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# THE ROLE OF COLOR IN INFLUENCING TRUST IN E-COMMERCE WEB SITES

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## ABSTRACT

*Researchers and practitioners have explored multiple techniques for enhancing user trust in e-commerce Web sites. Though these techniques have been incorporated into the design of e-commerce Web sites, recent studies have indicated that they have largely failed to engender trust in the user. This research looks at the role of color in influencing user perceptions of trust in e-commerce Web sites. Color psychology suggests that color has an influence on our perception of the world. It conveys meaning, inspires emotion, and guides the activity of people. Certain colors such as blue are capable of inspiring feelings of trust and credibility. We contend that the dominant design color used in Web site design could influence user perceptions of trust. A pilot study has confirmed these expectations with blue as dominant design color engendering maximum trust in participants. Black as the dominant design color inspired least trust in users.*

## KEYWORDS

Color, Trust, E-commerce, Web site Design.

## INTRODUCTION

One of the crucial factors that influence an individual's decision to become involved in e-commerce activities is whether the online merchant or Web site can be trusted (Holsapple & Sasidharan 2005). Researchers and practitioners have explored techniques for enhancing user trust in e-commerce Web sites. Despite these being incorporated into e-commerce Web sites, surveys have indicated that less than one-half of internet users actually trust e-commerce Web sites (Princeton Survey Research Associates 2002; 2005). Thus, it is important that researchers look at ways and means to enhance the credibility and trustworthiness of e-commerce Web sites. This study looks at the role of color in influencing user perceptions of trust in an e-commerce Web site.

## THE CONCEPT OF TRUST

Researchers have examined trust primarily from two dimensions: 1) the "faith in humanity" dimension

and 2) the “vulnerability” dimension (Holsapple & Sasidharan 2005). The former relates to the faith that the user has in the integrity, benevolence, and goodwill of the online merchant. Conceptualization along this dimension includes the belief that the user can rely upon a promise made by the online merchant and would act towards the user with goodwill, honesty, and benevolence (Stewart 2003; Suh & Han 2003). Users believe that that the online merchant will react in predictable ways and will not take undue advantage of a dependence upon them (Gefen 2000; Gefen et al. 2003). The latter conceptualization of trust relates to the willingness of individuals to be vulnerable to the actions of the online merchant. Here trust is viewed as a psychological state wherein the user is willing to be vulnerable to the actions of the online merchant, despite the fact that the user may have limited leverage over the activities of the merchant (Kimery & McCord 2002; Lee & Turban 2001).

Trust in an online merchant can be enhanced by providing users with information regarding privacy practices, data security precautions, procedures regarding compensation, dispute resolution and mediation services (Shneiderman 2000, Suh & Han 2003). Displaying user feedback through online customer communities, providing customers with unbiased information about competing products and transferring brand equity from existing brick-and-mortar business to the online portal are means of enhancing user trust (Urban et al. 2000). Web portal design factors such as the use of third party assurance seals and hypertext links from trusted Web sites and associations, such as usability, usefulness, ease of use, and security control of the interface can influence user trust in an online merchant (Kimery & McCord 2002; Roy et al. 2001; Stewart 2003). Thus, researchers and practitioners have explored multiple techniques for enhancing user trust in e-commerce Web sites; however, one area that has not been investigated is the role of color in influencing user perceptions of trust.

## COLOR PSYCHOLOGY

Color has a profound influence on our perception of the world and has been found to unconsciously influence both our mental and physical well-being. It conveys meaning, inspires emotion, and guides the activity of people. Most of these emotional responses are inherent in humans and largely tend to be a product of childhood conditioning. Without any conscious thought, humans are subject to very specific emotional and behavioral patterns when confronted with a particular color (Johnson 2006; Nicholson 2002; Walker 1991).

The color blue is associated with trust, truth, and confidence (Johnson 2006; Nicholson 2002; Wagner 1991). The police and other public servants wear blue. The phrase *true blue* is associated with loyalty and faithfulness. People have been found to be more productive in blue rooms and it is the recommended color to wear on a job interview. Physiologically, when confronted with the color blue, the brain secretes tranquilizing chemicals that can soothe and calm an individual (Wagner 1991).

Among the other major colors, red is associated with danger, aggression, and hatred (Johnson 2006; Nicholson 2002; Wagner 1991). Infants are conditioned by adults to associate the color red with danger. As the infant grows into an adult, this association is further reinforced by the conventions of the outside world: a red light at a traffic signal is an instruction to stop and a red light on a device indicates that it is malfunctioning. This meaning attached to the color red is extended intuitively to all facets of our life. Apart from the psychological response to the color red, there is a physiological response too—the pituitary gland secretes more hormones that can cause excitement, anger, hatred, passion, and alertness (Wagner 1991). Similarly, black is associated unhappiness, evil, sadness, remorse, anger, mourning, and death, yellow with joy, happiness, and dishonesty, and white with goodness, cleanliness, and peace (Johnson 2006; Nicholson 2002; Wagner 1991). Thus, color has a considerable effect in shaping our responses and influencing the manner in which we perceive the world around us. We now look at the possible role of color in enhancing user trust in an e-commerce Web site.

