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Online Hotel Booking Experience: Flow Theory, Measuring Online Customer Experience and Managerial Implications

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ORIGINAL RESEARCH

Online experiences: flow theory, measuring online customer experience in e-commerce and managerial implications for the lodging industry

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Abstract The past decade has perceived a significant development of various Internet technologies including HTML5, Ajax, landing pages, CSS3, social media and SEO to name a few. New web technologies provide opportunities for e-commerce companies to enhance the shopping experiences of their customers. This article focuses the phenomenon of online experiences from a services marketing aspect by concentrating online hotel booking. Successful lodging management strategies have been associated with the creation of experience, which in turn leads to fruitful performance outcomes such as superior financial performance, enhanced brand image, customer loyalty, positive word of mouth and customer satisfaction. E-commerce researchers and practitioners also focus on the phenomenon of online customer experiences. Plentiful of previous studies investigated the precursors and consequences of positive online customer experiences by utilizing various marketing and Information Systems theories, and it was found that online customer experience has numerous positive outcomes for e-commerce companies. This study analyses the previous studies on customer experiences by utilizing flow theory and develops a conceptual framework of customer experiences. Later it proposes and tests a measurement model for online customer experiences. Our findings indicate that for successful e-commerce practices, online shoppers need to reach a state of mind where they engage with the website with total involvement, concentration and

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enjoyment. The traditional approaches to attract customers in brick-and-mortar commerce are not applicable in online contexts. Therefore, interaction, participation, co-creation, immersion, engagement and emotional hooks are important in e-commerce. Managerial and theoretical implications of positive online customer experiences were discussed.

1 Introduction

In today's highly competitive marketplace, companies need to focus on providing positive "experiences" in order to win the hearts and minds of consumers (Pine and Gilmore 2011). Contemporary consumers tend to appreciate the experience more than the actual tangible value of a purchase. Thus, experience became a critical component of the overall product or service being purchased (Gopalani and Shick 2011; Rust and Lemon 2001). The significant role of experience becomes even more apparent when we consider that services (e.g. hotel room) became commodities in contemporary market places. In order to escape the commoditization trap, companies need to stage experiences deliberately, and e-commerce companies are no exception.

Also, progress in information technology has not only changed the methods of how tourism products and services are distributed (Buhalis and Licata 2002; Gursoy and McCleary 2004), but has also changed tourists' online behaviors (Golmohammadi et al. 2012). Considering the intangible characteristics of services, the perceived risks associated with purchasing tourism services are higher than online shopping for products. For example, if a tourist is booking a cruise online and has never been to a cruise previously, he or she might feel anxious if the online experience is not flawless. In this case, the tourist would want to see the pictures of the cruise ship, read the reviews from other cruisers, and possibly take a virtual tour of the cruise ship and ask any questions to a customer representative via online chat. Thus, tourism websites need to provide a compelling online experience to be successful. Research indicates that a significant amount of online revenue is lost globally due to poor online customer experiences. User-website interactions in online shopping create opportunities to engage in positive online experiences. For instance, taking a virtual tour of the hotel room and pool area of a resort can trigger the escapist elements in the online shopper's mind. Thus, flow has become an important element of online shopping. Consequently, academics have initiated to study the consumer's shopping experience in online environments by utilizing "flow" theory (Ding et al. 2011; Novak et al. 2000; Rose et al. 2012; Teng et al. 2012).

The concept of flow denotes a "peculiar dynamic state the holistic sensation that people feel when they act with total involvement" (Csikszentmihalyi 1975, p. 36) and an "ordered, negentropic state of consciousness" (Csikszentmihalyi 1988, p. 34). When people experience flow, they are immersed in their activity and current

actions transit flawlessly into another, displaying an inner logic of their own and creating harmony. The actor, in our context an online shopper, experiences a seamless transition and total control of the actions without interruption and the actor/user becomes absorbed in the activity. Lately, flow has considered as a vital construct to understand consumer behavior in online environments and online customer experiences (Hoffman and Novak 1996; Novak et al. 2000).

Flow could be explained as the pleasant experience that people (e.g. e-shoppers) feel when acting with total involvement and immersed with the activity (e.g. online shopping) (Hung et al. 2012). It is a critical component of enjoyment, fun, and a state of optimal experience. Both researchers and practitioners agree that flow is a key concept for the explanation of consumer behavior in online environments (Huang et al. 2012; Teng et al. 2012). The characteristics of flow contain: attention and immersion which is associated with the focused concentration on task at hand, awareness, and total control. When the user experiences flow, the time appear to pass slower or faster compared to ordinary experiences and this experience is considered to be intrinsically rewarding (Csikszentmihalyi 1988).

Flow is proposed to be helpful in explaining online experiences, thus, information systems researchers investigated the flow experiences of users (e.g. Agarwal and Karahanna 2000; Chen 2006; Hausman and Siekpe 2009; Huang 2003; Siekpe 2005; Skadberg and Kimmel 2004; Wu and Chang 2005). Flow experiences have been reported to be associated with various consequences in online contexts including behavioral intentions such as loyalty and intentions to revisit and repurchase (Hausman and Siekpe 2009; Siekpe 2005; Wu and Chang 2005), positive affects (Chen 2006), positive perceptions of and attitudes toward websites (Agarwal and Karahanna 2000; Huang 2003), and exploratory behavior with increased learning (Skadberg and Kimmel 2004). An analysis of previous research also highlights the gap that the analysis of flow as the optimum online consumer experience in e-commerce context is a promising but underdeveloped field. Further, there is no agreement on the measurement, antecedents, and consequences of flow in online contexts (Novak et al. 2000; Lee and Chen 2010; Voiskounsky 2008).

