site involvement, site attitude, and purchase intentions – are stronger for Canadians than for Chinese.

Uncertainty avoidance is the extent to which members of a society feel threatened by uncertain or unknown situations (Hofstede, 1991). Customers in a high uncertainty avoidance culture tend to avoid uncertain situations. People with low uncertainty avoidance have more tolerance for risk. Canada marginally scores higher than China (see Table 1). Therefore, Canadians would attempt more to minimize uncertainty. Seeking and collecting additional information is a strategy to reduce the level of uncertainty and risk involved in purchasing decisions (Murray, 1991). Therefore, the impacts of site informativeness and effectiveness of information content on site attitudes, site involvement, and purchase intentions are higher for Canadians compared to the Chinese.

Individuals from different cultures tend to focus on different types of cues (Mattila, 1999). Individualism emphasizes more individual responses to context rather than context and cues. Considering the nature of individualism and collectivism, Davis et al. (2008) find that high task cues – the site descriptors on the screen which facilitate shopping goal attainment – are more central to the decision-making process for individualistic customers.

This discussion of the three cultural dimensions informs the following hypotheses:

H12. The impact of site effectiveness on (a) site attitudes, (b) site involvement, and (c) site informativeness is greater for Canadians than for the Chinese.

H13. The impact of site informativeness on (a) site involvement and (b) purchase intention is greater for Canadians than for the Chinese.

The symbolic-subjective culture of collectivism is context sensitive; therefore, collectivistic customers rate the low task cues – the site descriptors that are in consequential to the completion of shopping task – as more helpful (Davis et al., 2008). The impacts of site entertainment, a low task cue, on site attitudes and involvement are likely to be stronger for Chinese than for Canadians.

H14. The impact of site entertainment on (a) site attitudes and (b) site involvement is greater for the Chinese than for Canadians.

Compared to Canada, China scores higher on “long-term orientation.” Long-term oriented individuals emphasize persistence and long-term alliances (Tsikriktsis, 2002). Collectivism is a high context culture and emphasizes causal reasoning and forming perceptions about social contexts and situational constraints (Davis et al., 2008). As a result, the associations of site attitudes with service attitudes and site involvement with site attitudes are likely to be higher for Chinese customers.

H15. The impact of site attitudes on service attitudes is greater for Chinese than for Canadians.

H16a. The impact of site involvement on site attitudes is greater for Chinese than for Canadians.

Individualistic customers tend to make their decisions based on their own interests. In an individualistic society, attitudes and behaviors are regulated by individual preferences (Triandis, 1989). On the other hand, attitudes and behaviors in a collectivist society are largely influenced by society's preferences (Triandis, 1989). Therefore,

we argue that Canadians make their purchasing decisions faster. If they like the service (higher attitudes) and are involved in the website, the chances that they would purchase the product or service are higher. For the Chinese, purchasing decisions are more complex. They have to consider their group interests beside their own.

Therefore, the impacts of service attitudes and site involvement on purchase intentions are likely to be greater for Canadians.

H16b. The impact of site involvement on purchase intentions is greater for Canadians than for Chinese.

H17. The impact of service attitudes on purchase intentions is greater for Canadians than for Chinese.

4. Method

For testing the hypotheses, we used real websites of service providers in 8 different industries: hotels, online bookstores, dental services, banks, vacation destination, restaurants, financial investments, and plastic surgery. We selected four websites for dental services, two for online bookstores, four for restaurants, two for financial investments, four for hotels, four for plastic surgery, three for vacation destinations and two for banks.

Data were collected online using a computer lab in a Northeastern university. Subjects were randomly assigned to one of the twenty five websites. They were exposed to a real website of a service company and were asked to surf the site and collect information for at least 5 min. The duration of completing the survey was monitored and the subjects who visited the site and completed the questionnaire in less than 15 min were eliminated. After the eliminations, our sample consisted of 234 Chinese (54% female and 46% male) and 350 Canadians (58% female and 42% male) subjects. Most respondents were undergraduate students (98.3% of Chinese and 98.9% of Canadians) between the ages of 18 and 24 (75% of Chinese and 80% of Canadians).

