

## Chapter IV

# A Movie E–Shop Recommendation Model Based on Web Usage and Ontological Data

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### ABSTRACT

*Recommendation systems are special personalization tools that help users to find interesting information and services in complex online shops. Even though today's e-commerce environments have drastically evolved and now incorporate techniques from other domains and application areas such as Web mining, semantics, artificial intelligence, user modeling, and profiling setting up a successful recommendation system is not a trivial or straightforward task. This chapter argues that by monitoring, analyzing, and understanding the behavior of customers, their demographics, opinions, preferences, and history, as well as taking into consideration the specific e-shop ontology and by applying Web mining techniques, the effectiveness of produced recommendations can be significantly improved. In this way, the e-shop may upgrade users' interaction, increase its usability, convert users to buyers, retain current customers, and establish long-term and loyal one-to-one relationships.*

## INTRODUCTION

Nowadays, e-commerce is seen as an extremely dynamic economic sector and at the same time, as one of the most appealing ways of beginning or expanding a business activity. Statistics for its future are quite optimistic indicating that the business-to-consumer (B2C) e-commerce will grow rapidly in the years to come (Browne, Higgins, & Hunt, 2003). In fact, despite the recent talking about businesses cases that went online but did not manage to profit, looking at the big picture reveals that such cases comprise just a small portion of the market and most “inhabitants” of the e-commerce world are not only surviving, but also doing very good business. This is a strong indication for assuming that there are certain distinctive features that make the difference and which result in either success or failure. Moreover, surveys and studies have shown that consumers are increasingly giving online commerce a chance (E-commerce Alert, 2006). Taking also into account the rapidly growing number of those that have access to the Internet and those that gain familiarity with the medium, we have a quite promising picture (Internet World Stats, 2006).

In this article we argue that one of the factors that may block or urge online sales concerns the *individuality* of Internet shoppers. There is no dispute about whether or not e-commerce has a future; it is a new philosophy in conducting business and it is here to stay. The question is how easily Internet users become e-consumers and which are the internal “mechanisms” and external factors that participate in an e-purchase. The problem arises from the fact that shoppers with varying needs, preferences, and background navigate through large and complex Web structures and are confronted with too many options, missing in many cases the goal of their inquiry. Generally, search engines are used for filtering pages according to explicit users’ queries. However, their results are often poor since the produced lists are

long, unmanageable, and contain irrelevant pages (Middleton, De Roure, & Shadbolt, 2004).

*Web personalization* is one of the most promising approaches to alleviate this information overload problem and to provide users with tailored experiences. Eirinaki and Vazirgiannis (2003, p. 1) define personalization as “any action that adapts the information or services provided by a web site to the knowledge gained from the users’ navigational behavior and individual interests, in combination with the content and the structure of the site.” In this direction, recent Web technological advances help online companies to acquire individual customer’s information in real time and with low cost. Based on this information, they construct detailed profiles and provide personalized services. Thus, e-shops now have the opportunity to improve their performance by addressing individual user preferences and needs, increasing satisfaction, promoting loyalty, and establishing one-to-one relationships.

*Recommendations systems* or *recommender systems* (RSs) that comprise the most popular forms of personalization are becoming significant business tools. They emerged in the middle of 1990s (Resnick & Varian, 1997) and from novelties used by a few Web sites have changed to important tools incorporated to many e-commerce applications (e.g., Amazon.com, eBay.com, CDNow.com). Specifically, these systems take advantage of users’ and/or communities’ opinions in order to help individuals identify information or products of interest (i.e., relevant to their needs and/or preferences). The recommendations may have various forms, for example, personalized offers, prices, products, or services; inserting or removing paragraphs, sections, or units; sorting, hiding, adding, removing, or highlighting links, explanations, or detailed information, and so forth. (Brusilovsky, 2001).

Early efforts were limited to *check-box personalization*, where portals allowed users to select the links they would like on their “personal”

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