## WEB SITE DESIGN, COLOR, AND TRUST

The design aspects of a Web site include color schemes, layout, typography, white space, and images. A color scheme will have a primary background color; we refer to this as the dominant design color. As already seen, the color blue is associated with calm, stability, and harmony and inspires emotions of trust and confidence. At the other extreme, the color red is associated with danger, excitement, and aggression, and the color black with unhappiness, evil, sadness, remorse, anger, mourning, and death. Thus, we can expect that users would have the highest amount of trust in a Web site having blue as the dominant design color. Hence, we propose:

- P1: User trust in an e-commerce Web site would be highest when the dominant design color is blue.

Within a given color, different shades can convey different meanings. For the color blue, pale blue (sky-blue) has a stronger association with tranquility and harmony, whereas dark blue has a stronger association with trust, solidity, and responsibility (Wagner 1991). Thus, it can be expected that a Web site having dark blue as the dominant color would be trusted more than a Web site having light blue as the dominant color. Thus, we propose:

- H2: User trust in an e-commerce Web site would be higher when the dominant design color is dark blue than when it is light blue.

We now provide a description of a pilot study that was conducted to test these propositions.

## RESEARCH METHOD

### System

We used a simulated online banking Web site in our study. Online banking is one of the fastest growing internet activities with about 43% of internet users, totaling 63 million adults, using it on a regular basis (Fox & Beier 2006). Though the size and growth of internet banking has been impressive, it has not outpaced the growth in the Internet or other e-commerce activities due to trust issues. Despite the technical advancements that have led to the safe and secure transmission of sensitive information, a sizable number of internet users still have reservations regarding the confidentiality of online financial transactions (Princeton Survey Research Associates 2002; 2005).

We designed a banking Web site that simulated typical online banking activities such as transferring funds, advancing loans, ordering checks, and downloading service information. The Web site also provided information regarding savings accounts, interest, dividends, and loans. Four experimental versions of the simulated banking Web site were designed corresponding to four dominant colors: Dark Blue, Light Blue, Black, and White (referred to hereafter as DB, LB, BL, and WH respectively). All other elements of Web site design such as layout, typography, images, and content were identical across the four experimental Web sites.

### Participants

The participants in our study were employees at a mid-sized organization. They were informed that they were to explore in detail the provisions available and the information provided at the online banking site

and then respond to a questionnaire that would ask questions regarding their impressions of the banking Web site. We used a five-item questionnaire adapted from Moorman, Deshpande, and Zaltman (1993), and Lee and Turban (2001) to measure trust. We also measured the age, gender, experience, perceived technological sophistication, and attitude towards computers of the participants.

## **Experimental Procedures**

Fifty-one participants volunteered for the experiment. They were randomly allocated to one of the experimental conditions: DB, LB, BL, and WH. The experiment was conducted over three consecutive sessions. Participants were asked to browse and examine the contents of the simulated banking Web site. After an hour, they were provided with a questionnaire that measured their extent of trust in the Web site. In addition, we collected information regarding their demographic characteristics, frequency of usage, perceived technological sophistication, and attitudes towards computers.

## **Data Analysis and Results**

Of the fifty-one participants, five were eliminated due to technical problems with their computer systems. For the remaining forty-six participants, the average age was thirty-six, and almost half of them were females. There were ten participants in the DB experimental group, thirteen in the LB experimental group, ten in the BL experimental group, and thirteen in the WH experimental group. We did not find any significant demographic differences between the four groups, nor could we find any significant differences in their perceived technological sophistication and attitudes towards computers.

The trust scores for the LB group were the highest (Mean=4.31, SD=0.65), followed by the DB group (Mean=4.02, SD=0.49), the WH group (Mean=2.23, SD=0.71) and then the BL group (Mean=1.80, SD=0.66). A t-test was then conducted for simultaneous comparison of trust scores. The trust scores for both the DB group and the LB group were significantly higher ( $p < 0.01$ ) when compared to the BL group or the WH group, hence we find support for H1 [*User trust in an e-commerce Web site would be highest when the dominant design color is blue*]. Though the LB group had a higher score than the DB group, the difference between the two was not significant. Thus, we do not find support for H2 [*User trust in an e-commerce Web site would be higher when the dominant design color is dark blue than when it is light blue*].

## **CONCLUDING REMARKS**

The results of the pilot study indicate that color does have an influence on user perceptions of trust on an e-commerce Web site. Thus, it is important that e-commerce vendors pay special attention to the dominant design color in their Web sites. To the extent possible, particularly for Web sites that need to engage in financial transactions or collect personal information from their users, the dominant design color should be a shade of blue. However, it has to be noted that it is a combination of several design elements such as layout, typography, white space, and images that results in the “net” trust engendered in the user. These aspects have not been examined in this pilot study, and should be a topic of future research.

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