5. Measurement

The questionnaire contains several measures addressing the research questions. Most scales are adapted from the literature. Mehrabian and Russell's (1974) PAD scale for emotions is used to measure pleasure, arousal, and dominance. Chen and Wells' (1999) scales are used to measure website entertainment (4 items) and informativeness (4 items).

Effectiveness of information content is measured by a 5-item scale adopted from Bell and Tang (1998). Eighmey's (1997) scale for attitudes was modified to a 5-item scale for website and service attitudes. Website involvement is measured by a 6-item scale (Muehling et al., 1990). Finally, a 4-item scale for purchase intentions is adopted from Dodds (1991). Five-point Likert scales are employed to indicate the respondent's levels of agreement or disagreement with each statement.

6. Results

6.1. Test of reliability and confirmatory factor analysis (CFA)

Given the high number of variables, we first run an exploratory factor analysis on all 42 items. The results of EFA demonstrate that all items, except two, have high primary loading (higher than 0.60) and low cross loadings (lower than 0.35). Two items of arousal are eliminated because of cross loadings. The Cronbach's alphas for all constructs are in the acceptable range.

Then, we run CFA by specifying the factor model including all 10 variables used for each cultural group. The loadings and R-squared for all items are in the acceptable range (Table 2). The results of the CFA

Table 2
Results of CFA for each group.

Constructs	Items	Factor loadings		R-square	
		Canadian	Asian	Canadian	Asian
Arousal	Relaxed–stimulated	0.85	0.67	0.72	0.44
	Calm–excited	0.89	0.88	0.76	0.78
Pleasure	Unhappy–happy	0.74	0.71	0.54	0.51
	Annoyed–pleased	0.89	0.86	0.78	0.74
	Dissatisfied–satisfied	0.89	0.78	0.79	0.61
	Despairing–hopeful	0.79	0.83	0.62	0.69
Dominance	I felt that I had a lot of control over my visiting experiences at this site	0.83	0.52	0.68	0.27
	While I was on this site, I could choose freely what I wanted to see	0.81	0.76	0.66	0.58
	While surfing the web, I had absolute control over what I could do on this site.	0.75	0.69	0.56	0.48
	While surfing the web, my actions decided the kind of experiences I got on this site	0.77	0.75	0.59	0.56
Site informativeness	While I was on this site, I controlled what happened in my online information searches	0.80	0.75	0.63	0.57
	This site is informative to me	0.89	0.87	0.79	0.76
	This site is resourceful to me	0.92	0.92	0.85	0.85
	This site is useful to me	0.86	0.86	0.74	0.74
Effectiveness of information content	This site is knowledgeable for me	0.87	0.70	0.75	0.49
	The information on this site is convenient	0.77	0.77	0.59	0.60
	The information on this site is accurate	0.87	0.79	0.75	0.62
	The information on this site is up-to-date	0.84	0.75	0.71	0.56
Site entertainment	The information on this site is complete	0.77	0.70	0.59	0.49
	The information on this site is relevant	0.84	0.78	0.71	0.61
	This site is fun to browse	0.90	0.91	0.82	0.83
	This site is exciting	0.95	0.90	0.91	0.80
Site attitudes	This site is imaginative	0.85	0.84	0.73	0.71
	This site is entertaining	0.91	0.87	0.83	0.76
	This site is flashy	0.69	0.76	0.48	0.57
	This site is bad–good	0.85	0.86	0.73	0.74
Site involvement	I dislike–like this site	0.90	0.92	0.80	0.85
	I react unfavorably–favorably toward this site	0.91	0.91	0.84	0.83
	I have negative–positive feelings toward this site	0.90	0.82	0.80	0.67
	This site is unattractive–attractive	0.72	0.83	0.52	0.69
Service attitudes	This web site is: Unimportant–Important to me	0.94	0.89	0.88	0.80
	This web site is: Irrelevant–Relevant to my needs	0.91	0.94	0.83	0.88
	This web site is: Not worth–Worth remembering	0.88	0.86	0.78	0.74
	This web site is: Not worth–Worth paying attention to	0.88	0.90	0.77	0.80
Purchase intentions	This web site is: Does not matter–Matters to me	0.96	0.91	0.92	0.83
	This web site is: Insignificant–Significant to me	0.96	0.95	0.92	0.91
	This service is bad–good	0.88	0.88	0.78	0.77
	I dislike–like this service	0.94	0.91	0.89	0.84
	I react unfavorably–favorably toward this service	0.95	0.93	0.90	0.86
	I have negative–positive feelings toward this service	0.96	0.90	0.92	0.80
	This service is unattractive–attractive	0.86	0.83	0.73	0.69
	The likelihood of purchasing this product is high.	0.89	0.82	0.79	0.68
	The probability that I would consider buying the product is high.	0.92	0.91	0.84	0.83
	My willingness to buy the product is high.	0.87	0.92	0.76	0.84
	I intend to purchase this product.	0.83	0.91	0.69	0.82

