

## AN ANALYSIS OF THE USE OF WEB DESIGN CONVENTIONS IN COMPANY WEBSITES

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### ABSTRACT

*Web usability advocates stress the importance of simplicity, consistency, and following web design conventions. Without this, users may get lost, feel confused or frustrated, or may abandon a site. Web usability authorities have made anecdotal remarks about the failure of sites to follow web conventions, but there have been few research attempts to address this issue. This study examines the websites of INC. 500 companies using five design measures related to link appearance and navigation. The results revealed that company practices with respect to these web design conventions are highly variable. This makes many websites more unpredictable than they otherwise would be and it imposes a greater cognitive load on web users. The results suggest that many websites might reexamine their sites from a usability perspective.*

**Keywords:** Web Usability, Website Design, Internet, Content Analysis

### INTRODUCTION

It has been observed that web users are “often in a hurry and on a mission” [3]. Users typically scan rather than read web pages, and they want to find the information they seek quickly and easily. If a website is not intuitive, users may get lost, feel confused or frustrated, and they may decide to “take their business” elsewhere to a competing site that is easier to use.

To facilitate ease of use, various web conventions, or “standard ways of doing things,” have been developed. Where conventions are followed, they provide simplicity, consistency, and predictability to the web experience and facilitate ease of use. However, as web usability authorities observe, designers sometimes do not follow conventions [2, 4, 6, 9]. Based on a review of the literature, the extent to which web design conventions are followed has not been addressed in previous studies. This important issue is the focus of this investigation. For if conventions are not followed, they cease to be conventions at all, and users have to work harder to understand the unique design features of each site. As

a result, users’ web experience may be less efficient and effective, as they take longer to find needed information or not find it at all—until perhaps users eventually get “up to speed” on the nuances of each site.

Content analysis has been commonly used to assess organizations’ use of the web. For example, Liu et al. [8] examined the content of company home pages, Liu and Arnett [7] reviewed website privacy policies, Singh et al. [11] compared the Chinese and domestic versions of Fortune 500 company websites, Zhao and Zhao [13] examined the web technologies used by companies at their websites, and Campbell and Beck [1] assessed the website responses of companies to public allegations of ethical malpractice. Consistent with this tradition, this study uses content analysis to examine the extent to which selected web design conventions are followed in practice.

### LITERATURE REVIEW

This investigation focuses on five selected web convention measures that are organized into two categories, link appearance and navigation. These measures were selected because they embody some of the more commonly understood web conventions and consequently users tend to have certain expectations about them based upon their past experience using the web. These measures can also be measured relatively objectively without a significant amount of interpretation by researchers. The five measures are identified and explained below from a usability perspective.

*Link Appearance (Measure 1: Links are Underlined; Measure 2: Links are Blue; Measure 3: Link Appearance Changes After It Is Clicked).* Many writers have observed that users have come to expect hyperlinks to appear in a certain way. In specific terms, links should be some shade of blue, they should be underlined, and they should change color after being clicked, usually from blue to magenta [2, 3, 5, 9, 12]. According to Shelly et al. [10], following these standards contributes to a well-designed navigation system. Van Duyne et al. [12] add, “You might think they are ugly to read and clutter the page,

but... customers expect unvisited links to be blue and underlined” [12, p. 584].

Nielsen [9] also stresses the importance of following web conventions for link colors. He states, “Although it is unnecessary to use exactly the same shade of blue as the browser default, unvisited links must unmistakably be blue and visited links must unmistakably be reddish or purple. When non-standard link colors are used, users lose the ability to clearly see which parts of the site they have already visited and which parts remain to be explored. Some users will waste time selecting the same option repeatedly; other users will give up prematurely, thinking they have explored all options when in fact they have not” [9, p. 62-64]. In addition, Johnson says, “When links don’t show whether a user has already visited a page, the navigability of a site suffers” [5, p. 240-241].

*Navigation (Measure 4: A Company Logo Appears as a “Home” Link on Secondary Pages; Measure 5: A “Home” Text Link Appears on Secondary Pages).* Many web authorities point out the importance of having a link on secondary pages back to the home page [3, 4, 6, 10, 12]. This provides a feeling of comfort and safety to users [2] and flexible navigation. Two possible ways to provide a navigation link back to the home page are through a

clickable, company logo on secondary pages and/or a “home” text link on secondary pages. Where present, the company logo is usually placed at the top left of the screen and the “home” text link is shown as a main navigation option.

