

Research note

Online Customer Experience in e-Retailing: An empirical model of Antecedents and Outcomes

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Abstract

The theoretical understanding of online shopping behavior has received much attention. Less focus has been given to the formation of the customer experience (CE) that results from online shopper interactions with e-retailers. This study develops and empirically tests a model of the relationship between antecedents and outcomes of online customer experience (OCE) within Internet shopping websites using an international sample. The study identifies and provides operational measures of these variables plus the cognitive and affective components of OCE. The paper makes contributions towards new knowledge and understanding of how e-retailers can provide effective online experiences for customers.

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Keywords: E-retailing; Online customer experience; Trust; Satisfaction; Repurchase intention; Structural equation modeling

Introduction

Effective retail management strategies have been linked to the creation of customer experience (CE), which in turn leads to successful performance outcomes (Gentile, Spiller, and Noci 2007; Grewal, Levy, and Kumar 2009; Tynan and McKechnie 2009; Verhoef et al. 2009). The importance of experience to the growth of online shopping has similarly been recognized (Elliot and Fowell 2000). Given the latest technological developments in e-retailing, this paper advances our understanding of CE in the online retail context. In this respect we follow the call by Brown and Dant (2009, p. 118) for Internet researchers to make significant contribution to the retailing literature “by utilizing theories not frequently applied to internet issues”.

The e-retail landscape is now populated by “pure players” (online only retailers) as well as multi-channel retailers. The multi-channel context increases e-retailer opportunities to reach

customers while also presenting a number of challenges in terms of the complexity of shopper behaviors (Balasubramanian, Raghunathan, and Mahajan 2005; Konus, Verhoef, and Neslin 2008). Web 2.0 features (such as interactivity, customer-to-customer (C2C) online recommendations, online word of mouth, or user generated content) advance the potential for e-retailer-to-customer interactions. Complexity is further created by advances in hardware such as handheld devices that enable real time information exchange and anytime, anywhere purchase (Balasubramanian, Peterson, and Jarvenpaa 2002). The combination of this increasingly complex e-retail landscape, coupled with the importance of CE to business performance, means that retailers must understand how to ensure an optimum online experience for the customer both within, and across, channels.

A number of studies have investigated the drivers of website quality and the development of measurement instruments (Kaynama and Black 2000; Loiacono, Watson, and Goodhue 2002). Identification of the components of website quality provides a start-point for the exploration of OCE. Experience however is more than the component parts of a website but rather, in this study, is viewed as the cumulative outcome of consistent exposure to the e-retailer’s offer online. The purpose of our study is to expand and further our knowledge of OCE, particularly in relation to its antecedents and outcomes. The main objectives of our study are as follows:

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1. identify the components of OCE,
2. develop a comprehensive theoretical model of OCE that incorporates direct and indirect antecedent variables, OCE component variables and outcome variables based on pre-existing theory of customer purchase intention,
3. test empirically the explanatory model of OCE to find support for the proposed causal relationships.

By pursuing these objectives we make several contributions to the e-retailing literature that add both new knowledge and extend existing knowledge (Brown and Dant 2008). We do this by developing and testing a new model of OCE not currently found in the literature. The structure of the paper is as follows. We begin by reviewing current definitions of OCE in relation to existing definitions of CE in the traditional offline context. We present the OCE model and provide supporting literature for the antecedent and outcome variables and the relationships between them. In the next section we lay out the research method adopted, followed by an analysis of the findings of the study. Finally we provide a discussion of the findings, managerial implications, limitations of the study and indications for future research.

Background to online customer experience

Customer experience

Meyer and Schwager (2007) define CE as “the internal and subjective response that customers have to any direct or indirect contact with a company” (p. 118). CE is conceptualized as a psychological construct, which is a holistic, subjective response resulting from customer contact with the retailer and which may involve different levels of customer involvement (Gentile, Spiller, and Noci 2007; Lemke, Clark, and Wilson 2011). Gentile, Spiller, and Noci (2007) find evidence of six components of OCE. These are defined as: *sensorial, emotional, cognitive, pragmatic, lifestyle, and relational*. The two psychological constructs of *cognition* and *affect* have been consistently identified as influential components of customer behavior and customer experience (Bagozzi, Gopinath, and Nyer 1999; Frow and Payne 2007; Tynan and McKechnie 2009) and are incorporated in models of CE such as that of Verhoef et al. (2009).

The outcome of CE is the formation of a “take-away impression” that is created as a result of the contact and stored in the customer’s long-term memory (Carbone and Haeckel 1994). Impression formation is highly personal, being based on the individual’s interpretation of incoming sensory data from the external environment (Carbone and Haeckel 1994). The impact of the stored impression upon customer behavior has important practical implications for retailers both off and online. Lemke, Clark, and Wilson (2011) comment that the outcome of CE has not been the focus of many CE models and this paper addresses this weakness in its exploration of OCE by incorporating behavioral outcomes.

Tynan and McKechnie (2009) view experience marketing as consistent with a Service-Dominant Logic approach (Vargo and Lusch 2008) and the notion of “value in use” in which the customer jointly determines the value of the good or service

offering. Lemke, Clark, and Wilson (2011) adopt a value-in-use approach to understanding customer experience in which CE is co-created by an alignment between the customer’s goals and an organization’s offering. Given the nature of Web 2.0 technology, virtual environments now exist in which the customer and firm jointly co-create experiences (Kohler et al. 2011). This paper similarly adopts a value-in-use approach viewing OCE as effective where an alignment takes place between the customer’s goals and the e-retailer’s online offering.

Online customer experience

Online shoppers encounter incoming sensory data from a range of stimuli on the e-retailer’s website such as text-based information, visual imagery, video, or audio delivery. Consistent with Gentile, Spiller, and Noci (2007) we posit that the customer interprets this data from a cognitive and affective perspective creating impression formation of the e-retailer website. Novak, Hoffman, and Yung (2000) explore OCE using a cognitive view of the online interaction. They define OCE as the “cognitive state experienced during navigation” (Novak, Hoffman, and Yung 2000, p. 22) and propose a number of person-centered, cognitively-based determinants of OCE (Hoffman and Novak 2009; Novak, Hoffman, and Duhachek 2003; Novak, Hoffman, and Yung 2000). Our study extends the work of Novak, Hoffman, and Yung (2000) by the inclusion of the affective state in our conceptualization of OCE.

The literature suggests certain features of OCE. Firstly, past experience influences future online behavior (Ling, Chai, and Piew 2010). Therefore we view OCE impression formation as cumulative following repeated exposure to the e-retailer. Secondly, given that an online shopping interaction does not take place at the retailer’s location, the e-retailer may not have total control of all aspects of the OCE formation (Verhoef et al. 2009). The online shopping situation (e.g., at home or at the office) may involve many external variables of which the e-retailer is unaware.