The Internet has affected how people shop and it became a significant distribution channel (e.g., Hoffman and Novak 1996; Butler and Peppard 1998; Schlosser 2003). Consequently, the impact of the Internet on consumer behavior has become vital, thus portraying an important field to study the impact of the Internet on consumer behavior (Barwise et al. 2002). In e-commerce, customers are not only *consumers* but also Internet *users* (Koufaris 2002). Therefore, co-creation of online customer experience also became and important area of research. Hoffman and Novak (1996) suggest that it is essential to investigate flow experience in interactive, computer-mediated environments to understand aforementioned dual role of online consumers. Studying flow, as an optimal experience, would help understanding how e-commerce companies achieve competitive advantage (Hoffman and Novak 1996) as the creation of experiences lead to competitive advantage in contemporary marketplaces.

Given the possibility of flow theory as a foundation of online experiences, this study aims to concentrate on the previous research conducted on flow and investigates the antecedents and consequences of this optimal experience in online

shopping and develop a model. The developed model is a conceptual one, which has interdisciplinary foundations. A further goal of the study is to develop a measurement model of a flow construct in online shopping. A survey approach was taken to test the measurement model. The first section of the paper is written based on a synthesis of previous literature on creating and managing optimal experiences, flow theory, aesthetics, consumer behavior, and Information Systems research. Finally, implications for online hotel booking websites are derived since the Internet contributes more than half of the total Central Reservation System reservations (TravelClick 2012). The second section of the paper empirically tests a measurement model of online flow experience.

2 Literature review

As previously mentioned, flow signifies a "peculiar dynamic state—the holistic sensation that people feel when they act with total involvement" (p. 36) and an "ordered, negentropic state of consciousness" (Csikszentmihalyi 1988, p. 34). The term "negentropic" refers to being in harmony and a lack of chaos. The actor/user experiences a smooth transition and total control of his/her actions without distraction. The term "flow" was initiated by Csikszentmihalyi's studies' participants.

Hoffman and Novak (1996) initiated to barrow the flow construct to study online experiences and they described online flow consistent with the Csikszentmihalyi's original framework. Similar to the original description of flow, online flow is the state arising during network navigation that is characterized by a seamless sequence of responses facilitated by machine interactivity (Hoffman and Novak 1996). Further, Hoffman and Novak (1996) highlight the importance of creating this flow state by claiming that creating a commercially compelling website depends on facilitating such experience. Online marketers are convinced that if consumers experience flow, they are likely to make more purchases and they will visit the website in future to feel the same shopping experience (Bridges and Florsheim 2008). Consequently, online marketers initiated to promote website loyalty by providing online features such as advergames and gamification. Positive attitudes foster flow and increased likelihood of online purchasing (Goldsmith and Bridges 2000), therefore, it is important for e-commerce websites to create pleasant and enjoyable experiences. Furthermore, flow in online environment reduces the possibility of undesirable consequences, such as website avoidance (Dailey 2004) and help e-tailers to build trust in the minds of consumers. Considering mistrust is still an important issue in online shopping, a positive website interaction could possibility increase the likelihood of purchasing.

In online environments, consumers seek utilitarian benefits; in fact, earlier e-commerce research solely highlighted the importance of the utilitarian nature of online shopping. However, contemporary e-shoppers also seek for enjoyment of the experience when shopping online (Sénécal et al. 2002). Earlier era of the Internet involved delivering information (company created content) and order-taking utilities to customers. Therefore, it was initially considered as channel to satisfy

customers' utilitarian needs. In that period, competition was merely based on price and availability (Benjamin and Wigand 1995). Contemporary research highlights that such utilitarian attributes no longer sufficient to drive online buying; indeed, online customers increasingly seek for experiential value in e-commerce (Bridges and Florsheim 2008). User interfaces that increase shopping pleasure and enjoyment considerably influences customer satisfaction (Szymanski and Hise 2000). Online customers value immersive and experiential aspects of the Internet. Therefore, it is both hedonic and utilitarian shopping values that create positive affects towards a website (Babin and Attaway 2000). An Internet user is expected to be more likely to purchase from a particular website and maintain loyalty to this website if the user has positive feelings about the website. Also, feelings of control and enjoyment while using the Internet are positively related to intentions to purchase (Dabholkar 1996), thus it is easy to claim that flow experience leads to fruitful behavioral intentions.

Hoffman and Novak (1996) propose that e-commerce websites would benefit by facilitating the experience of flow. Subsequent research has expanded the flow theory. Plentiful of studies investigated the precursors and consequences of online customer experience by utilizing flow theory and it was found that online customer experience has positive outcomes for e-commerce companies. Table 1 shows the previous research on flow experience by examining the antecedents and outcomes of flow; we have modified the meta analysis conducted by Hoffman and Novak (2009) and extended it with the research conducted in the area in the past decade.

