Website attributes in urging online impulse purchase: An empirical investigation on consumer perceptions

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ABSTRACT

A multitude of evidences show that impulse purchase is prevalent online, yet relatively limited knowledge is available on this phenomenon. The study borrows marketing wisdom to information systems space to quantify how the website cues (products availability, website ease of use and visual appeal) affect personality traits (instant gratification, normative evaluation and impulsiveness) to urge the impulse purchase online. Structural equation modeling technologies are employed to evaluate the research model based on a survey questionnaire. The results show that personality factors of instant gratification, normative evaluation and impulsiveness are key determinants of urge to buy impulsively, while perceived website cues of visual appeal, website ease of use and product availability are important precursors. Through combining marketing and IS wisdom, a number of new insights are offered which enrich our understanding on the determinants of online impulse purchase decision as well as on how a proper IS design alters consumer shopping experience to engender more online impulse purchase.

1. Introduction

Consumers often make unplanned purchase spontaneously and intuitively after being exposed to stimulating cues, like price promotion, advertisement of limited offer and attractive product appearance. This sort of purchase, termed as impulse purchase, holds three key features, which are 1) unplanned, 2) the result of an exposure to a stimulus, and 3) decided "on-the-spot" [51]. Impulse purchase is prevalent not only in brick-and-mortar stores but also in online settings, in particular that Internet shoppers were found to be more impulsive than Internet non-shoppers [17]. Hausman [23] noted that 30–50% of all retail sales are from impulse purchase while almost 90% of consumers make purchase on impulse occasionally. *Approximately 40% of all the money spent on e-commerce sites is attributed to impulse purchase* (see. [63,64]). "In an online context, idly browsing through iTunes to kill some time, without an a priori shopping goal, and deciding to purchase a song would be considered a pure impulse purchase" ([65], p. 34). Despite the prevalence of impulse purchase online, rather limited knowledge is available concerning psychological mechanism underlying online impulse purchase, such as how perceived online store design affects consumers' shopping experience in urging impulse purchase decision.

Most of prior literature on consumers' decision making process is based on the promise that decision and behavior are performed consciously and deliberately (see [64]). As a result, theories of conscious behavior, like TRA and its descendants (i.e. TAM and UTAUT), have been widely adopted as important theoretical frameworks underlying this stream of studies (i.e. [2,3,36,72]). However, inspired by recent advances in consumer psychology on automatic and impulse decision making activities (see [16,32]), a number of researchers started to investigate consumers' impulse decision making mechanisms in online environments. For instance, a handful of studies are found to apply environmental psychology to examine how website attributes, such as information fit-to-task, visual appeal and site ease of use, affect consumers' emotion and personality in triggering online impulse shopping decision (see. i.e. [48,64,65]). Their studies suggested that an integration of marketing and IS wisdom would enrich our knowledge on online impulse purchase (see [64,65]). In this concern, based on prior IS studies [48,64,65], the research analyzes how three perceived website attributes, namely website ease of use, visual appeal and product availability, interact with consumers' personalities to entice impulse purchase online. Derived from consumer behavior literature, three personality variables are examined, including impulsiveness, instant gratification and normative evaluations. The study is expected to add to the decision support literature by elucidating consumers' impulse decision making activities.

Considering various online shopping approaches, i.e. B2C, C2C and online auction, the study examines impulse purchase in the context of

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online group shopping, which is increasingly popular across different countries in the world thanks to its initiator of Groupon.com. The remainder of the paper is organized as follows. Section 2 presents the literature review and the research contexts, followed by research framework and hypotheses in Section 3. Section 4 discusses the research methodology and evaluates the research model. Section 5 discusses the results and makes conclusions. Research limitations and possible future research avenues are discussed in Section 6.

2. Literature review and research context

2.1. Impulse purchase

In the past 60 years, both psychology and consumer behavior researches have accumulated a multitude of evidences, showing that environmental stimulus exerts robust and often irresistible influences on consumers' purchase decision even without their awareness. A famous experiment by North et al. [47] found that French music played in a store made more customers buy French wine, whereas German music played increased the sale of German wine. Prior studies have examined how in-store stimuli, like retail shelf location [49], amount of shelf space [12], displays of products [50], price-off promotion [6] affected impulse purchase. In addition to visual factor, audio and olfactory stimuli were found to affect in-store purchase behavior alike (i.e. [43,55]). Psychology research indicated that automatic information processing is key mechanism underlying impulse purchase behavior, in which decision is made intuitively and spontaneously without consumers' conscious deliberation [13]. Consequently, the planned-behavior-assumption based theories, like theory of reasoned action, are inappropriate to interpret consumers' impulse purchase (c.f. [64]).