In summary, we assume OCE to be a psychological state manifested as a subjective response to the e-retailer’s website (Gentile, Spiller, and Noci 2007; Meyer and Schwager 2007). The customer engages in cognitive and affective processing of incoming sensory information from the website, the result of which is the formation of an impression in memory. A number of antecedent conditions will influence the cognitive and affective state of the customer. Repeated website exposure makes the process of impression formation cumulative over time. We now move to discuss our conceptual model of OCE, which identifies these antecedent conditions and links them to behavioral outcome variables.

The conceptual model

Fig. 1 presents our conceptual model of OCE. We adopt the established S–O–R or input–response–output framework as found within many online purchase intention models (Koufaris, Kambil, and LaBarbera 2001; Perea y Monsuwé, Dellaert, and Ruyter 2004; Shim et al. 2001). Our model is composed of three

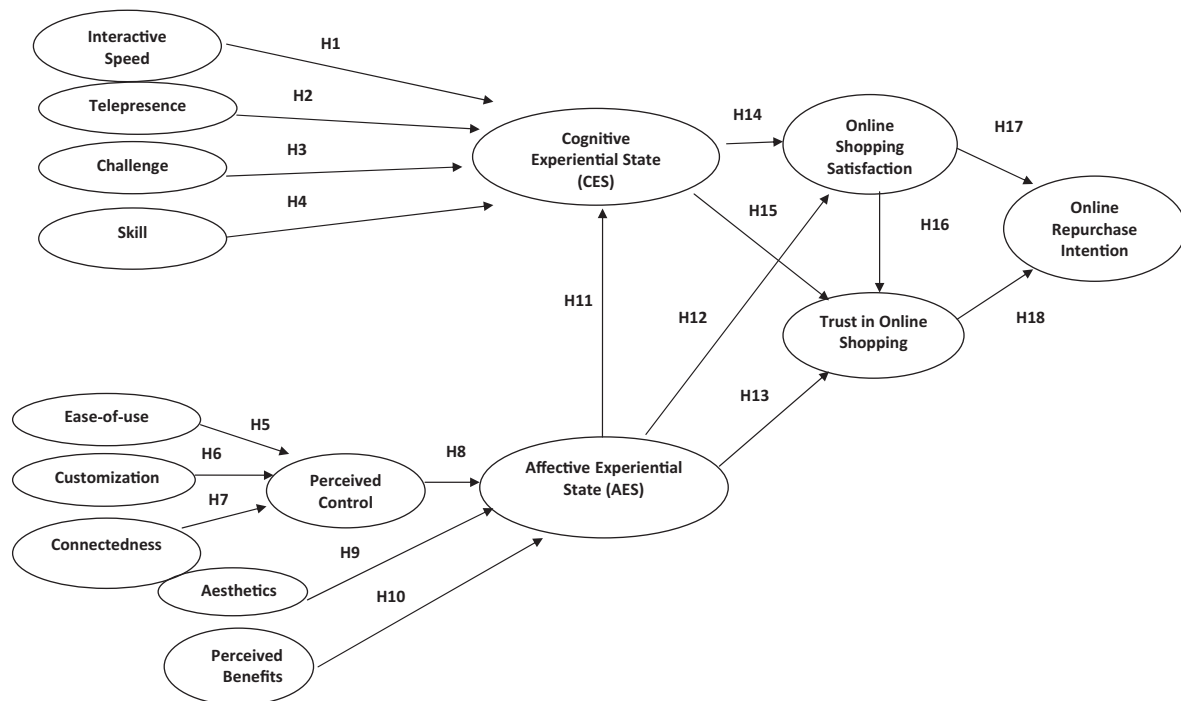


Fig. 1. Conceptual model of online customer experience.

types of variables, which are discussed below: *antecedent variables*, *OCE component variables*, and *outcome variables*. Ten antecedent variables, supported within the literature, are formative upon the cognitive and affective components of OCE, which in turn lead to three outcome behaviors: *Satisfaction*, *Trust*, and *Repurchase Intention*. We present below a discussion of the conceptual model with supporting hypotheses summarized in Table 1 showing where testing provides new, versus confirmation of existing knowledge within the OCE literature.

Antecedent variables

Ten antecedent variables are proposed that independently influence the Cognitive Experiential State (CES) and Affective Experiential State (AES) of OCE supported by literature from the fields of online consumer behavior and OCE. For literature summaries of each field see: Perea y Monsuwé, Dellaert, and Ruyter (2004), Cheung, Chang, and Limayem (2005), and Rose, Hair, and Clark (2011).

Antecedents of the Cognitive Experiential State (CES)

Four antecedent variables are hypothesized to be formative upon CES with theoretical support taken from a body of work on online experience by Novak, Hoffman, and Yung (2000) and continued by Novak, Hoffman, and Duhachek (2003) and Hoffman and Novak (2009). The key premise of this work is the concept of “Flow”, which is a cognitive state in which the individual is completely absorbed in an activity to the extent that they are mentally immersed and oblivious to time or other things around them (Csikszentmihalyi 1997). Flow is a particular cognitive state applied to online studies (Huang 2006; Mathwick and Rigdon 2004). Flow online has been defined as

“a cognitive state experienced during online navigation” (Novak, Hoffman, and Yung 2000, p. 24). It is a motivational construct (Csikszentmihalyi 1975, 1990), influencing experience (Huang 2006). (See Hoffman and Novak 2009; Mollen and Wilson 2010 for a summary of its application and a critique.)

Flow state leads to high levels of enjoyment, involvement, and concentration, making an activity interesting, gratifying, and self-absorbing and therefore compelling by its nature (Huang 2006). The outcome of an optimum Flow state is a positive, subjective experience (Hoffman and Novak 2009). Four direct antecedents of optimum online Flow state, as identified by Novak, Hoffman, and Yung (2000), are included within the OCE model: *Telepresence*, *Level of Challenge*, *Skill*, and *Speed of Interactivity*. Definition of these antecedent variables and statement of the four hypotheses (H1–H4) are provided in Table 1.

Antecedents of the Affective Experiential State (AES)

Five antecedent variables are hypothesized to be formative upon the AES of OCE as summarized in Table 1. We propose that *Perceived Control* has a mediating effect upon three variables: *ease-of-use* (such as navigation, search, and functionality); *customization* (personal tailoring of website appearance and functionality); and *connectedness* (ability to connect and share knowledge and ideas with others in the virtual community) and their effect upon AES (H5–H8). *Perceived Control* is an attitudinal variable that helps explain online consumer behavior (Koufaris, Kambil, and LaBarbera 2001) as technical complexity, plus the wealth of incoming information makes online control crucial. Two factors drive desire for control. First, lack of time for shopping leads to a desire for efficiency and second, limitations on the individual’s cognitive resources (see online pre-purchase models such as Shim et al. 2001). Agarwal

Table 1
Summary of OCE model, hypotheses and supporting literature.

