

The Webosphirics Effects on Shopping Behavior: The Influences of Web Page Color Displays on Online Impulse Purchasing Intention

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Abstract: It is interesting to note that even though the studies of atmospheric effects in physical stores have been abundant, knowledge of ambient factor effects in the online retailing context has been limited. This study investigates the influence of webospheric effect, web page color displays on respondents' emotional reactions and subsequent online impulse buying intention. A Stimulus-Organism-Responses (S-O-R) model was used as the basic framework and a laboratory experiment was conducted to test the hypotheses in this study.

The results demonstrated that web page color displays had a significant effect on participants' emotional response, eventually influencing their intention to purchase impulsively online. Specifically, respondents felt more aroused and experienced greater pleasure when they were exposed to chromatic web page displays than achromatic one. Additionally, both pleasure and arousal emotions played an intervening role between web page color displays and online impulse purchasing intention. Personality traits and product involvement were proved to moderate the relationship between atmospheric cues and impulse shopping intention. These findings suggest that the website design with effective web page color displays would create a desirable environment and thus prompt consumers to buy impulsively. Finally, research implications of the model and proposition are presented.

Key words: webospheric effect; Stimulus-Organism-Responses model; web page display, product involvement, purchase intention

JEL codes: M3

1. Introduction

With the growing prevalence of Internet and the continuing improvement of online shopping procedure and platform, numbers of consumers shopping online have been tremendously increasing since the last decade. The willingness of shopping online soars because the Internet offers many benefits and advantages to the consumers. One of the advantages is that consumers can enjoy the convenience of shopping in the comfortable environment and time of their choice. Besides, it is easy for consumers to compare the prices of same products and research products across shopping websites (McKinney, 2004). It can be judged that Internet has become one of useful sources providing relevant, up-to-date, timely, complete, convenient and accessible product information for

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consumers to not only search information but also experience the process of shopping online. It is more likely that online shoppers make even more frequent in-store purchases than other shoppers due to the advantages of shopping online. Darian (1987) claimed that in-home shopping indeed provides the opportunity to purchase impulsively owing to the fact that consumers may respond to an advertisement received at home immediately.

It is interesting to note that previous research assumed that consumers were rational when they made purchase decisions, and experienced planned purchasing. However, Engel et al. (1986) discovered that over half of consumers' purchasing behavior in physical stores is influenced by atmosphere which leads to unplanned purchasing. It can be inferred that impulse buying behavior might be induced by emotion and environment stimuli. These might imply that taking advantages of atmospheric variables can be one of the competitive advantages in retail environment to shape shopping experience and increase earnings for retailers. It also reveals that impulse purchasing probably exists in the world of online purchasing as long as retailers create the online shopping atmosphere as well. Childers et al. (2001) argued that the word "webosphirics" represent atmosphere of retail virtual environment (such as text, graphics, color, pop-up windows, audio, video, and search engine configuration). Therefore, the relationship between atmospheric variables and online shopping behavior is a valuable topic to investigate.

This research identify how the atmospheric factors, web page color displays (namely chromatic and achromatic) influence on impulse purchasing intention in an online store setting. This study starts with exploring the theoretical framework used for assessing the effects of web page color displays on emotions and impulse buying intention. A set of hypotheses ascertaining the relationship between a certain environment, emotional responses and behavioral intention is derived from the accompanied review of relative literature. Thereafter, a experiment data was collected and followed by the presentation of the results. Finally, the implications and limitations of this study were discussed.

1.1 Stimulus-Organism-Response (S-O-R) paradigm

The framework of environmental psychology approach is based on the Stimulus-Organism-Response (S-O-R) paradigm which explains that the atmosphere is the stimulus (S) that results in an evaluation of consumer (O) and causes some behavioral response (R) (Spangenberg et al., 1996). The concept pointed out by Mehrabian and Russell (1974) was widely used by understanding the emotional and behavioral responses of consumers in a physical retail environment.