In this regard, environmental psychology of stimulus–organism–response (S–O–R) framework has been widely adopted to interpret impulse purchase. Introduced by Woodworth [68], the framework is an extension and improvement of the classical stimulus–response (S–R) theory in behaviorism (see. [35,45]). The classical S–R theory refers to human behavior as a learned response to stimuli, which treats human mind as a black box. The S–O–R paradigm seeks to enhance the classical S–R theory by integrating 'organism' to account for internal cognitive and affective processes of people in response to external stimulus. The theory postulates that stimulating cues perceived from the situated environment (stimulus) triggers one's internal evaluation (organism), which subsequently brings about positive or negative behaviors toward the stimuli (response) [42]. In consumption realm, this framework has been widely applied as one of the most important theories in explaining consumer behavior in brick-and-mortar stores (i.e. [28,35,62]), which has recently been introduced to online impulse buying research (i.e. [19,24,29,31]).

2.2. Online impulse purchase research

Environmental psychology plays an important role in current online impulse purchase research. Derived from S–O–R framework, Parboteeah et al. [48] argued that perceived usefulness and enjoyment are key organic variables reacting to website stimulus (perceived visual appeal and information fit-to-task) in urging consumers to buy impulsively. The study found that consumers are more likely to feel urge to buy impulsively if their interaction with the shopping environment is pleasant. In a similar way, a work of Adelaar et al. [1] investigated how media format of music CD affects impulse buying behavior. The study noted that different media formats affect consumers' emotional responses differently, which helps explain the people's impulse buying intent. Verhagen and van Dolen [64] proposed that website functional convenience and representational delight have significantly influences on positive and negative shopping emotions, which in turn impact online impulsive buying action. The study shows that the emotion of 'positive affect' is the key driver of online impulsive purchase. A recent study of Well et

al. [65] utilized a measurement of felt urge to buy impulsively as the proxy of impulse purchase, found that consumer impulsiveness and website quality significantly affect the felt urge to buy impulsively. Bressolles et al. [7] investigated the impacts of e-service quality dimensions on customer satisfaction and buying impulse. The study found that functional buying impulsivity moderates the influence of website quality dimensions on satisfaction and on buying impulses [7]. In general, marketing and IS literatures show that impulse purchase can be studied from two key perspectives: the state of mind created by the shopping environment, such as perceived enjoyment [52] or a specific personality trait inherent to the individual consumer, such as impulsiveness [53,65]. However, an investigation on personality trait variables, such as instant gratification and normative evaluation, is lacking in online impulse purchase research. Also there is a lack of understanding on whether, what and how website attributes affect these variables in an online store setting.

2.3. Online group shopping

Online group shopping is an online retailing concept that seeks to offer cheap services or products through leveraging the buying power of individual consumers as a group. As a U.S. based online coupon seller, Groupon.com is a pioneer in doing online group shopping business, while its rapid growth in 2009 brings about the advent of recent online group shopping industry. Launched on November 2008, Groupon currently offers deals in almost 500 markets in 44 countries while similar businesses witness a rapid growth across the world, particularly in China. Specifically, Groupon-like sites seek to offer low-price local service or products (typically 50–90% off retail prices) to consumers after a minimal amount of shoppers signing up for the offer has been reached during a short period of selling time. In 2010, 50 million Chinese consumers, or 12% of all Chinese Internet users, are estimated to be the online group shopping users according to a report of iResearch [26]. The figure is predicted to reach 60% (420 million) by 2015 [26]. In China daily coverage of online group shopping sites has increased from 5 million in July 2010 to be 27 million in July 2011 [27]. Urged by its rapid growth and vast potentials, online group shopping has been considered to be the new growth point of Chinese e-commerce industry and the next paradigm of e-commerce (see [26]). Online group shopping is in fact becoming a platform for enterprises of all sizes to sell off-season and overstocked inventories, and an important platform for local small and medium enterprises (SMEs) to effectively market their brand. For consumers, the availability of various cheap local services and psychical products covering nearly all aspects of daily lives improves their life quality while saving cost.

Compared to conventional e-commerce approaches, online group shopping offers a fertile ground for impulse purchase behavior research. First, deals sold in online group shopping sites are typically from SMEs, and a consumer is unable to predict whether a specific brand is or will be available in the site. Recall that purchases of new products, i.e. unfamiliar brands, result more from impulse than from prior planning (see [30]). In addition, a deal in the group shopping sites is typically available only for a certain period of time and will probably not be available anymore in the future; this probably makes consumers more impulsive in participating in the buying event. Hence, investigating impulse purchase in the context of online group shopping industry seems appropriate.

3. Research model and hypotheses

3.1. Organism: the state of mind and personality

Based on prior marketing studies, the study introduces three personality trait variables to model online impulse purchase, which are instant gratification, impulsiveness and normative evaluation (Fig. 1).

Instant gratification reflects the degree of immediate gratification that an individual obtains via making an impulse purchase. In-store marketing wisdom suggests that, as a kind of personality, some consumers can immediately obtain a sense of gratification right after making an impulse purchase; and this irresistible desire for immediate gratification stimulates them to buy a product on impulse (i.e. [11,21,52,54]). Youn and Faber [70] noted that there are significant differences between impulse and non-impulse consumers; an impulse consumer tends to decide rapidly and behave for obtaining instant gratification. Impulse purchasers are motivated in pursuit of the instant gratification that buying provides, which hedonically charges their moods [70]. Beatty and Ferrell [4] noted that some shoppers obtain more gratification from the process of shopping and this personal trait makes that a shopper may enjoy some shopping contexts more so than others, suggesting its context-sensitive nature.