Hypotheses	Key supporting literature	Prior testing in the context of OCE
H1 The greater the speed of interactivity when using Internet shopping websites, the greater the cognitive experiential state (flow).	Mollen and Wilson (2010); Hoffman and Novak (2009); Skadberg and Kimmell (2004); Novak, Hoffman, and Yung (2000).	Previously tested in the context of OCE (Novak, Hoffman, and Yung 2000).
H2 The greater the telepresence experienced by using Internet shopping websites, the greater the cognitive experiential state (flow).	Mollen and Wilson (2010); Hoffman and Novak (2009); Novak, Hoffman, and Yung (2000).	Previously tested in the context of OCE (Novak, Hoffman, and Yung 2000).
H3 The greater the challenge posed by using Internet shopping websites, the greater the cognitive experiential state (flow).	Hoffman and Novak (2009); Novak, Hoffman, and Yung (2000).	Previously tested in the context of OCE (Novak, Hoffman, and Yung 2000).
H4 The greater the level of skill at using Internet shopping websites, the greater the cognitive experiential state (flow).	Hoffman and Novak (2009); Novak, Hoffman, and Yung (2000).	Previously tested in the context of OCE (Novak, Hoffman, and Yung 2000).
H5 The greater the ease of use of Internet shopping websites, the greater the level of perceived control.	Cheung, Chang, and Limayem (2005); Perea y Monsuwé, Dellaert, and Ruyter (2004); Gefen (2003); Cho and Park (2001).	Previously tested in the context of online shopping behaviour (Gefen 2003). New testing of the role of Ease-of-use as antecedent of OCE.
H6 The greater the opportunity for customization of Internet shopping websites, the greater the level of perceived control.	Blackwell, Miniard, and Engel (2006); Burton (1999); Chang, Yuan, and Hsu (2010).	New testing of the role of customization as an antecedent of OCE.
H7 The greater the level of connectedness when using Internet shopping websites, the greater the level of perceived control.	Kim and Jin (2006); Muniz and O'Guinn (2001); O'Guinn and Muniz (2005); Pentina, Prybutok and Zhang (2008).	New testing of the role of connectedness as an antecedent of OCE.
H8 The greater the perception of control when using Internet shopping websites, the greater the affective experiential state.	Agarwal and Karahanna (2000); Koufaris, Kambil, and LaBarbera (2001); Perea y Monsuwé, Dellaert, and Ruyter (2004); Shim et al. (2001); Wolfinger and Gilly (2001).	New testing of the mediating role of Perceived Control upon AES.
H9 The more aesthetically pleasing Internet shopping websites are, the greater the affective experiential state.	Baker, Levy, and Grewal (1992); Carbone and Haeckel (1994); Eroglu et al. (2003); Gentile, Spiller, and Noci (2007); McKinney (2004); Wang, Hong, and Lou (2010).	Testing in the context of OCE.
H10 The greater the perceived benefits of Internet shopping websites, the greater the affective experiential state.	Chen and Chang (2003); Childers et al. (2001); Doolin et al. (2005); Ha (2004); Hoffman, Novak, and Venkatesh 2004.	Testing in the context of OCE.
H11 The affective experiential state of the online shopper will influence the cognitive experiential state of OCE.	Bagozzi, Gopinath, and Nyer (1999); Bower (1981); Gentile, Spiller, and Noci 2007; Pham (2004); Tsal (1985); Zajonc and Markus (1985).	New testing of the effect of AES upon CES.
H12 The greater the level of affective experiential state, the greater the level of online shopping satisfaction.	Ha and Perks (2005); Homburg, Koschate, and Hoyer 2006; Janda and Ybarra (2005); Jin, Park, and Kim (2008); Khalifa and Liu (2007); Kim, Zhao, and Yang (2008); Ranaweera, Bansal, and McDougall (2008); So, Wong and Sculli (2005).	New testing of AES effect on satisfaction.
H13 The greater the level of affective experiential state, the greater the level of trust in online shopping.	Bart et al. (2005); Ha and Perks (2005); Janda and Ybarra (2005); Jin and Park (2006); Jin, Park, and Kim (2008); Khalifa and Liu (2007); Kim, Zhao, and Yang (2008); Ranaweera, Bansal, and McDougall (2008); So, Wong and Sculli (2005).	New testing of AES effect on trust.
H14 The greater the level of cognitive experiential state, the greater the level of online shopping satisfaction.	Ha and Perks (2005); Homburg, Koschate, and Hoyer 2006; Janda and Ybarra (2005); Jin, Park, and Kim (2008); Khalifa and Liu (2007); Kim, Zhao, and Yang (2008); Ranaweera, Bansal, and McDougall (2008); So, Wong and Sculli (2005).	New testing of CES effect on satisfaction.
H15 The greater the level of cognitive experiential state, the greater the level of trust in online shopping.	Bart et al. (2005); Ha and Perks (2005); Janda and Ybarra (2005); Jin and Park (2006); Jin, Park, and Kim (2008); Khalifa and Liu (2007); Kim, Zhao, and Yang (2008); Ranaweera, Bansal, and McDougall (2008); So, Wong and Sculli (2005).	New testing of CES on trust.

Table 1 (Continued)

Hypotheses	Key supporting literature	Prior testing in the context of OCE
H16 The greater the level of online shopping satisfaction, the greater the level of trust in online shopping.	Bart et al. (2005); Ha and Perks (2005); Ha, Janda, and Muthaly (2010); Janda and Ybarra (2005); Jin, Park, and Kim (2008); Khalifa and Liu (2007); Kim, Zhao, and Yang (2008); Ranaweera, Bansal, and McDougall (2008); So, Wong and Sculli (2005).	Tests existing findings.
H17 The greater the level of online shopping satisfaction, the greater the level of online repurchase intention.	Cronin, Brady, and Hult (2000); Ha and Perks (2005); Ha, Janda, and Muthaly (2010); Janda and Ybarra (2005); Jin, Park, and Kim (2008); Khalifa and Liu (2007); Kim, Zhao, and Yang (2008); Mittal and Kamakura (2001); Ranaweera, Bansal, and McDougall (2008); Seiders et al. (2005); So, Wong and Sculli (2005).	Tests existing findings.
H18 The greater the level of trust in online shopping, the greater the level of online repurchase intention.	Ha and Perks (2005); Ha, Janda, and Muthaly (2010); Janda and Ybarra (2005); Jin, Park, and Kim (2008); Khalifa and Liu (2007); Kim, Zhao, and Yang (2008); Ranaweera, Bansal, and McDougall (2008); So, Wong and Sculli (2005).	Tests existing findings.

and Karahanna (2000) propose that feeling in control reduces perceptions of difficulty and heightens positive feelings of AES for customers.

Aesthetics and *Perceived Benefits* are the two remaining variables hypothesized to influence AES. In a traditional retail context, aesthetic cues such as store layout, color scheme, lighting, music, and odor influence shopper responses and decisions (Baker, Levy, and Grewal 1992) and web aesthetics similarly provide sensory stimuli (Eroglu, Machleit, and Davis 2003) supporting the formation of experience impressions (Carbone and Haeckel 1994; Gentile, Spiller, and Noci 2007). Aesthetic features of a website have been studied in terms of their influence upon shopper experience. Termed atmospheric variables, they are defined by McKinney (2004, p. 269) as stimuli “which result in a number of responses including enjoyment, purchase and satisfaction” and may include color, graphics, layout, and design. Aesthetic responses influence AES, which in turn influences outcome behaviors of satisfaction (McKinney 2004) and purchase intention (Wang, Hong, and Lou 2010) (**H9**).

