

E-Business and Supply Chains: breaking down the boundaries in 21st century.

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Abstract

E-business is concerned with the use of the Internet to link companies with their suppliers, customers and other trading partners. The adoption of e-business can result in benefits of supply chain information sharing, such as order forecasts and inventory planning, automates requisition and purchase order creation and integrate payment processes, and help organizations develop plans for the more effective management of sourcing and logistics. In order to find a better competitive advantage and survive in the market with daily increasing changes, all organizations need a dynamic supply chain management. The emergence of business on the Internet brings a new set of challenges to coordinating supply chain activities. The aim of this research is to present a detailed consideration about research literature and e-business process as well to describe supply chain and all its necessities and requirements in today's competitive world. It also explains how possible it is to find competitive advantage by the use of electronic supply chain as a basic and fundamental factor in fixed and maintenance of next step and make better situation than other competitors in market and industry. The purpose of this paper is to build a grounded theory of the impact of e-commerce on supply chain. The main objective of this article is to find (a) Why will e-business have an impact on the supply chains of companies? (b) How is e-business affecting supply chains in 21st century? (c) What is the future impact of e-commerce that we should be preparing for? This paper is origin and empirical study that would be a contribution to business practitioners and academia. Findings showed e-business has the capacity to have an impact on the physical, information and financial flows of supply chains

Keywords: E- business, Supply-chain, Supply-chain & 21st century.

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Introduction

The increasing complexity in supply chain networks, the globalization of businesses, the rapid increase in product variety, and the shortening of the product life cycles are forcing companies to draft new supply chains strategies. While the management of information flows have always been a key aspect of supply chain management, the rapid growth of web-based information transfer between companies, their suppliers,

and their customers has decidedly increased the importance of information management in creating effective supply chains. E-business has emerged as the most cost effective model for driving supply chains integration and deriving the maximum benefits from it. E-Business as the marriage between the Internet and supply chain integration. E-business is an activity by which organisations use information and communication technologies/tools in support of all activities of business. In the other words it means doing business with the help of internet.

Supply chain integration has four key dimensions: information, synchronization, workflow coordination, and new business models. Information integration refers to the sharing of information among supply chain members. This means shared demand information, inventory status, capacity plans, production schedules, promotion plans, demand forecasts, and shipment schedules. Ideally, such information is readily accessible by the appropriate parties on a real-time, online basis. Synchronization refers to the joint design and execution of plans for forecasting and replenishment. Hence, members in a supply chain can coordinate their order fulfilment so that all replenishments are made to meet the same objective the ultimate customer demands. Workflow coordination is the highly streamlined workflow activities among supply chain partners. For example, procurement activities from a manufacturer to a supplier can be tightly coupled to achieve efficiencies in accuracy, time, and cost. Product development activities involving multiple companies also can be integrated to achieve similar efficiencies. New business models refer to new ways of doing business in a supply chain. A supply chain network may jointly create new products, pursue mass customization, and penetrate new markets and customer segments.

LITERATURE REVIEW

“A supply chain can be defined as three or more organizations directly linked by one or more of the flows of products, services, finances, and information from a source to a customer”. Supply chain management includes the methods, systems, and leadership that continuously improve an organization’s integrated processes for product and service design, purchasing, inventory management, planning and scheduling, logistics, distribution, and customer satisfaction.¹ The objectives of e-business in supply chain management are to provide information availability and visibility, enable single point-of contact of data, allow decisions based on total supply chain information, and enable collaboration with supply chain partners. Additionally, e-business tools can be used for decision support in supply chain management. Then the analytical power of computers is used to provide assistance to managerial decisions related to, for example, co-operation with supply chain partners and inventory management.²

¹ Mentzer J.T. (2001c), Managing supply chain: managerial and research implications, in Mentzer J.T. (Ed.)

² Simchi-Levi, D., Kaminsky, P. & Simchi-Levi, E. (2003), Designing and Managing the Supply Chain: Concepts,

Efficiency of information transfer, information availability and transparency of relevant business information are only a few of the benefits provided by e-business solutions to support supply chain integration. The increasing importance and role of e-business in supporting company operations is widely acknowledged both by practitioners.³

OBJECTIVE OF STUDY

- a) Why will e-business have an impact on the supply chains of companies?
- b) How E-business is changing supply chains in 21st century?
- c) What is the future impact of e-commerce that we should be preparing for?