Consistent with Hoffman and Novak's (1996) proposition that flow is commercially compelling, Park (2000) proposes that e-commerce may be improved by fostering interest and excitement. Korzaan (2003) found out that enhancing the senses of control, challenge, and stimulation increases the likelihood of purchase in online environments. A number of studies have observed that increasing a website visitor's perception of interactivity leads to greater perceived control and interest (Alba et al. 1997; Ghose and Dou 1998; Weinberg et al. 2003). Huang (2003) found that complexity makes a website appear more useful, but also more distracting, while novelty excites curiosity but undermines hedonic benefits. Hence, studies propose that the inclusion of many elements of flow may manipulate online buying (refer to Table 1 and Fig. 1 to various outcomes of flow). Therefore, it is vital to consider elements of flow as they relate to the online environment, potentially increasing the understanding of how being in a state of flow might impact buying behaviors and the nature of relationship between the hotel website and customer. Some elements of flow may lead to greater likelihood of online purchase and loyalty to the e-commerce website. A difficult or challenging interaction may negatively affect the online experience (Sénécal et al. 2002).

Flow experience has been considered as a critical precursor of consumers' subjective enjoyment of website use (Csikszentmihalyi 1993; Koufaris 2002; Lu et al. 2009; Siekpe 2005; Wu and Chang 2005). It was also revealed that computer-mediated environments expedite flow experiences (Hoffman and Novak 1996). Hoffman and Novak (1996) widened the applicability of flow to the e-commerce context by implying that the success of online marketers depends on their ability to create opportunities for consumers to experience flow. In the condition of using the

Table 1 Summary of literature of flow theory in online environments

References	Research setting	Method	Flow antecedents	Flow experience	Flow outcomes
Ghani (1991)	Virtual versus face-to-face groups	Survey	Skills, control, challenge	Enjoyment, concentration	
Trevino and Webster (1992)	Communication technologies (email, voice mail in work setting)	Survey	Technology type, technology char (ease of use), Ind. diff (computer skill), organizational factors (management support)	Control, attention focus, curiosity, intrinsic interest	Attitude, effectiveness, quantity, barrier reduction
Webster et al. (1993)	Software usage in the work setting	Survey		Control, attention, focus, cognitive enjoyment	User control, attention, positive attitude, system use, positive work outcome
Ghani and Deshpande (1994)	Computer use	Survey	Control, challenge	Enjoyment, concentration	Exploratory use
Ghani (1995)	Work communication	Survey	Task challenges and perceived control, cognitive spontaneity	Enjoyment, concentration	Focus on process, learning, creativity
Hoffman and Novak (1996)	Hypermedia computer mediated environment	Conceptual	Control characteristics (skills, challenges), content characteristics (interactivity, vividness), process characteristics (goal-directed, experiential, involvement, focused attention, telepresence	Flow	Consumer learning, perceived behavioral control, exploratory behavior, subjective experience (pleasure, future voluntary computer interaction, and time distortion)
Lombard and Ditton (1997)	Virtual environment	Conceptual	Vividness, interactivity, contents, media user variables	Presence (or telepresence)	Arousal, enjoyment, involvement, task, performance, skills training, desentizasition, persuasion, memory, social judgment, parasocial interaction, relationship
Nel et al. (1999)	Web navigation	Experiment		Content, attention, focus, curiosity, intrinsic interest	Website re-visit

Table 1 continued

References	Research setting	Method	Flow antecedents	Flow experience	Flow outcomes
Agarwal and Karahanna (2000)	World wide web	Survey	Personal innovativeness. Playfulness	Cognitive absorption (curiosity, control, temporal dissociation, focused immersion, heightened enjoyment)	Perceived ease of use, perceived usefulness, intention to use
Chen et al. (2000)	Web navigation	Survey/ experience	Clear goals, immediate feedback, potential control, merger of action and awareness	Concentration, time distortion, loss of self consciousness, telepresence	Autotelic experience, positive affect
Novak et al. (2000)	Web navigation	Survey	Skill/control, interactive speed, importance, challenge/arousal, focused attention, telepresence/ time distortion	Flow	Positive affect, exploratory behavior
Rettie (2001)	Internet use	Focus groups	Goals, feedback, skills, challenge	Merging of action and awareness, focused concentration, sense of control	
Koufaris (2002)	Online shopping	Survey	Product involvement, web skills, value-added search mechanism, challenge	Shopping enjoyment, concentration	Intention to return
Luna et al. (2002)	Websites	Experiment	Balance-challenges/skills, perceived control, unambiguous demands, focused attention, attitude toward site	Flow	Revisit intention, purchase intention
Huang (2003)	Websites	Survey	Complexity, novelty, interactivity	Control, attention, curiosity, interest	Utilitarian performance, hedonic performance
Klein (2003)	Computer-mediated environment	Experiment	Media richness, user control	Telepresence	Persuasion, attitude belief strength, attitude intensity
Korzaan (2003)	Online shopping	Survey		Flow	Exploratory behavior, attitude