The Internet is indispensable to consumers today and lack of access is viewed as a disruptive event (Hoffman, Novak, and Venkatesh 2004). Outcome benefits are associated with online shopping experience and include convenience, price comparison, saving time, enjoyment, and enhanced customer–retailer relationship (Chen and Chang 2003; Doolin et al. 2005; Ha 2004). They have been found to motivate online shopping in both utilitarian and hedonic contexts (Childers et al. 2001). We propose that *Perceived Benefits* or “value in use” positively increases AES (**H10**).

OCE component variables

We hypothesize that a relationship exists between the cognitive (CES) and affective (AES) components of OCE. Following Gentile, Spiller, and Noci (2007, p. 398) we define CES as the component of OCE “connected with thinking or conscious mental processes” and AES as the component of OCE that “involves one’s affective system through the generation of moods, feelings and emotions”. Explanations of the interaction between

cognition and affect vary (Tsal 1985; Zajonc and Markus 1985). Cognition, in a marketing context, has been found to be influenced by the emotional state of the individual (Bagozzi, Gopinath, and Nyer 1999). Emotion can influence the encoding and retrieval of information by consumers from memory and create the condition of “state-dependent learning” in which content learned by an individual in one affective state is best recalled when subsequently in the same affective state (Bower 1981). Evidence also suggests that affective processing influences judgments and decision-making (Pham 2004). Following Bagozzi, Gopinath, and Nyer (1999), we propose that CES is influenced by AES in the context of OCE. This finding would represent a new contribution to our understanding of OCE (**H11**).

Outcomes of OCE

Three behavioral outcomes of OCE are identified in previous studies: *Satisfaction*, *Trust*, and *Repurchase Intention* (Ha and Perks 2005; Janda and Ybarra 2005; So, Wong and Sculli 2005; Jin, Park, and Kim 2008; Ranaweera, Bansal, and McDougall 2008). Satisfaction in e-retailing results from the customer’s evaluation and impression of the website performance across a number of attributes (Jin and Park 2006). Both cognition and affect have been identified in the formation of customer satisfaction in cumulative experiences (Homburg, Koschate, and Hoyer 2006). We propose that AES and CES influence online shopping satisfaction (**H12** and **H14**). Trust on the other hand relates to feelings of vulnerability, which are exacerbated online by the remote nature of the relationship with the e-retailer. Bart et al. (2005) view the online website as the equivalent of the retailer’s store where customers build perceptions of *Trust* based on online interactions. Trust in the site builds as feelings of vulnerability decrease and expectations are consistently met. Impression formation will play an important role in the realization of customer expectations and we propose that AES and CES positively influence *Trust* in our model of OCE (**H13** and **H15**).

Online purchase models identify the importance to the e-retailer of repeat patronage. Khalifa and Liu (2007) incorporate

Table 2
Sample profile.

Demographic		Percent of sample
Gender	Male	53
	Female	47
Age	18–24	4
	25–35	27
	36–45	16
	46–55	21
	56–65	22
	65+	10
Frequency of online shopping	Every day	4
	>once a week	25
	>once a month	50
	<once a month	21
Location of residence	Never shop online	0
	USA	63
	Europe	32
	Rest of the world	5

the outcome variable “online repurchase intention” and find evidence of a relationship between online shopping experience, online shopping satisfaction and online repurchase intention. We incorporate the latter as the dependent variable in our model. Customer satisfaction is a key driver of loyalty in the retail context (Cronin, Brady, and Hult 2000) and is considered an antecedent of repurchase intention (Mittal and Kamakura 2001; Seiders et al. 2005). This relationship has been confirmed in the online context (Ha, Janda, and Muthaly 2010; So, Wong and Sculli 2005).

Evidence exists that both trust and satisfaction influence online loyalty (Jin and Park 2006), however conflicting evidence exists regarding the directional link between satisfaction and trust (Jin and Park 2006; Kim, Zhao, and Yang 2008). The OCE model aims to identify whether satisfaction and trust have a direct and/or an indirect effect upon online repurchase intention. In this regard we follow the model tested by Ha, Janda, and Muthaly (2010) in which satisfaction and trust are found to have a direct effect upon repurchase intention (**H17** and **H18**) and satisfaction indirectly via trust (**H16**).

Method

The sample

A web-based questionnaire was used to collect the data. The sampling frame consisted of online shoppers, located in the USA and Europe, identified from a mix of online user groups and professional databases via group-based electronic notification. After cleansing, a total of 220 usable questionnaires were obtained, which is consistent with sample size requirements for PLS estimation (Chin 1998a). Residential location and frequency of online shopping was recorded. Demographic details of the sample profile are provided in Table 2. Descriptive analysis of the sample showed that the summated scales of the attitudes statements are generally consistent across the measures. Given the sampling method used to access online shoppers,

we tested for non-response bias (Hudson et al. 2004) using an accepted procedure comparing early versus late responses (Armstrong and Overton 1977). We found no evidence of differences between the two, which is consistent with other findings in an Internet context (Hudson et al. 2004).

Measure development

The survey instrument consisted of a total of 61 scale items used to measure level of agreement to a series of statements relating to an ideal OCE. Reflective items measured the ten antecedents shown in Fig. 1. Viewing OCE as cumulative over time (Verhoef et al. 2009), the methodology did not require the respondent to rate one specific online shopping transaction but to generalize across recent occasions. To improve accuracy of recall, respondents rated their most recent Internet shopping experiences. Scale items for six of the antecedent constructs were adapted from existing scales used in online shopping studies using the procedure outline by Engelland, Alsford, and Taylor (2001). New scales were developed for the remaining four antecedent constructs (*Connectedness*, *Customization*, *Perceived Control*, and *Aesthetics*) as appropriate existing scales could not be found. Scales for these four constructs were developed consistent with established scale development procedures (Churchill 1979; Rossiter 2002).

For the components of OCE, we followed measurement items used consistently in the literature. For the CES of OCE, we used Novak, Hoffman, and Yung (2000) using a descriptive statement of *Flow* to which the respondent is asked questions in relation to their own experience. (See Hoffman and Novak 2009 for a review of the measurement of *Flow*.) For the measurement of the AES of OCE we used eight items found in the PAD scale (Pleasure, Arousal, Dominance) by Mehrabian and Russell (1974), which has been used in online shopping studies (Eroglu, Machleit, and Davis 2003; Novak, Hoffman, and Yung 2000). Existing scale items were adapted where necessary for wording. Scale items for the three outcome constructs (*Online Shopping Satisfaction*, *Trust in Online Shopping*, and *Online Repurchase Intention*) were taken from existing scales. See Appendix 1 for a list of all items and their sources.

