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Consumer Decision Making in Online Shopping Environments: The Effects of Interactive Decision Aids

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Abstract

Despite the explosive growth of electronic commerce and the rapidly increasing number of consumers who use interactive media (such as the World Wide Web) for prepurchase information search and online shopping, very little is known about how consumers make purchase decisions in such settings. A unique characteristic of online shopping environments is that they allow vendors to create retail interfaces with highly interactive features. One desirable form of interactivity from a consumer perspective is the implementation of sophisticated tools to assist shoppers in their purchase decisions by customizing the electronic shopping environment to their individual preferences. The availability of such tools, which we refer to as *interactive decision aids* for consumers, may lead to a transformation of the way in which shoppers search for product information and make purchase decisions. The primary objective of this paper is to investigate the nature of the effects that interactive decision aids may have on consumer decision making in online shopping environments.

While making purchase decisions, consumers are often unable to evaluate all available alternatives in great depth and, thus, tend to use two-stage processes to reach their decisions. At the first stage, consumers typically screen a large set of available products and identify a subset of the most promising alternatives. Subsequently, they evaluate the latter in more depth, perform relative comparisons across products on important attributes, and make a purchase decision. Given the different tasks to be performed in such a two-stage process, interactive tools that provide support to consumers in the following respects are particularly valuable: (1) the initial screening of available products to determine which ones are worth considering further, and (2) the in-depth comparison of selected products before making the actual purchase decision. This paper examines the effects of two decision aids, each designed to assist consumers in performing one of the above tasks, on purchase decision making in an online store.

The first interactive tool, a *recommendation agent* (RA), allows consumers to more efficiently screen the (potentially very large) set of alternatives available in an online shopping environment. Based on self-explicated information about a

consumer's own utility function (attribute importance weights and minimum acceptable attribute levels), the RA generates a personalized list of recommended alternatives. The second decision aid, a *comparison matrix* (CM), is designed to help consumers make in-depth comparisons among selected alternatives. The CM allows consumers to organize attribute information about multiple products in an alternatives \times attributes matrix and to have alternatives sorted by any attribute.

Based on theoretical and empirical work in marketing, judgment and decision making, psychology, and decision support systems, we develop a set of hypotheses pertaining to the effects of these two decision aids on various aspects of consumer decision making. In particular, we focus on how use of the RA and CM affects consumers' search for product information, the size and quality of their consideration sets, and the quality of their purchase decisions in an online shopping environment.

A controlled experiment using a simulated online store was conducted to test the hypotheses. The results indicate that both interactive decision aids have a substantial impact on consumer decision making. As predicted, use of the RA reduces consumers' search effort for product information, decreases the size but increases the quality of their consideration sets, and improves the quality of their purchase decisions. Use of the CM also leads to a decrease in the size but an increase in the quality of consumers' consideration sets, and has a favorable effect on some indicators of decision quality.

In sum, our findings suggest that interactive tools designed to assist consumers in the initial screening of available alternatives and to facilitate in-depth comparisons among selected alternatives in an online shopping environment may have strong favorable effects on both the quality *and* the efficiency of purchase decisions—shoppers can make much *better decisions* while expending substantially *less effort*. This suggests that interactive decision aids have the potential to drastically transform the way in which consumers search for product information and make purchase decisions.

(*Decision Making; Online Shopping; Electronic Commerce; Decision Aids; Recommendation Agents; Consumer Behavior; Information Search; Consideration Sets; Information Processing*)