CHAPTER 1 SUPPLY CHAIN MANAGEMENT: AN OVERVIEW

LEARNING OBJECTIVES

The major objectives of this chapter are:

- Understand the major external change drivers in the global economy and explain their impacts on global supply chains.
- Understand the development of supply chain management in leading organizations and its contribution to financial viability.
- Appreciate the significance and role of supply chain management among private, public and nonprofit organizations.
- Understand the contributions of a supply chain approach to organizational efficiency and effectiveness for competing successfully in the global marketplace.
- Explain the benefits that can be achieved from implementing supply chain best practices.
- Understand the major challenges and issues facing organizations currently and in the future.

CHAPTER OVERVIEW

Introduction

The last decade of the twentieth century was a period of rapid change for organizations, especially businesses. That rate of change has not slowed down and is actually increasing in the twenty-first century. The forces of change require organizations to be much more nimble and responsive; that is, organizations need to be able to transform themselves to survive in the intensely competitive global environment.

Use the Case study as a means to discuss the changed environment in a more concrete manner.

Discuss the current retail environment and use the examples of K-Mart and Walmart, and the ability of Walmart to dominate the retail landscape in part due to their highly developed logistics capability. An online literature search should find several current articles that you can use to provide more information.

What Forces Are Driving the Rate of Change?

The rate of change has accelerated, both in U.S. domestic business and globally. A key to understanding how to respond to this change is to gain a perspective on the forces of change.

Globalization: Many believe that globalization has replaced the "cold war" of the post-World War II era as the driving force for world economics. Beginning in the 1970s, U.S. firms began procuring more globally. Firms started asking:

- Where in the world should they source?
- Where in the world should they manufacture
- Where in the world should they market their products?
- From where in the world should they warehouse and distribute?
- What global transportation strategies should they utilize?

Some important issues or challenges for supply chains of the global economy are: (1) more volatility of supply and demand, (2) shorter product life cycles, and (3) the blurring of traditional organizational boundaries. All three deserve some discussion.

Supply and demand have become more volatile for a number of reasons. Acts of terrorism, for example, can have serious implications for the flow of commerce. Companies have put in place security measures to protect their global supply chains. Visit the webpages for the Department of Homeland security and Transportation Security Administration to see how their activities can impact the Supply Chain

Natural catastrophes such as hurricanes, floods, earthquakes, etc., have become more problematic because of the scope and extent of global trade; therefore, they pose a significant potential problem.

Longer-run issues of supply and demand also arise with the global competition of sources of supply and markets. The global supply chains of the best companies must be adaptive and resilient to meet the challenges of the global marketplace.

Shorter product life cycles are a manifestation of the ability of products and services to be duplicated quickly. Technology companies are particularly vulnerable to the threat of their new products being reengineered, with life cycles as short as 18 months.

To maintain their profitability, companies may have to outsource some parts of their operation to another domestic or global company that can provide what they need more efficiently and hopefully maintain the same quality.

Outsourcing has been going on for some time. From a supply chain and logistics perspective, the growth in outsourcing increases the importance of effective and efficient global chains which are more complex and challenging.

Discuss the concept of "Core Business," or concentrating on what the company does best and outsourcing the rest. A brief discussion of 3PLs may be appropriate here as well.

Before discussing technology, mention should be made of the "BRIC factor" in our analysis of globalization and supply chains. BRIC is an acronym for the four countries of Brazil, Russia, India, and China. Many of our consumer goods are imported from these countries, introducing additional complexities in the supply chain.

Technology: It is also a major force in changing the dynamics of the marketplace. Individuals and organizations are "connected" 24/7 and have access to information on the same basis via the Internet.

The speed and availability of information over the Internet has caused consumers to be much more aware of delivery cycles and to have a greater desire for instant gratification.

Developing countries such as China and India can participate in the global economy much more readily because of the Internet. The world is no longer tilted toward the developed countries such as the United States and European countries in terms of an economic advantage.

Have the students discuss any recent purchases made via the Internet and share their views on how this affects logistics.

Organizational Consolidation: After World War II, manufacturing became the leading driver of supply chains. As markets became more fragmented and competitive, these manufacturing firms sought advantage through logistics excellence. Retail giants such as Walmart, Sears, Kmart, Home Depot, Target, Kroger, McDonald's, and other Big Box Store chains have became powerful market leaders in driving logistics change.

The importance of the consolidation and power shift is that the large retailers are accorded special consideration from consumer product companies. The value added services that these retailer demand allows them to operate more efficiently and often more effectively. The scale of the retailers can also provide possible economies (read cost savings) to the producers of the products but may also add complexity.

