Enhancing the Mobile User Experience Through Colored Contrasts

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INTRODUCTION

In 1940, during the Second World War, the Cambridge zoologist Hugh Cott published a textbook about camouflage, warning coloration and mimicry. He introduced the notion of disruptive coloration, which was defined as contingent on background matching, suggesting

the effect of a disruptive pattern is greatly strengthened when some of its components closely match the background, while others differ strongly from it. Under these conditions, by the contrast of some tones and the blending of others, certain portions of the object fade out completely while others stand out emphatically (p.50).

As stated by Schaefer & Stobbe (2006), disruptive coloration and background matching are both techniques of camouflage that are often quoted as textbook examples of natural selection. For example, the experiments conducted by Cuthill *et al.* (2005) illustrated that artificially colored moths, which had been designed to match their background of oak trunks in terms of color and brightness, survived better if they sported highly contrasting patterns on the edge of their wings compared to moths with the same patterns inside their wings. Furthermore, this phenomenon of contrast concerns all natural species in various fields and even human beings, such as soldiers in the army or surgeons in their operating room.

For example, military camouflage patterns were worn in the army to protect personnel and equipment from observation by enemy forces. Green uniforms, especially, and later other drab colors were used depending on the field of war (in Vietnam khaki green colored uniforms were favored, whereas in Irak khaki yellow was privileged). Surgeons operate in completely green or blue operating rooms to allow them to focus on what is red, namely blood and organs. This can be explained by the physiology of the human eye, notably the retina, which is lined with photoreceptor cells known as rods and cones. The rods are stimulated by dim light. In parallel, cones run "at full throttle" in normal brightness. Because human beings have three types of cones with different levels of sensitiveness to red, green and blue - red-sensitive cones are the most numerous, followed by the green-sensitive, and finally the blue-sensitive cones - the red color captures the surgeon's attention more easily than the other colors. Thus, having an operating room with a dominant green or blue color allows a surgeon's eyes to focus on the red color of blood and therefore on the surgery itself. The same question of contrast occurs on a webpage such as an e-commerce webpage, enabling users to read more or less easily, thanks to a properly chosen contrast ratio between the foreground and background colors.

"A frustrating experience on a website hurts my opinion of the brand overall" says Miller (2012). The author adds that many customers of

a brand are disappointed in the company itself if the mobile experience doesn't meet their expectations. The mobile experience or *"Mobile User Experience"* (MUE) refers to the perception users have of a mobile product or service, such as an app, a social media or a website, for example an e-commerce website. This perception mainly leans on the sense of sight. The principal variable among the viewable features of the Cascade Style Sheet (CSS) used to write formatting instructions (rules) for websites is color. Indeed most of the information available on a website comes from what is viewable: in fact, 80% of the information processed by an Internet user's brain results from sight (Mattelart, 1996), making color the main variable to take into account in research on consumer behavior when using a handled device for shopping purposes. Bearing in mind that the background color is the first factor to become apparent when the download of a webpage is in progress (Gorn *et al.*, 2004), thinking about colors to improve the MUE and leverage the benefits of companies is fundamental for the Return on Investment (ROI) of an organization. Nevertheless, attention given to the background color itself and the various parameters that summarize it (such as hue, brightness and saturation) is not sufficient to improve the customer experience. In order to answer this question, the present research compares the design cues of a m-commerce website on its color contrast occurred between foreground and background. An experimental design was developed to investigate the effects of m-commerce website design on emotions and behavioral intention within the context of smartphone usage.

This chapter therefore presents a literature review on the importance of the colored contrast of mobile website interfaces. The methodology section then presents the website built for the experiment, followed by results aiming at highlighting the behavioral intentions derived from the presentation of positive and negative colored contrasts. We conclude the paper with a discussion, some limitations and suggestions for future research, which give rise to some managerial implications.

BACKGROUND

Definition of the Mobile User Experience (MUE)

The term "mobile commerce" (m-commerce) was introduced in 1997 by Kevin Duffey at the Global Mobile Commerce Forum. According to Duffey's definition, m-commerce is an area separated from the e-commerce (electronic commerce) market, which is characterized by the carrying out of all operations by means of wireless devices, mainly smartphones and tablets (Shaikh & Gupta, 2014). M-commerce is specifically mobile-phone access to a wide spectrum of services covering finance (mobile banking), entertainment (music, movies, e-publications), and information and localization services (Prałat, 2013). Among mobile consumers, another action is increasingly practiced, namely "showrooming", where people use smartphones in traditional shops to search for information about the products on the Internet, compare prices and, in cases where they find an attractive offer, make their purchases online instead of at the shop (Prałat, 2013). The key to improving the MUE of e-commerce websites visited on a laptop/desktop interface seems to lie partly in the contrast that occurs between the background and foreground colors (Pelet, 2014). However, until now the effects of the colored contrasts occasioned by the foreground and background colors of the CSS of a website on consumer behavior have not been studied.

Total retail sales are increasing slowly but steadily in the USA according to e-Marketer (2015). Although sales are growing most quickly in the digital market, e-commerce is expected to rise only slightly as a share of the total, from 7.2% this year to 9.8% by 2019. Mobile still accounts for 1.6% of all retail, and by 2019 its share is expected to be 2.7%. According to Gentle (2015), current m-commerce figures indicate that a major shift is taking place, since the percentage of smartphone owners that use their phones to access the Internet was seen to double between

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