Normative evaluation reflects a consumer's judgment about the appropriateness of making an impulsive purchase in a particular buying situation [53]. Many of the early studies linked impulse purchase with being 'irrational, immature and wasteful' that results from impaired rationality (for a review see [51,53]). However, recent consumer surveys show that, only a part of consumers feel regretful and guilty after an impulse purchase [53] while most consumers do not judge their impulse purchase as being inappropriate or wrong [23,52]. In particular, a work of Rook and Fisher [53] indicated that *in-store* consumers purchase on impulse only when feeling it appropriate. It is possible that normative evaluation also exerts an important influence on online impulse purchase alike. In addition, Rook and Fisher ([53], p. 307) argued that "different impulse buying situations tend to evoke varying normative evaluations". Different buying situations may invite either negative or positive normative evaluations even for the same product [53]. This suggests that normative evaluation is susceptible to different buying stimuli and that normative evaluation may mediate the influence of buying stimulus on impulse purchase.

Impulsiveness or impulse buying tendency can be defined as "both the tendencies (1) to experience spontaneous and sudden urges to make on-the-spot purchases and (2) to act on these felt urges with little (conscious) deliberation or evaluation of consequence" ([4], pp. 174). This construct that has been tested in both online and offline settings (i.e. [65]), which shows up as a significant determinant of impulse purchase. However, personality traits like instant gratification, normative evaluation and impulsiveness has only been studied separately in prior consumer behavior literature. We argue that these personality traits may have interdependencies. It is possible that consumers who have a positive evaluation on impulse purchase will more easily feel a sense of gratification, compared to those who feel guilty towards impulse purchase. In addition, if a consumer is impulsive in nature and is used to making a purchase in an impulsive manner, s/he should be more likely to feel impulse purchase as being appropriate. Therefore, we hypothesized that:

H1a. Impulsiveness positively relates to normative evaluation.

H1b. Normative evaluation positively relates to instant gratification.

As proposed by Beatty and Ferrell ([4], pp. 172), the (felt) urge to buy impulsively refers to "the state of desire that is experienced upon encountering an object in the environment". The construct has been claimed to be an accurate, appropriate and effective proxy for impulse buying [4,65] being used in a number of studies (i.e. [4,48,65]). In a similar manner, our study adopts the urge to buy impulsively as the proxy of impulse purchase. Based on the above discussion, we therefore proposed that:

H2a. Impulsiveness positively relates to the urge to buy impulsively.

H2b. Normative evaluation positively relates to the urge to buy impulsively.

H2c. Instant gratification positively relates to the urge to buy impulsively.

3.2. Activating internal reactions: stimulus of website cues

Prior studies have identified hundreds of different cues in both online and offline stores that may alter consumers internal traits in urging impulse purchase (i.e. [15,70]). In online settings, Childers et al. [10] proposed a term of 'webmospherics' inclusive of such web design attributes as frames, graphics, text, pop-up windows, search engine configuration, "one-click" check-out or purchase procedures, and hypertext links, media dimensions (e.g., graphics, text, audio, color, and streaming video) and site layout dimensions (e.g., organization and grouping of merchandise); and these web design attributes may contribute to triggering online impulse purchase to a different extent. In other words, different consumers are susceptible to different environmental characteristics of different degrees [14,70,71]. People differ in their reaction to different environmental cues; some people are responsive to a particular buying stimulus whereas others are not [37].

As noted already, prior studies have empirically tested a number of website cues, such as perceived visual appeal, website quality, information fit-to-task, media format, functional convenience and representational delight in online impulse purchase contexts. Among the website cues evaluated, many of them are similar and interrelated. For instance, Bressolles et al. [7] related the website ease of use to the website usability, and evaluated the variable from the
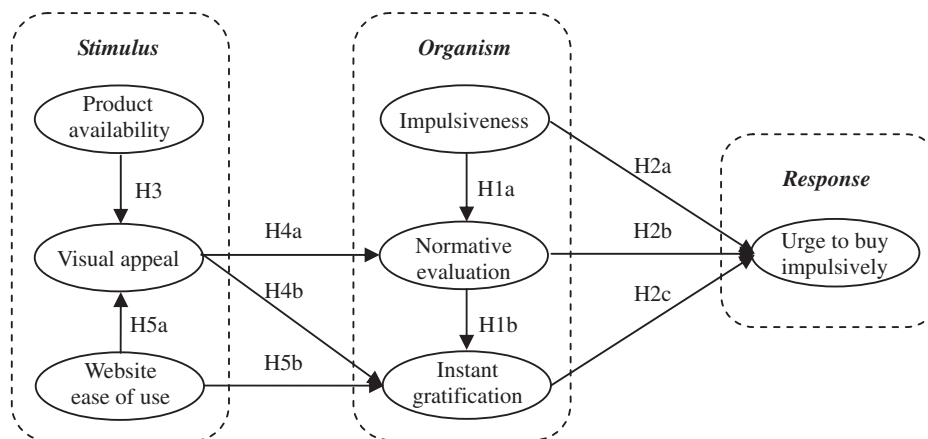

