

THREE WAYS TO CONVERT BROWSING INTO IMPULSE BUYING: WEBSITE STREAMLINE AND DECORATION

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Abstract:

Online stores spring up everywhere and their store display changes more agilely than the brick-and-mortar ones. The webpage aesthetics in online stores, similar to in-store atmospherics in brick-and-mortar stores, are significant to consumer impulse buying, yet has received very limited attention from researchers. This paper reports three empirical studies that examine how webpage aesthetic components affect consumer online impulse buying.

The objectives of this research are based on the framework of webpage aesthetics to systematically investigate the influence of webpage aesthetics components on impulse buying, so we design three separate studies to answer the following research questions:

Study 1: Does virtual layout influence consumers' emotions, which in turn affect their online impulse buying behavior?

Study 2: Does virtual atmospherics influence consumers' emotions, which in turn affect their online impulse buying behavior?

Study 3: Does virtual theatrics influence consumers' emotions, which in turn affect their online impulse buying behavior?

Keywords: Impulse buying, webpage aesthetics, environment psychology, color contrast, webpage theatrics

1. INTRODUCTION

Impulse buying is defined here as a consumer's immediate response to external stimuli. It is not confined to a specific product category, but excludes the purchase of common household items (Madhavaram & Laverie, 2004). Madhavaram suggests that the impulse decision has hedonic components and might involve brand switching if substitute products were purchased. Consumer impulse buying is an important issue in retail stores, where it accounts for 30 to 50 percent of the products sold (Hausman, 2000). Although consumer impulse buying behavior is well-understood in traditional retail stores, online impulse buying is only gradually being recognized as an important phenomenon.

Madhavaram and Laverie (2004) suggest that research on online behavior could pay more attention to the stimuli of webpage environment cues (e.g., store layout, store atmospherics). Thus, this study adopts webpage aesthetics as our variables and examines their effect on consumer online impulse buying behavior.

Much of the rationale linking stimuli to emotional response, and emotional response to impulse buying is drawn from the stimulus-organism-response model (abbreviated as S-O-R model hereafter), in which the stimulus (S) causes the consumer to make an evaluation (O), which in turn causes a behavioral response (R) (Beatty & Ferrell, 1998). The stimuli in the S-O-R model can be divided into an object and situational cues, and that the situational cues can be classified into different groups, and in which the physical surroundings are the most readily apparent features of a situation (Belk, 1975)(Belk 1975).

However, not all principles of design that apply to physical surroundings in brick-and-mortar stores apply to the design of webpages (Cober, Brown, Levy, & Cober, 2003). Manganari, Siomkos, and Vrechopoulos (2009) propose a conceptual framework for studying the effects of online store design on consumer behavior. Their framework consists of four primary components: virtual layout, virtual atmospherics, virtual theatrics, and virtual social presence. The first three components are directly associated with webpages' visual appeal and are grouped together as webpage aesthetics in this study. We empirically validate the hypothesis that webpage aesthetic components such as virtual layout, virtual atmospherics, virtual theatrics, stimulate emotional states such as pleasantness and arousal and in turn affect consumer online impulse buying.

Currently, online impulse buying behavior is not well understood and there is limited (but useful) research on the influence of online stores on consumer's impulse buying behavior (Verhagen & van Dolen, 2011). Thus, there is a need to better understand how online store designs and human-computer interfaces affect online impulse buying. The work is an extension of the suggestions of Madhavaram and Laverie (2004), who suggested that conducting quantitative studies on different webpage configurations could improve our understanding of online impulse buying phenomena.

The objective of this study is to examine the effect of web aesthetic configurations on impulse buying. The research model of this study is from the perspective of webpage aesthetics components in a laboratory setting, which includes three experiment studies discussed as follows:

Study 1: Exploring how virtual layout (e.g., Grid layout/Free-form/Racetrack) influences consumers' emotions, which in turn affects their online impulse buying behavior.

Study 2: Exploring how virtual atmospherics (e.g., color contrast) influence consumers' emotions, which in turn affects their online impulse buying behavior.

Study 3: Exploring how virtual theatrics (e.g., text, graphics, and links) influences consumers' emotions, which in turn affect their online impulse buying behavior.