demonstrate good measurement fit for both groups: the chi-square, NNFI, CFI, and RMSEA have values of 1873 (df = 853), 0.976, 0.978, and 0.059 for the Canadian sample and 1534 (df = 853), 0.975, 0.978, and 0.059 for the Chinese sample. Given the number of analyzed items and factors, the model fit parameters are in the acceptable range (Baumgartner and Homburg, 1996).

For convergent validity, the average variance explained (AVE) by each factor is calculated (second column, Table 3). All factors have AVE higher than 0.50 demonstrating that a construct share more variance with its indicators than with error variances (Fornell and Larcker, 1981). For discriminant validity, the correlations between factors and square root of the AVE are compared (Table 3). The square root of AVE for each factor is greater than the correlations between that factor and all other factors, exhibiting appropriate discriminant validity (Fornell and Larcker, 1981).

6.2. Tests of hypotheses

To test the hypotheses, multiple-group analysis in EQS is employed. First we examine the factor loading invariance across groups (Bollen, 1989). Without factor loading invariance it is difficult

to argue that the factors are identical across different groups (Bentler, 1989). Steenkamp and Baumgartner (1998) also state that metric invariance should be established across groups before comparing the strengths of the path coefficients. As a result, measurement level constraints are introduced before testing for causal path invariances (Byrne, 1994).

Table 4 summarizes the results. Fit parameters demonstrate a good fit for all models. Model 1 is the least restrictive, and models 2 to 4 are nested in model 1. When we constrain all the loadings, the model does not significantly improve. The multivariate LM χ^2 statistics and related *p*-values reveal two non-invariant factor loadings: one item of dominance and one item of site attitudes. Releasing these two constraints (Model 3) produces a satisfactory measurement model that is invariant across the two groups. The Chi-square difference between model 3 and the baseline model is 36 with 29 degrees of freedom (*p* > 0.10). Therefore, partial metric invariance is supported.

By constraining the paths to be invariant across the two groups, the model does not improve (Model 4 in Table 4). Therefore, the paths are non-invariant. After testing the measurement invariance across groups, the Lagrange test is used to find the differences (Bentler, 2004). The multivariate test determines a simultaneous effect of

Table 3

Square root of the AVE are on diagonal (bold) and correlations among factors are off-diagonal.

	AVE	Pleasure	Arousal	Dominance	Informativeness	Effectiveness	Entertainment	Site attitudes	Site involvement	Service attitudes	Purchase intentions
Pleasure	0.71	0.84									
Arousal	0.76	0.46	0.87								
Dominance	0.60	0.33	0.16	0.77							
Informativeness	0.76	0.53	0.35	0.31	0.87						
Effectiveness	0.64	0.51	0.26	0.46	0.54	0.80					
Entertainment	0.74	0.56	0.52	0.41	0.58	0.49	0.86				
Site attitudes	0.73	0.56	0.40	0.40	0.58	0.62	0.63	0.85			
Site involvement	0.85	0.54	0.39	0.18	0.56	0.39	0.51	0.56	0.92		
Service attitudes	0.82	0.48	0.26	0.22	0.47	0.44	0.45	0.61	0.47	0.91	
Purchase intention	0.79	0.49	0.43	0.18	0.56	0.34	0.50	0.50	0.60	0.50	0.89

several restrictions in the model and is used to test the hypotheses. The null hypothesis for each constraint is that the constraint is true in the population involved. Therefore, the low probability value of the Lagrange test statistic indicates that the constraint is unreasonable. The results of the multivariate Lagrange test are presented in Table 5. All hypotheses are directional.