Fig. 1. Research model.

perspectives of how easy it is to search information in a site and how easy the site can be navigated. In the study, ease of use is defined as a dimension of e-service quality and is found to have a significant and indirect influence on buying impulse [7]. Wells et al. [65] evaluated navigability from the view of how easy it is to interact with and to navigate a website, and employed the construct as a dimension of website quality. The study also reported a significant indirect influence of navigability on urge to buy impulsively [65]. Verhagen et al. [64] evaluated ease of use as a dimension of functional convenience. However, no significant influence is found between ease of use and urge to buy impulsively. A work of Parboteeah et al. [48] elucidated easy of navigation as a dimension of designing task-relevant cues. In a controlled experiment, Parboteeah et al. [48] found high-quality task-relevant cues bring about more impulse purchase. In the present study, three sorts of website cues, including perceived product availability, website ease of use and visual appeal, are tested. The three website cues have been frequently discussed in prior website quality and impulse purchase literature (i.e. [39,64,65]). However, there is a lack of knowledge on how these cues interact with consumers' internal evaluations (i.e. normative evaluation and instant gratification) to trigger impulse purchase online.

Perceived product availability refers to the presence of a diversity of various products in the online store to satisfy a broad shopping interest of potential consumers. Prior study has suggested that behavior cannot occur if objective conditions in the environment prevent it (c.f. [58,61]). In other words, if consumers fail to find the products they are interested in, frustrated experience will be easily aroused, which diminishes the possibility of subsequent (impulse) purchase. As a result, product availability has been frequently studied in terms of in-store impulse purchase (i.e. [9,59]). In a study on impulse clothing purchase, Chen-Yu and Seock [9] found that product availability is the most important criterion of store selection for impulsive purchasers. Yoo et al. [69] found that a wide product assortment of a store makes consumers feel more pleasure towards the store. Theodoridis and Chatzipanagiotou [59] noted that consumers' perception of a great assortment influences their perceptions on store image and satisfaction with the store. A rich product assortment is one of the most important reasons for consumers buying online [22,56,66]. Hence, as a rich product assortment has been an important determinant of consumer pleasure, satisfaction and perceived store image, as well as an important reason for consumer to purchase online, it is possible that consumers would evaluate an online store with a rich product variety to be more visually appealing. In other words, a consumer may feel an online store dull, if s/he is unable to find any interesting offer. Groupon.com originally exhibited and sold only one deal per day and it started to offer multiple deals per day in late 2010. Therefore, more cues of interesting offers are presented in Groupon's site today in comparison to its previous interface that exhibits a single deal. This new strategy of offering more products than only a single product should make the online group shopping stores look more appealing to consumers. Hence, we hypothesized that:

H3. Perceived product availability positively relates to perceived visual appeal.

Visual appeal relates to the exhibition of fonts and other visual elements such as graphics, acts to enhance the overall presentation of a web [48]. Prior works indicated that perceived visual appeal has an indirect influence on impulse purchase, that is mediated by the factors, such as user satisfaction and website quality (see [39,65]). Parboteeah et al. [48] found that if a website is visually appealing, more pleasure will be elicited when interacting with the website. We expect that a visually-appealing website would enhance the felt gratification of impulse purchase online. For instance, exhibiting products in a visually appealing approach, such as through a number of appealing pictures, may generate more gratification if consumers purchase the products. In

addition, it is expected that, an individual will have a more positive evaluation on an unplanned impulse purchase, when shopping in a visually appealing website than shopping in a poorly-organized website. For instance, a well-taken photo of a product may make the deal look more visually appealing, so that consumers may give a more positive normal evaluation on purchasing the product. In contrast, the same deal presented in an ugly or poorly designed website may trigger consumers to consider the appropriateness of placing an order in this website, therefore thwarting both planned and unplanned purchase intentions. Consumers may easily feel being irrational or crazy to purchase in a website that cannot even properly design its layout. Therefore, we hypothesized that:

H4a. Perceived visual appeal positively relates to normative evaluation.

H4b. Perceived visual appeal positively relates to instant gratification.

Perceived website ease of use refers to how easy it is to navigate in an online store [64]. Prior studies suggested that if a website is easy to use, it is possible to raise consumers' positive emotions, therefore making impulse purchase likely [20,64]. In other words, if a consumer experiences many difficulties of browsing a site, it is less likely that s/he will feel glad after purchasing an item in the site. Therefore, it is hypothesized that a user will be more likely to get a sense of gratification if the website is easy to use. Additionally, website ease of use should be an important precursor of perceived visual appeal of a website. Prior studies found that the feeling on whether an interface can be easily navigated is highly correlated with the perceived visual appeal of the interface [8,33,60,65]. Website ease of use is an important dimension of visual esthetics of the website [34]. Apparently, if a website is difficult to navigate, it is hard for the users to evaluate the website as visually appealing. Therefore, we hypothesized that:

H5a. Perceived website ease of use positively relates to perceived visual appeal.