This study's primary contribution is to systematically investigate the influence of web aesthetics on consumer impulse buying behavior through a structured framework, rather than by a single component.

The remainder of this study is organized as follows. First, we review the relevant literature on impulse buying behavior and its stimuli antecedents, the webpage aesthetics. The associated hypotheses are then followed. Finally, the research methodology is discussed.

2. THEORETICAL BACKGROUND

2.1. Impulse buying

Impulse buying has been characterized as a behavior occurring when a consumer spontaneously experiences positive affect on confrontation with a product or service, which results in an urge to possess or buy something instantly (Rook, 1987). Distinct from rational buying, impulse buying is an emotional behavior aroused by a stimulus that is often hedonically charged (Madhavaram & Laverie, 2004), and accompanied by intense immediate gratification without regard to realistic, or even potentially undesirable results. Hassay and Smith's (1996) findings indicate that the stimuli in retail settings are responsible for this impulse and the subsequent consumptive response. Thus, well-designed stimuli create pleasant emotions in buyers and encourage impulse buying.

2.2. Environmental stimulus

The S-O-R model, in which the stimulus (S) causes a consumer's evaluation (O), which in turn causes some behavioral response (R) (Beatty & Ferrell, 1998), can be used to explain the links between stimulus, pleasure and impulse buying. Previous research based on the S-O-R model indicates that shoppers respond to marketer's stimulus with approach and avoidance behaviors (Turley & Milliman, 2000). Approach behaviors, such as the urge to buy a product, are seen as positive responses.

Belk (1975) argues that the stimulus in a S-O-R model can be divided into an object and the situational cues specific to the time and place of a particular observation. However, an object's attributes are controlled or operationalized by producers rather than by retail stores, therefore approaches that emphasize the product as the stimulus offer limited insight into the environmental stimuli that influence impulse buying (Rook & Hoch, 1985). Marketers in retail settings manipulate the situational cues to stimulate consumers' impulse buying (Mattila & Wirtz, 2001). Situational cues can be classified into five different groups: physical surroundings, social surroundings, temporal perspective, task related, and antecedent states. Physical surroundings are the most readily apparent features of a situation, and include institutional decor, sounds, aroma, lighting, visible configurations of merchandises, and other elements of the material surroundings (Belk, 1975).

Some research has suggested that Internet shoppers are more impulsive when exposed to certain stimuli (Donthu & Garcia, 1999); brick-and-mortar retailers need to pay more attention to their webpage design, to seamlessly integrate the design scheme realized in their physical stores (Manganari, Siomkos, Rigopoulou, & Vrechopoulos, 2011). To transfer the design scheme of a physical store to an online store is one of the important moves to attract customers to the site, but not all the principles of design that apply to brick-and-mortar stores are applicable to the design of webpages (Cober, et al., 2003). Reducing the entire store to a computer screen creates questions about the effects of online store design on sales and consumer purchasing behavior (Manganari, et al., 2009).

Manganari, et al. (2009) have proposed a conceptual framework for studying the effects of online store design on consumer behavior. Their framework consists of four primary components: virtual layout, virtual atmospherics, virtual theatrics, and virtual social presence. Virtual layout and design refers to the arrangement of displays and aisles in online stores; virtual atmospherics refers to background configurations; virtual theatrics refers to animation techniques or images used to increase vividness and interactivity; and virtual social presence refers to web counters and visitors' comments (Eroglu, Machleit, & Davis, 2001). The first three components are directly associated with webpages' visual appeal to customers, and are grouped as webpage aesthetics in this study. The following sections will detail the effects of webpage aesthetics stimuli on consumers' emotions, which in turn affect impulse buying.

2.3. Web aesthetics

Webpage aesthetics are one of major determinants for keeping online consumers in-store and making follow-up purchases (Eroglu, et al., 2001). Successful online stores should use web aesthetics to create an environment that attracts customers, entices them to spend more time in the store and encourages them make impulsive purchases while they are there. The visual appeal components in

Manganari et al.'s (2009) framework are the basis of our hypotheses regarding the relationship between webpage aesthetics and impulse buying.

