

Chapter II

The Evolution of Comparison–Shopping Agents

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ABSTRACT

Comparison-shopping agents became the important link in the business-to-consumer (B2C) e-commerce domain since the late 1990s. Since its emergence in 1995, the evolution of comparison-shopping agents experienced a few ups and downs. This chapter covers key events and issues of comparison-shopping agent evolution in three intertwined threads: the emergence of representative agents, the evolution of comparison-shopping agent technology, and the evolution of their business models.

INTRODUCTION

Generally speaking, comparison-shopping agents are Web-based business-to-consumer (B2C) information searching services that could retrieve product information from multiple online retailers, aggregate them, and then present them to online shoppers to assist shopping decision making. There are several synonyms for comparison-shopping agent, such as *shopbot*, *product comparison agent*, *recommendation agent*, *buyer's agent* as

well as *aggregator* (Bakos, 1998; Brynjolfsson & Smith, 2000; Crowston, 1997; Green, 1998; Kuttner, 1998; Madnick & Siegel, 2001; Sinha, 2000). Since the popularity of the World Wide Web (WWW) in 1994, electronic decision aids or Web-based business-to-consumer agents became crucial to Web users for their information acquisition and processing support. Among these Web-based B2C agent systems, comparison-shopping agents are the most visible and systematically developed agent group.

BACKGROUND

The popularity of comparison-shopping agents and the formation of this industry originated from sheer consumer needs when they have to navigate in the World Wide Web to look for product information especially the price.

The emergence and commercialization of Internet provides a completely new channel for consumer shopping—online shopping. Compared with traditional channels, this online channel has two important features: low entry barrier and almost unlimited shelf space.

As described in the seminal book *Information Rules* (Shapiro & Varian, 1998), online channel has unprecedented low entry cost for potential retailers. Nowadays, any individual can launch an e-commerce site by uploading the product data to a template provided by Internet service protocols (ISPs) with slight customization of the interface. As a result, we were observing an increasing number of micro-online retailers that operated by only one or two individual.

This new channel also has a unique feature of almost unlimited shelf space compared with physical channels. For example, Wal-Mart, the biggest brick-and-mortar chain store, at any time has 100,000 items available on the shelf in a typical supercenter. However, Amazon.com, the biggest online store can already offer as many as 18 million unique items even without inclusion of third-party vendors who utilize the platform provided by Amazon to sell to its customer base.

These two features led to an exponential increase of product information online in the past 10 years, which have been enriching our shopping experience ever since. However, with so many products available online, finding them was not as easy as expected unless one could remember all those domain names beyond a few established portals. Thus, this posed a practical problem for online shoppers: *how to find the relevant product information especially price information from those unknown stores?*

Even when searching established portals from memory, experience told us that retrieving the same product price from each site for comparison-shopping was exceedingly time-consuming. So can we find all these relevant information with one click instead of several clicks per site?

These questions are directly related to the research topic of online information searching and processing behavior.

To make a shopping decision, the consumer needs relevant information. However, there exists a cost to retrieve this information (Shugan, 1980). In a traditional environment, cost incurred in searching information is prohibitive if one wants to visit several physical stores to retrieve the price information for comparison-shopping, for example, time, transportation to each store, and so forth. In an online environment, shoppers can avoid costs such as transportation. But still there is limited time one could spend on searching the Web for a product with the preferred feature and price.

Online shopping, as an information search process, has two components: intersite and intrasite search (Hodkinson & Kiel, 2003). The intersite search mainly refers to use general purpose search engine to locate shopping information from multiple sites; intrasite search refers to search the specific product information in the site of one specific online retailer. Both components incur cost to online shoppers. The intersite search requires considerable time and domain knowledge (familiarity with search engines) for the online shopper to identify useful information; the intrasite search also requires the learning time for online shopper to familiar oneself with the specific site he searches.

We can expect that, when the volume of B2C electronic commerce increases further and reaches certain plateaus, the efficiency and effectiveness of manual comparison-shopping would be a major bottleneck in the effort to achieve customer satisfaction. Consumers would face an increasing amount of product information to sort through

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