Results

Partial Least Squares (PLS), a Structural Equation Modeling (SEM) approach, was used to examine simultaneously the structural components of both the measurement and causal models (Chin and Newsted 1999; Henseler, Ringle, and Sinkovics 2009; Tenenhaus et al. 2005). PLS-GRAPH version 3 developed by Chin (2001) was used. PLS, a variance-based approach, has the advantage over covariance approach like LISREL or AMOS in that it can be applied to explore the underlying theoretical structure of models of “high complexity but low theoretical information” (Jöreskog and Wold 1982, p. 270). In particular PLS is “suitable for data analysis during the early stage of theory development” (Tsang 2002, p. 841). It is often used to test and validate hypothesized relationships at the theoretical level for exploratory models (Julien and Ramangalahy 2003; Mahmood, Bagchi, and

Ford 2004) and has been applied in the context of online purchase (Ha, Janda, and Muthaly 2010). In addition the PLS technique is robust, imposing minimal demand on measurement scales, sample size, and residual distributions (Chin 1998b). Although PLS is appropriate for this study whose focus is on theory development rather than theory confirmation, it does have a number of disadvantages. For example, there is no agreed global goodness-of-fit index and “the estimates are not optimal regarding bias and consistency” (Hair, Ringle, and Sarstedt 2011, p. 143).

Measurement model

A reflective measurement model is assessed via its reliability and validity. Traditional Cronbach’s α tends to give an underestimation of reliability (Chin 1998a; Henseler, Ringle, and Sinkovics 2009), therefore, for all constructs the composite reliability ρ_c developed by Wert, Linn, and Jöreskog (1974) was calculated with all but one exceeding .80 (Nunnally and Bernstein 1994). Two aspects of validity were examined: convergent validity and discriminant validity. For all constructs, convergent validity, assessed by the average variance extracted (AVE) met the criterion of .50 set by Fornell and Larcker (1981). Thus each latent variable explains on average more than 50 percent of the variance of its indicators (Götz, Liehr-Gobbers, and Krafft 2009). Furthermore, bootstrapping analysis of 500 subsamples revealed that all the standardized loadings except three exceed .60 and were highly significant ($p < .001$) (Appendix 2). Discriminant validity is confirmed for all latent constructs since the square root of each construct’s AVE is greater than the bivariate correlation with the other constructs in the model (Chin 1998a) (see Appendix 3).

Structural models

The results presented in Table 3 indicate that all linkages have the appropriate signs providing “partial empirical validation of the theoretically assumed relationship between latent variables” (Henseler, Ringle, and Sinkovics 2009, p. 304). To assess significance of the path coefficients, bootstrapping (with 500 subsamples) was executed (Chin 1998a, 2001). Thirteen of the eighteen hypothesized linkages are supported implying a sound theoretical rationale of the model specification. The explanatory power (R^2) of the predictor constructs range from 16 percent to 46 percent (Table 4). Examination of the change in R^2 can help to determine whether a predictor latent variable (LV) has a substantial and significant effect on a particular predicted LV. Using the Cohen (1988) guidelines, the effect size (f^2) implies that five predictor LVs have little or no effect whilst the remaining thirteen have from small to large effect. In particular large effect is seen in *Ease-of-use* upon *Perceived Control* and *Satisfaction* upon *Trust*. The significance of the substantive impact of the thirteen constructs was further confirmed by the application of the pseudo F -test suggested by Mathieson, Peacock, and Chin (2001, p.104). In addition a blindfolding procedure yielded positive Q^2 values for all endogenous constructs implying predictive relevance for our research model (Chin 1998a; Hair, Ringle, and Sarstedt 2011); see Table 4.

Table 3
Hypotheses and structural model path coefficients.

Hypotheses and pathways	Path coefficients sample estimates	T-statistic
H ₁ (+) Interactive → Cognitive Experiential	.027	0.421
H ₂ (+) Telepresence → Cognitive Experiential	.340	4.75***
H ₃ (+) Challenge → Cognitive Experiential	.126	1.78*
H ₄ (+) Skill → Cognitive Experiential	.087	1.33
H ₅ (+) Ease-of-use → Control	.517	8.24***
H ₆ (+) Customization → Control	.208	3.40***
H ₇ (+) Connectedness → Control	.114	1.81*
H ₈ (+) Control → Affective Experiential	.220	2.75***
H ₉ (+) Aesthetic → Affective Experiential	.115	1.58
H ₁₀ (+) Beneficial → Affective Experiential	.193	2.28**
H ₁₁ (+) Affective Experiential → Cognitive Experiential	.136	2.11*
H ₁₂ (+) Affective Experiential → Satisfaction	.343	4.97***
H ₁₃ (+) Affective Experiential → Trust	.082	1.17
H ₁₄ (+) Cognitive Experiential → Satisfaction	.145	1.90*
H ₁₅ (+) Cognitive Experiential → Trust	.087	1.42
H ₁₆ (+) Satisfaction → Trust	.542	5.90***
H ₁₇ (+) Satisfaction → Repurchase	.472	7.90***
H ₁₈ (+) Trust → Repurchase	.153	1.90*

* $p < .05$.
** $p < .01$.
*** $p < .001$.

Table 4
Goodness-of-fit indices.

Endogenous constructs	R^2	ΔR^2	f^2	Q^2 ^a
Control	.46			.24
Ease-of-use		.24	.41*	
Customization		.43	.06*	
Connectedness		.45	.02*	
Affective Experiential	.19			.11
Control		.16	.04*	
Aesthetic		.17	.02*	
Beneficial		.18	.01	
Cognitive Experiential	.24			.23
Interactive		.24	.00	
Telepresence		.16	.11*	
Challenge		.23	.01	
Skill		.23	.01	
Affective experiential		.22	.03*	
Satisfaction	.16			.08
Cognitive experiential		.14	.02*	
Affective experiential		.05	.13*	
Trust	.37			.21
Satisfaction		.12	.40*	
Cognitive experiential		.36	.02*	
Affective experiential		.36	.02*	
Repurchase intention	.28			.16
Satisfaction		.17	.15*	
Trust		.27	.01	

* $p < .05$ using pseudo F -test.
^a Q^2 calculated with $d = 2$.

The total effect of each variable on *Repurchase Intention* was estimated. The variables that have the most impact are: AES with a coefficient of .199, *Trust* with a coefficient of .153, and *Satisfaction* with a coefficient of .509. The coefficients on the remaining variables are relatively small ranging from .002 for *Speed of Interaction* to .087 for CES. We conclude that the proposed model with its mediation structure provides supporting evidence for our hypothesized relationships.

Testing of alternative models

Two alternative theoretically plausible models were tested during analysis of the data. First, the link between CES upon AES was considered given the debate regarding their relationship (Tsal 1985; Zajonc and Markus 1985). Whilst the original model supports the hypothesized effect of AES upon CES, the same was not found in the opposite direction. A weak insignificant link was found between CES upon AES (.036) with no significant impact upon the explanatory power (R^2).

Second, given the debate regarding the use of the *Flow* concept (Mollen and Wilson 2010) we tested the direct relationship of one aspect, *Telepresence*, upon AES, *Satisfaction*, and *Trust*. No significant linkage was found on either AES or *Satisfaction*, although the impact on *Trust* was significant at $p < .01$. An explanation of this may be that if the customer feels able to immerse him or herself whilst online it generates feelings of being in a trustworthy situation. On the balance of empirical evidence our proposed model, with its mediating structure, outperformed the alternative models estimated.