Virtual layout

The virtual layout refers to the relative location of information and/or products on the webpage, and how a consumer's attention is directed. The virtual layout can either facilitate or impair navigation (Madhavaram & Laverie, 2004). Vrechopoulos et al. (2004) have examined the three most common conventional layout types (grid, freeform, and racetrack) in online stores to investigate their effects on consumers' purchasing behavior.

(1) Grid: The objective of the grid layout is to help consumers find their desired products as efficiently as possible, so Vrechopoulos et al. (2004) argue that a conventional grid layout corresponds to a hierarchical structure (i.e., product category → product subcategory → end-product) in online stores.

(2) Freeform: The objective of the freeform layout is to provide consumers freedom to move in any direction. Accordingly, online stores should provide a search engine and selected items should appear on each page, while enabling direct access to all products from the homepage (Stenstrom, Stenstrom, Saad, & Cheikhrouhou, 2008).

(3) Racetrack: The objective of the racetrack layout is to force consumers to follow predetermined paths to reach desired products. Vrechopoulos et al. (2004) argue that the racetrack's tunnel-like structure could be achieved in online stores by providing limited tunnels on the homepage for consumers to select before they continue their exploration.

The three layout types are associated with different emotions, the antecedents of impulse buying. According to Vrechopoulos et al. (2004), consumers find the freeform layout pleasant and will spend more time in the store. Wakefield and Blodgett (1994) argue that the longer one spends in a store, the greater the likelihood that environmental cues will play an important role in determining one's pleasant feelings.

Web users' emotional responses are caused by their exposure to specific stimuli. Furthermore, the lack of direct physical contact during a service encounter makes consumers in online stores more readily and directly influenced by environmental cues than in conventional stores. The level of emotion felt by the consumer in a hedonic encounter, that is the degree to which the experience is pleasing, may determine their subsequent behavior (Kim & Moon, 2009).

Pleasant feelings created by the layout design are a necessary, but not sufficient condition for the consumer's subsequent decision to buy; these feelings should be catalyzed by arousal. Arousal refers to the degree to which a consumer is stimulated (Ryu & Jang, 2008). Arousal is associated with the time spent in the store (Sherman et al., 1997). The time spent by consumers in online stores varies with the layout type (Vrechopoulos et al., 2004), so there is a close association between the layout type and consumers' arousal. In this research, we propose that the layout design in online stores is supposed to make shopping enjoyable, so Hypothesis 1 will test whether the various layout designs in online store elicit different emotional responses from shoppers.

Hypothesis 1a. The webpage layout will influence consumers' sense of a pleasant experience.

Hypothesis 1b. The webpage layout will influence consumers' arousal state

Virtual atmospherics

Virtual atmospherics are shaped by color scheme, music, and scent (Manganari, et al., 2009). Virtual atmospheric cues subconsciously influence customers' sense of a pleasant experience and arousal (Kim & Moon, 2009). There is empirical evidence that appropriate colors increase arousal and pleasant feelings in online store users (Wu, Cheng, & Yen, 2008). In colorimetry, the colors are defined according to three dimensions: hue, value (lightness), and chroma (color grey). Hue is the most obvious measurement of a color, and it refers to the position on the common color spectrum, like the one seen when sunlight passes through a prism. The function of value is to tell us how light or how dark a given color is. Chroma specifies the amount of neutral grey of the same value added to a hue.

Previous studies of webpage design have only incorporated one or two colors with different hues, most often red or blue, (warm or cold color respectively), into their empirical tests. The limited number of colors is convenient for experimental manipulation and makes it easier to retain analytical rigor

(e.g., Cai & Xu, 2011). On the other hand, in their study of the emotional response to color, Suk and Irtel (2010) employ 36 color stimuli distinguished by hue, value and chroma, and each color stimulus is label with the seven digits specified by the RAL Design System. Their findings show that the emotional responses vary more strongly with regard to value and chroma than with regard to hue. Suk and Irtel further point out that the larger the discrepancy between the value of the color of the object and that of the context the greater the response. Therefore, the employment of color schemes in the webpages of online stores should place more emphasis on value, chroma, and color contrast rather than on hue.

