

Usability Engineering and Research on Shopping Portals

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INTRODUCTION

A business-to-consumer (B2C) electronic marketplace (e-marketplace) portal helps online shoppers in searching for desired products and services, customizing a user's shopping experience, and identifying reputable merchants and service providers. These shopping portals provide the ability for a shopper to specify personal preferences, compare prices from multiple vendors, obtain merchant ratings and feedback from other customers, read reviews of products, find featured products and promotion, and create his or her own wish list in a online profile, among others. From an economics perspective, these portals reduce a buyer's search cost (Bailey & Bakos, 1997). Web sites falling into this category include Yahoo! Shopping, bizrate.com, shopzilla.com, and nextag.com, among others.

Interest in e-marketplaces has significantly increased due to the structural changes in online business brought about by these markets (Ratnasingam, Gefen, & Pavlou, 2005). This article reviews current literature and explores avenues of future research, so as to provide both marketing practitioners and system designers an understanding of the factors contributing to the success of a shopping portal from multiple aspects of usability engineering in e-commerce.

BACKGROUND

B2C Web sites must be aesthetically appealing, easy to navigate, interactive, and load at a reasonably fast speed (Nielsen, 2004). Current technology also enables the development of dynamic, secure, and personalized Web portals. Additionally, e-marketplace portals require unique functionalities that distinguish themselves from ordinary e-commerce Web sites. Such functionalities, reviewed elsewhere in this publication, include personalization, an intelligent search engine, and a merchant reputation system, among others. These functionalities are based on advanced data-drive server-side applications. Nonetheless, the ultimate judgment of the effectiveness of a Web portal comes from the users.

Usability of the Web interface impacts the bottom line of the portal site.

USABILITY ENGINEERING

Unlike direct retailing sites, shopping portals are more of a utility, where people use it as a tool to find the stores from which they will purchase products. For example, product categorization is more complex than most individual e-merchants. Portal sites are also more informational in providing featured products and other advertising. Thus, a portal can be viewed as both a technological tool and a consumer information center in its usability. The following sections present a review of related research applicable to evaluating the usability of a shopping portal. Some of these models have been applied to portal or quasi-portal sites in empirical studies, while others should be adopted in future research of e-marketplace portals.

Human Computer Interaction (HCI) and Web Usability

HCI examines the usability of a user interface design from the perspectives of efficiency, effectiveness, and user satisfaction. In the Web context, usability measures how easily a user can learn to operate, provide inputs, and interpret outputs of a system (IEEE, 1990). Nielsen (2003) provides a number of attributes of usability that could be instrumental in conducting usability studies. They include learnability (how easy it is to accomplish basic tasks on a user's first visit), efficiency (how quickly a user can perform a task once learned), memorability (how quickly a user re-establishes proficiency after a period of time), errors (how many errors occurred), and satisfaction. Related research in this area includes a ServQual instrument (Parasuraman, Zeithaml, & Berry, 1988) and a WebQual framework (Barnes & Vidgen, 2001), both of which have been utilized in measuring usability and effectiveness of Web-based interfaces.

A portal site with high usability should be one that is reliable, responsive, functional, and aesthetically attractive. Responsiveness of a search engine and the reliability of information represent the effectiveness of the system and naturally lead to user satisfaction or the lack thereof. Examples of research on portal usability include a recent empirical study that examined the differences in user satisfaction with Web portals based on types of portals and behavioral grouping of users (Xiao & Dasgupta, 2005).