While the “home” text link is almost universally understood by web users, it is more questionable whether some users, especially novice ones, realize that clicking the company logo will take them back to the home page. Johnson [4] observed in 2000 that in the usability tests he conducted, few users realized the company logo was a link, at least initially. Krug [6] stated that while the use of the logo as a home link is a useful idea, a surprising number of users are not aware of it so it is probably a good idea to also include a “home” text link along with the logo. More recently, in 2003, Van Duyne et al. [12] stated that most users expect to be able to return to the home page by clicking on the site logo in the upper-left hand portion of any page. Thus, the company logo convention appears to have become more understood over time, but not all users are still probably aware of it. For this reason, ideally secondary pages will have both a “home” text link as well as a company logo “home” link. Table 1 presents reasons why web designers may choose not follow the web conventions explored in this study and the resulting impact of each on users.

**Table 1.** Web Design Convention Problems, Potential Causes, and Impacts

<b>Potential problems related to web design conventions:</b>	<b>Some common reason(s) for these problems:</b>	<b>Potential impact on users: <i>How this may inhibit visitors from finding information or meeting their goals quickly and easily</i></b>
1. Text links are not underlined	Designers may think this will produce less clutter and improve a page’s appearance	Some users will not recognize these entries as links and miss important information
2. Text links are not blue	Designers may think this will better fit the site’s color scheme and improve the appearance	Some users will not recognize these entries as links and miss important information
3. Text link color does not change after it is clicked	Designers disable the default color option, not allowing the link color to change	Users may not remember which links they have visited and which they have not; they may visit the same link multiple times
4. The company logo (as a “home” link) is missing from secondary pages	Designers may discount the importance of this convention, or only use a “home” text link	Some users look for this as a familiar way to get back “home”; they may not understand how to get back to the home page or it may take more time to do so
5. A “home” text link is missing from secondary pages	Designers assume that all users know the company logo is a home link; or they forget to provide any link back to home page	Some users look for this as a familiar way to get back “home”; they may not understand how to get back to the home page or it may take more time to do so

## METHODOLOGY

The authors conducted a content analysis of the websites of *INC. 500* companies over a two-week period in late summer 2005. The most recently available list of *INC. 500* companies was used at that time, based on company sales and growth data through 2004. The URLs for the company websites were obtained wherever possible from the *INC. 500* list. For those companies lacking a URL, the authors used the search engine Google to find the company website. The three link appearance measures were assessed by reviewing the company's home page while the two navigation measures were considered based on reviewing at least one secondary page. To ensure the researchers utilized a standardized approach to evaluating each site, a coding scheme was carefully developed for each measure based on a review of the literature and two rounds of pre-tests prior to full-scale data collection. The researchers used a common browser (Internet Explorer) and a 1024 X 768 screen resolution in data collection. Inter-rater reliability was assessed during the second round of pre-tests at 95.2%.

This study is based on 478 websites out of the 500 companies on the *INC. 500* list. The remaining 22 companies were not included for one of several

reasons: (1) the company did not appear to have a website based on no URL entry in the *INC. 500* list and no site being found as a result of the Google search; (2) the website was under construction or maintenance; or (3) the website was unable to be opened or was infected with a virus.

The measurement of each variable is summarized in Table 2. As indicated by the first two measures, the appearance of the links at some sites changed to underline or in color only with a mouse "rollover." For measurement purposes, these sites were counted as not following web conventions because they required additional steps to make the convention become apparent. As one web usability expert, Gold [3] observes, "Why make users make the extra effort find out whether something is a link?" This measurement approach is also consistent with the web usability "mantra" of Krug [6] that says, "Why make me think?" In terms of the fourth measure, the authors observed that while many websites included a company logo on secondary pages, they were not always "active" links back to the home page. Inactive company logos on secondary pages were counted as not following web conventions, since their lack of functionality would run contrary to the expectations of many users.

**Table 2.** Measures and Coding Scheme

For each measure: 1 = Yes (follows web conventions); 0 = No (does not follow conventions)
1) <i>Text Links Are Underlined:</i> 1 = Yes; 0 = No, or they appear only on a "mouse rollover"
2) <i>Text Links Are Blue (Some shade of blue, not necessarily the default shade):</i> 1 = Yes 0 = No, or they appear only on a "mouse rollover"
3) <i>Text Link Color Changes after a Link is Clicked:</i> 1 = Yes; 0 = No
4) <i>A Company Logo Serves as a "Home" Link on Secondary Pages</i> 1 = Yes (a logo is present, active) 0 = No (no logo is present or if it is, it is not active)
5) <i>A "Home" Text Link Appears on Secondary Pages (or a "Return" link):</i> 1 = Yes; 0 = No

## RESULTS

The extent to which the five web design conventions were followed by companies in this sample is presented in Table 3. As indicated, the sites were rather evenly split in terms of whether their links appeared in blue or were underlined. In only about

one-fourth of the sites (27.4%) did the text color of hyperlinks change after being clicked. Most sites (73.2%) provided a clickable “home” text link on secondary pages, while sites less commonly included an “active” company logo as a home link (61.1%).