Color contrast is defined as a change in color appearance of a test stimulus with a change of surround chromaticity (i.e., hue, value, and chroma) (Pereverzeva & Teller, 2009). Color contrast on webpages is used to reduce consumers' information processing load (Budimir & Palmovic, 2011), to highlight products or information, and to shorten and simplify the path from stimulus to hedonic affection (arousal and pleasantness), which in turn triggers impulse buying. Thus Hypothesis 2 will test whether the various color contrast schemes in online stores elicit different emotional responses in shoppers.

Hypothesis 2a. The webpage color contrast will positively influence consumers' sense of a pleasant experience.

Hypothesis 2b. The webpage color contrast will positively influence consumers' arousal state.

Virtual theatrics

Online stores are able to create a theatrical atmosphere on their webpages through the allocation of text, images, and graphics. Complexity is one of the elementary aspects of virtual theatrics (Manganari, et al., 2009), and refers to the richness of elements in a webpage setting. Kaplan and Kaplan's (1982) preference framework proposes that the complexity of environment information catches the human beings' attention, which in turn evokes their curiosity and the desire to explore, and then spend more time staying. To evoke a sense of involvement, an environment must be complex and mysterious to interest people. Borrowing this definition of environmental complexity, Webpage visual complexity can be conceptualized as two dimensions, visual diversity and richness (Deng & Poole, 2010). Visual diversity is measured by the types of elements present on the webpage. Visual richness is measured by the amount of text, number of graphics, and links.

Previous studies indicate that individuals' arousal is positively associated with the conflict between the information received from their surroundings and their memory. The surroundings information carrying novel or complex concept intensifies the conflict with individuals' memory, and leads to the high level of arousal (Gilboa & Rafaeli, 2003). A novel or complex environment requires considerable time and effort to view and comprehend, which in turn stimulates attention interest and increases arousal level (Deng & Poole, 2010).

Webpage complexity engages web users and increases the time they spend browsing. Deng and Poole (2010) indicate that if a user's goal is enjoyment, then the more complex webpage evokes a greater sense of pleasantness. The above analysis leads to Hypothesis 3.

Hypotheses 3a. The level of webpage complexity positively influences consumers' feeling of arousal.

Hypotheses 3b. The level of webpage complexity positively influences consumers' sense of a pleasant experience.

2.4. Arousal and pleasantness

It is believed that affect has at least two dimensions: arousal (body activation) and valence (pleasantness or hedonic value) (Groepel-Klein, 2005). Both are subjective experiences and are together capable of explaining up to 80% of response variance (Whissell, Fournier, Pelland, Weir, & Makarec, 1986). Arousal is a subjective state of feeling activated or deactivated. Groepel-Klein (2005) argues that arousal might be the driving force of the decision-making process, resulting in consumers' approach (e.g., impulse buying) or avoidance behavior toward stimuli. Previous studies underscore that arousal is a non-directional psychological state ranging from sleep at the low end, to frenetic excitement at the high end (Deng & Poole, 2010; Russell & Barrett, 1999).

Emotional valence is a subjective feeling of pleasantness or unpleasantness (Barrett, 1998). Frijda (1993) argues that there is strong correlation between particular patterns of appraisal and particular emotions. The emotional valence is a response to an appraisal based on the consistency/inconsistency between environmental stimuli received and the goal, and it is recognized

as the antecedent of impulse behavior. The appraisal which stems from innate knowledge and past experiences is an automatic and unconscious process (Frijda, 2010). The resultant emotional valence primarily leads to impulse behavior to meet an individual's need for immediate gratification.

Roseman et al. (1996) find that the distinction between positive and negative emotions is based on an appraisal of whether the emotion-eliciting event improves things or makes them worse. The cognitive appraisal theory of emotions is concerned with the relationship between the stimulus and an individual's motives. When the stimulus satisfies a person's motivation, the individual will experience positive emotion; however, if the stimulus is seen as obstructive, the individual will experience negative emotions. Therefore, emotional valence is defined as the feeling of pleasantness/unpleasantness toward a stimulus that is a result of motivational consistency/inconsistency appraisal. In this research, we consider the virtual aesthetics of a webpage as emotion-eliciting stimuli.

The S-O-R model suggests that emotions provide individuals with the ability to respond to the changes in their surroundings by triggering approach or avoidance behavior. Emotional valence is a significant predictor of approach-avoidance behavior. Positive emotion (e.g., pleasantness) drives the tendency to approach; negative emotion (e.g., unpleasantness) promotes avoidance in a variety of environments, including online stores (Bagozzi, Gopinath, & Nyer, 1999).