The framework of this study (Figure 1) is modifications of the 10 environmental psychology approach to analyze the emotional and behavioral responses caused by environmental stimuli (web page color displays) in an on-online setting.

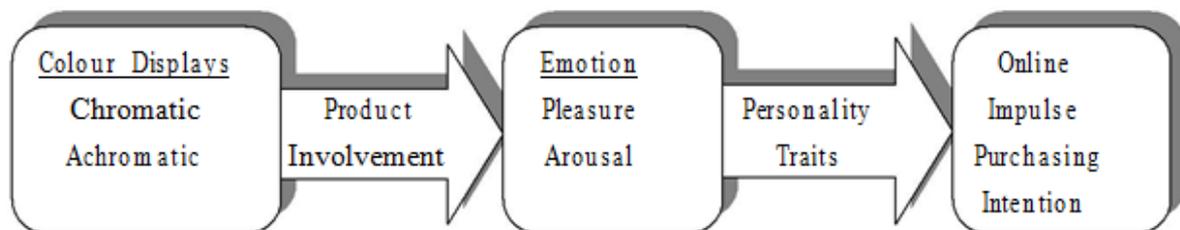


Figure 1 Proposed Theoretical Model for the Influence of Web Page Color Displays on Online Impulse Purchasing Intention

In this study, it is discussed how the particular web page color displays (chromatic and achromatic) trigger emotional response and then form the behavioral response of buying intentions. Furthermore, higher product involvement is more likely to induce emotional need for impulse purchasing since it is easily associated with product-specific impulse buying tendency (Chen, 2008). Also, personality traits factor which causes different responses in another individual or group is considered as the buying tendency to determine the behavior response. Laverie (2004) suggests that the appropriate orientations of understanding concept of impulse purchases are to investigate product or person orientation. Therefore, product involvement and personality traits are conceived of potential contributors to conduct this research.

2. Literature Review

2.1 Color, Environmental Stimuli and Emotional Response

Eroglu et al. (2003) suggested that atmospheric variables of the online stores can be categorized into high task relevant and low task relevant. High task relevant cues are regarded as the cues which enable consumers to go shopping and achieve their goal; price, delivery and return policies and merchandise pictures are classical examples. Low task relevant cues are defined as the information which is not so related to the shopping task such as colors, music, and decorative pictures. Online impulse purchasing is usually influenced by product attributes and shopping environment (i.e., website) (Madhavaram & Laverie, 2004). Furthermore, it is discovered that mood related cues plays a critical role in enhancing a website's visual attractiveness. These visual elements can be manipulated by changing the website's overall look to trigger the sudden urge to buy (Parboteeah et al., 2009), but not all the impulse buying depends on direct visual stimulus. Therefore, in this study, a low task relevant cue (web page color displays) is selected to evaluate the influence on affective reactions and how these reactions reflect on impulse purchasing intention.

It has been believed that colors are provided with some degree of emotional value. One study was conducted by Odbert et al. (1942) to match color terms for a set of mood terms. The result showed that red was with exciting, yellow with playful, green with tender, and blue with sad and solemn. As mentioned previously, hues are categorized into either "warm", such as red, or orange, or "cool", such as green, or blue. Generally, warm colors are connected with anxiety and excitement, while cool colors are related to peacefulness, calmness. Even the achromatic colors can be associated with emotion, for example, white is linked to innocence, purity and loneliness and black usually trigger sadness, depression and power (Naz & Helen, 2004). It can be judged that regardless of pleasure, arousal or dominance has positive relation with color saturation. Because the degree of achromatic (neutral) colors is zero, less than every chromatic color, overall, the association of color and emotion for the chromatic colors are more positive than achromatic colors (Valdez & Mehrabian, 1994; Naz & Helen, 2004). Furthermore, web page color displays and emotions lead to the following hypothesis.

H1: Subjectss exposed to chromatic web page displays will trigger more positive emotional responses than those exposed to achromatic web page displays in online shopping environment.

