

Chapter VII

Developing a Software Agent for Establishing a Convenient Customer–Driven Group–Buying Mechanism

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ABSTRACT

Group-buying (or volume discount) is a promising field in electronic commerce for applying software agent technologies. In a traditional group-buying mechanism, either a customer or the supplier calls up a sufficient number of buyers for a target item, and then coordinates the actions of all participants during the whole process. Most participants involved in a group-buying project are passive. Studies in this field were therefore focused on developing an effective mechanism so as to enhance the utility of every participant in a fair way. However, the utility of a customer can only be maximized if the customer can buy the item he/she personally needs at a possibly lowest price, not just an item recommended by another customer or the supplier that he/she is supposed to like. In other words, it would be more flexible if every customer can initiate a group-buying project of his/her own for the item he/she personally needs in a convenient way. As a result, there will be multiple group-buying projects for multiple target items at the same time. To this end, a software agent is developed in this study to make every customer

easily reach the web page he/she browses for a target item for group-buying. The data of the item will be automatically extracted and uploaded onto a website which then informs every registered user of the group-buying project of this item. Requests for the same item will be combined, and there are always multiple target items on the website for group-buying at the same time. As a result, cross group-buying becomes possible. An experimental system is constructed in this study to demonstrate the applicability of the software agent. Its advantages and/or disadvantages are also discussed.

INTRODUCTION

The characteristics of e-commerce are different with various trading objects or applications. E-commerce can be classified into business-to-business (B2B), business-to-consumer (B2C), business-to-business-to-customer (B2B2C), consumer-to-consumer (C2C), peer-to-peer (P2P), mobile commerce, intra-organizational, business-to-employee (B2E), collaborative commerce, non-profit-making, digital learning, exchange-to-exchange (E2E), and e-government categories. According to Zwass's opinions (Zwass, 2003), e-commerce comprises five respects including commerce, collaboration, communication, connection, and computation. These respects can be exploited to find innovational opportunities to organize and address marketplaces, to offer innovative products, to collaborate with business partners, to transform business processes, and to organize the delivery of information-system services. If the five innovational opportunities are mapped to these categories, then a matrix showing the innovational opportunities in these

e-commerce categories can be constructed as shown in Table 1. This study is focused on group-buying (or volume discount, aggregate sell/buy, buyer coalition, etc.), which belongs to both "organize and address marketplaces" and C2B EC. The concept of group-buying is that buyers can advantageously negotiate with sellers and purchase items at volume-discount prices by forming a coalition (Yamamoto & Sycara, 2001). Group-buying is also considered as a special type of reverse auction. For group-buying, an electronic market place (usually a server computer) is a more convenient place than a traditional market, because it is very difficult to find a certain group of people with the same demand latter (Yuan & Lin, 2004).

In a traditional group-buying mechanism, either a buyer/customer or the seller/supplier calls up a sufficient number of buyers for a target item, and then coordinates the activities of all participants during the whole process. Most participants involved in a group-buying project are passive. Studies in this field were focused on developing an effective mechanism so as to enhance the utility

Table 1. Innovative opportunities in e-commerce categories

	B2B	B2C	C2C	C2B	Others
Organize and address marketplaces					
Offer innovative products					
Collaborate with business partners					
Transform business processes					
Organize the delivery of information-system services					

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