The discrepancy between the present and the desired leads to discomfort, and which in turn leads to arousal and evokes impulsive action to reduce discomfort (Frijda, 2010). The intensity of corresponding impulsive action is associated with the level of the arousal (Mattila & Wirtz, 2001). Therefore, arousal is a significant predictor of an individual's responses to an environment. High-arousal stimulates the approach tendency (e.g., spending more money and more time in the store); low-arousal encourages avoidance behavior (Sherman, Mathur, & Smith, 1997). In this study, the impulse buying is approach behavior. The above analysis leads us to propose Hypotheses 4 and 5.

Hypothesis 4. Consumers' sense of a pleasant experience will positively influence their impulse buying behavior.

Hypothesis 5. Consumers' feeling of arousal will positively influence their impulse buying behaviour.

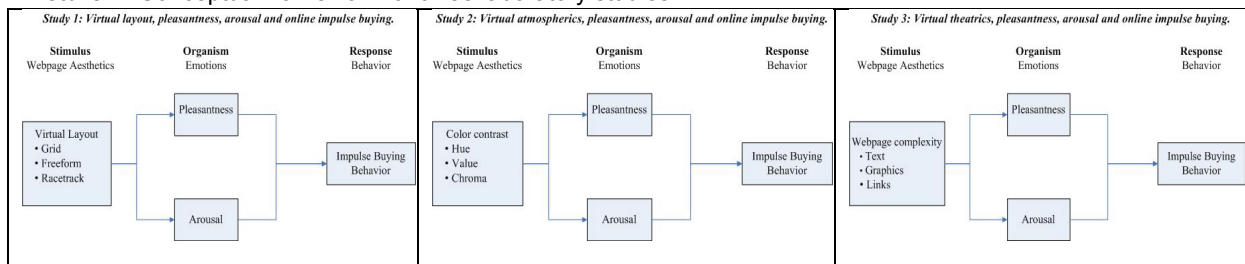
3. RESEARCH METHODOLOGY

3.1. Research model

Synthesizing the findings from previous research and the above discussion, we can formulate a research model to describe how webpage aesthetics evoke difference emotional responses and impulse buying behaviors (See Figure 1). Consumer online impulse buying behavior serves as the dependent variable. The independent variables of the webpage aesthetics include the following: virtual layout (Study 1), virtual atmospherics (Study 2), and virtual theatrics (Study 3). They will be examined in three separate studies. Pleasantness and arousal are the two emotional responses considered.

To test the proposed model, we will conduct two pilot studies and three laboratory experiments. We will manipulate the webpage stimuli by varying the levels of virtual layout, color contrast and webpage complexity, and measure the subjects' emotional responses and impulse buying behavior in response to the manipulation of the webpage aesthetics.

Picture 1: Conceptual framework for three laboratory studies



3.2. Participants

The participants will be at least 760 undergraduate students with Internet shopping experience.

3.3. Experimental design

In the laboratory phase of the research, a sample of subjects who did not participate in the pilot studies will be recruited. We will use three independent studies to examine the effect of webpage aesthetics on web users' emotion responses and subsequent impulse buying behavior. Each of the three studies will use a single factor between-subject design, producing a total of 38 treatments (three treatments in virtual layout, thirty one treatments in color contrast, and four treatments in webpage complexity).

Structure your text up to three levels deep, however third level must not be numbered.

3.4. Experimental procedure

Subjects will be randomly assigned to each treatment. Before being exposed to the stimulus materials, subjects will be instructed to read a hypothetical scenario designed to simulate an enjoyable experience. Deng and Poole (2010) suggest that the stimulated enjoyable experience ensure that the arousal and the pleasantness positively affect approach behavior, e.g., impulse buying behavior. Following this, we will measure the subjects' emotional state before they are exposed to the experimental stimuli. Next, subjects will be asked to look at one of the 38 versions of the webpage on their computer screens. Each subject will be randomly assigned to view only one webpage. After exposure to the webpage, they will be asked whether they would like to put the product in the e-shopping cart system. If they intend to buy, they will be able to place an order; if they do not intend to buy they will be able to press the "go away" button. The latter group will then be finished. Participants who purchase an item will be asked to answer a questionnaire about their attitude toward their impulse buying behavior.