Discussion

The aim of this study was to develop conceptually, and test, a comprehensive model of OCE by drawing on extensive literature in both traditional and e-retailing to develop the conceptual framework and applying empirical analysis of data captured from online shopper experiences. We now offer insights into the findings of the study and discuss implications for academics and practitioners.

Theoretical contributions

This study makes four contributions to our understanding of OCE. The first contribution is the addition of new knowledge to our understanding of OCE. The study provides empirical support for a comprehensive model of OCE not previously found in the literature and evidences the linkages between antecedents, components, and outcomes of OCE. This is a more extensive model than previously developed (Ha, Janda, and Muthaly 2010; Khalifa and Liu 2007; Koufaris, Kambil, and LaBarbera 2001; Novak, Hoffman, and Yung 2000; So, Wong and Sculli 2005). Furthermore, the methodological approach supports the assumption that OCE is cumulative over time as proposed by Holloway, Wang, and Parish (2005).

The second contribution to new knowledge is the evidence for the previously unidentified variable *Perceived Control* and its mediating effect. The findings indicate that control influences

the customer's affective state and that three variables (*Connectedness*, *Customization* and *Ease-of-use*) directly impact levels of perceived control. We suggest that *Connectedness* and *Customization* (enabled by Web 2.0) influence feelings of control by empowering customers and giving them confidence in their online shopping decisions. However, we find that *Ease-of-use* has the greater impact indicating that despite advances in technology that enable customers to feel empowered, making it easy to use remains the most important feature.

The third contribution resolves a gap in our knowledge regarding the components of OCE. The study identifies the existence of CES and AES as components of OCE, previously only found in CE offline (Frow and Payne 2007; Gentile, Spiller, and Noci 2007) thereby extending existing knowledge into the online context. Additionally, the study supports the use of the concept of *Flow*, as a surrogate measure of CES and *Telepresence* and *Challenge* as antecedents of CES as found by Novak, Hoffman, and Yung (2000). However, contrary to their findings, this study does not support the role of *Skill* and *Interactive Speed* in influencing CES. A possible explanation for this may be that in the decade since the original work of Novak, Hoffman, and Yung (2000) the skill level of online shoppers has increased and the interactive speed of websites is consistently superior.

The fourth contribution is made by extending existing knowledge into a new context. First the study replicates the relationships previously found between the three outcome variables of OCE: *Satisfaction*, *Trust*, and *Repurchase Intention* but also provides new linkage between CES, AES, and repurchase intention. CES and AES do not directly influence *Repurchase Intention* but rather customer satisfaction is an important mediator between them. *Satisfaction* has both a direct and indirect relationship with *Repurchase Intention* via *Trust* as found by Ha, Janda, and Muthaly (2010). *Trust* is not found to be directly influenced by CES and AES but is mediated by the customer's level of *Satisfaction* with the online shopping experience. Further, in this study this relationship is tested and supported using a range of online websites across retail sectors rather than focusing on the travel industry as used by Ha, Janda, and Muthaly (2010). In summary the study provides strong contributions to theoretical knowledge. At the same time it extends our understanding of a methodological approach to the investigation of OCE. The study validates a measurement scale for the antecedents, components, and consequences of OCE.

Managerial implications

This study helps e-retailers to distinguish between factors that make a distinct difference to an online shopping experience from those now seen as the norm by online shoppers. The findings suggest we have moved on from where skill and technical capability of the user determines experience of the website. Similarly, speed is no longer viewed as part of the overall judgment of experience. While a high degree of emphasis is still placed upon the visual design, graphical features, and technical functionality of e-retail websites, these are of less importance to the customer.

Of more importance is a sense of control and empowerment. This is a powerful insight for e-retailers because control

influences the emotional feelings generated in online transactions. This study provides e-retailers with an indication of three sources of control and how they may enhance OCE. First, the ease-of-use of the site continues to be important. Overly complex navigation and information overload disrupts the emotional state and likelihood of a repeat purchase. Sites that easily communicate product or service information in a way that fits with the customer's search process will enhance feelings of confidence and calm.

Second, the study suggests that the ability to customize one's own space will similarly build a sense of personal control. We can assume that ease-of-use and customization work together in enhancing the experience. This can be equated to the way in which shoppers form their own rituals and routines when shopping in a traditional store setting. Third, Web 2.0 functionality that enables C2C interaction must be recognized and encouraged in e-retailing. This should be viewed as the equivalent of shoppers talking and exchanging thoughts and ideas in a traditional setting. Customers develop their sense of relationship with a retailer through identification with others. This facility should be encouraged by e-retailers since it empowers customers by building feelings of confidence and control.

A further implication for e-retailers is that *Challenge* and *Telepresence* both positively influence OCE. Online shoppers become cognitively immersed in the shopping experience as they do in-store. E-retailers, therefore, should explore the differences of this mindset and the extent and implications of immersion. Differences may also exist between types of online shopping styles which may vary by gender, age, product type, or shopping occasion, all of which present further opportunities for research.

The study also identifies managerial implications for enhancing loyalty and repeat business from the online channel. As in all commercial contexts, a key managerial objective should be high customer satisfaction ratings for an online site. However, a high level of OCE in any one transaction does not ensure repeat purchase. Rather e-retailers must provide a compelling OCE continuously over time in order to build levels of cumulative

satisfaction which drives trust in the e-retailer. The use of customer dashboards is essential to monitor and evaluate levels of satisfaction and trust across the various features of the site. For multi-channel retailers this should extend to all channels through which the customer has exposure during the shopping process (e.g., in-store returns, telephone customer support).

Finally, this study provides insight into the link between OCE and repeat patronage of a website. Since the study suggests OCE is cumulative over time, e-retailers should be cautious about short-term tactical measures often assumed to build loyalty. Rather they should view OCE as a long-term strategic priority that builds consistent brand differentiation and competitive advantage.

Limitations and opportunities for further research

The findings and contributions of our study are to some extent constrained by certain limitations, some of which provide opportunities for further research. First, the sample does not include a significant number of the emerging Generation Y group of young people (18–24 years). At the same time, greater geographic reach may help understand cross-cultural differences which are important to global e-retailers. Future studies might also identify the extent to which OCE varies across e-retailing situations or shopping frequency. Further testing of the OCE model in different contexts is likely to yield further valuable insights to e-retailing.

Second, the study developed a model of OCE exploring effects on online repurchase intention. Whilst online shopping models consistently use this outcome variable, it is important to also test the model in terms of actual purchase behavior. This calls for the development of a different methodology, which would capture OCE and its outcome in real time, rather than post hoc as in this study. Since the domain of OCE is critical to the success of e-retailers, continued research into the many factors remains an imperative.