H5b. Perceived website ease of use positively relates to instant gratification.

4. Research methodology

4.1. Questionnaire and samples

A questionnaire has been developed to collect data for evaluating the research model. The questionnaire was initially developed in English and subsequently translated into Chinese by one of the manuscript's authors while another author conducted a back translation to ensure of the accuracy of the translation. The questionnaire items are attached as shown in Appendix A. A seven-point Likert-scale ranging from strongly disagree (1) to strongly agree (7) was used to measure each item. Measurement items for visual appeal were from the works of Loiacono et al. [40] and Wells et al. [65]. Items for impulsiveness and urge to buy impulsively were based on the measurement from Rook et al. [53] and Parboteeah et al. [48] respectively. Indicators of normative evaluation were from the study of Rook et al. [53]. Items of products availability were adapted from the measurements for merchandise attractiveness [64], product assortment [69] and product variety [9]. Items for website ease of use were adopted from the measurements for information fit-to-task [48] and ease of use [7,64]. The measurement for instant gratification is developed based on a reflection of prior studies [11,21,52,54].

Convenient samples of university students were utilized. Our questionnaires were distributed at the campus (i.e. library) of Zhejiang Normal University in September 2011, which took about two days. As the whole questionnaire is rather long with over 100 questions, candies were provided to please respondents in order to seduce their patience with survey, which cost about 3 RMB (approximately 0.5 USD) each. Of the 389 distributed questionnaires, 369 were

returned (94.9%) and 318 were acceptable (86.2%). The questionnaires that were poorly filled in, such as those giving more than 10% missing value, were discarded. Samples (N = 5) reporting no prior knowledge on online group shopping are excluded alike. The validated samples consist of 129 males (40.6%) and 189 females (59.4%). Respondents are requested to report their prior experience of browsing online group shopping sites and those without browsing experience should not be included for evaluating impulse purchase. As shown in Table 1, 231 respondents inclusive of 84 males and 147 females have the experience of visiting online group shopping sites before; their responses are therefore retained for model testing. As shown in Table 2, 104 of 188 actual purchasers reported that their last purchases in online group shopping websites were made impulsively, indicating that it is appropriate to investigate impulse purchase in online group shopping contexts.

4.2. Measurement validity and reliability

Confirmatory factor analysis was utilized to test the adequacy of the measurement model using Amos 19. One item for measuring impulsiveness was found to have a low loading value. After removing this item, we reran the confirmatory factor analysis, the results of which demonstrated a satisfactory fit (CMIN/DF: 1.981; P < 0.001; NFI = 0.88; IFI = 0.94; TLI = 0.91; CFI = 0.94; RMSEA = 0.065). The values of Cronbach's Alpha (α), composite reliability (CR) and average variance extracted (AVE) of the constructs are all over the thresholds of 0.7, 0.7 and 0.5 respectively, as shown in Table 3. The squared roots of AVE are higher than their correlations with other constructs, as shown in Table 4. In addition, principle component analysis was conducted to further test measurement validity, as shown in Appendix B. The results show that all items fit their respective factors quite well. The results suggest unidimensionality, convergent and discriminant validity of the measures. Harmon's one-factor test is applied to test common method bias [41]. No factor is found to account for the majority of the covariance in the variables, which suggests that common method bias is an unlikely concern in the data. In addition, a single factor model test is conducted. The single-factor model showed a poor fit (CMIN/DF = 9.606; P < 0.001; NFI = 0.36; IFI = 0.39; TLI = 0.23; CFI = 0.38; RMSEA = 0.193) against the existence of common method bias.

4.3. Model evaluation and hypotheses testing

Structural model test indicated a good fit between the model and data (CMIN/DF = 2.019; P < 0.001; NFI = 0.88; IFI = 0.93; TLI = 0.91; CFI = 0.93; RMSEA = 0.067). Except hypothesis H5b, all the hypotheses are supported, as shown in Fig. 2. Both perceived product availability and website ease of use have positive and significant effects on visual appeal, which in turn significantly influences normative evaluation and instant gratification. In addition, impulsiveness has significant impacts on normative evaluation. Normative evaluation is a significant determinant of instant gratification. Impulsiveness, normative evaluation and instant gratification are significant motivators of urge to buy impulsively. Against expectation, perceived website ease of use has no significant influence on instant gratification. Overall, the model interpreted 25% of variance of visual appeal, 23.2% of instant gratification, 13.7% of normative evaluation and 27.6% of urge to buy impulsively. Note that prior works typically interpret about 18 to 34% of the variances of urge to buy impulsively (see [4,64,65]). Therefore, the explanatory power of the research model is acceptable. However, this also suggests a need for future studies to identify more factors that help interpret online impulse purchase activities.