Vendor managed inventory is a powerful collaborative tool and has multiple benefits to supply chain collaborators. Lower retailer costs are achieved through lower inbound logistics costs and better stocking levels. The manufacturer gains from increased sales through improved fill rates.

The Empowered Consumer: The impact of the consumer is much more direct for supply chains because the consumer has placed increased demands at the retail level for an expanded variety of products and services. The supply chains have to be performing very efficiently to enable the retailer and other organizations in the supply chain to make a profit.

Today's consumers are more enlightened, educated, and empowered than ever before by the information they have at their disposal from the Internet and other sources.

The demographics of our society with the increase in two-career families and single-parent households have made time a critical factor for many households so demand quicker response times and more convenient offerings according to their schedules.

The reason is that the supply chain/logistics requirements have dramatically increased. With the resulting tendency to order more frequently in smaller quantities places greater demands on the supply chains that serve them.

Government Policy and Regulation: The fifth external change factor is the various levels of government which impact businesses and their supply chains. The deregulation of the 1980s and 1990s included transportation, communications, and financial institutions.

Now that domestic transportation is deregulated, it has become possible for transportation services to be purchased and sold in a much more competitive environment. New carriers entered the marketplace while other sectors of transportation underwent consolidation through mergers and acquisition. Many service providers are offering logistics services companies and offer an array of related services that can include order fulfillment, inventory management, warehousing, etc.

The financial sector was also deregulated at the federal level and this has fostered changes in how businesses can operate. Many companies more cognizant of the value of asset liquidity and asset reduction, especially inventory.

The communications industry was also made more competitive and like the other two industries discussed earlier, the communications industry has undergone much change and more is coming with the integration of related services such as cable, telephone, computers, and wireless access.

Communications efficiency and effectiveness have led to dramatic improvements and opportunities in logistics and supply chains which had led to lower cost and better customer service. New technology such as radio-frequency identification (RFID) and other technology offer great potential for improvement.

The Supply Chain Concept

Development of the Concept:

The concept started in the 1960s with the development of the idea of physical distribution which focused on the outbound side of a firm's logistics system. The focus of physical distribution was on total systems cost and analyzing tradeoff scenarios to arrive at the best or lowest system cost.

The initial focus on physical distribution or outbound logistics was logical since finished goods were usually higher in value, which meant that their inventory, warehousing, materials-handling, and packaging costs were relatively higher than their raw materials inputs.

During the 1980s, the logistics or integrated logistics management emerged. In its simplest form, it added inbound logistics to the outbound logistics of physical distribution. This increased coordination between the outbound and inbound logistics systems provided opportunities for increased efficiency and, perhaps, improved customer service.

International or global sourcing of materials and supplies for inbound systems was growing, which presented some special challenges for production scheduling.

The systems or total cost concept was also a rationale for logistics management. This includes a tool called value chain analysis developed for competitive analysis and strategy purposes.

Supply chain management is the efficient and effective flow of products/materials, services, information, and financials from the supplier's suppliers through the various intermediate entities out to the end user.

Before discussing and analyzing the supply chain concept in more detail, please note that the definition of supply chain management proposed in this book is broad and comprehensive; therefore, demand and value are very relevant as well as synchronization of flows through the pipeline or supply chain.

Supply chain management attracts significant attention among CEOs, CFOs, COOs, CIOs, and other senior executives, and the business case for supply chain management demonstrated by two well-known studies in the text provide ample reasons.

The potential savings of $30 billion demonstrated in the grocery study showed the power of optimizing the supply chain as opposed to just one individual company or one segment of the supply chain.

A study of "best-in-class" companies showed they spent 7.0 cents of every sales/revenue dollar for supply chain-related costs, while the median company spent 13.1 cents of every sales dollar on supply chain-related costs. For a hypothetical company with $100 million in sales in 1997, being best in class would mean an additional $5.3 million of gross profit to an organization, which frequently would be the equivalent profit from an additional $80–100 million of sales.

Integration across the boundaries of several organizations in essence means that the supply chain needs to function similarly to one organization in satisfying the ultimate customer.

Services and products have traditionally been an important focus as customers expect their orders to be delivered in a timely, reliable, and damage-free manner. Transportation is critical to this outcome. Note that product flow is a two-way flow in today's environment because of the reverse logistics systems for returning products to the supplier for a variety of reasons.

The information flow has become an extremely important factor for success in supply chain management, noting the two way flow. In a sense, the supply chain is being compressed or shortened through timely information flows back from the marketplace, which leads to a type of supply chain compression or inventory compression. Sharing sales information leads to less demand distortion which is known as the bullwhip effect.

The third flow is financials or, more specifically, cash, and a major impact of supply chain compression and faster order cycle times has been faster cash flow. The faster cash-to-cash cycle or order-to-cash cycle has been a bonanza for companies because of the impact on working capital.

