Do Colors Change Realities in Online Shopping?

Yi-Ching Hsieh [a] & Hung-Chang Chiu [b] & Yun-Chia Tang [c] & Monle Lee [d],*

[a] Department of Information Management, National Central University, 300, Jhongda Rd., Jhongli City, Taiwan, R.O.C.
[b] Institute of Technology Management, National Tsing Hua University, 101, Section 2, Kuang-Fu Rd., Hsinchu, Taiwan, R.O.C.
[c] Department of International Business, Tunghai University, 1727, Sec.4, Taiwan Boulevard, Xitun District, Taichung 40704, Taiwan, R.O.C.
[d] Judd Leighton School of Business & Economics, Indiana University South Bend, 1700 Mishawaka Ave., South Bend, IN 46615, United States

Abstract

This study investigates the links among color, price, and patronage intention on the Internet. With regard to the effects of a store website's background colors and product prices, the interactions of background colors and price levels may influence online patronage intention via perceptions of quality, sacrifice, and value. The results reveal that online consumers' reactions to online merchandise prices vary according to website background colors. Participants who view blue or low-brightness backgrounds have high patronage intentions regardless of whether prices are high or low. Participants who view red or high-brightness backgrounds are sensitive to merchandise prices and react significantly negatively to high prices. Further mediation analyses indicate that website background colors can influence how consumers interpret price levels: Blue backgrounds make consumers use high price as a sign of high quality rather than monetary sacrifice, but red or high-brightness backgrounds make consumers use high price as a sign of high monetary sacrifice rather than product quality.
© 2017

Keywords: Color; Price; Online store atmospherics; Website design

Introduction

Do colors influence our daily judgments and decisions? Imagine visiting the website of an online store at which a shirt is priced at $10. Would the website's background colors (e.g., red or blue) influence your purchase value and intention? If the price at another online store is set at $25, should the background colors of that store's website be the same as those at the $10 store? Although some researchers have addressed the effects of colors (Bagchi and Cheema 2013; Mehta and Zhu 2009; Puccinelli et al. 2013; Puzakova et al. 2016), the psychological processes of color use have not been fully discussed.

Online consumers are often sensitive to price. Because prior literature has indicated that colors significantly influence consumers' judgments and decision, online businesses can reduce price competition by using color to create atmospheric differentiation. For example, colors influence consumers' liking of ads (Gorn et al. 1997) and perceived brand personality (Labrecque and Milne 2012; Romaniuk and Nenycz-Thiel 2014). From a business perspective, understanding how color influences consumer judgment can help managers increase their companies' competitive advantages and profits (Labrecque and Milne 2012). Although the role of color in marketing has been abundantly researched, authors have paid surprisingly little attention to the role of color in online environments (Labrecque, Patrick, and Milne 2013), and several knowledge gaps remain.

First, price and color are critical determinants of customer behavior (Baker et al. 2002; Polo, Sese, and Verhoef 2011). Research indicates that product selection, quality, service, store atmospherics, and price relate significantly to store-patronage intentions (Pan and Zinkhan 2006). Although the impacts of color and price have been demonstrated, little is known about the impact of color on price perception (Puccinelli et al. 2013). By understanding how background colors influence consumer perceptions of price, online businesses can better align their website designs with prices.

* Corresponding author.
   E-mail addresses: ychsieh@mgt.ncu.edu.tw (Y.-C. Hsieh),
hcchiu@mx.nthu.edu.tw (H.-C. Chiu), mlee@iusb.edu (M. Lee).

Second, color is a multidimensional construct, composed of hue, brightness, and saturation (Gorn et al. 1997). Whereas the dimension of hue (e.g., red or blue) has attracted some study (e.g., Babin, Hardesty, and Suter 2003; Bagchi and Cheema 2013), brightness has received less attention even though the background brightness of retail websites varies. For example, the background brightness of Montblanc's online store (http://www.montblanc.com/en/home.html) is low, whereas that of The Gap's online store is high (http://www.gap.com). Businesses can differentiate themselves by providing online shopping environments that feature appropriate atmospherics, so we explore the influences of both hue and brightness in online contexts.