Hypothesis H5b is rejected, indicating perceived website ease of use has no significant linear relationship with instant gratification. It is worth noting that a recent work of Nadkarni [46] indicates a quadratic non-linear relationship between website ease of use and user satisfaction. In a similar way, this may suggest a non-linear relationship between perceived website ease of use and instant gratification. As a result, a quadratic regression analysis was performed using SPSS 18.0. Consistent with the research findings of Nadkarni [46], an inverted-U relationship is found between the two variables. Standardized path coefficients for perceived website ease of use and perceived website ease of use^2 are 1.013 (P < 0.01) and −0.767 (P < 0.05) respectively. A graph of scatter plot of the two variables helps visualize their relationship, as shown in Appendix C. We duplicated the analysis through the use of a partial least square analysis approach in SmartPLS 2.0. The same results of path coefficients were reported. As shown in Table 4, there is a low correlation between perceived website ease of use and instant gratification, indicating that multicollinearity between the two variables does not exist to cause a problem for the data analysis. The results suggest that a non-linear relationship may best explain the interaction between website ease of use and instant gratification. Perceived website ease of use explains 8.7% of variance of instant gratification based on the quadratic regression analysis.

Table 1
Website usage experience.

Time spent on browsing online group shopping website weekly		
Options	Cases	Percentage
1. Never use before	84	26.4%
2. Less than 10 min	59	18.6%
3. 11–30 min	57	17.9%
4. 31–60 min	40	12.6%
5. 1–2 h	44	13.8%
6. 3–5 h	16	5.0%
7. Over 5 h	15	4.7%
No answer	3	0.9%
Total	318	100%

Table 2
Evaluation of popularity of impulse purchase among online group shopping users.

Please recall your last purchase in online group shopping sites, was the purchase decision made suddenly when you were wandering in the online group shopping websites, or made before you start to browse the websites?		
Options	Cases	Percentage
1. I have never purchased using online group shopping sites before.	127	39.9%
2. I have already had a specific shopping goal before I start to browse the websites.	55	17.3%
3. My decision was made suddenly when I was wandering in the websites.	104	32.7%
4. None of above options describes me.	18	5.7%
5. I do not remember.	11	3.5%
No answer	3	0.9%
Total	318	100%

Table 3
Reliability and convergent validity statistics.

Construct (no. of items)	α	Composite reliability	Minim. factor loading	AVE
Products availability (3)	0.84	0.85	0.706	0.656
Visual appeal (3)	0.89	0.89	0.806	0.730
Website ease of use (3)	0.75	0.76	0.632	0.524
Instant gratification (3)	0.86	0.87	0.733	0.688
Normative evaluation (3)	0.82	0.83	0.624	0.631
Impulsiveness (2)	0.81	0.82	0.754	0.698
Urge to buy impulsively (3)	0.87	0.87	0.722	0.699

Table 4
Discriminant validity (the bold diagonal are the square roots of the AVEs of the individual constructs; off diagonal values are the correlations between constructs).

Construct	PA	VA	WEOU	IG	NE	IMP	UBI
Products availability (PA)	**0.81**						
Visual appeal (VA)	0.44	**0.85**					
Website ease of use (WEOU)	0.41	0.39	**0.72**				
Instant gratification (IG)	0.29	0.39	0.28	**0.83**			
Normative evaluation (NE)	0.11	0.20	0.26	0.34	**0.79**		
Impulsiveness (IMP)	0.17	0.22	0.17	0.35	0.35	**0.84**	
Urge to buy impulsively (UBI)	0.24	0.25	0.30	0.47	0.34	0.38	**0.84**

5. Discussion and conclusion

The study contributes new insights to understanding the determinants of online impulse purchase through combining IS and marketing wisdom. The results indicated that perceived website ease of use, visual appeal and product availability are important online cues for engendering impulse purchase online. Specifically, perceived product availability, and website ease of use affect organic variables via the mediating effect of perceived visual appeal. In other words, when a consumer feels that an online store exhibits a diversity of various interesting offers and is easy to use, the store will be perceived to be more visually appealing. Further, shopping in such a visually appealing site, consumers will have more pleasure of making purchase and have a positive evaluation on making unplanned purchase, resulting in a stronger feeling of being urged to buy impulsively. In addition, impulsive consumers are more likely to evaluate unplanned impulse purchase positively, which in turn urges them to make purchase on impulse. Our research model is derived from the prior discussion on online and in-store impulse purchase. Therefore, we believe that the research findings of the study should be largely generalizable to other sorts of e-stores, while the study chooses online group shopping as the study context.

The study makes several contributions to IS and online shopping literature. First, the study identified three website attributes of perceived visual appeal, website ease of use and product availability, quantifies their influences on organic variables.

Second, organic variables, including instant gratification and normative evaluation, are found to mediate the effects of website cues on urge to buy impulsively. To further validate the mediating effects of organic variables, a post hoc test on an alternative model is conducted by adding direct connections between three website cues to *urges to buy impulsively*. Despite a slightly worse model fit (CMIN/DF: 2.029; P < 0.001; NFI = 0.88; IFI = 0.93; TLI = 0.91;

CFI = 0.93; RMSEA = 0.067), none of websites cues were found to have significant and direct influences on urge to buy impulsively. This result is consistent with the research findings of Verhagen et al. [64]. Specifically, the results support the validity of using the S–O–R framework in modeling online impulse purchase, and suggest the necessity of including organic variables in modeling online impulse purchase behavior.