6.3. Results of multiple-group analyses

Results of multiple-group analyses show that most paths (18/20) are significant in at least one culture; however, the strengths of the paths are not invariant across the groups. Contrary to our model, the impacts of site effectiveness on site involvement (H4b) and arousal on site effectiveness (H2a) are not significant in either group. Also, the impact of dominance on site informativeness (H3b) is not significant for the Chinese and is negative for Canadians.

The impacts of the three emotions vary between the cultures. In line with our hypotheses (H10a, and H10c), pleasure has stronger impacts on customers' site effectiveness, and entertainment for Canadians. However H10b is not supported. Also in line with our hypothesis (H11a), the influence of dominance on site effectiveness is greater for the Chinese, but H11b and H11c are not supported. Consistent with the previous studies, the impact of arousal on other variables is invariant between cultures.

Moreover, the impacts of high task cues on customer behavior variables are greater for Canadians than for the Chinese. In line with our hypotheses, the impacts of site effectiveness on site attitudes, site informativeness on site involvement, and site informativeness on purchase intentions are greater for the Canadians (0.318, 0.577, and 0.150 respectively) compared to the Chinese (0.125, 0.401, and 0.083 respectively) supporting H12a, H13a, and H13b.

On the other hand, the impacts of entertainment on site attitudes and site involvement are significantly higher for Chinese respondents (0.577 and 0.444) compared to the Canadians (0.376 and 0.156) supporting H14a and H14b. In line with hypothesis H15, the impact of site attitudes on service attitudes is stronger for the Chinese (0.601) compared to Canadians (0.474).

The impacts of site involvement on site attitudes and purchase intentions and also service attitudes on purchase intentions are

invariant between the two cultures, failing to support H16a, H16b, and H17.

7. Conclusion and discussion

This study proposes a model of online customer behavior in services marketing and compares all the relationships between Chinese and Canadian cultures. Most paths (18/20) are significant in at least one group. Moreover, half of the 18 significant structural paths are invariant between the cultures. Given that the Chinese respondents were students in Canada, we expect to find even larger differences with mainland Chinese.

Our theoretical contribution is to develop a more comprehensive model of online consumer behavior. For that, we distinguish between two groups of website features. The first group – website interfaces – is considered as stimulus and influence shoppers' emotions at the initial exposure. The second group – site atmospherics – is influenced by the three types of emotions.

The results of multiple-group analysis suggest that two types of emotions (pleasure and dominance) influence other behavioral variables differently in the two cultures. Living in an individualistic society, pleasure is the most influential type of emotions for Canadian customers. On the other hand, dominance is the key type of emotions for the more task-oriented customers and its influences on the other cognitive and affective variables are stronger for the Chinese than for Canadians. These findings suggest that website designers should use different techniques to increase visitors' feelings of pleasure and likeability of the website for Canadian and feeling of control over the website for Chinese customers.

Consistent with our hypotheses, the impact of *low task relevant cues* on site attitudes and site involvement are stronger for the Chinese who live in a long-term oriented, low uncertainty avoidance, and collectivistic society. On the other hand, living in a short-term oriented, high uncertainty avoidance, and individualistic society, Canadians rely more on the *high task relevant cues* to form their site attitudes, being involved in the site, and making a purchase decision. Service providers should enhance the hedonic aspects of the website for the Chinese and the utilitarian aspects for Canadians.

Given the Chinese emphasis on persistence, long-term alliances and causal reasoning, the association of site attitudes and service

Table 4

Test of measurement invariance between the two groups.

	Model	χ^2	df	χ^2/df	$\Delta\chi^2$ from model 1	Δdf from model 1	p-value	NNFI	CFI	RMSEA
1	Base model: no constraint	2937	1510	1.94	0	0	1	0.977	0.979	0.040
2	Factor loading invariance	3001	1541	1.95	64	31	0.000	0.977	0.979	0.041
3	Partially factor loading invariance	2973	1539	1.93	36	29	0.21	0.978	0.979	0.040
4	Structural path invariance	2993	1531	1.95	56	21	0.000	0.977	0.979	0.041

Table 5

Results of the invariance tests of the model between the two groups.