The fourth flow is demand flow. Integrated information systems enable demand signals to be identified early and responded to with appropriate production or delivery quantities.

Supply chain management provides organizations with an opportunity to reduce cost (improve efficiency) and improve customer service (effectiveness). However, certain issues or challenges must be addressed before SCM will be successful.

Major Supply Chain Issues

Supply Chain Networks: The network facilities must be capable and flexible to respond and change with the dynamics of the marketplace whether in the short run or the long run.

Technology companies, for example, may have to move manufacturing operations to a different country in six to nine months because of changes that can occur that affect their cost and/or customer service. At times, the flexibility may be required for a shorter duration—for example, a port strike, floods, hurricanes, etc.

Walmart and Home Depot received accolades for their ability to respond in 2005 to Hurricane Katrina and the flood disasters that occurred in New Orleans and the surrounding Gulf Coast area.

Complexity: Globalization and consolidation in supply chains increase complexity for organizations in terms of SKUs, customer/supplier locations, transportation requirements, trade regulations, taxes, etc. Companies need to take steps to simplify, as much as possible, the various aspects of their supply chains such as rationalizing SKUs, physical locations, and customer service.

Inventory Deployment: SCM provides an opportunity to reduce inventory levels with coordination or integration, which can help reduce inventory levels on horizontal (one firm) and/or vertical (multiple firms) levels in the supply chain.

Information: Today’s technology and communication lead to the collection and storage of vast amounts of data unless data is shared horizontally and vertically in the supply chain and used to make better decisions. Information can be a powerful tool if it is timely, accurate, managed, and shared.

Cost/Value: A challenge for supply chains is the prevention of suboptimization. Global supply chains compete against other global supply chains which accentuates the importance of cost and value at the very end of the chain.

Organizational Relationships: Supply chain management emphasizes a horizontal process orientation that cuts across traditional functional silos within organizations and necessitates collaboration with external vendors, customers, transportation companies, 3PLs, and others in the supply chain. Communication is critical to explain the opportunities for system tradeoffs that will make the supply chain more competitive.

Performance Measurement: Most organizations have measures of performance or metrics in place to analyze and evaluate their efficiency and progress over different time periods. In some instances, metrics are set that appear logical for the subunit of the organization but are suboptimal for the overall organization or supply chain.

Technology: Technology can be viewed as a change driver, but it is also important as a facilitator of change that will lead to improved efficiency and effectiveness. The approach necessary is to analyze and adjust or change processes, educate the people involved, and then select and implement the technology to facilitate the changes in the processes.

Transportation Management: Transportation can be viewed as the glue that unites the supply chain model. The critical outcomes of the supply chain are to deliver the right product, at the right time, in the right quantity and quality, at the right cost, and to the right destination. Economic changes among transportation providers such as shortages of drivers, higher fuel costs, and changes in driver hours of service regulations have led to what some individuals have called a transportation crisis or the “perfect storm,” a much greater challenge for users.

Supply Chain Security: Safe reliable delivery of products and services is expected. Disruptions such as 9/11 or natural disasters such as the tsunami in Japan have heightened awareness for the need to be prepared in the event of disaster.

SUMMARY

• Cash flow has become one of the most important measures of financial viability in today’s global markets. Supply chains are an important determinant of improved cash flow since they impact order cycle time to customers.

• Supply chains are an important determinant of capital consumption since they impact working capital, inventory levels, and other assets such as warehouses.

• Efficient and effective supply chains can free up valuable resources and improve customer fulfillment systems so as to increase return on investment or assets and improve shareholder value.

• The accelerated rate of change in our economy has accelerated the necessity of continuing changes in organizations or even transformation to remain competitive.

• The rate of change has been driven by a set of external forces including but not limited to globalization, technology, organizational consolidation and shifts in power in supply chains, an empowered consumer, and government policy and regulations.

• The conceptual basis of the supply chain is not new. In fact, organizations have evolved from physical distribution management to logistics management to supply chain management.

• Supply chains are boundary spanning and require managing three flows—products, information, financials (cash), and demand.

• Supply chain management is a journey, not a goal, and there are no “silver bullets” since all supply chains are unique.

• Information is power, and collaborative relationships internally and externally are a necessary ingredient for success.

• The performance of supply chains must be measured in terms of overall corporate goals for success.

• Supply chains need to focus on the customers at the end of the supply chain and be flexible and responsive.

• Technology is important to facilitate change, but it must follow a process and educate people to address problems and issues appropriately.

• Transportation management and security have become increasingly important in the twenty-first century because of changes that have occurred.

• Change with the changes, or you will be changed by the change!