Table 1 continued

References	Research setting	Method	Flow antecedents	Flow experience	Flow outcomes
Luna et al. (2003)	Websites	Survey	Attention, challenge, interactivity, attitude towards the site	Flow	Purchase intent, revisit intent
Novak et al. (2003)	Online shopping experience	Survey	Goal-directed vs. experiential activities, skill, challenge, novelty, importance	Flow	
Chung and Tan (2004)	Search engines	Survey	Website characteristics, focused attention, control	Perceived playfulness	Attitude toward using
Hsu and Lu (2004)	Online games	Survey	Perceived ease of use	Flow	Attitude, intention
Jiang and Benbasat (2004)	Shopping websites	Experiment	Visual control, functional control	Flow	
Pace (2004)	Web browsing	Grounded theory—semi structured interviews	Goals and navigation behavior, challenge and skills, attention	Duration, frequency and intensity, joy of discovery, reduced awareness of irrelevant factors, distorted sense of time, merging of action and awareness, sense of control, mental alertness, telepresence	
Pilke (2004)	WWW	Interviews	Immediate feedback, clear goals, complexity, dynamic challenges		
Reid (2004)	Virtual reality	Interviews, experiment, observation	Cognitive ability, volitional control, self-efficacy	Flow and playfulness	Competence, creativity, user satisfaction
Skadberg and Kimmel (2004)	Web browsing	Survey	Speed, ease of use, attractiveness, interactivity, domain knowledge/skill, information on the website/challenge	Enjoyment, time distortion, telepresence	Increased learning, attitude change and behavior change
Fortin and Dholakia (2005)	Product website	Experiment and survey	Interactivity, vividness	Arousal, involvement, social presence	Attitude towards Ad, attitude towards brand, purchase intention

Table 1 continued

References	Research setting	Method	Flow antecedents	Flow experience	Flow outcomes
Kim et al. (2005)	Online games	Survey	Skills, challenges, focused attention	Flow	
Siekpe (2005)	Websites	Survey		Challenges, concentration, control, curiosity	Intention to return, intention to purchase
Chen (2006)	Web browsing	Digitalized experience sampling method	Clear Goal, potential control, immediate feedback, merger of action and awareness	Telepresence, concentration, loss of self-consciousness	Positivity of affects, enjoyable feeling
Li and Browne (2006)	General online experience	Survey	Need of cognition, mood	Focused attention, control, curiosity, temporal dissociation	
Shin (2006)	Virtual learning	Survey	Skill, challenge, individual differences	Enjoyment, telepresence, focused attention, engagement, time distortion	Achievement, satisfaction,
Tung et al. (2006)	Websites	Survey	Involvement	Flow	Mood, attitudes
Park et al. (2008)	Virtual world	Conceptual	Content characteristics, process characteristics	Flow	Brand equity
Hoffman and Novak (2009)	Internet	Conceptual	Skill, challenge, interactivity, vividness, telepresnece, motivation, involvement, attention, novelty, innovativeness, content/interface, ease of use	Flow	Learning, control, exploratory behavior, ease of use, perceived usefulness, behavioral intention, purchase, addictive behaviors
Lu et al. (2009)	Instant messaging	Survey		Perceived enjoyment, concentration	Attitude, intention to use
Parboteeah et al. (2009)	Shopping websites	Experimental design	Task-relevant cues, mood-relevant cues, perceived usefulness	Perceived enjoyment	Urge to buy impulsively
Ho and Kuo (2010)	Virtual learning	Survey	Computer attitudes	Flow experience	Learning outcomes

Table 1 continued

| References	Research setting	Method	Flow antecedents	Flow experience	Flow outcomes
Xin Ding et al. (2010)	Online financial services	Survey	Service quality Process feature Product variety	Perceived Control Skill Focused attention Interactivity Challenge	Satisfaction
Zhou et al. (2010)	Social networking websites	Survey	Information Quality System Quality Trust	Flow	Loyalty
Chiang et al. (2011)	Online gaming	Survey	Emotion Game playfulness feature	Flow	Positive affect
Sharkey et al. (2012)	Online shopping	Survey	Design features	Flow	Behavioral intentions
Rose et al. (2012)	Online shopping	Survey	Telepresence, challenge, control, beneficial	Experiential	Satisfaction
Zhou (2013)	Mobile TV	Survey	Perceived ease of use, access speed, content quality	Flow	Usage intention
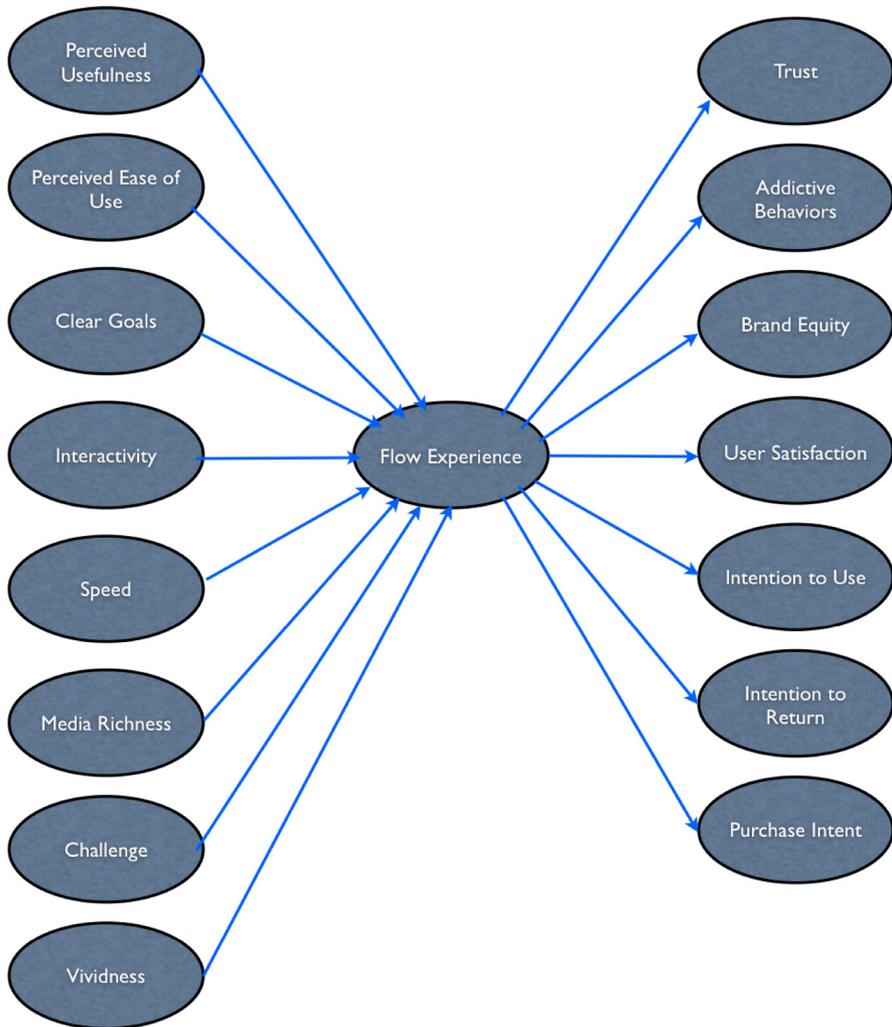
Fig. 1 Selected antecedents and outcomes of flow experience