**Table 3.** The Use of Web Design Conventions in Company Websites

	<b>Yes</b>	<b>No</b>
<b>Link Appearance:</b>		
1. Text links are underlined	55.1 %	44.9 %
2. Text links are blue	44.9 %	55.1 %
3. Text link color changes after it is clicked	27.4 %	72.6 %
<b>Navigation:</b>		
4. A company logo link appears on secondary pages	61.1 %	38.9 %
5. A “home” text link appears on secondary pages	73.2 %	26.8 %

## CONCLUSIONS

The results of this study suggest that the use of web conventions varies considerably, at least with regard to the link appearance and navigation measures examined here. There is sometimes a “trade-off” in web design between appearance and usability; for example, web designers may think that the appearance of a site will be improved if links are not underlined and if links are not blue to better match a site’s color scheme. While these points likely have merit in some cases, the ultimate outcome is that websites as a whole are more variable, less predictable, and arguably less usable than they otherwise would be. The results seem to support the assertions of web authorities like Gold [3] that many times appearance “trumps” usability in web design.

Of the conventions considered in this study, the least followed was the lack of color change for links after they were clicked. This practice was followed in only about one-fourth of the sites, yet it can be annoying to users, especially if they are presented with a long list of items and expected to remember which ones they clicked and which they did not. A second likely source of annoyance to users uncovered in this study stems from the different ways companies present their logos on secondary pages. Specifically, 4.6% present no logos, 34.3% present logos for display purposes only, and at 61.1% of the sites, the logos are active links back to the home page. It is easy to imagine users clicking inactive company logos and

getting frustrated. Finally, it is easy to envision some users missing links to information because they are either not underlined (as they expect) or their underlines are only visible with a mouse “rollover.” Perhaps these examples do not sound like major issues, but in web design, it is the details that matter. One annoyance in itself may not be enough to cause users to go to a competing site, but the cumulative effect of multiple annoyances may be. It appears prudent for many companies to “take a fresh look” at the usability of their sites.

It should be noted that while the findings of this study are based on a large sample of company websites, they are cross-sectional, i.e., collected at one time period. Perhaps different results would be obtained in future time periods. The findings are also based on the websites of companies on the INC. 500 list. These companies are small to medium sized, high growth businesses, and as such they may not represent organizations in general. Thus, there is a need to replicate this study with the websites of larger firms such as Fortune 500 companies or among smaller to medium sized companies that are more mature or which are experiencing lower rates of growth. This study is also based on the use of selected web design conventions – it does not claim to address most or all of them. Thus, future research could address the use of other website conventions.

## REFERENCES

1. Campbell, D. & Beck, A. C. (2004). Answering allegations: the use of the corporate website for restorative ethical and social disclosure. *Business Ethics*, 13(2-3), 100.
2. Flanders, V. & Peters, D. (2002). *Son of web pages that suck: learn good design by looking at bad design*. San Francisco: Sybex.
3. Gold, M. (2003). *Making your website work - for your user*. Palo Alto, CA: Stanford Videos.
4. Johnson, J. (2000). *GUI bloopers: don'ts and do's for software developers and web designers*. San Francisco, CA: Morgan Kaufmann Publishers.
5. Johnson, J. (2003). *Web bloopers: 60 common web mistakes and how to avoid them*. San Francisco, CA: Morgan Kaufmann Publishers.
6. Krug, S. (2000). *Don't make me think: a common sense approach to web usability*. Berkeley, CA: New Riders Publishing.
7. Liu, C. & Arnett, K. P. (2002). An examination of privacy policies in Fortune 500 Web Sites. *Mid-American Journal of Business*, 17(1), 13-21.
8. Liu, C., Arnett, K. P. & Beatty, R. (1997). Web sites of the Fortune 500 companies: facing customers through home pages. *Information & Management*, 31(6), 435-446.
9. Nielsen, J. (2000). *Designing web usability*. Berkeley, CA: New Riders Publishing.
10. Shelly, G. B., Cashman, T. J. & Kosteba, L. A. (2002). *Web design introductory concepts and techniques*. Boston, MA: Course Technology.
11. Singh, N., Zhao, H. & Hu, X. (2003). Cultural adaption on the web: a study of American companies' domestic and Chinese websites. *Journal of Global Information Management*, 11(3), 63-80.
12. Van Duyne, D. K., Landay, J.A. & Hong, J. I. (2003). *The design of sites: patterns, principles and processes for crafting a customer-centered web experience*. Boston, MA: Addison-Wesley.
13. Zhao, J. J. & Zhao, S. Y. (2004). Internet technologies used by INC. 500 corporate web sites. *Issues in Information Systems*, 4, 366-372.