The e-supply chain portal: a core business model

Sandor Boyson [a,*], Thomas Corsi [a], Alexander Verbraeck [a,b]

[a] *Supply Chain Management Center, R.H. Smith School of Business, University of Maryland, 3570 Van Munching Hall, College Park, MD 20742, USA*

[b] *Faculty of Technology, Policy, and Management, Systems Engineering Group, Delft University of Technology, Jaffalaan 5, Delft 2628 BX, The Netherlands*

Abstract

Information technology can help to overcome the problems that plague many supply chains. Electronic exchange of information leads to reduction of errors and increased efficiency of the work processes. When one company can use the information of other companies in the supply chain, the negative effects of uncertainty can be mitigated in theory. In practice, however, the exchange of information between companies is not as easy as it seems. Many different systems and standards are used, the number of peer-to-peer relations with other companies in the network is usually too large to manage, most systems are not open for easy exchange of information with other systems, and most companies are very reluctant to share information with other companies in the first place.

A portal looks like a good solution to overcome these problems. Standardized interactions with one portal are easier to manage than are many peer-to-peer relations. The portal can take the role of a trusted party. What is needed to accomplish portal effectiveness is a review of the business processes when dealing with other companies. In this paper, we advocate a radical simplification of these business processes, and provide support for the end-to-end character of the supply chain in real time. Specifically, we report on a pilot project for the US Department of Defense to create a portal for supply chain integration. The project showed the feasibility of real-time support for end-to-end supply chain management in a complex organization.
© 2003 Published by Elsevier Science Ltd.

Keywords: e-Supply chain; Portal; Core business

* Corresponding author. Tel.: +1-301-405-2197.

E-mail addresses: sboyson@rhsmith.umd.edu (S. Boyson), tcorsi@rhsmith.umd.edu (T. Corsi), a.verbraeck@tbm.tudelft.nl (A. Verbraeck).

1. Introduction

Information technology can help to overcome the uncertainties of the modern business environment. Electronic exchange of information leads to a reduction of errors and increased efficiency of the work processes. When one company can use the information of other companies in the supply chain, the negative effects of uncertainty (i.e., higher inventory levels, inaccurate forecasts, and unfulfilled orders) can, in theory, be mitigated.

In practice, however, the exchange of information between companies is not as easy as it seems. Many different systems and standards are used, the number of peer-to-peer relationships with other companies in the network is usually too large to manage, and most systems are not open for easy exchange of information with other systems. Furthermore, most companies are very reluctant to share information with other companies in the first place.

A portal represents a solution to overcome these problems. Standardized interactions with one portal are easier to manage than are many peer-to-peer relationships. The portal provides an organization with a single, unified database, linked across all functional systems, both within the organization and between the organization and its major supply chain partners. In this paper, the authors advocate use of the portal interface to radically simplify business processes. Furthermore, the authors demonstrate the portal's capabilities to support the management of an end-to-end supply chain in real time.

The US Department of Defense (DOD) is an organization that does business with many partners at many locations worldwide for a multitude of parts, products, and services. In a pilot project for the Office of the Secretary of Defense (OSD), the authors were part of team that designed and tested a portal for supply chain integration. The project showed the feasibility of real-time support for end-to-end supply chain management in a complex organization. This paper reports on that pilot portal as well as a generalization of the learning experiences from it to industry in general.

2. Information technology: enabling the e-supply chain

The most important reasons for the increasing attention and practice of supply chain management are the possibilities that technology enhancements have generated. A key barrier to full supply chain management has been the cost of communication with, and coordination among, the many independent suppliers in each supply chain (Fredenhall and Hill, 2001). EDI, teleconferencing, and voice mail systems reduce the cycle time in communication. Also, new technology for the physical handling of products has become available. Bar-coding and material handling technologies are being used for more efficient distribution centers and inventory management. Information technology makes it possible to process more information, more accurately, more frequently, from more sources, even from all over the globe. And information technology makes it possible to digest, to understand, and to act on this growing abundance of information by using sophisticated analysis, modeling, and decision support capabilities.

The key to enhanced supply chain operations is not solely efficient information transfer, but timely information availability. In fact, the use of information systems to ensure visibility (transparency) of item demand, location, and status to all parts of the logistics network was