IMPACT OF E-BUSINESS ON SUPPLY CHAIN

To measure the impact of e-business on supply chain we will break the supply chain in to three distinct components: the business channel, the transportation/distribution channel, and the payments channel. All three channels have been transformed and have become more tightly interconnected by e-business technologies (supply chain integration) that bring more accurate information to decision-makers in real time.

The business channel of supply chain operations concerns what type of goods or services a business should focus on producing and at what levels. This involves knowing your customer and satisfying their needs and desires. Information needed to make these decisions comes from the market as it sends out its many signals. Producing this information entails consumer and market research, and is often very data intensive to most accurately understand changing preferences, tastes, styles, etc.

The transportation/distribution channel of supply chain operations addresses what is the best way to move products to customers, or “How goods or services should be moved and stored?” This involves understanding the entire supply chain, from the raw materials to the end consumer, and then taking advantage of the most efficient and effective logistics and inventory systems. Again, information at all points along the supply chain can be integrated using new e-business technologies, enabling better decisions regarding necessary inventory levels and efficient movement of products.

The payments channel of supply chains deals with the best way to move money in exchange for delivered goods and services or “How (and when) should suppliers be paid?” Knowing and understanding the supply chain operations of all the firms involved is crucial to making the payments system flow smoothly and accurately. ERP systems that communicate and share information in real time can lead to competitive advantages.

All three of these channels have been transformed by new e-business technologies. The effective implementation of new information technologies allows firms to quickly collect and analyze important information throughout the supply chain, including

³ Cagliano et al. (2003), E-business strategy, how companies are shaping their supply chain through the Internet.

monitoring demand in real-time. In short, information flows within and between businesses can be reorganized through e-business technologies, resulting in better and more timely decisions across all channels of the supply chain.⁴

E-BUSINESS AND SUPPLY CHAINS IN 21ST CENTURY

In this paper, we explore how e-Business is changing supply chains. Following the framework of *Lee and Whang (2002c)*, we divide the various forms of e-Business applications into three categories – e-Commerce, e-Procurement, and e-Collaboration. E-Commerce helps a network of supply chain partners to identify and respond quickly to changing customer demand captured over the Internet. E-Procurement allows companies to use the Internet for procuring direct or indirect materials, as well as handling value-added services like transportation, warehousing, customs clearing, payment, quality validation, and documentation. E-Collaboration facilitates coordination of various decisions and activities beyond transactions among the supply chain partners, both suppliers and customers, over the Internet. For example, coordination of engineering changes in the bill-of-materials for a product that is manufactured by an outsourced partner.

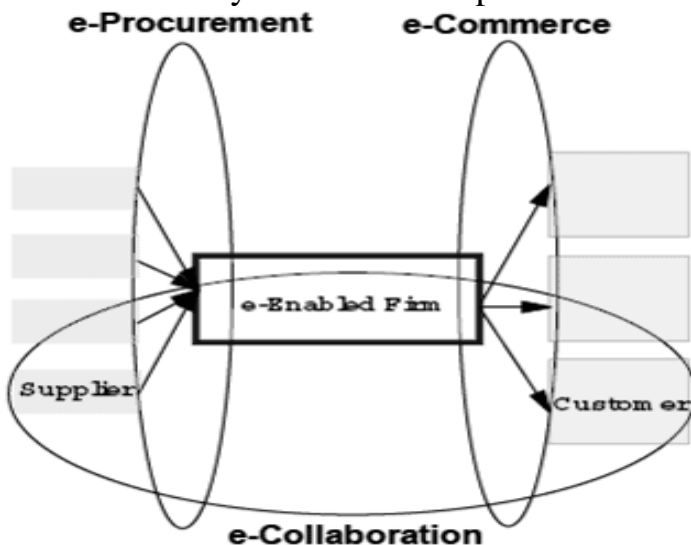


Figure 1. e-business forms and their impact on the supply chain.

E-Commerce

E-commerce can be defined as the conduct of business communication and transactions over networks and through computers or as the buying and selling of goods and services, and the transfer of funds, through digital communications. It can

⁴ Lee, Hau L., and S. Whang (2001), "E-Business and Supply Chain Integration,"



include all inter-company and intra-company functions (such as marketing, finance, manufacturing, selling and negotiation) that enable commerce. E-commerce uses communications such as electronic mail, file transfer, facsimile, video conferencing, workflow, or interaction with a remote computer. E-commerce has the capacity to have an impact on the physical, information and financial flows of supply chains. At a simplistic level, supply chains are typically made up of three major flows – physical, financial and information. E-commerce has the capacity to affect all three.