2.2 Emotions and Shopping Behavior

Affective reactions represent an individual's emotional response as interacting with an environment. Studies showed that consumers may enjoy the shopping experience and generate impulse buying behavior to satisfy the needs which do not coincide with economic utility (Boone & Kurtz, 1995). As a result, the hedonic or affective components of impulse buying became the mainstream of these studies (Cobb & Hoyer, 1986; Piron, 1991; Rook,

1987; Weinburg & Gottwald, 1982). One of the possible explanations for impulse buying behavior is that shopping experience may provide hedonic needs for consumers, so the products chosen by consumers are without planning in advance and the impulse purchasing behaviors occur.

Laverie's (2004) indicated that the majority of subjects claimed that a positive mood would be more conducive to impulse buying than a negative mood as mood and affect may impact consumers' desire to use the Internet and their subsequent desire to make online purchases impulsively. It is argued that impulse buying can be strengthened by positive cognitive reactions that would enhance positive emotional reactions. Consequently, it is proposed that a positive correlation between cognitive reactions and affective reactions of website will further inspire the emotional nature of the impulsive behavior in an online shopping environment. Providing both high quality of task and mood relevant cues on the website will maximize the impulse buying magnitude and likelihood since mood relevant cues can further enhance the usefulness or task relevant cues of website (Parboteeah et al., 2009).

Mehrabian and Russell (1974), Russell and Pratt (1980) and Donovan and Rossiter (1982) indicated that emotional states mediate the behavioural responses in environment. Three emotions containing pleasure (a person feels good, joyful, happy, or satisfied with a situation), arousal (an individual feels excited, stimulated, alert, or active) and dominance (a person feels in control of or free to act in a particular situation) (PAD) are normally discussed. They claimed that pleasure is related to motivation; arousal is linked with mobilization; and, dominance is associated with capability. As a result, Laverie (2004) proposes that "a mood state sufficiently motivates consumptions, mobilizes a transaction, or induces a subjective sense of capability to do so, generates psychological associations that increase the likelihood of making a purchase". Additionally, Rook and Gardner (1993) points out consumer's buying impulses may be either supported or dissuaded by these three principal mood dimensions (PAD).

H2: Participants' level of emotion will be positively related to online impulse buying intention. Participants who with more positive emotion will be more likely to trigger online impulse buying intention than those with less positive emotion.

2.3 Online Shoppers and Impulse Purchase

Bellenger and Korganokar (1980) suggested that online shoppers can be classified into two types. One is convenience or economic shoppers whose main concern is money and time. The other type is recreational shoppers who principally focus on pleasure and information seeking. However, it is discovered that the reasons for consumers to shop online have become increasingly diversified, so it has been more difficult to define the group a consumer belongs to. In other words, an online consumer may pursue convenience, enjoy the shopping process, and prepare to engage in price comparison to find the best bargains simultaneously. Therefore, the better approach for retailers is taking a more holistic method to decide their marketing strategies (Brown et al., 2003).

It seems that the image of impulse buying is negative from the angle of psychological studies because it represents immature, self-centered (Solnick et al., 1980), risky, wasteful, irrational and guilty (Rook & Fisher, 1995). Rook's (1987) indicated that only 20 percent respondents who feel bad about their impulse buying. It is possible that impulse buying is distinguished from more rational consumer decision making which derives from the variety and higher level of excitement. Actually, this result is consistent with the finding of Hausman (2000) "Once consumers recognize that products are more than commodities and that they are buying to please their hedonistic desires as well as their physical desires, they will feel more comfortable with the impulse buying decision". This result also encourages people to re-think the role of impulse purchasing in our daily life; perhaps

impulse buying which happens so frequently is not overwhelmingly wrong. Also, it seems a little ironic that most people have negative image toward impulse purchasing because the stereotype of lack of self-control but more participants felt good after making a purchase impulsively in Rook's (1987) research. However, there is no doubt that impulse buying indeed exists in our daily life. Therefore, the impulse buying is a valuable theme to be developed further.