Appendix 1. Measurement scales

Construct	Scale reference	Adapted scale
Skill	Novak, Hoffman, and Yung (2000)	<ul style="list-style-type: none"> • I consider myself knowledgeable about good search techniques for Internet shopping. • I am extremely skilled at Internet shopping. • I know how to find what I am looking for when Internet shopping. • I know somewhat more than most users about Internet shopping.
Challenge	Novak, Hoffman, and Yung (2000)	<ul style="list-style-type: none"> • Using Internet shopping websites challenges me to perform to the best of my ability. • I find that using Internet shopping websites stretches my capabilities to my limits. • Using Internet shopping websites challenges me. • Using Internet shopping websites provides a good test of my skills.
Telepresence	Novak, Hoffman, and Yung (2000)	<ul style="list-style-type: none"> • Using Internet shopping websites creates a new world for me, and this world suddenly disappears when I stop browsing. • I forget about my immediate surroundings when I use Internet shopping websites. • Internet shopping often makes me forget where I am. • After Internet shopping I feel like I come back to the "real world" after a journey.
Interactive Speed	Novak, Hoffman, and Yung (2000)	<ul style="list-style-type: none"> • Pages on Internet shopping websites usually load quickly. • Interacting with Internet shopping websites is fast.

Construct	Scale reference	Adapted scale		
Connectedness	New Scale Items	<ul style="list-style-type: none"> • When I use Internet shopping websites there is little waiting time between my actions and the response of the online shopping websites. • It is an advantage when the content of Internet shopping websites is partly influenced by the community who use it. • Being able to connect with other consumers who share similar interests in the same products is a positive feature of Internet shopping. • Being able to share comments about my experiences of the products with other consumers on Internet shopping websites is an important feature to me. • Viewing the product recommendations of other consumers who use Internet shopping websites is helpful. • Internet shopping websites should feel like they are talking to me personally as a customer. 		
Customization	New Scale Items	<ul style="list-style-type: none"> • The requirement to log into an Internet shopping website makes me feel recognized as a customer. • It is important to me that an Internet shopping website feels like my personal area when I use it. • I like it when I am able to customize the Internet shopping web pages to my own liking. 		
Perceived Control	New Scale Items	<ul style="list-style-type: none"> • I feel in control of what I am doing when I purchase from Internet shopping websites. • I can easily control the information that is provided on Internet shopping websites. • I feel I can control my use of information on Internet shopping websites. • The level of information provided by Internet shopping websites helps me to feel in control of my purchase decision. • Navigation is quick and easy when I shop on the Internet. • Internet shopping allows me to easily shop for what I want. 		
Ease-of-use	Gefen (2003)	<ul style="list-style-type: none"> • It is easy to become confident at Internet shopping. • Internet shopping websites are easy to use. • Learning how to navigate Internet shopping websites does not take too long for me. 		
Aesthetics	New Scale Items	<ul style="list-style-type: none"> • The aesthetics of Internet shopping websites promotes a perception of quality. • The branding of Internet shopping websites should be consistent with my current perceptions of these companies. • Too much third party advertising is not helpful when Internet shopping. • The look and feel of the website is important when Internet shopping. 		
Perceived Benefits	Teo (2002)	<ul style="list-style-type: none"> • I can learn which products are suitable for my needs in comparison to other competitor products by browsing Internet shopping websites. • With Internet shopping websites I can find out what I want to know before I purchase online. • By reviewing the information provided by Internet shopping websites I can be confident that I have made the best purchase decision. • The convenience of Internet shopping is a key benefit. 		
Cognitive Experiential State – Flow	Novak, Hoffman, and Yung (2000)	<ul style="list-style-type: none"> • The word “flow” is used to describe a state of mind sometimes experienced by people who are deeply involved in some activity. One example of flow is the case where a professional athlete is playing exceptionally well and achieves a state of mind where nothing else matters but the game; he or she is completely and totally immersed in it. The experience is not exclusive to athletics; many people report this state of mind when playing games, engaging in hobbies, or working. Activities that lead to flow completely captivate a person for some period of time. When one is in flow, time may seem to stand still, and nothing else seems to matter. Flow may not last for a long time on any particular occasion, but it may come and go over time. Flow has been described as an intrinsically enjoyable experience. • Thinking about your most recent Internet shopping experience, respond to the following (1–7 scale): • When Internet shopping I have experienced flow...When Internet shopping I have never experienced flow. 		
Affective Experiential State	Havlena and Holbrook (1986) Novak, Hoffman, and Yung (2000)	<p>Using the rating scale below indicate the feelings you had following your most recent online shopping experience (1–7 scale):</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> Unhappy Melancholic Annoyed Sluggish Calm Relaxed Guided Influenced </td> <td style="width: 50%; border: none; text-align: right;"> Happy Contented Pleased Frenzied Excited Stimulated Autonomous Influential </td> </tr> </table>	Unhappy Melancholic Annoyed Sluggish Calm Relaxed Guided Influenced	Happy Contented Pleased Frenzied Excited Stimulated Autonomous Influential
Unhappy Melancholic Annoyed Sluggish Calm Relaxed Guided Influenced	Happy Contented Pleased Frenzied Excited Stimulated Autonomous Influential			

Construct	Scale reference	Adapted scale
Trust in Online Shopping	Lee and Turban (2001)	<ul style="list-style-type: none"> • Internet shopping is reliable. • In general I can rely on Internet vendors to keep the promises that they make. • Internet shopping can be trusted, there are no uncertainties. • Internet shopping is a trustworthy experience.
Online Shopping Satisfaction	Khalifa and Liu (2007)	<ul style="list-style-type: none"> • I am satisfied with my overall experiences of Internet shopping. • I am satisfied with the pre-purchase experience of Internet shopping websites (e.g., consumer education, product search, quality of information about products, product comparison). • I am satisfied with the purchase experience of Internet shopping websites (e.g., ordering, payment procedure). • I am satisfied with the post-purchase experience of Internet shopping websites (e.g., customer support and after sales support, handling of returns/refunds, delivery care). • It is likely that I will repurchase from Internet shopping websites in the near future.
Online Repurchase Intention	Khalifa and Liu (2007)	<ul style="list-style-type: none"> • I anticipate repurchasing from Internet shopping websites in the near future. • I regularly repurchase from the same websites. • I expect to repurchase from Internet shopping websites in the near future.