website to enter a flow state, e-shoppers ultimately enhance their subjective well-being through accumulated ephemeral moments. Several studies have inspected flow in numerous conditions, such as human–computer interaction (Ho and Kuo 2010; Hsu and Lu 2004; Trevino and Webster 1992; Webster et al. 1993) and web use (Chen et al. 1999, 2000; Pace 2004). The concept has also been regarded as a useful insight into consumer behavior (Chen et al. 1999; Shin and Kim 2008). Table 1 represents the flow investigations in various contexts and conditions.

Flow experience has been found to foster learning and changes in attitudes and behaviors (Webster et al. 1993). In the e-commerce context, it is hypothesized that such a flow experience can attract consumers and significantly affect subsequent

attitudes and behaviors (Novak et al. 2000). Previous research found that flow experience is a significant determinant of consumer attitudes toward the focal website and the focal firm (Mathwick and Rigdon 2004). Therefore, flow experience increases the intention to revisit and spend additional time on the website (Kabadayi and Gupta 2005). There is also a strong relationship between the flow experience and subsequent online behaviors (Chen et al. 1999; O'Cass and Carlson 2010; Skadberg and Kimmel 2004). Celsi et al. (1993) revealed that people who experience flow have a tendency to replicate or re-experience that state. Ilsever et al. (2007) suggested that in the e-commerce context, consumers who experience flow while shopping would consider revisiting the website or repurchasing from it in the future. Consequently, a consumer who experiences flow will attempt to reengage and revisit the activity that delivered the flow experience.

From the lodging industry's point of view, previous studies on flow experience have important implications to online booking websites. Using proprietary websites to retain loyal e-consumers has become a critical strategy for hotels in order to maintain a competitive advantage in a marketplace that is dominated by online travel agencies (OTAs) (Miller 2004). Hotel-owned websites are losing ground to online travel agencies or intermediary travel websites. Nusair and Parsa (2011) state that online hotel booking has fallen behind in terms of creating a compelling shopping experience. Consequently, hotel bookings websites are advised to offer unique buying experiences in online context (Pine and Gilmore 2011). Enhancing experience and loyalty is considered a noteworthy marketing goal (Verhoef et al. 2009). In online environments, optimal experience on a brand's website is a critical factor for creation of loyalty. Experiencing online flow leads to enhanced loyalty (Gabisch 2011).

Flow experience prolong Internet and website use in general (Nel et al. 1999; Rettie 2001). Hsu and Lu (2004) confirm that flow experience is significantly related to positive behavioral intentions. Similarly, studies found that experiencing flow positively affects behavioral intentions including a significant increase in the likelihood of purchasing from a website (Korzaan 2003). Flow experience also increases the transaction intentions in the online travel communities (Wu and Chang 2005). Further, flow experience is found to lead to impulsive buying (Koufaris 2002). Flow experience is also positively correlated with recognition of marketing promotions. When flow experience occurs, the consumer becomes entirely focused on their shopping activity. As purported by Koufaris (2002), consumers that are able to focus their attention at an online shopping website should also be more likely to notice marketing promotions on the website.

Figure 1 displays the relevant antecedents and consequences of flow experience having appeared in e-commerce literature. This figure includes several propositions founded by the extensive literature review in various disciplines. Principal antecedents of flow experience in e-commerce that have emerged in literature are perceived usefulness, ease of use, clear goals, interactivity, speed, content richness, challenge and vividness. These antecedents could be grouped into two main website features, namely hedonic (experiential) and utilitarian (functional).

Hedonic website features foster pathological Internet use and create flow (Bridges and Florsheim 2008). User interfaces that make shopping enjoyable, pleasing and pleasurable prominently influence flow experience by enhancing the

enjoyment of the online experience. Hedonic features have been used broadly in research on the acceptance and use of websites, either as a precursor of flow or as a component to the Technology Acceptance Model (Agarwal and Karahanna 2000; Davis et al. 1992; Koufaris 2002; Koufaris et al. 2001). In addition, hedonic website features create flow experience (Sénécal et al. 2002). Greater perception of interactivity leads to an increased achievement of flow experience (Ghani and Deshpande 1994; Koufaris 2002; Novak et al. 2000; Skadberg and Kimmel 2004; Trevino and Webster 1992).