2.4 Impulse Buying Intention and Shopping

The definition of impulse buying intention is "a sudden, often powerful and persistent urge to buy something immediately" (Rook, 1987). Hence, the time period between receiving information of a product or service and making purchase decision is normally transient (Weun et al., 1998). That is, Impulse purchasing intention is more like an urge to buy certain product or service spontaneously, which is evoked by many factors, for example, marketing, shopping environment, situation and personality traits. Impulse buying behavior is that an individual actually purchases the product or service based on the urge triggered by a stimulus.

Impulse buying intention or tendency can be defined as two tendencies, one is "to experience spontaneous and sudden urges to make on-the-spot purchases" and the other is "to act on these felt urges with little deliberation or evaluation of consequence" (Beatty & Ferrell, 1998). Impulse buying is induced by the increased desire which overcomes one's willpower and is aware of and sense the external stimuli (atmospheric factors). Hence, a stimulus is the most crucial factor to induce impulse purchasing because it can motivate consumers to generate unexpected and sudden buying urge. In addition, emotional attraction and immediate gratification dominate individual's thinking which is more likely to be unreflectively (Thompson et al., 1990; Hoch & Loewenstein, 1991).

H3: Participants' level of impulsiveness will be positively related to online impulse buying intention. Participants who are more impulsive will be more likely to buy on impulse online than those who are less impulsive.

2.5 Product Involvement, Emotion and Impulse Purchasing Intention

Product involvement plays an important role on shopping enjoyment. Product involvement was defined as the personal relevance of the stimulus object based on values, interests, and inherent need (Zaichkowsky, 1994). Product involvement is related to how people respond to environmental and sensory cues, including marketer-created environmental and product factors increase possibility of involving in impulse buying (Eroglu & Machleit, 1993; Mitchell, 1994).

It is suggested that consumers who are more involved with a particular product category receive more pleasure from these products (Laurent & Kapferer, 1985). Also, highly involved consumers are more likely to think unusually and unconventional, so they are more emotionally responsive to engage external stimuli, that is to say, they are more readily attracted by entrancing stimuli (Youn & Faber, 2000). In other words, highly involved people will be more easily caught up in external sensory stimulation, and thus, more likely to engage in impulse buying.

H4: Respondent's degree of product involvement will be positively related to the emotion. Respondents who are highly involved with a particular product category will be more likely to evoke positive emotion than those who are low involved with a particular product category.

3. Method

3.1 Research Design

In terms of the research design, a 2 (Web page color: chromatic, achromatic) X 2 (Product Involvement:

High, Low) between-subjects factorial experiment was conducted to test the hypotheses.

3.2 Research Stimulus Development

Two distinct WWW pages would be designed and constructed for the stimulus materials, web page color displays (chromatic and achromatic) in this experiment (see Appendices). These web sites were designed by the application of iWeb of the Macintosh computer. The content of the web site was identical in all treatments, except for the web page color displays. Additionally, the web site was established on the server of MobileMe. After browsing the experimental web site, the respondents completed a survey questionnaire that contains measurement of feeling, impulse purchasing intention, impulsiveness, product involvement, demographics and music tastes.

3.3 Subjects and Procedure

A total of 313 University students were recruited in the study. The experiment took around 10 minutes for participants to complete from visiting the experimental web site to survey questionnaire. Subjects were given an instruction to the experiment at the beginning. They were told that this is a study in understanding how the web page color displays influence their online purchase intention of a particular product category. After that, they entered the experimental web site, which randomly assigned them to one of the conditions, either chromatic or achromatic experimental web site. Subjects were randomly assigning to one of experimental web sites. The experimental web sites were designed to transfer to survey questionnaire website by clicking “next” at the end of the web page after respondents visited the web site around one minute. The respondents were asked to complete a questionnaire with five sections dealing with: emotional response measurement, planned and impulse buying intention, impulsive trait of subjects, product involvement, online shopping perceptions, music taste of participants, and personal information including age, gender, and extent of experience in using the Internet.