Third, research has shown that price has an impact on perceived value through two opposite forces: *price–quality* associations and *price–sacrifice* associations (Bornemann and Homburg 2011; Monroe 2012). In this study, we show how the background hues and brightness levels of websites influence these forces, as well as perceived value and patronage intentions. Online retailers can use our results to design their websites' background colors to appeal to their target segments depending on whether they would target on high-quality or low-sacrifice segments.

Theoretical Background

Color as an Atmospheric Cue of an Online Store

Kotler (1973/1974) introduced the term *atmospherics* to describe the conscious planning and manipulation of environmental cues that contribute to consumers' propensities to purchase. Atmospheric cues influence both offline and online consumers. Color is an important website design factor; it affects users' aesthetic perceptions (Cai and Xu 2011; Coursaris, Swierenga, and Watrall 2008; Wang, Minor, and Wei 2011), perceptions of download speeds (Gorn et al. 2004), reading of information (e.g., Scharff and Ahumada 2002), willingness to respond to e-mails (Zviran, Te'eni, and Gross 2006), bidders' levels of aggression in auctions (Bagchi and Cheema 2013), and interpretations of negative firm information (Puzakova et al. 2016). Although past studies show that color influences consumers' behavioral intentions in brick-and-mortar environments (e.g., Babin, Hardesty, and Suter 2003; Bellizzi and Hite 1992), evidence still is lacking about the influence of website background colors on online shoppers' patronage intentions. To provide insight, this study varies the combination of background color and price to examine how color can be used to position online stores distinctly.

Color consists of three dimensions: hue, brightness, and saturation (Gorn et al. 1997). Color theorists cite these dimensions as potential influences on viewers' responses; marketing researchers refer to them as the design and ambient factors of service environments (Baker et al. 2002). Table 1 summarizes marketing research on color.

Hue

Hue is the wavelength of light within the visible light spectrum. Short wavelengths tend to be associated with "cool" colors (e.g., blue, purple), and long wavelengths are associated with "warm" colors (e.g., red, orange). Most studies find that cool-colored shopping environments produce more pleasure than warm-colored environments (Bellizzi and Hite 1992). Research on online environments, however, reports mixed results. Coursaris, Swierenga, and Watrall (2008) find that stronger aesthetic perceptions result from cool rather than warm website colors, whereas Wu, Cheng, and Ye (2008) find that participants report greater pleasure in response to red background colors than blue background colors.

Brightness

Brightness is a continuous dimension, according to which colors high in brightness appear "whitish," like white mixed into a pigment; colors low in brightness appear "darkish," like black mixed into a pigment. Past research shows that the whitish quality of high-brightness color is more pleasant; it produces a calming, relaxing effect (Valdez and Mehrabian 1994). Gorn et al. (2004) find that in online settings, brighter colors elicit greater feelings of relaxation than darker colors.

Saturation

Saturation is the intensity of a color. High-saturation colors have more pigment than low-saturation colors; they are rich, vivid, and striking, whereas low-saturation colors are dull (Gorn et al. 1997). Research consistently reports significant positive relationships between saturation and viewers' perceptions (see Gorn et al. 1997; Valdez and Mehrabian 1994). Colors with high saturation appear even more vivid on a computer screen than colors with low saturation (Gorn et al. 2004). Because low-saturation colors are similar to gray, given these consistent results, we test the effects of the combination of hue and brightness while maintaining a constantly high level of saturation.

Color is an important atmospheric factor; it affects consumers' inferences about quality and store image and contributes to differential advantages (Chebat and Morin 2007). Color can also emphasize or de-emphasize the importance of price (Puccinelli et al. 2013). The influence of color on consumer perception suggests an opportunity for e-retailers to use color designs to influence consumer responses. However, relatively few studies have discussed the relationship between color (hue and brightness) and price, leaving practitioners unsure of how colors influence consumers' perceptions and patronage intentions when the price varies.

Effects of Website Background Hue and Price on Perceived Value and Patronage Intention

There are three points of view that help us understand how color and price influence perceived value and patronage intention: the dual role of price, the effects of color on cognitive tasks, and adaptation-level theory. According to studies of the dual role of price, consumers arrive at their perceptions of value by cognitively trading off the benefits they believe they will receive against the costs they must pay. Thus, price influences perceived value through two mechanisms: as a signal of quality and as an indicator of the required sacrifice for a product (Bornemann and Homburg 2011). When a price increases from low to high, consumers may perceive a change in value by recognizing higher quality (higher