3.5. Web aesthetics stimuli

Pilot studies

To investigate how webpage aesthetics influence users' emotional response, the webpage stimuli need to (1) vary only in terms webpage layout, color contrast and webpage complexity, (2) have content and characteristics that evoke a neutral emotional response, and (3) allow users to engage in enjoyment-seeking activities. Given these criteria, we will conduct two pilot studies to select appropriate website type and content for the research. The first pilot study will determine appropriate website types, which will be unfamiliar to the subjects so that their experimental responses can be understood as responses to the webpage stimuli. The second pilot study will identify appropriate items to be included on the webpage. We will employ a hypothetical scenario in which an individual visits a specific website to look for something interesting for family holidays. This hypothetical scenario is tested in another pilot study to determine how much enjoyment users get from it.

Virtual layout stimuli

To investigate how virtual layout influences users' emotional responses, we will design three webpages based on the three layout types identified by Vrechopoulos et al.(2004): grid, freeform, and racetrack (See Table 1).

Color contrast stimuli

To manipulate color contrast stimulus, we will control the foreground color (i.e. color of products), and use 36 different product background colors, which will vary according to hue, value and chroma. For example, if the pilot studies show that a meat and seafood store is an appropriate type of website, we will retain the color of the meat and seafood and measure its color value in the RAL Design System. Then we will vary the background color according to color stimuli used by Suk and Irtel (2010) (See Table 2). If the foreground color is red, the background color will bypass the color stimuli related to red (i.e. hue=30), and will therefore produce only 31 treatments.

Webpage complexity stimuli

To investigate how webpage complexity influences users' emotional responses, we will use visual richness (i.e., the amount of text, the number of graphics, and the links) to represent webpage

complexity (Deng & Poole, 2010). To manipulate the webpage complexity ranging from “too simple” to “too complex”, we adopt Deng and Poole’s (2010) four-level webpage complexity stimuli design (See Table 3).

3.6. Measurement

The proposed research model contains three constructs. Data will be collected to measure these three constructs. This section describes the measurement of each construct and presents some example items. The emotional responses will be measured using semantic differentials (scales: -3~+3).

Dependent variable

Impulse buying behavior. We will create an e-shopping cart system to determine whether web users’ do indeed experience impulse buying behavior. This is more accurate than using a measurement item such as “urge to buy impulsively” as a proxy for purchasing behavior. The webpage aesthetics stimuli can influence both the likelihood of impulse buying and its magnitude (Jarboe & McDaniel, 1987). Thus, impulse buying behavior will be assessed according to three actions: whether web users put the products in the e-shopping cart system (i.e., measuring the likelihood of impulse buying), the number of products in the e-shopping cart system (i.e., measuring the magnitude of impulse buying), and the time spent in the store.

Control variables. Four items adopted from Rook and Fisher (1995) will be used to measure consumers’ buying impulsiveness. In addition, participants are randomly assigned to webpages to limit the possibility that any systematic individual differences would influence the results. Finally, the product will be kept constant to avoid any potentially confounding effects from varying perceptions of product quality.

Manipulation check

As a manipulation check, three independent variables will be measured: visual layout, color contrast and webpage complexity.

Virtual layout

After the experiment, Vrechopoulos, et al.’s (2004) items will be used to assess the effectiveness of layout types.

Color contrast

After the experiment, subjects’ color vision will be tested to ensure that they do not lack perceptual sensitivity to certain colors. Red/Green and Blue/ Yellow color vision deficiency are the most common.

Webpage complexity

We adapt the measure of perceived webpage complexity developed by Geissler et al.(2001) to use the following 4-point scale: complex, dense, crowded and overwhelming.

3.7. Data analysis

After the data collection, we will conduct MANOVA tests on the measures of arousal and pleasantness. A correlation coefficient test on the association between emotional response and impulse buying behavior. Finally, a multiple regression will be conducted according to Baron and Kenny’s (1986) four criteria for establishing mediation relationships.