Physical flows can be affected by using information to avoid physical movements and to make product information available through virtual ways. In essence, e-commerce can give companies access to more markets and customers without the physical need to move the levels of product and inventory that were required in the past.

Information flows can be affected by the capacity of e-commerce solutions to provide ‘24 x 7 x 365’ access to information and to eliminate traditional paper-based approaches to working and company interactions. E-commerce is also particularly well suited to providing information such as product tracking and tracing.

Financial flows can be affected by the capacity for e-commerce solutions to offer faster payment and settlement solutions at all stages of the supply chain.

E-Procurement

E-procurement which is one of the major instruments of e-commerce is still very new to many businesses around the world. As technology costs continue to fall and electronic connections between companies increase, more firms are adopting digital technologies and eliminating paper transactions and human contact. Automatic order placement, billing, and payment can all be performed by a computer without requiring human intervention and/or a trail of paperwork. And such electronic transactions can now be accomplished faster and cheaper, thereby enhancing the efficiency of the supply chain. Improved information management and better information engineering help lower transactions costs, whether in procurement, production, logistics, or inventory. And the end result is that consumers benefit from lower prices, higher quality products and services, and an improved variety and selection of goods.

E-Collaboration

While e-Commerce and e-Procurement have captured most of the business press headlines over the past years, the promise of e-Collaboration may be far greater. We define e-Collaboration as business-to-business interactions facilitated by the Internet. These interactions go beyond simple buy/sell transactions and may be better described as relationships. These include such activities as information sharing and integration, decision sharing, process sharing, and resource sharing.

FUTURE IMPACT OF E-COMMERCE ON SUPPLY CHAIN



E-commerce will not change what needs to happen in the supply chain, but how it is done. The impact of e-commerce on the supply chain will be felt in how work is done, including how areas of the supply chain interact, and in how supply chains operate between company and geographic boundaries. E-commerce will have an impact on all major areas of supply chain work in companies from design, through buying to fulfilment and service support. It can also be used to show where e-commerce will have its greatest impact:

Direct & Indirect procurement: E-Commerce will have a direct impact on both indirect and direct procurement of goods and services. E-procurement will have its greatest effect on change management and compliance. The combination of e-commerce procurement solutions with existing ERP systems has the capacity to provide large efficiency savings. E-Commerce has the capacity to make buyers smarter and cost saving opportunities more visible.

Product and service design: E-Commerce has the capacity to improve the quality of product design, reduce design time-scales and fundamentally improve the interaction between designers, engineers, suppliers and manufacturing. Collaborative product commerce (CPC) is a term that is often used to describe the potential of e-commerce in this area. We can expect these capabilities to be rolled out across many other industries as e-commerce solutions become more widely accepted.

Manufacturing: E-Commerce solutions will also have an impact on manufacturing as companies are required to be more flexible and responsive in what they make and in the levels of mass customization that manufacturing systems can deliver. E-Commerce can, in some ways, be seen as a mechanism for customers to become more demanding of their suppliers.

Demand and supply planning: Organisations find it difficult to cope with planning when it involves more than a few variables. This is an area where computers, statistics and e-commerce will always be more capable – if they are used in the right way. Demand and supply planning systems are increasingly using e-commerce alongside their traditional software applications to improve the effectiveness of planning solutions.

E-fulfilment: E-Commerce has the capacity through information, such as tracking and tracing, to revolutionize the way that goods and services are delivered. It has the capacity to virtualize inventory and to change fundamentally the relationship between end customers, retailers, wholesalers and manufacturers.

E-working: E-working is an area that will have a more immediate impact on the supply chain. Most companies have already given thousands of their workers access to intranets and the Internet. They have given them e-working tools such as employee portals, knowledge management systems and computer-based training. Through e-mail they have revolutionized the way in which people work across boundaries of time and space. E-working capabilities are already having a significant impact on the

working of supply chains and on the ability of employees to manage complex events and issues in the supply chain.

Conclusion

To survive in the present global competitive environment, organizations need to show an increased awareness to customers' needs. Hence, there is an increased focus on a customer-centric business models and integration of supply chains to enable collaboration between the supply chain partners. While improved supply chain management principles combined with new information (e-business) technologies may not have been given much macroeconomic attention in the past, its effective implementation can help firms reduce costs, increase revenues, boost efficiencies, and expand market opportunities. We find evidence that these improvements have resulted in a reduced bullwhip effect (production volatility that more closely resembles sales volatility), lower inventory levels, reduced logistical costs, and streamlined procurement processes. In short, the future of e-business in the industries is coming into focus.