Third, the study introduces personality traits from in-store marketing literature to IS space and quantifies their effects in online impulse purchase contexts. Normative evaluation and instant gratification are found to exert significant influences on urge to buy impulsively. Consistent with the prior work of Wells et al. [65], impulsiveness is found to be a significant determinant of online impulse purchase alike.

Forth, the study tested the interrelationships between organic variables. Note that organic variables, like impulsiveness, normative evaluation and instant gratification, are developed and tested independent of each other in prior studies. The study is the first to test their interrelationships in an integrated model. Consistent with our expectations, significant interactive relationships are found among organic variables. Explicitly, impulsiveness is a determinant of normative evaluation, which further affects instant gratification.

Fifth, based on the work of Nadkarni (2007), the study found a possible inverted-U relationship between perceived website ease of use and instant gratification. The results indicate that a moderate degree of perceived website ease of use is the best approach to promote instant gratification. It is also suggested that future research should pay attention to the possible non-linear relationship between variables, in particular considering the popularity of using linear-relationship-based structural equation modeling (SEM) technique in the field.

From a managerial view, our study has several implications. First, the study emphasized the importance and popularity of impulse purchase in online group shopping market. Hence, online retailers should pay more attention to impulse purchase and invest more resources in online store design in order to generate more impulse purchases. Second, the results showed that, to promote impulse purchase, online retailers should create a friendly and easy-to-navigate site, offer an attractive assortment of products and include visually appealing elements in relevance to their products, such as appetitive picture for selling food. Usability technologies, like card sorting, tree test and pluralistic walkthrough (see [18]), are available solutions to make a site easy to use. Visual appeal of a website can be improved by a proper use of fonts, colors (e.g., backgrounds) and graphics (e.g., color tabs for product selection) in the website design (see [48,65]). It is suggested to have well-trained photographers to take photos of products so that the products offered by online retailers can be exhibited in a visually-appealing way, in particular for the online retailers who
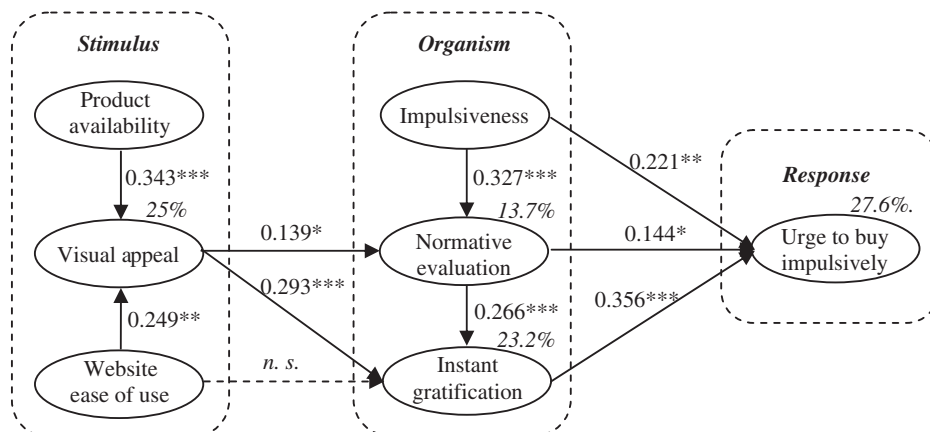

Fig. 2. Results of model evaluation (*: P < 0.05; **: P < 0.01; ***: P < 0.001; *n.s.*: not significant).

have a rapid turnover of new products, i.e. online group shopping sites. Based on the findings of both prior studies (c.f. [4,51,57]) and the present study, we argue that the trick for effectively triggering impulse purchase is *to give consumers enough exposures to relevant environmental stimuli at the expenditure of least physical, mental and time effort by creating a pleasant shopping experience*, and this should be applicable to the contexts of both online and physical stores. Also, as consumers tend to have different degrees of impulsiveness, pushing product information to consumers who have impulsive shopping habits may contribute to an increase of sale. Prior marketing studies have already identified a number of possible characteristics of impulse purchaser. For instance, impulse purchasers tend to (i) buy impulse items, such as gum or mints, candy and magazines in the aisles of supermarket when checking out [44]; (ii) be 'sensitive' to television shopping channel [38]; (iii) be under 35 years old [5]; (iv) have a higher frequency of shopping and better household income [73], (v) have 'some' college or other post high school educational experience [67], etc.

6. Limitations

As of prior studies, the study is not without limitations. The first limitation is the use of convenient sampling strategy by surveying university students, even if they contribute to the second largest use group in China [25]. More diversified samples would provide more valuable results. Second, website stimuli that influence impulse purchase abound. The study only investigated three of them. Hence, future studies may provide more insights if different website characteristics can be taken into consideration. Future studies may include more website attributes and organic variable into the model for a more complete understanding for online impulse purchase.

