Chapter 6

A Neuro–Fuzzy Partner Selection System for Business Social Networks

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ABSTRACT

Enterprises are now facing growing global competition and the continual success in the marketplace depends very much on how efficient and effective companies are able to respond to customer demands. Business social network sites (BSNS) have provided a powerful tool to link up manufacturers, suppliers, distributors, and customers. Among the emerging business social networks, decision support functionality addressing the issue of selecting business partners is an important domain to be studied, and it is the objective of this chapter to propose a practical partner selection decision support system. Essentially, a neural-network data mining system is used to generate information for subsequent fuzzy multi-objective analysis. It demonstrates the benefits of integrating information technology, artificial intelligence, and multi-objective decision making to form a practical aid that capitalizes on the merits of BSNS. A special feature is that the trust among companies can be incorporated as an evaluation criterion.

INTRODUCTION

Globalization and information technology have become key factors in gaining competitiveness for businesses in recent years (Lee & Lai, 2007)

and the continual success in the marketplace depends very much on how efficient and effective companies are able to respond to customer demands. Business social network sites (BSNS) have provided a powerful tool to link up manufacturers, suppliers, distributors and customers to facilitate the rapid exchange of useful information.

The formation of smart organizations is gathering momentum to meet this challenge. The main aim of business social networking is meant to establish dynamic organizations by the synergetic combination of dissimilar companies with different core competencies, thereby forming a consortium to perform a business activity to achieve maximum customer satisfaction. Among the emerging business social networks, the decision support functionality, which addresses issues such as selection of business partners, coordination in the distribution of manufacturing processes and the solution of production problems, is an important domain to be studied and it is the objective of this chapter to propose a viable partner selection decision support system.

Nowadays, many enterprises manufacture and distribute their products or services globally, and quite a number of smart organizations are formed through BSNS and are expected to evolve to a strategically important e-business model. Although business social networks play an important role in linking the core and partner companies, it remains subservient to the human that form the smart organizations. A review of the literature indicates that neither researchers nor practitioners agree on a single model of inter-firm trust that applies to all partner evaluation contexts.

As more and more BSNS are becoming ubiquitous, organizations preparing to make use of such sites need to recognize the implications this transition will have on their business processes and organizations as a whole. Organizations need to: (i) encourage staff to enter into business network collaborations, (ii) manage transition and adapt quickly, and (iii) leverage human resources to optimize performance. In other words, organizations need to get "smart" and one would find without difficulty that most SMEs fall into this category. SMEs comprise over 98% of business establishments in Hong Kong and employ about 60% of the working population in the private sector. The Government of the Hong Kong Special Administrative Region (HKSAR) attaches great

importance to supporting Hong Kong's SMEs. The reasons that small and medium enterprises (SME) are becoming so prevalent in Hong Kong nowadays include low overhead, flexibility, minimum investment, and high productivity. By owning few resources and focusing on the organization's expertise, the company can maintain high levels of productivity while allowing her partners to do the same. Both partners in a smart organization and the individuals who work for the partners are allotted greater flexibility. The partners can focus on core competencies, while individual workers may have the ability to telecommute from their homes. In a smart organization, companies are linked by the free flow of information. There is no hierarchy, no central office, and no vertical integration: just the skills and resources needed to complete the project at hand. Each participating company contributes what it is best at. It can be seen that since no single company will have all the skills necessary to compete in the global market, these arrangements will become the norm. One of the keys to the success of the smart organization is the use of business social network sites to facilitate these alliances.

Trust among partners is critical for smart organizations. Without trust, commitment to the goals of the virtual organization can waver, as members perceive the alliance as weak or disintegrating, fractured by misunderstanding or mistrust. Trust is particularly important in networked organizations that require constant and close attention to shared commitments to safety and reliability, as well as a shared willingness to learn and adapt. It has been suggested that trust permits an organization to focus on its mission, unfettered by doubts about other members' roles, responsibilities, and resources, and that with trust, synergistic efforts in inter-organizational missions are possible. Developing trust in a smart organization is a complex task. It requires fairly constant, small group activities between partners, because it is difficult to trust people you do not know well, whom you have not observed in action over time, and who

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