The Technology Acceptance Model

In information systems research, the technology acceptance model (TAM) has been widely adopted in evaluating user acceptance of and attitude toward using a technological system (Davis, 1989). TAM is rooted in the theory of reasoned actions (TRA) (Ajzen & Fishbein, 1980). It proposes that perceived ease of use and perceived usefulness of technology are predictors of user attitude toward using the technology, subsequent behavioral intentions, and actual usage. TAM has been applied in studies testing user acceptance of information technology, from word processors (Davis, Bagozzi, & Warshaw, 1989), spreadsheet applications (Mathieson, 1991), and e-mail (Szajna, 1996), to Web browsers (Morris & Dillon, 1997) and telemedicine (Hu, Chau, Sheng, & Tam, 1999). TAM has also been adapted to examining user acceptance of the IT interface of Web retailing sites (Gefen, Karahanna, & Straub, 2003; Koufaris, 2002; Pavlou, 2003). Its parsimonious nature makes it an ideal candidate for evaluating the effectiveness of an online shopping portal, which may be viewed as an IT-based utility enabling effective shopping across many stores.

In a field study using one of the popular travel portals, perceived usefulness and perceived ease of use, along with perceived security control and perceived willingness to customize, turned out to be significant predictors of perceived trustworthiness of the online company (Koufaris & Hampton-Sosa, 2004). This framework is readily adaptable to other types of portals in B2C commerce.

Consumer Behavior Research

Viewing the portal as a consumer information center, theories in communications and consumer research are also applicable to examining the impact of cognitive perceptions regarding the portal site through attitudinal variables such as loyalty and purchase intentions (Coyle & Thorson, 2001; Wolin & Korgaonkar, 2005). Recent studies have explored psychographic profiling of online shoppers and the relationship between consumers' shopping orientations and their intention to use and actual use of the online shopping medium (Vijayarathy, 2003). Web site design has been examined from the perspective of enhanced usability via the

building of a cognitive framework based upon a coherent choice of design elements and layout (Rosen, Purinton, & Lloyd, 2004).

Attitude toward the site evaluates site effectiveness. In advertising research, attitude toward the ad (Aad) mediates the effect of advertising on brand attitude and purchase intention (Brown & Stayman, 1992). Attitude toward the site would be an equally important measure for marketing and advertising strategies on the Web. It measures a visitor's affective response to a Web site (Chen & Wells, 1999).

Intention to return to a site is another valuable indicator of site effectiveness. Repeat visits increase the number of times a consumer is exposed to a commercial message. The benefits of retaining loyal customers exceed those of gaining new prospects (Aaker, 1995). It is in the portal site's interest to develop a Web site that would retain customers, so that more potential referrals to subscribing merchants can be generated and more advertising messages are exposed to its customers.

Past research has identified many factors that could potentially influence a Web user's attitude toward a site and intention to return. Perceived realism and vividness, perceived informativeness, entertainment and organization, perceived concentration, control, and shopping enjoyment, perceived interactivity, and content usefulness are some of the valuable constructs that can be adapted to studying the usability of e-marketplace portals (Coyle & Thorson, 2001; Ducoffe, 1996; Hassan & Li, 2005; Koufaris, 2002).

Online Trust

Prior IS research in consumer trust online provides another set of vehicles in assessing the value of a shopping portal. Consumers' trusting beliefs form the basis of their trust in a Web vendor. Such beliefs include perceived benevolence, integrity, competence, and predictability (Gefen et al., 2003; Salam, Iyer, Palvia, & Singh, 2005).

McKnight and Chervany (2001-2002) reported the development and testing of a multilevel, multidimensional model of Web trust, with constructs derived from the reference disciplines of psychology and sociology. Their model includes four conceptual-level constructs of disposition to trust, institution-based trust, trusting beliefs, and trusting intentions. A shopping portal is an institution where buyers and sellers meet. The concept of institutionally-based trust and its two subconstructs, that is, structural assurance and situational normality, are key indicators of user trust in the portal site. Related research would provide valuable insights into understanding how an e-marketplace portal is perceived to be a trustworthy institution within which businesses can be done (McKnight, Choudhury, & Kacmar, 2002).

Web vendor interventions, that is, actions a vendor may take to influence consumers' trusting beliefs, such as its privacy policy, reputation building techniques, and

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