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Development of a case based intelligent customer–supplier relationship management system

K.L. Choy^{a,*}, W.B. Lee^a, V. Lo^b

^a*Department of Industrial and Systems Engineering, Hong Kong Polytechnic University, Hung Hom, Hong Kong, People's Republic of China*

^b*Asia Operations, Honeywell Consumer Products (Hong Kong) Limited, Hong Kong, People's Republic of China*

Abstract

The integration of customer relationship management (CRM) and supplier relationship management (SRM) to facilitate supply chain management in the areas of supplier selection using a help desk approach has become a promising solution for manufacturers to identify appropriate suppliers and trading partners to form a supply network on which they depend for products, services, and distribution. In this paper, an intelligent customer–supplier relationship management system (ISRMS) using the case based reasoning (CBR) technique to select potential suppliers is discussed. By using ISRMS in Honeywell Consumer Product (Hong Kong) Limited, it is found that the outsource cycle time from the searching of potential suppliers to the allocation of order is greatly reduced. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Customer and supplier relationship management; Supplier selection; Help desk function; Supply network; Case based reasoning

1. Introduction

The intensive global competition among manufacturers to co-ordinate with and respond quickly the industry value chain from suppliers to customers has made customer–supplier relationship management important in the new business era. In such circumstances, decision-making in each business plays a key role in cost reduction, and supplier selection is one of the important functions in the supplier relationship management (SRM) because doing business with appropriate suppliers is beneficial for the organization to provide a sufficient production volume with good quality. Very few manufacturers now own all the activities along the chain but integrate the supply network from various supplier networks and the ability to make fast and accurate decision often constitute a competitive advantage compared with the competitors or other networks. The rapid advance in information technology is now deployed not only to improve existing operational effectiveness of a business, but also to build the new capability to meet today's business environment and complexity. Consequently, top management may feel hard to select the most appropriate suppliers globally.

Customer relationship management (CRM) has become very important in the competitive business environment

since late 1990s and is now a multi-million-dollar industry. In increasingly competitive markets, customer satisfaction and relationship are the vital corporate objectives. As customers come to increasingly demand and expect higher quality service, the profit per unit on the product gradually decreases due to the increasing global competition especially after the explosion of e-procurement on the Internet. With the CRM solutions, which provide fast and efficient transactions to help companies to acquire, serve, and retain the ever-growing numbers of customers, enterprises can empower their customers to interact more directly with the company and deliver personalized products and services that build customer trust and loyalty.

In order to maintain the profit margin while increasing the quality level, it is essential for manufacturers to strengthen their own competitive edges by means of focusing their resources on the core competences. It is an increasing trend for manufacturers to build a close and collaborative relationship with their suppliers through outsourcing. These suppliers, through superior performance, can leverage the manufacturers to a higher level of competitiveness or success. By forming such link, a manufacturer becomes a customer-focused organization through collecting customer order and requirement and then subcontracting the order to appropriate suppliers to achieve total customer satisfaction. Hence, the selection of suppliers becomes a crucial factor for the manufacturer to become a successful out-sourced type company to get customer satisfaction in the business. SRM, a new category of supply

* Corresponding author. Tel.: +852-2766-6597; fax: +852-2362-5267.
E-mail address: mflchoy@inet.polyu.edu.hk (K.L. Choy).

chain applications, contributes to the supplier selection and thus increases the competitive advantage of the manufacturer through three primary mechanisms: (1) support of improved business processes across the supply chain, (2) a next-generation architecture that can handle multi-enterprise processes, and (3) facilitation of rapid product cycles and new product introduction. Together, these mechanisms can drive competitive advantage through substantial reductions in the true cost of parts and materials, increased flexibility to respond to changes in customer demand, and faster cycle times which can enhance customer satisfaction and increase market share.

