

Chapter 9

Improving Network–Based Marketing by Personalized Recommendation

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ABSTRACT

Social networks, which are a newfound phenomenon, have gained much attention. These networks, which are based on Web 2.0, provide a free and flexible environment for users and organizations to make diverse contents and, based on it, absorb users. Marketing is one of the main activities done in social networks for incoming purpose. Organizations and companies are trying to attract potential and actual customers by targeted advertising in these networks. Variety and diversity of advertising and marketing methods in social networks has made users confused and uncertain. To solve this problem, in this chapter, the authors propose a group recommender system, which is based on data mining techniques, information theory, and user preferences. This system, despite other existing methods, could yet support users who are not in relation with the others or their activity history is not available. Each group can be fans of a company or one or more products of it. The results show the superiority of this chapter's proposed model rather than the other.

DOI: 10.4018/978-1-4666-4510-3.ch009

INTRODUCTION

With the rise of web 2.0, many virtual environments have been created which in them, users develop and share information and interact with each other. Social network is one of these environments which have gained much attention, nowadays. Social network is a structure made up of individuals or organizations as its nodes which are connected by one or more specific type of interdependency such as friendship, kinship, and financial exchange (Adamic, Buyukkokten & Adar, 2003). An important issue in these networks is incoming methods which are widely populated today. In (Rappa, 2010), Rappa has specified diverse incoming methods in online communities and has defined them. However, it is obvious that social networks are not a place for buying, selling or trading; their nature is to provide a suitable platform for freely multidimensional interaction between users. Therefore, in this free and competitive environment, incoming methods such as marketing, by considering their goals, should maintain their position and influence to gain desirable income, without any disorder in network activities and users interactions.

One of those methods which is widely used today in marketing is recommender system. "Recommender systems are technique and intelligent applications to assist users in a decision making process where they want to choose one item among a potentially overwhelming set of alternative products or services" (Bouseghoub, Do, and Wives, 2009). These systems are a field in the wide range of personalization, too (Yujie, Licai, 2010). Recommender systems make their recommendations based on information about users, meta-data associated with items, and implicit or explicit ratings made by users about items (Woerndl, Scheller, and Wojtech, 2007). From business perspective, recommender systems can be used as an advertising tool for attracting new customer and retaining prior ones (Bouseghoub, Do, and Wives, 2009).

In this research a recommender system is modeled which is for marketing purpose is social networks. Based on incoming models presented by Rappa (Rappa, 2010), this system uses "targeted advertising" model to attract customers. Here, a group contains members who have joined the group due to their common goal or interest; therefore, what is recommended in this system is different from recommendations made by other recommender systems. Unlike specialized recommender systems which offer special products, each of which have special features such as color, size and price, here a group is the same as the features of its members; and we could identify a group by its members' features. We believe that users with the same features and interests join the same groups. To identify the main users of each group, hierarchical clustering of users, determining user interaction degree in group and measuring user similarity with other members in the group (the distance of user to cluster centroid) are required. Once the main users of each group and the main group of each user are identified, we use D-tree to predict user membership in a group. Finally, regarding association rules and evaluation metrics, we recommended a group list of two groups that were related to user features. In our research 31.63% of users had multi-memberships and others only had one membership. On average, users in our social network had memberships in two groups. As a result, we recommended a pair of groups in our recommendation lists; of course lists with more groups could be offered. We also introduced a framework for recommender systems in social networks.

The rest of the paper is as follow: the next section provides a review of related works in this field. Section 3 identifies personalized recommendation framework for network based marketing. Section 4 represents the evaluation method and discussions. Finally, section 5 concludes the paper.

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