Conceptual model	Cultural comparison	Hypothetical path	Chinese	Canadian	Path differences: $\chi^2(p\text{-value})$
H1a	H10a	Pleasure → effectiveness	0.260***	0.415***	3.01 (0.083)
H1b	H10b	Pleasure → informativeness	0.200***	0.261***	0.638(0.424)
H1c	H10c	Pleasure → entertainment	0.387***	0.460***	2.66 (0.100)
H2a	–	Arousal → effectiveness	0.047n.s.	0.022n.s.	0.087(0.769)
H2b	–	Arousal → informativeness	0.148**	0.105*	0.444(0.505)
H2c	–	Arousal → entertainment	0.266**	0.314***	0.025(0.870)
H3a	H11a	Dominance → effectiveness	0.623***	0.402***	14.4(0.000)
H3b	H11b	Dominance → informativeness	–0.049n.s.	–0.124*	0.256(0.613)
H3c	H11c	Dominance → entertainment	0.249***	0.210***	1.93(0.165)
H4a	H12a	Effectiveness → site attitudes	0.125*	0.318***	3.16(0.076)
H4b	H12b	Effectiveness → site involvement	–0.178n.s.	–0.021n.s.	1.83(0.190)
H4c	H12c	Effectiveness → informativeness	0.679***	0.534***	2.07(0.150)
H5a	H13a	Informativeness → site involvement	0.401**	0.577***	3.10 (0.078)
H5b	H13b	Informativeness → purchase intentions	0.083n.s.	0.150*	4.80(0.030)
H6a	H14a	Entertainment → site attitudes	0.577***	0.376***	5.22(0.022)
H6b	H14b	Entertainment → site involvement	0.444***	0.156**	4.55(0.033)
H7	H15	Site attitudes → service attitudes	0.601***	0.474***	3.02(0.082)
H8a	H16a	Site involvement → site attitudes	0.268***	0.145**	2.51(0.113)
H8b	H16b	Site involvement → purchase intentions	0.328***	0.499***	1.70(0.192)
H9	H17	Service attitudes → purchase intentions	0.352***	0.229***	2.16(0.142)

*** $p < 0.001$.** $p < 0.01$.* $p < 0.05$.

attitudes is found to be stronger for the Chinese compared to Canadians. Therefore, increasing customers' attitudes toward the website can be considered as a competitive advantage for service providers who target the Chinese.

The findings suggest that the impacts of site involvement and service attitudes on purchase intentions are not significantly different between the cultures. Based on the individualism/collectivism dimension, we hypothesized these relationships to be stronger for Canadians. However, in a society with high uncertainty avoidance, customers tend to create more “formal rules” for their decisions (Moon et al., 2008). Even though, Canadians make decisions based on self-interests, rules for the decision can be established. As a result, the influence of site involvement and service attitudes on purchase intentions becomes invariant between the groups.

Also, our findings do not support the influence of site effectiveness on site involvement. For some services, effectiveness of information content may allow customers to obtain the required information faster and more conveniently. In many cases, the faster they get their information, the faster they leave the website and the lower is their level of involvement. The wide range of services that we used might explain this contradictory finding. Future research should explore the moderating impact of service type in this relationship.

8. Limitations and future research

To interpret the results, consider the limitations of this study. This study includes a wide range of service websites. The only disadvantage is that we are not able to control for all variables. For example, the type of service might have a moderating effect on the site effectiveness and site involvement relationship. Future research should investigate the role of service type on the impact of effectiveness of information content on site involvement.

Most respondents are students. Given their familiarity with internet technology, this group uses the Internet the most. However, one should be cautious about generalizing these findings to other segments of the population. Future research might investigate the possible moderating impact of age and/or social status on online customer behavior.

The final limitation is choosing the Chinese sample. They were all students in Canada. Using real customers from China may provide even greater differences.

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