The dependent variable was measured as Impulse buying intention. Namely, it was evaluated by the question of revised impulse purchasing intention 7-point Likert scale of Rock and Fisher (1995). The choices were measured how likely subjects buy impulsively after browsing the web site. Moreover, Unplanned buying intention was also evaluated by the question of 7-point Likert scale of Vijayasathy (2002) and Dodds et al. (1991) with anchors 1= very unlikely and 7 = very likely. The choices were measured how likely subjects buy impulsively after browsing the web site if they unplan to purchase a particular category.

Finally, product involvement were evaluated by personal involvement inventory 7-point Likert scale of Zaichkowsky (1994). That was measured by a revised and reduced Product Involvement Inventory (PII) (Zaichkowsky, 1985). The PII was reduced from original 20 items to 10 items and is still reliably (Zaichkowsky, 1994). Furthermore, covariates were measured to control extraneous variation in the data using analysis of covariance. In this research, Internet usage, music tastes, age, and gender would be measured for the influence of extraneous variables.

4. Results

4.1 Hypotheses Testing

Hypothesis 1 predicts that the participants exposed to chromatic color displays of web page will be more likely to trigger emotional responses than those exposed to achromatic color displays of web page in online shopping environment. For the subjects who visited the web page with chromatic displays, their emotional conditions were more positive than those who visited the web page with achromatic (means = 4.05 vs. 4.36). The analysis of variance (ANOVA) revealed that color had a significant effect on emotion ($F(1, 213) = 6.07; p = 0.015$

< 0.05). The results of these 2 emotion components, web page color displays (chromatic and achromatic) yielded a significant main effect on not only pleasure emotion ($F(1, 213) = 3.97$; $p = 0.048 < 0.05$) but also arousal emotion ($F(1, 213) = 6.39$; $p = 0.012 < 0.05$).

Hypothesis 2 predicts that participants whose emotional responses are easily triggered will be more likely to prompt the intention to purchase on impulse. The result produced ($F = 1.87$; $p < 0.01$) a significant output to reveal that different level of emotion indeed influence the intention to buy impulsively online. However, it is interesting to note that not only pleasure emotion ($F = 2.95$; $p < 0.01$) but also arousal emotion ($F = 2.27$; $p < 0.01$) had strongly impact on impulse buying intention, but there was no significant pleasure x arousal interaction across the impulse buying intention ($F = 1.07$; $p > 0.05$).

Hypothesis 3 posits that for participants with impulsive traits, they will be more likely to purchase online on impulse. Bivariate regression analysis was performed to check this hypothesis. Regression results revealed that a significant relation between personality traits, impulsiveness, and online impulse purchasing intention ($r = 0.141$, $p < 0.05$).

Hypothesis 4 proposes that participants who are highly involved in a particular product will be more likely to prompt emotional (pleasure and arousal) A bivariate regression analysis was used and the result was consistent with the hypothesis, respondent's level of product involvement was positively associated to emotional responses ($r = 0.179$; $p < 0.01$).

4.2 Research Results

As expected, the web page color displays (achromatic and chromatic) resulted in significantly different emotional responses in the arousal and pleasure dimensions. The differences between conditions were significant on participants' level of arousal and pleasure. Thus, these results generally supported the hypothesis 1. Additionally, as expected, the level of emotional responses, including pleasure and arousal, is positively related to online impulse buying intention. The association between online impulse buying intention and emotion was significant in pleasure and arousal. Thus, these results generally supported the hypothesis 2.

Furthermore, consistent with expectations, participants' level of impulsiveness is positively associated to the online impulse buying intention. Nevertheless, for the difference of dividing personality traits into low or high impulsiveness to test online impulse buying intention, the result was not so significant. Overall, there is partial support for hypothesis 3. In terms of hypothesis 4, product involvement and the emotional responses (pleasure and arousal) was positively correlated. The result was significant for pleasure emotion; however, not so evident for arousal emotion

5. Discussion

5.1 General Discussion

The experiment data from this study support for the proposed model developed from the framework of Mehrabian and Russell (1974) which is widely used in environmental psychology literature. The results of the experiment showed that 1) the influence of web page color displays on emotional responses of an individual, and 2) emotional responses is positively related to the likelihood of buying impulsively in the computer-generated environment. Also, the potential contributors, personality traits and product involvement have positive effect on online impulse purchasing intention toward music CDs.