The integration of customer/supplier relationship management (CRM/SRM) to facilitate supply chain management in the areas of supplier selection using a help desk approach to validate the searching result done by the CBR technology during the retrieval stage of the cycle in a real time base becomes a promising solution for manufacturers to identify appropriate suppliers and trading partners to form a supply network on which they depend for products, components, services, and distribution. The result is the formation of an integrated supply network that allows the most appropriate suppliers of the manufacturers to deliver the competitively priced, high quality products and services to their final customers according to their demand effectively. In this paper, an intelligent customer–supplier relationship management system (ISRMS) using the case-based reasoning (CBR) technique to select potential suppliers from a supplier list, following the comparison with the best practice supplier list inside a built-in case based help desk module to verify the accuracy of the result, is discussed. By using ISRMS, manufacturers can shortlist appropriate suppliers according to the position the supplier is ranked, resulting in the identification of preferred suppliers with references to the suitability of the supplier attributes selected. As a result, the outsourcing cycle time from the searching of potential suppliers to the allocation of orders to the most appropriate supplier can be greatly reduced with high accuracy.

This paper is divided into eight sections. Section 2 is the introduction of CRM and SRM. Section 3 is the literature review in the areas of supplier/partner selection using various techniques. Section 4 is about CBR and its suitability in SRM. Section 5 is the development of ISRMS using a CBR system incorporating major tasks in customer-supplier relationship management to form a distinct intelligent supplier evaluation system with the aid of the help desk approach, which is important for the manufacturers to outsource its incompetence operations to reliable, correlative suppliers and business partners. Section 6 is an application case study using ISRMS as an ISRMS in the purchasing department of Honeywell Consumer Product (Hong Kong) Limited, to aid the conventional human reasoning process of suppliers selection. Section 7 is about the results and benefits of using ISRMS while a conclusion of the application of ISRMS in general is made in Section 8.

2. Customer and supplier relationship management

CRM is a process by which a company maximizes customer information in an effort to increase loyalty and retain customers' business over their lifetimes. The primary goals of CRM are to (a) build long term and profitable relationships with chosen customers, (b) get closer to those customers at every point of contact, and (c) maximize the company's share of the customer's wallet (Shaw, 1999). In fact, CRM is an information industry term for methodologies, software, and usually Internet capabilities that help an enterprise manage customer relationships in an organized way. Simply stated, CRM is about finding, getting, and retaining customers. It is at the core of any customer-focused business strategy and includes the people, processes, and technology questions associated with marketing, sales, and service. In today's hyper-competitive world, organizations looking to implement successful CRM strategies need to focus on a common view of the customer using integrated information systems and contact center implementations that allow the customer to communicate via any desired communication channel. CRM can assist the organization to improve telesales, account, and sales management by optimizing information shared by multiple employees, and streamlining existing processes. CRM allows the formation of individualized relationships with customers, with the aim of improving customer satisfaction and maximizing profits, identifying the most profitable customers and providing them the highest level of service. Moreover, under the Internet age, CRM accesses the new markets in everywhere throughout the world wide web (www) to access the world class capabilities and consequently increase the commoditization by shortening the product life cycle, and eroding margins. CRM enriches the competitiveness by increasing the customer choices while purchasing product, making use of technology to perform the information empowerment, developing new markets and new business models and also increasing the connectivity between all relative parties within a business.

In summary, CRM is focused on leveraging and exploiting the interaction with the customer to maximize customer satisfaction, ensure return business, and ultimately enhance customer profitability.

As the trend toward use of technology to drive competitive advantage has taken root, visionary manufacturers are starting to take advantage of a new competitive opportunity called SRM. Herrmann and Hodgson (2001) defined SRM as a process involved in managing preferred suppliers and finding new ones whilst reducing costs, making procurement predictable and repeatable, pooling buyer experience and extracting the benefits of supplier partnerships. It is focused on maximizing the value of a manufacturer's supply base by providing an integrated and holistic set of management tools focused on the interaction of the manufacturer with its suppliers. In fact there is an interesting and satisfying symmetry between the role of

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