Utilitarian website features are linked with the utilitarian performance that is judged according to whether the particular purpose is accomplished (Davis et al. 1992; Venkatesh 2000). Huang (2003) indicates that flow elicits favorable web evaluations for the utilitarian aspects. Previous research signifies that greater user perception of the utilitarian features (e.g., easier navigation) in online environment corresponds to greater opportunity to achieve flow (Ghani and Deshpande 1994; Koufaris 2002; Novak et al. 2000; Skadberg and Kimmel 2004; Trevino and Webster 1992). Choi et al. (2007) find that utilitarian features stimulate flow experience.

Outcomes of the flow experience in e-commerce include trust, brand equity, satisfaction, addictive behaviors, purchase intent, intention to use and intention return. Fredrickson et al. (2003) claim that flow experience leads to an increase in behavioral repertoires such as exploring and playing, thus broadens users' attention and thinking. The positive emotions that arise from the e-commerce website flow experience increase consumer learning about the brand and strengthen association with the brand. Flow in online environments reduces the possibility of undesirable consequences, such as negative attitudes and website avoidance (Dailey 2004). Hampton-Sosa and Koufaris (2005) empirically examine the effect of a firm's website on a customer's development of trust after a visit to the website. It was found that flow is a predictor of trust in e-commerce websites. Also, it should be noted that there could be potential moderators in proposed relationships. For example, hotel types (e.g. budget, economy, midscale, upscale, and luxury) can potentially moderate the relationship as the luxury segment is expected to immerse more in hedonic elements. Another potential moderator is the traveler type (e.g. business vs. leisure traveler). Leisure travelers are expected to engage in escapist elements more than the business travelers. The next section of this study develops the measurement items for flow experience.

3 Methodology and sample

The target population evaluated in this study was adult travelers in the US who have made an online hotel booking in the past 12 months. Flow experience was evaluated using multiple item measures that were modified to reflect the context of online hotel booking. A focus group of e-commerce shoppers, industry professionals, e-commerce professors were asked to evaluate the items. During this process, new items emerged for online booking context. In order to test the proposed measurement model, this study combines exploratory factor analysis (EFA) and

confirmatory factor analysis (CFA). It is recommended that factor analysis be done using separate data sets (Hair et al. 2010). The separate data sets allow the researcher to test the theoretical construct under consideration. Using the same data set merely fits EFA results directly into the CFA. Therefore, an initial sample was examined using EFA subsequently followed by a drawn sample used to perform the CFA. Data for the EFA was collected from an online questionnaire that was sent to 2,500 college students from two US colleges. In order to deploy CFA, the revised questionnaire was sent to a sample of randomly selected US respondents from a national database, who are interested in purchasing travel products online. Out of the student sample, a total of 504 responses were received, which equates to a response rate of about 20 %. Out of the 504 respondents, 254 of them had booked a hotel room online in the past year. We did not consider the respondents who did not use the Internet to book a hotel room or those who had not booked a room at all. After removing results from surveys that were either incomplete or otherwise missing data, a total of 242 complete responses were available for subsequent data analysis. After receiving the responses from the students and deploying an EFA, the questionnaire was sent to e-commerce shoppers across the US via a national database company for the purpose of conducting CFA. Upon consent, the level of agreement regarding flow experience was measured through a self-administered questionnaire that was sent to 20,000 randomly selected individuals in the US who were interested in purchasing travel products. After 1 month, 1,298 responses were collected with a response rate of 6.5 %. The first question of the survey was for screening purposes to ensure that only those subjects who had booked a hotel room online in the past year would complete the rest of the survey. Only 40 % of the respondents had booked a hotel room online in the last year; therefore, 520 respondents remained for the purpose of conducting data analysis. After inputting the data into SPSS, it was determined that nine questionnaires were missing responses to a substantial number of questions and were therefore removed. This brought the total number of usable questionnaires to 511. Survey participants were almost evenly split between females (50.3 %) and males (49.7 %). Most were married (58.0 %) and distributed evenly in terms of age. A total of 21.1 % of the respondents held a bachelor's degree, whereas 27.1 % held a master's degree. The largest proportion of respondents (28.3 %) reported a personal annual income in the range of $25,001 to $50,000.

4 Results

During the literature review, we identified different scales to measure flow experience. The flow theory is novel to online shopping in services context, therefore, the flow experience was measured with two different measurement scales in order to be more accurate. The first instrument used a seven-item Likert scale following a narrative description of flow. Chen et al. (1999) have successfully used this approach in eliciting examples of experiences of flow among Web users. Later, many researchers adopted this measurement scale (e.g. Kiili 2005; Novak et al. 2000, 2003; Sicilia et al. 2005). Several researchers investigating flow have

employed narrative description of flow technique of presenting study participants with a phenomenon before eliciting their experiences (Jackson 1996; Chen et al. 1999, 2000; Novak et al. 2000). Wengraf (2001) stresses the importance of explaining the phenomenon to participants in their own language or idiolect, as opposed to the language of the researcher and research community. Confusions could have resulted from engaging potential informants in a discussion about flow without first explaining the meaning of the term (Pace 2004). Therefore, a short narrative description of flow was presented to the participants. Table 2 illustrates the measurement items for flow and the narrative description of flow. For refinement of the measurement items, they were revealed to focus group. Additional items were added and some minor wording changes were made after the focus group discussions. Cronbach's alpha scores were calculated in order to assess the reliability of the measures.