Layout	Features	Value					
		Hue	dark	deep	vivid	brilliant	light
Grid	Hierarchical or tree structure of display (e.g., product category->product subcategory->end-product)	30 (red)	V:30 C:30	V:30 C:45	V:40 C:60	V:50 C:40	V:70 C:30
Freeform	Homepage configured with search engine and selected items permanently listed on the homepage	80 (yellow)	V:30 C:30	V:30 C:45	V:40 C:60	V:50 C:40	V:70 C:30
Racetrack	Tunnel structure of display	160 (green)	V:30 C:30	V:30 C:45	V:40 C:60	V:50 C:40	V:70 C:30

Table 1: Manipulation of virtual layout.

	Level-1 _o	Level-2 _o	Level-3 _o	Level-4 _o
Amount of text _o	33 _o	40 _o	57 _o	118 _o
Number of graphics _o	2 _o	4 _o	8 _o	14 _o
Numbers of links _o	12 _o	16 _o	37 _o	54 _o

Table 3: Manipulation of webpage complexity.

4. EXPECTED CONTRIBUTION

This study will incorporate three important factors drawing from web aesthetics to advance our theoretical and pragmatic understanding in the effect of web design layouts on impulse buying behavior.

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REFERENCE LIST

1. Bagozzi, R. P., Gopinath, M., & Nyer, P. U. (1999). The role of emotions in marketing. *Journal of the Academy of Marketing Science*, 27(2), 184-206.
2. Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychology research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* 51(6), 1173-1182.
3. Barrett, L. F. (1998). Discrete emotions or dimensions? The role of valence focus and arousal focus. *Cognition & Emotion*, 12(4), 579-599.
4. Beatty, S. E., & Ferrell, M. E. (1998). Impulse buying: Modeling its precursors. *Journal of Retailing*, 74(2), 169-191.
5. Belk, R. W. (1975). Situational variables and consumer behavior. *Journal of Consumer Research*, 2(3), 157-164.
6. Budimir, S., & Palmovic, M. (2011). Gaze differences in processing pictures with emotional content. *Collegium Antropologicum*, 35(17-23).
7. Cai, S., & Xu, Y. J. (2011). Designing not just for pleasure: Effects of web site aesthetics on consumer shopping value. *International Journal of Electronic Commerce*, 15(4), 159-187.
8. Cober, R. T., Brown, D. J., Levy, P. E., & Cober, A. B. (2003). Organizational web sites: Web site content and style as determinants of organizational attraction. *International Journal of Selection and Assessment*, 11(2-3), 158-169.
9. Deng, L., & Poole, M. S. (2010). Affect in web interfaces: A study of the impacts of web page visual complexity and order. *MIS Quarterly*, 34(4), 711-730.
10. Donthu, N., & Garcia, A. (1999). The internet shopper. *Journal of Advertising Research*, 39(3), 52-58.
11. Eroglu, S. A., Machleit, K. A., & Davis, L. M. (2001). Atmospheric qualities of online retailing - a conceptual model and implications. *Journal of Business Research*, 54(2), 177-184.
12. Frijda, N. H. (1993). The place of appraisal in emotion. *Cognition & Emotion*, 7(3-4), 357-387.
13. Frijda, N. H. (2010). Impulsive action and motivation. *Biological Psychology*, 84(3), 570-579.
14. Geissler, G., Zinkhan, G. a., & Watson, R. T. (2001). Web home page complexity and communication effectiveness. *Journal of the Association for Information Systems*, 2(1).
15. Gilboa, S., & Rafaeli, A. (2003). Store environment, emotions and approach behavior: Applying environmental aesthetics to retailing. *International Review of Retail, Distribution & Consumer Research*, 13(2), 195-211.
16. Groeppel-Klein, A. (2005). Arousal and consumer in-store behavior. *Brain Research Bulletin*, 67(5), 428-437.
17. Hassay, D. N., & Smith, M. C. (1996). Compulsive buying: An examination of the consumption motive. *Psychology and Marketing*, 13(8), 741-752.
18. Hausman, A. (2000). A multi-method investigation of consumer motivations in impulse buying behavior. *Journal of Consumer Marketing*, 17(5), 403-417.
19. Jarboe, G. R., & McDaniel, C. D. (1987). A profile of browsers in regional shopping malls. *Journal of Academy Marketing Science*, 15, 46-53.
20. Kaplan, S., & Kaplan, R. (1982). *Cognition and environment: Functioning in an uncertain world*. New York: Praeger.

