

# Investigating the Importance of Website Color Contrast in E- and M-Commerce

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## INTRODUCTION

While research on the use of contrasting colors to improve the online shopping experience is limited, paradoxically contrast and its use in e-commerce and mobile commerce (m-commerce) websites appear to play an important role in shaping consumer behavior. The efficient use of contrast seems to contribute to an increase of the potential target market. Contrast enhances the memorization of information (Hall & Hanna, 2003), and increases the intention to purchase (Pelet & Papadopoulou, 2010, 2012). The use of contrast also presents considerable advantages in terms of usability overall and is especially helpful to visually impaired people (Hill & Scharff, 1997). Color blind men - 8% of all men according to the Howard Hughes Medical Institute, (2006) - could better see a site's content when it is built with contrasting tones (Lanthony, 2005). Therefore, contrast may stimulate online consumers from developing a purchase intention to the act of purchasing.

These findings show the value to further study the use of contrast in e-commerce and m-commerce websites. The need for such studies is all the more urgent when considering that prior research focused mostly on color, without taking contrast into account. This gap has done little to advance our current knowledge. The use of color only as a variable in research studies does not provide enough actionable information about e and m-commerce websites for several reasons:

- Research comparing cold and hot colors such as blue and yellow hues provide limited results, and do not reflect the whole spectrum of hues that users are able to identify (see Ettis, 2008 for example);
- Research comparing chromatic versus achromatic colors also provide limited results, since

achromatic colors are not as much appreciated as chromatic ones during online shopping (see Pelet & Papadopoulou, 2012). Chromatic, or achromatic, colors should be compared independently of each other, each with its own particularities, rather than simply comparing chromatic with achromatic colors. Comparing this way has the potential to provide information that would be useful from a managerial and academic point of view;

- Research dealing with the hue, brightness and saturation levels of the foreground and background colors of the interface does not provide results that managers and web designers can easily and quickly implement when attempting to improve the readability and legibility of information of website interface (see Pelet & Papadopoulou, 2012; Conway *et al.*, 2010);
- Research focusing on colors does not consider the needs of almost 8% of the male population suffering from color deficiencies (Howard Hughes Medical Institute, 2006), to be able to read the information;
- Finally, research focusing on colors does not take into account the elderly population and their reading difficulties. This growing population has a greater need for a better contrast between the foreground and background colors.

In the very near future, as website design experiences a high growth rate, the colored contrast selection may therefore play an important role, and address the issues we have presented. This work aims to contribute to the on-going discussion related to contrast by providing a thorough literature review of the role that contrast plays in the design of an e-commerce/m-commerce website. The paper concludes with a discussion of

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theoretical and practical insights for the use of contrast in studies involving color as well as in the design of e-commerce/m-commerce websites.

## BACKGROUND

Although color is a widely researched topic in various fields (Divard & Urien, 2001), to this day there is a lack of studies focusing on color in the online context. Studies investigating the use and the role of color contrast as part of the interface of an e-commerce/m-commerce website seem absent in the academic literature. Though, the colored contrast is a variable embedded in the graphic chart of a website, it has the potential to bring much better results in terms of readability and retention of information than the color variable alone. Providing an extensive literature review on color contrast from different fields such as marketing, information systems and human-computer interaction the author demonstrates that the importance and value of contrast for e and m-commerce websites are very useful to advance the understanding of the online consumer behavior. Insights for theory and practice are also offered for designing effective e and m-commerce websites, in order to leverage companies' online ROI.

## LIMITATIONS FACED BY ONLINE RETAILERS

According to a study of 50,000 online retailers published by the FEVAD (*Fédération des Entreprises de Vente à Distance*), Internet sales continue to experience a strong growth rate and showed an increase of 19% in 2012 (Fevad (2013). Although online sales continue to grow, the human-machine interface connecting the user to an online store, through the website for computers and the “*landing page*” for mobile phones, remains an important subject in e-commerce, which has not been adequately addressed. It is already an important issue for mobile commerce (m-commerce). The impressive growth of mobile devices use, and more specifically the smartphones' penetration is definitely favoring the surge in mobile shopping and wireless-based applications in general (Lenhart *et al.*, 2011). The quality of the landing page becomes of primary importance, for content and for aesthetics purposes. Colors play a

major role and must be taken into consideration since the phenomenon of spatial contrast indicates that color is not something that can be represented by a one-to-one mapping. Rather, color depends upon context (Morovic, Cheung, & Morovic, 2012). Context is of primary concern when using a mobile device. Given the complexity of the context, the prospect of counting the total number of indistinguishable colors is practically impossible (Morovic, Cheung, & Morovic, 2012). However, spatial contrast is only one way that color varies.

An aware web designer creates a site that adapts to whatever the size of the browser screen is. This way of creating websites which appear on many smartphones and tablets include design techniques that can provide self-adaptive content according to the interfaces of consultation used by the visitor. A web page or image can be resized according to the screen size of the device (computer, tablet, smartphone, etc.) which is very important in order to keep the appropriate ratio of colors shown on the picture. The responsive web designer adapts the content of the site technical consulting environment without having to create multiple versions of the same content. It usually depends on the cascade style sheets (CSS) which embeds color codes, the latest technical standards and web programming such as HTML 5. The objective of the landing page is to convert a user who visits into:

1. A sale, the user is then converted to client;
2. A contact (lead), the user is then converted into a potential customer or prospect.

The primary objective of the landing page is to attempt to understand the consumer behavior; what prompted the action of seeking out a particular website, was it an attractive offer?, highlighting the value of the product or service depicted in an attempt to motivate the user to action. It is clear that many businesses are present on social networks (Lenhart *et al.*, 2011). To advertise on this medium, the company has the choice between two ad formats. The first relates to banners pointing to a landing page of the brand. The second type of advertising is to promote the official website of the brand. These two types of formats are not perceived the same way by the user, and the choice between these two options is an important decision for the company. The offer must meet the expectations

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