The second set of measurement items for the flow experience was adopted from Huang (2006) as self-report flow scales (Ghani and Deshpande 1994; Novak et al. 2000; Trevino and Webster 1992; Webster et al. 1993). This method is applicable when studying subjective states (Webster et al. 1993). There are two adaptations of this method. The first one evaluates the overall flow experience by presenting a short description of flow events, and respondents present personal examples of flow events and rate these events (Privette 1983), or they rate the overall flow experienced while using the Web (Novak et al. 2000). On the other hand, the second method measures the components of flow with the use of Likert-scale statements

Table 2 Flow Experience Measurement Items 1

Code	Item	Standardized loadings
FLO1_1	I experienced flow last time when I booked my hotel room online at this website	0.903
FLO1_2	In general, I experience "flow" when I book my hotel room online at this website	0.917
FLO1_3	Most of the time I book my hotel room online at this website; I feel that I am in flow	0.917
FLO1_4	Last time I booked my hotel room at this website, I was fully engaged	0.879
FLO1_5	Last time I booked my hotel room at this website, I was fully involved	0.853
FLO1_6	Last time I booked my hotel room at this website, I had full concentration	0.788
FLO1_7	Last time I booked my hotel room at this website, it was an enjoyable experience	0.678

Instructions: the word ''flow'' is used to describe a state of mind sometimes experienced by people who are totally involved in some activity. One example of flow is the case where a user is shopping online and achieves a state of mind where nothing else matter but the shopping; you engage in online shopping with total involvement, concentration and enjoyment. You are completely and deeply immersed in it. Many people report this state of mind when web pages browsing, on-line chatting and word processing

Cronbach's $\alpha = 0.94$

Extraction method: principal component analysis. 1 components extracted. Average variance extracted = 0.85

(Trevino and Webster 1992; Webster et al. 1993) or bipolar semantic-differential scale items (Ghani and Deshpande 1994). The self-report scaling method measures flow capturing the subjective state while minimizing interference. Table 3 illustrates the second set of measurement items of flow experience and Cronbach's alpha reliability score of the measure.

EFA is a statistical approach to explore the underlying structure and relationships of a set of variables. When possible, this technique searches for ways to reduce or summarize the data into a smaller set of factors (Hair et al. 2010). This analysis groups variables based on strong correlations. Therefore, in order to identify misfit variables, the factorability of the 7 items was examined in the EFA. Table 2 represents the rotated component matrix of items deployed in the study phase one. The Kaiser–Meyer–Olkin measure of sampling adequacy was 0.88, above the recommended value of 0.6, and Barlett's test of sphericity was significant ($\chi^2(21) = 1{,}885.469$, $p < 0.01$). The flow factor was explaining 72 % of the variance.

CFA is used to identify unidimensionality of each construct or find evidence that a single trait or construct underlies a set of unique measures (Anderson and Gerbing 1988). CFA provides a more rigorous interpretation of dimensionality than does EFA. Therefore, CFA was used as a confirmatory test of the measurement theory and suggest how the measured items represent the latent factors that are not directly measured (Hair et al. 2010). Accordingly, CFA was used as confirmatory test of the results of the EFA above to confirm. Since this study combines exploratory and confirmatory factor analysis, it is recommended that factor analysis be done using separate data sets (Hair et al. 2010). The separate data sets allow the researcher to test the theoretical construct under consideration. Using the same data set merely fits EFA results directly into the CFA. Therefore, an initial sample examined using EFA subsequently followed by a drawn sample used to perform the CFA. It is recommended that a sample size of $n = 150$ is sufficient for EFA given that there are several high loadings marker variables (above 0.80) (Tabachnick and Fidell 2001). The EFA sample ($n = 150$) was randomly drawn from the data set.

Table 3 Flow experience measurement items 2

Code	Item
FLO2_1	When using the website to book a room, I felt in control
FLO2_2	I felt I was able to interact online with the website
FLO2_3	When using the website, I thought about other things
FLO2_4	When using the website, I was aware of distractions
FLO2_5	When using the booking website, I was totally absorbed in what I was doing
FLO2_6	Using the booking website excited my curiosity
FLO2_7	Using the booking website aroused my imagination
FLO2_8	The booking website was fun to use

Cronbach's $\alpha = 0.80$

Average variance extracted $= 0.82$

The measurement model was estimated using CFA. The model was then purified by eliminating measured variables that do not fit well by an initial model. CFA was run on the randomly selected data ($n = 350$) using AMOS version 20. Based on the recommendation of Hair et al. (2010) and Schumacker and Lomax (2004) the appropriateness of model fit was assessed using χ^2, RMSEA, NFI, CFI, and SRMR. Table 4 shows the indicators of a model fit. Four items were finally used to measure flow experience with standardized loadings range from 0.97 to 0.78 (refer to Table 5).

