Analyzing the Influence of Web Site Design Parameters on Web Site Usability

Monideepa Tarafdar, University of Toledo, USA
Jie (Jennifer) Zhang, University of Toledo, USA

ABSTRACT

Web site usability is concerned with how easy and intuitive it is for individuals to learn to use and interact with a Web site. It is a measure of the quality of a Web site's presence, as perceived by users. The usability of Web sites is important, because high usability is associated with a positive attitude toward the Web site and results in higher online transactions. Poorly designed Web sites with low usability, on the other hand, lead to negative financial impacts. Existing approaches to Web site usability include measurement and tracking of parameters, such as response time and task completion time, and software engineering approaches that specify general usability guidelines and common practices during software development. This paper analyzes usability from the point of view of Web site design parameters. An analysis of usability and other design characteristics of 200 Web sites of different kinds revealed that design aspects, such as information content, ease of navigation, download delay, and Web site availability positively influence usability. Web site security and customization were not found to influence usability. The paper explains these results and suggests design strategies for increasing Web site usability.

Keywords: consumer Web site interaction; electronic business; Internet traffic; Internet trust; interface design; Web navigation; Web site content; Web site design; Web site usability

INTRODUCTION

Web site usability is concerned with how easy and intuitive it is for individuals to learn to use and interact with a Web site in order to quickly and easily accomplish their tasks (Preece, 2001). It typically is a measure of the quality of a Web site's presence, as perceived by users (Agarwal & Venkatesh, 2002; John & Bass, 2001). That is, Web sites that are highly usable are easy to learn, remember, and use. Web site us-
ability is derived from a broader framework of system usability, as described in concepts from the literature on human-computer interaction (HCI) (Schneiderman, 1998). The primary premise of HCI studies is that the design of information systems should include features and characteristics that make it easy for users to interact with and use the system.

The usability of Web sites is important for a number of reasons (Huang, 2002). First, the World Wide Web (WWW) is an open and connected environment, and switching Web sites is easy. To ensure that people actually stay with a Web site until the transaction is completed, the Web site needs to be usable. In this context, Ellis and Kurniawan (2000) state that browsers often do not wait to complete their transactions on Web sites that are not user friendly, that do not facilitate the retrieval of information, and that do not present the information in a well organized and relevant form. Second, the WWW provides access to an increasing range of information, products, and services. Its users range from experts to novices that have dramatically different expectations and skills. Hence, it is important to understand the factors that increase Web site usability for different kinds of browsers. Third, prior research suggests that high usability is associated with user-related positive outcomes, such as a reduction in the number of user errors (Siau, 2003) and a more positive attitude toward the Web site (Lecerof & Paterno, 1998; Nielsen, 2000). Finally, the Web site is the interface through which employees and customers interact with the organization. In that sense, it is analogous to a brick-and-mortar store. High Web site usability, therefore, is akin to a user-friendly and pleasant store environment and influences the Web site traffic. It gives an impression of a strong customer orientation and services mindedness (Heldal et al., 2004). Likewise, low usability portrays the opposite of these sentiments.

Financial and economic impacts of poor usability also have been documented. Landauer (1996), for example, found that inadequate use of usability engineering methods in software and Web site development projects costs the U.S. economy $30 billion per year in lost productivity. According to the consulting firm A.T. Kearney, poor Web site usability costs e-tailers almost $4 billion in potential revenue, as many prospective purchasers actually do not complete the transactions that they start. In a similar vein, Forrester research (Manning et al., 1998) estimated that 50% of potential sales from a Web site are lost when visitors to a Web site cannot find the relevant product, services, or information. They also found that almost 40% of visitors do not return to a site when their first visit results in a negative experience. Taken together, these two factors can result in potential losses of millions of dollars annually due to poor usability for a reasonably large Web site.

Considering all of the above, it is clear that usability is one of the most important characteristics of Web sites. This has been described succinctly by Nielsen (2000), who suggests that usability rules the Web. If a user cannot conveniently use a Web site to find a product or service, the user will not buy it.

Different approaches have been adopted in order to study usability (Huang, 2002). System designers have taken a software engineering approach and have specified general usability guidelines, principles, and common practices that would ensure
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