Chapter XIV

Web-Based Supply Chain Integration Model

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ABSTRACT

This chapter discusses various business process supply-chain models and emphasizes the need for organizations to apply CRM concepts and to integrate the Internet within the functions of the supply chain in order to be able to gain good customer expectations in the era of e-commerce. This chapter outlines a framework for developing a Web-based supply chain integrating model based on SCOR and key features of CPFR, and attempts to link this model with Business Process Reengineering, and with traditional productivity improvement programs. The development of a Web site at two levels is suggested. The first level is within the public domain and the other is limited to supply chain partners. The chapter incorporates fuzzy set theory into the dynamic of production scheduling to allow the integrating model to deal with vague constraints, and to enable conflicting multi-criteria objectives to be managed effectively in the production environment.

INTRODUCTION

Traditionally, firms did not consider the potential for their suppliers or customers to become partners. Instead, they may have competed with their suppliers and customers, fearing that they would be taken advantage of by them (Frendendall & Hill, 2001). As a result, firms were constrained by their customers' or suppliers' lack of collaboration and unresponsiveness. These attributes prevented firms from responding quickly to changes in the market or to customers' requirements.

Changing conditions of competition have forced organizations now to adopt a different strategy. Lambert and Copper (2000) point out that one of the most significant paradigm shifts of modern business management has been that individual businesses no longer compete as autonomous entities, but rather as supply chains. Managing the supply chain has become a means of improving competitiveness (Chantra & Kumar, 2000; Lee, 2000). Proactive supply chain managers begin to view the supply chain as a whole, and promote customer-focus, supplier partnership, co-operation and information sharing (Jayaram et al., 2000). Three major developments in global markets and technologies have brought the emerging supply chain management (SCM) to the forefront of management's attention (Handfield & Nichols, 1999):

1. The information revolution;
2. Customer demands in areas of product and service cost, quality, delivery, technology, and cycle time brought about by increased global competition; and
3. The emergence of new forms of interorganizational relationships.

Today, the effectiveness of an organization's response to rapidly changing market conditions will be determined by the capability of trading partners (Power & Sohal, 2001). Members within the supply chain should "seamlessly" work together to serve the end consumer (Towill, 1997). The notion of supply chain management (SCM) is therefore holistic, rather than functional, and of strategic, rather than tactical, importance.

The association of supply chain management with e-business offers new challenges for marketing. In addition, the explosion of the Internet and other telecommunication technology also has made real-time, on-line communication throughout the entire supply chain a reality. The Internet allows companies to interact with customers and collect enormous volumes of data, and manipulate it in many different ways to bring out otherwise unforeseen areas of knowledge (Abbott, 2001). The concept of Customer Relationship Management (CRM) is one of the new ways of interacting with customers (Galbreath & Rogers, 1999). The aim of this chapter is to explain the possibility of developing a Web-based supply chain integration model that enhances CRM and collaboration among supply chain entities by incorporating the advantages of existing supply chain reference models. The chapter defines SCM and introduces CRM and its dimensions. CRM, e-commerce and information sharing are considered as three major constituents of SCM (Figure

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