5 Discussion and conclusions

Georgiadis and Chau (2013, p. 185) note that "A lot of research has been conducted worldwide on e-commerce, as it is undoubtedly a growing market and its applications represent a particularly high-growth area in business sector. However, there has been little consideration on examining and evaluating user experience in the e-business context. The customer's experience is a very important factor for the success of any e-commerce practice because it influences the customer's perceptions of value and product/service quality, and therefore is affecting customer loyalty and retention". The past decade has seen an immense development of e-commerce technologies including HTML5, Ajax, landing pages, CSS3, social media and SEO to name a few. The new technologies enabled e-commerce

Table 4 Goodness-of-fit statistics

Goodness-of-fit statistics	Values (base model)	Desired values for good fit
Chi square (χ^2)/df test	2.24	<3.0
RMSEA	0.07	<0.08
NFI	0.92	>0.90
CFI	0.94	>0.90
SRMR	0.08	<0.08
RFI	0.91	>0.90
IFI	0.90	>0.90

Table 5 Item loadings

Variables	Standardized loadings
FLO1_1 I experienced flow last time when I booked my hotel room online at this website	0.96
FLO1_2 In general, I experience "flow" when I book my hotel room online at this website	0.97
FLO1_3 Most of the time I book my hotel room online at this website; I feel that I am in flow	0.95
FLO1_4 Last time I booked my hotel room at this website, I was fully engaged	0.78

companies to enhance the shopping experience of their customers. Successful e-commerce management strategies have been associated with the creation and management of customer experience, which in turn leads to fruitful performance outcomes such as trust, addictive behaviors, brand equity, satisfaction, and loyalty. Furthermore, co-creation of online experience is important for e-commerce companies. Advancements of social media enabled e-commerce companies to combine the social media with customers' shopping experience, thus leading to increased interactivity. E-commerce researchers and practitioners focus on the phenomenon of online customer experiences. Plentiful of previous studies investigated the precursors and consequences of online customer experience by utilizing flow theory and it was found that online customer experience has numerous positive outcomes for e-commerce companies. This study analyzed the previous studies on flow and developed a conceptual framework. Later it proposed and tested a measurement model for online customer experience.

Successful retail management strategies have been associated with the creation of customer experience, which in turn leads to fruitful performance outcomes (Rose et al. 2012; Tynan and McKechnie 2009; Verhoef et al. 2009). Online customer experience has positive outcome for e-commerce companies; therefore, it should be regarded as a vital construct. Given the latest technological developments in e-commerce, this study highlights the opportunities for e-tailers by stressing the flow theory. This research examined the previous literature on flow theory and identified some of the precursors and consequences of flow experience in e-commerce context. Hedonic features are found to be important to create flow experience. These features include virtual interactivity, media richness, and appealing website designs. These features are related to the fun, playfulness, and pleasure that users experience or anticipate from a website. Additionally, utilitarian elements such as perceived usefulness and perceived ease of use are also important. Flow elements such as challenge are important to create pleasant online experiences. The current study also offers e-commerce marketers useful insights into the antecedents of user experience and experience measurement. For example, as our theoretical model indicates perceived usefulness, perceived ease of use, clear goals, interactivity, response time, media richness, vividness, and challenge are important precursors to enhance the overall experience. Unlike brick-and-mortar store shopping, e-commerce relies on Web interfaces to communicate product/service related information and manage customer relationships. However, Web interfaces are constrained, since online shoppers can only passively receive the product information presented (Jiang and Benbasat 2004). This lack of interactive experience leaves online shoppers less emotionally engaged in shopping experiences; making them less willing to buy online. Consequently, online shoppers need to achieve a state of mind where they engage in online shopping with total involvement, concentration and enjoyment. In other words, the traditional approaches to attract customers in brick-and-mortar commerce are not applicable in online contexts. Therefore, interaction, participation, immersion, engagement and emotional hooks are important in e-commerce. Accordingly, e-tailers are advised to think of consumers as actors in a play and not mere observers. In addition, e-tailers are encouraged to take cues from industries such as movies and video games to bring more seductive attributes to website design.

e-Commerce websites could create positive shopping experiences if they focus on features such as virtual tours and unique, innovative designs. An e-commerce website should provide a pleasant and visually attractive online environment that gives customers the impression that the website is effective and reliable. Those characteristics have a positive influence on the flow experience. Similar to the way a hotel's employees can provide a good impression to guests, a well-designed website can impart positive perceptions about the property to potential customers before they actually experience or stay at the hotel.

As e-commerce matures, key aspects of online shopping shift from static to more interactive components. Previously it was difficult to find websites that would facilitate the flow experience. The advent of Web 2.0, Flash, Ajax, Silverlight, and online widgets help websites to enhance customers' web experiences. For instance, Web 2.0 tools could be embedded to e-commerce environments to increase the virtual interactivity. From a theoretical perspective, the results of this study present a measurement model for flow experience.

This study contributes to the current body of knowledge in online customer experiences in several ways. First, we expect to see this study as a call to action. Shoppers' experiences in online environments are becoming increasingly important as online sales and technologies keep increasing. We highlighted the applicability of flow theory in e-commerce, particularly for the services industries. We also proposed, and later purified a measurement model of flow experience. Our research has resulted in a validated and comprehensive instrument for studying flow experience in online shopping. The creation process involved surveying existing instruments, creating new items, and then undertaking a scale development process.

Future studies can adopt this scale to measure flow experience in online contexts and are advised to propose models and empirically test them. Manipulation of flow experience by designing experiment studies may help practitioners and academicians to understand the online customer experience further. Finally, testing the model in different environments could potentially enhance our findings. For example, one research could compare the online experiences for services and products. Another future research might compare the flow experience of luxury travelers with economy travelers.

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