21. Kim, W. G., & Moon, Y. J. (2009). Customers' cognitive, emotional, and actionable response to the servicescape: A test of the moderating effect of the restaurant type. *International Journal of Hospitality Management*, 28(1), 144-156.
22. Madhavaram, S. R., & Laverie, D. A. (2004). Exploring impulse purchasing on the internet. *Advances in Consumer Research*, Volume Xxxi, 31, 59-66.
23. Manganari, E. E., Siomkos, G. J., Rigopoulou, I. D., & Vrechopoulos, A. P. (2011). Virtual store layout effects on consumer behaviour applying an environmental psychology approach in the online travel industry. *Internet Research*, 21(3), 326-346.
24. Manganari, E. E., Siomkos, G. J., & Vrechopoulos, A. P. (2009). Store atmosphere in web retailing. *European Journal of Marketing*, 43(9-10), 1140-1153.
25. Mattila, A. S., & Wirtz, J. (2001). Congruency of scent and music as a driver of in-store evaluations and behavior. *Journal of Retailing*, 77(2), 273-289.
26. Pereverzeva, M., & Teller, D. Y. (2009). Simultaneous color contrast in 4-month-old infants. *Perception*, 38(1), 30-43.
27. Rook, D. W. (1987). The buying impulse. *Journal of Consumer Research*, 14(2), 189-199.
28. Rook, D. W., & Fisher, R. J. (1995). Normative influences on impulsive buying. *Journal of Consumer Research*, 22(3), 305-313.
29. Rook, D. W., & Hoch, S. J. (1985). Consuming impulses. *Advances in Consumer Research*, 12(1), 23-27.
30. Roseman, I. J., Antoniou, A. A., & Jose, P. E. (1996). Appraisal determinants of emotions: Constructing a more accurate and comprehensive theory. *Cognition & Emotion*, 10(3), 241-277.
31. Russell, J. A., & Barrett, L. F. (1999). Core affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant. *Journal of Personality and Social Psychology*, 76(5), 805-819.
32. Ryu, K., & Jang, S. (2008). Influence of restaurant's physical environments on emotion and behavioral intention. *Service Industries Journal*, 28(8), 1151-1165.
33. Sherman, E., Mathur, A., & Smith, R. B. (1997). Store environment and consumer purchase behavior: Mediating role of consumer emotions. *Psychology & Marketing*, 14(4), 361-378.
34. Stenstrom, E., Stenstrom, P., Saad, G., & Cheikhrouhou, S. (2008). Online hunting and gathering: An evolutionary perspective on sex differences in website preferences and navigation. *IEEE Transactions on Professional Communication*, 51(2), 155-168.
35. Suk, H. J., & Irtel, H. (2010). Emotional response to color across media. *Color Research and Application*, 35(1), 64-77.
36. Turley, L. W., & Milliman, R. E. (2000). Atmospheric effects on shopping behavior: A review of the experimental evidence. *Journal of Business Research*, 49(2), 193-211.
37. Verhagen, T., & van Dolen, W. (2011). The influence of online store beliefs on consumer online impulse buying: A model and empirical application. *Information & Management*, 48(8), 320-327.
38. Vrechopoulos, A. P., O'Keefe, R. M., Doukidis, G. I., & Siomkos, G. J. (2004). Virtual store layout: An experimental comparison in the context of grocery retail. *Journal of Retailing*, 80(1), 13-22.
39. Wakefield, K. L., & Blodgett, J. G. (1994). The importance of servicescapes in leisure service settings. *The Journal of Services Marketing*, 8(3), 66-66.
40. Whissell, C., Fournier, M., Pelland, R., Weir, D., & Makarec, K. (1986). A dictionary of affect in language .4. Reliability, validity, and applications. *Perceptual and Motor Skills*, 62(3), 875-888.
41. Wu, C. S., Cheng, F. F., & Yen, D. C. (2008). The atmospheric factors of online storefront environment design: An empirical experiment in taiwan. *Information & Management*, 45(7), 493-498.