Acknowledgment

Appendix A. Indicators of measurement

Product availability

PA1: There are a sufficient variety of products available for me in online group shopping websites.
PA2: I can easily find the products from online group shopping websites which I need.
PA3: I can easily find the products from online group shopping websites which I am interested in.

Visual appeal

VA1: Online group shopping websites are visually pleasing.
VA2: Online group shopping websites display visually pleasing design.
VA3: The layouts of online group shopping websites are attractive.

Website ease of use

EOU1: I think getting product information in online group shopping websites is simple.
EOU2: For me, getting product information is easy from online group shopping websites.
EOU3: In online group shopping websites, relevant information is presented in an obvious and easy to find manner.

Instant gratification

IG1: Purchase in online group shopping websites on an impulse brings me immediate enjoyment.
IG2: I would feel pleased when I purchase something in an online group shopping websites on an impulse.
IG3: I would feel excited when I purchase something in an online group shopping websites on an impulse.

Normative evaluation

How do you evaluate the following situation?
You visited online group shopping websites and planned to buy one E-coupon of a particular restaurant, but you ended up buying E-coupons of four different restaurants.
I think the above-mentioned behaviour is:
  Unacceptable (1) acceptable (7)
  Unattractive (1) attractive (7)
  Crazy (1) rational (7)

Impulsiveness

IMP1: I often buy things intuitively rather than deliberately.
IMP2: "Buy now, think about it later" describes me.
IMP3: I buy things according to how I feel at the moment (dropped).

Urge to buy impulsively

UBI1: As I browsed the online group shopping websites, I had the urge to purchase items other than or in addition to my specific shopping goal.
UBI2: Browsing online group shopping websites, I had a desire to buy items that did not pertain to my specific shopping goal.
UBI3: While browsing online group shopping websites, I had the inclination to purchase items outside my specific shopping goal.

Appendix B. Principle component analysis

Rotated component matrix

	Component						
	1	2	3	4	5	6	7
Website ease of use 1	−.065	.195	.212	.107	.037	**.761**	.000
Website ease of use 2	.200	.028	.034	.152	.133	**.836**	.021
Website ease of use 3	.226	.072	−.003	.096	.019	**.773**	.087
Products availability 1	.162	.230	.110	**.743**	.006	.268	−.151
Products availability 2	.199	.012	.063	**.879**	.011	.110	.042
Products availability 3	.155	.049	.070	**.878**	.031	.053	.135
Visual appeal 1	**.852**	.120	.107	.107	.043	.175	.064
Visual appeal 2	**.884**	.071	.159	.202	.050	.141	.043
Visual appeal 3	**.849**	.016	.129	.211	.133	.059	.049
Instant gratification 1	.129	.214	**.828**	.069	.143	.093	−.030
Instant gratification 2	.136	.168	**.867**	.153	.118	.074	.124
Instant gratification 3	.144	.157	**.814**	.022	.071	.079	.262
Normative evaluation 1	.028	.146	.119	−.049	**.875**	.096	.035
Normative evaluation 2	.074	.174	.140	−.026	**.867**	.023	.076
Normative evaluation 3	.111	−.040	.044	.132	**.749**	.064	.254
Impulsiveness 1	.097	.209	.126	.090	.179	.077	**.834**
Impulsiveness 2	.033	.128	.152	−.032	.149	.021	**.880**
Urge to buy impulsively 1	.038	**.857**	.208	.106	.150	.168	.055
Urge to buy impulsively 2	.049	**.868**	.265	.033	.125	.092	.073
Urge to buy impulsively 3	.128	**.792**	.081	.112	.036	.061	.283

Appendix C

Scatter plot graph for website ease of use and instant gratification (the data is displayed as a collection of circles. For each circle, the value of perceived website ease of use determines the position on the horizontal axis and the value of instant gratification determines the position on the vertical axis; the highlighted dark circle indicates the existence of several circles overlapping each other).
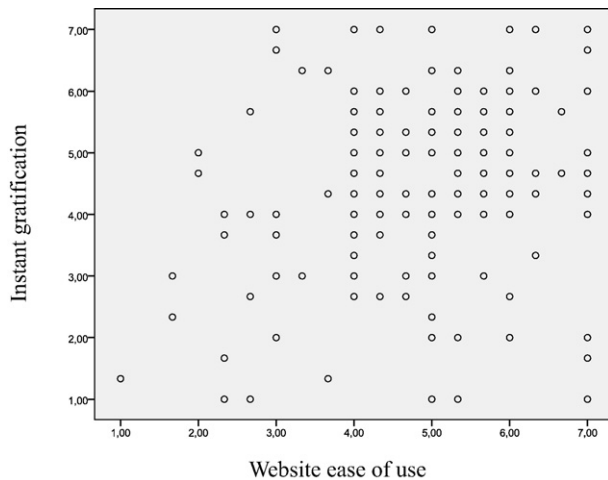
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