

# Chapter 50

## Product Recommendation Agents for Cyber Shopping Consumers

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### ABSTRACT

*With cyber shopping, consumers face a massive amount of product information before an educated purchase decision can be made. Identifying relevant products is therefore laborious for consumers, in particular when they look for non-commodity products such as consumer electronics. Product Recommendation Agents (PRAs) help consumers in finding relevant products efficiently. PRAs recommend a set of products either explicitly according to product attributes preferred by the consumer or implicitly based on consumers' interests and activities. PRAs retrieve hereby product information from various sources such as a retailer's product database or a third-party's review database. This entry introduces and discusses PRAs for cyber shopping consumers from five perspectives: (1) Purchase decision-making, (2) natural language interaction, (3) dynamic pricing, (4) product reviews, and finally, (5) product recommendation infrastructures. Future research directions on PRAs for cyber shopping conclude this entry.*

### INTRODUCTION

Cyber shopping describes activities in which consumers adopt Web-based resources for their purchase decision-making be it at home on a desktop computer or in-store on a mobile device. For cyber shopping consumers, purchase

decision-making depends on precise and comprehensible product information. Hereby, product information can be derived from various sources such as the retailer, the producer, professional review organizations, mediating organizations (e.g., Google product search or Groupon) and other users of the product (e.g., family, friends

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or other people). Thus, product information is not only restricted to prices, discounts and other objective product characteristics but it considers also experiential information in case of product reviews. In order to find and aggregate relevant product information for their purchase decisions, consumers are required to compare and evaluate these types of information and their sources. This decision-making process takes time and is even more laborious when the product in question is not an every-day article such as a bottle of water or a book but a long-term purchase such as a TV, digital camera or even a car.

Product Recommendation Agents (PRAs) have the potential to overcome this problem by supporting consumers in finding relevant product information efficiently. They can be defined as information systems that derive preferences of consumers either explicitly or implicitly and recommend then products accordingly (Xiao & Benbasat, 2007). Explicit product recommendations are based on product attributes that are directly determined by consumers, for example, by determining a price range. By contrast, implicit recommendations are not based on explicit consumer input but rather on observations of consumer behavior. For example, a consumer interested in a book might get book recommendations based on prior purchase decisions, i.e. books that have been often bought together are likely to be recommended in this sense implicitly.

Cyber shopping consumers can adopt PRAs for purchase decision-making in online shopping and in-store shopping situations. In the former case, PRAs are often part of retailers' websites such as the product filtering and product recommendation features at Amazon.com. But there exist also many websites that aggregate product information from various retailers and recommend products accordingly (e.g., at ConsumerReports.org). In the latter case, usually mobile devices are used to request product information directly at the point of sale (e.g., the Tesco Finder mobile application). In either purchase situation online

or in-store, cyber shopping consumers request product information from online resources with the help of PRAs and thus, this entry discusses PRAs for cyber shopping in general.

In the following, a brief overview of the history of PRAs and their impact on consumer behavior is presented. A detailed literature review on research areas related to PRAs for cyber shopping consumers is given subsequently. Finally, future research directions are discussed.

## **OVERVIEW**

Izak Benbasat from the Information Systems discipline (Gregor & Benbasat, 1999; Todd & Benbasat, 1999) and Gerald Häubl and Valerie Trifts (Häubl & Trifts, 2000) from marketing sciences were one of the pioneering scholars that conducted research on PRAs in the late 1990s. Up until now, several studies have investigated the impact of PRAs on consumer behavior in (1) online shopping situations (Gregor & Benbasat, 1999; Häubl & Murray, 2003; Häubl & Trifts, 2000; Kamis, Koufaris, & Stern, 2008; Komiak & Benbasat, 2006; Pereira, 2001; Senecal & Nantel, 2004; Swaminathan, 2003; Todd & Benbasat, 1999; Xiao & Benbasat, 2007) and (2) in-store shopping situations (Kleijnen, de Ruyter, & Wetzel, 2007; Kowatsch & Maass, 2010; Kowatsch & Maass, to appear; Kowatsch, Maass, Filler, & Janzen, 2008; Lee & Benbasat, 2010; Maass & Kowatsch, 2008a; Maass & Kowatsch, 2008b; Maass, Kowatsch, Janzen, & Varshney, 2011; van der Heijden, 2006). The utility of PRAs for online shopping situations has been already shown. They help to reduce search complexity and consumers' information overload (Häubl & Trifts, 2000; Todd & Benbasat, 1999), improve decision quality (Pereira, 2001; Xiao & Benbasat, 2007), increase trust in decisions (Gregor & Benbasat, 1999; Komiak & Benbasat, 2006), or influence store preferences and purchase intentions (Kamis, Koufaris, & Stern, 2008).

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