An impulsive behavior can be maximized by web page color displays. It is also clear that web page color displays indirectly influence on online impulse purchasing intention through pleasure and arousal emotion. For instance, to increase positive emotional reactions, chromatic web page displays can be used to please and arouse individual's emotion since more saturated colors induce more feeling of pleasure and arousal. This is consistent with that web site should be more appealing to maximize positive affective reactions.

The result also supports the view point that a positive relationship between affection and urge to buy impulsively (Beatty & Ferrell, 1998) and consumers who are in a good mood are more favourable to be impulsive (Rook & Gardner, 1993), even in the virtual environment. This study throws light on that arousal has positive effect on the intention to purchase impulsively online which is consistent with the assertions of Sherman et al. (1997).

Moreover, this study revealed that impulsiveness indeed affects the intention to purchase impulsively online and product involvement plays an important role on the urge to buy impulsively in virtual environment. As expected, highly impulsive purchasers are more sensitive to their emotional states than low impulsive shoppers which is consistent with the assertions of Rook and Gardner (1993). Likewise, product involvement provides effective cues to increase the likelihood of online impulse buying as well.

In sum, this study supports Donovan and Rossiter's (1982) finding that the Mehrabian Russell model is applicable to a retail setting: emotional states triggered by the store environment do influence consumers' urge to purchase impulsively, even in an online shopping environment. Also, this study has proved that both web page color displays and product involvement have a positive correlation with emotion, web page color displays are the principal factors to influence the fluctuation of emotion. Impulsiveness and product involvement are regarded as potential factors influencing the fluctuation of emotion and online impulse purchasing intention, respectively. The results coincide with the theoretical framework of this research and provide foremost insights for web page design as well.

5.2 Implications

This study offers several theoretical implications that may contribute to online retailing literature. First, this research provides a validated model of online impulse purchasing that is grounded in online retailing theory and literature, offering a more advanced understanding of the consumer behavior in a computer-generated environment. Second, the use of environmental psychology model justifies the web page features (e.g., web page color displays) theoretically as valuable independent variables. Hence, through the manipulation of human-computer interface, the web page color displays prove their influence on the online user's emotional reactions, as well as their ultimate influence on the intention to purchase online. Judging from the findings, it is found that online shoppers' impulse purchasing intention and their behaviors can be predicted beforehand. Third, the theoretical and empirical support are provided for the influence of web page color displays on affection and intention to buy online on impulse. Additionally, this study offers constructive insights on how to design effective websites in retailing literature.

From a managerial perspective, a number of implications may be of interest to online retailers. First, it is possible for online retailers to design more effective websites by web page color displays visually attracting online shoppers to purchase impulsively since positive affective reactions could be raised through high-quality mood related cues (Valacich et al., 2007). Second, online retailers should create an environment where customers can be released from negative online shopping perceptions of impulse if they intend to promote impulse purchasing. Third, consumers involved in a particular category are more likely to be impulse purchasers in particular product

category; therefore, retailers should participate in efforts to attract highly involved consumers.

5.3 Limitations and Future Research

There are few limitations to this study which should be acknowledged. First, there are practical and technical problems occurred when designing the experiment stimuli. Compared to using the experimental web-page, using true web-page would result in more true managerial implications and increase the reliability. Second, use of a homogeneous sample (i.e., student sample) limits the generalizability of the results. Third, the intention of online impulse buying was used as dependent variable instead of actual impulse buying behavior. Finally, this study measured general online shopping orientations rather than targeted Internet users. Future research should concern about how different mediating states influence on actual online impulse purchasing behaviors.

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