Appendix 2. The measurement model loadings

Latent constructs	Sample estimates	T-statistic*
<i>Skill: $\rho_c = .890$, AVE = .672</i>		
Q1 I consider myself knowledgeable about good search techniques for Internet shopping.	.891	6.99
Q4 I am extremely skilled at Internet shopping.	.931	6.67
Q32 I know how to find what I am looking for when Internet shopping.	.674	3.70
Q40 I know somewhat more than most users about Internet shopping.	.757	4.79
<i>Challenge: $\rho_c = .879$, AVE = .647</i>		
Q16 Using Internet shopping websites challenges me to perform to the best of my ability.	.843	27.20
Q28 I find that using Internet shopping websites stretches my capabilities to my limits.	.810	21.45
Q43 Using Internet shopping websites challenges me.	.684	8.19
Q49 Using Internet shopping websites provides a good test of my skills.	.869	33.01
<i>Telepresence: $\rho_c = .895$, AVE = .682</i>		
Q6 Using Internet shopping websites creates a new world for me, and this world suddenly disappears when I stop browsing.	.666	12.08
Q22 I forget about my immediate surroundings when I use Internet shopping websites.	.875	55.01
Q42 Internet shopping often makes me forget where I am.	.889	39.53
Q50 After Internet shopping, I feel like I come back to the “real world” after a journey.	.855	30.29
<i>Interactive: $\rho_c = .832$, AVE = .626</i>		
Q3 Pages on Internet shopping websites usually load quickly.	.739	3.39
Q33 Interacting with Internet shopping websites is fast.	.909	6.29
Q39 When I use Internet shopping websites there is little waiting time between my actions and the response of the online shopping websites.	.711	3.61
<i>Connectedness: $\rho_c = .879$, AVE = .709</i>		
Q18 Being able to connect with other consumers who share similar interest in the same products is a positive feature of Internet shopping.	.843	29.42
Q29 Being able to share comments about my experiences of the products with other consumers on Internet shopping websites is an important feature to me.	.820	22.24
Q30 Viewing the product recommendations of other consumers who use Internet shopping websites is helpful.	.861	36.02
<i>Customization: $\rho_c = .805$, AVE = .514</i>		
Q14 Internet shopping websites should feel like they are talking to me personally as a customer.	.641	10.26
Q23 The requirement to log into an Internet shopping website makes me feel recognized as a customer.	.782	19.25
Q41 It is important to me that an Internet shopping website feels like my personal area when I use it.	.834	22.57
Q44 I like it when I am able to customize the Internet shopping web pages to my own liking.	.580	7.43
<i>Control: $\rho_c = .823$, AVE = .541</i>		
Q24 I feel in control of what I am doing when I purchase from Internet shopping websites.	.761	20.10
Q27 I can easily control the information that is provided on Internet shopping websites.	.579	9.81
Q31 I feel I can control my use of information on Internet shopping websites.	.741	17.84
Q34 The level of information provided by Internet shopping websites helps me to feel in control of my purchase decision.	.837	33.71
<i>Ease-of-use: $\rho_c = .840$, AVE = .637</i>		
Q12 Internet shopping allows me to easily shop for what I want.	.801	19.40
Q13 It is easy to become confident at Internet shopping.	.807	19.52

Latent constructs	Sample estimates	T-statistic*
Q25 Learning how to navigate Internet shopping websites does not take too long for me.	.785	18.79
<i>Aesthetic: $\rho_c = .754$, AVE = .508</i>		
Q7 The aesthetics of Internet shopping websites promotes a perception of quality.	.798	6.62
Q11 The branding of Internet shopping websites should be consistent with my current perceptions of these companies.	.712	7.80
vQ52 The look and feel of the website is important when Internet shopping.	.618	4.53
<i>Beneficial: $\rho_c = .833$, AVE = .558</i>		
Q5 I can learn which products are suitable for my needs in comparison to other competitor products by browsing Internet shopping websites.	.655	8.01
Q35 With Internet shopping websites I can find out what I want to know before I purchase online.	.810	19.51
Q38 By reviewing the information provided by Internet shopping websites I can be confident that I have made the best purchase decision.	.847	21.83
Q47 The convenience of Internet shopping is a key benefit.	.667	9.75
<i>Cognitive Experiential: $\rho_c = 1.000$, AVE = 1.000</i>		
Q61 Please rate the extent to which you believe you have experienced flow when Internet shopping.	1.000	1.00
<i>Affective Experiential: $\rho_c = .871$, AVE = .644</i>		
Feelings 1 Unhappy–Happy	0.889	32.96
Feelings 2 Melancholic–Contented	0.890	39.96
Feelings 3 Annoyed–Pleased	0.909	55.09
Feelings 8 Influenced–Influential	0.409	4.47
<i>Repurchase Intention: $\rho_c = .859$, AVE = .607</i>		
Q2 It is likely that I will repurchase from Internet shopping websites in the near future.	0.667	9.70
Q19 I anticipate repurchasing from Internet shopping websites in the near future.	0.868	32.98
Q36 I regularly repurchase from the same websites.	0.716	13.93
Q48 I expect to repurchase from Internet shopping websites in the near future.	0.847	28.19
<i>Satisfaction: $\rho_c = .844$, AVE = .575</i>		
Q15 I am satisfied with my overall experiences of Internet shopping.	0.739	13.11
Q26 I am satisfied with the pre-purchase experience of Internet shopping websites (e.g., consumer education, product search, quality of information about products, product comparison).	0.701	14.96
Q37 I am satisfied with the purchase experience of Internet shopping websites (e.g., ordering, payment procedure).	0.823	31.42
Q46 I am satisfied with the post-purchase experience of Internet shopping websites (e.g., customer support and after sales support, handling of returns/refunds, delivery care).	0.764	20.53
<i>Trust: $\rho_c = .864$, AVE = .614</i>		
Q8 Internet shopping is reliable.	0.745	21.05
Q17 In general, I can rely on Internet vendors to keep the promises that they make.	0.801	29.96
Q21 Internet shopping can be trusted, there are no uncertainties.	0.732	18.52
Q45 Internet shopping is a trustworthy experience.	0.851	44.87

* $p < .001$.

Appendix 3. Discriminant validity: correlations of constructs and \sqrt{AVE}

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Skill	.82														
Challenge	-.04	.80													
Telepresence	.09	.55	.83												
Interactive	.42	.12	.17	.79											
Connectedness	.36	.25	.24	.41	.84										
Customization	.25	.47	.51	.29	.46	.72									
Control	.47	.21	.26	.55	.40	.43	.74								
Ease-of-use	.63	.05	.20	.56	.37	.32	.63	.80							
Aesthetic	.15	.33	.37	.30	.36	.40	.36	.35	.71						
Beneficial	.56	.09	.24	.58	.46	.35	.64	.66	.41	.75					
Cognitive	.15	.32	.44	.16	.26	.31	.36	.20	.33	.27	n/a				
Affective	.21	.04	.16	.19	.25	.28	.38	.38	.27	.38	.22	.80			
Repurchase	.51	-.03	.03	.41	.33	.21	.41	.47	.21	.49	.13	.29	.76		
Satisfaction	.48	.03	.09	.57	.37	.24	.59	.64	.26	.69	.22	.38	.52	.78	
Trust	.39	.23	.34	.53	.30	.32	.56	.58	.31	.60	.23	.30	.40	.59	.78

Key: 1 = Skill; 2 = Challenge; 3 = Telepresence; 4 = Interactive; 5 = Connectedness; 6 = Customization; 7 = Control; 8 = Ease-of-use; 9 = Aesthetic; 10 = Beneficial; 11 = Cognitive; 12 = Affective; 13 = Repurchase; 14 = Satisfaction; 15 = Trust.

Off diagonals are bivariate correlations, bold italics main diagonal are square root of corresponding AVE.

n/a = not applicable because a single item.

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