ANSWERS TO STUDY QUESTIONS

1. Globalization and technology developments have led to what some individuals have described as a "flat world." What is the significance of the flat world concept? What is the impact of the flat world on supply chains?

Answer: In his best selling book, *The World Is Flat*, Thomas Friedman, a staff writer for *The New York Times*, discusses 10 major forces that have helped to "flatten" the world from an economic perspective. One of the 10 forces is what he describes as supply chaining, a method of collaborating among businesses to manage the flow of goods, information, and cash to deliver "value" for the consumer. This type of collaboration has stretched vertically and horizontally on a global basis to become a cornerstone of competitive strategy for successful organizations in today's global marketplace. (Page 1)

2. The consolidation that has developed at the retail end of many supply chains has been described as the Walmart effect. Why? What is the significance of retail consolidation for supply chains?

Answer: In the 1990s, Walmart became the leading retailer with a multi-faceted strategy based on discount pricing for brand name products, location in smaller communities, and more customer service. A key element in Walmart's ability to discount brand name products was an understanding of the criticality of efficiency in its logistics and supply chain system from purchasing through delivery to its stores and a continual focus on improving its supply chain processes. (Page 6)

3. Consumers are considered to have much more influence in the marketplace today. What factors have led to this "empowered consumer" situation? How has this factor changed supply chains in the last 10 to 15 years? Will this influence continue?

Answer: The impact of the consumer is much more direct for supply chains because the consumer has placed increased demands at the retail level for an expanded variety of products and services. Responses to consumer demand has led to many different variations of the same basic product, stores being open 24/7, etc., are all extras provided with very low margins on products. The supply chains have to be performing very efficiently to enable the retailer and other organizations in the supply chain to make a profit.

Today's consumers are more enlightened, educated, and empowered than ever before by the information that they have at their disposal from the Internet and other sources. Their access to supply sources has expanded dramatically beyond their immediate locale by virtue of catalogs, the Internet, and other media. They have the opportunity to compare prices, quality, and service. Consequently, they demand competitive prices, high quality, tailored/customized products, convenience, flexibility, and responsiveness. They tend to have a low tolerance level for poor quality in products and/or services. Consumers also have increased buying power due to higher income levels. They demand the best quality at the best price and with the best service. These demands place increased challenges and pressure on the various supply chains for consumer products. (Page 11-12)

4. The influence and impact of federal, state, and local governments seem to be growing in importance for supply chains. Why? What are the most important dimensions of governmental control for supply chains?

Answer: Influence of various levels of government (federal, state, and local) that establish and administer policies, regulations, taxes, etc., which impact individual businesses and their supply chains has become significant. The deregulation of several important sectors of our economy including transportation, communications, and financial institutions--all of which are cornerstones of the infrastructure for most organizations--has had real impact.

New carriers entered the marketplace while other service providers have declared themselves to be logistics services companies, offering an array of related services that can include order fulfillment, inventory management, warehousing, etc.

The deregulation of financial institutions has fostered changes in how businesses can operate. For example, the opportunity to invest cash at the end of the day in the global overnight money market in periods of 6–10 hours made many companies more cognizant of the value of asset liquidity and asset reduction, especially inventory.

The communications industry was also made more competitive, and businesses and the general consumer population are all being impacted by the many changes in this industry from cell phones to e-mail, text messaging, and the Internet. (Pages 12-15)

5. Why should CEOs, COOs, CFOs, and CMOs be concerned about supply chain management in their organizations?

Answer: Supply chain management attracts significant attention among CEOs, CFOs, COOs, CIOs, and other senior executives, and the business case for supply chain management demonstrated by two well-known studies in the text provide ample reasons.

The potential savings of $30 billion demonstrated in the grocery study showed the power of optimizing the supply chain as opposed to just one individual company or one segment of the supply chain.

A study of “best-in-class” companies showed they spent 7.0 cents of every sales/revenue dollar for supply chain-related costs, while the median company spent 13.1 cents of every sales dollar on supply chain-related costs. For a hypothetical company with $100 million in sales in 1997, being best in class would mean an additional $5.3 million of gross profit to an organization, which frequently would be the equivalent profit from an additional $80–100 million of sales. (Pages 18-19)

6. Supply chain managers should be concerned about three flows in their organizations. What are these three flows, and why are they important? How are they related to each other?

Answer: The three flows--products and services, information and financials--are very important to the success of supply chain management. Integration across the boundaries of several organizations in essence means that the supply chain needs to function similarly to one organization in satisfying the ultimate customer.

Services and products have traditionally been an important focus as customers expect their orders to be delivered in a timely, reliable, and damage-free manner; and transportation is critical to this outcome. The information flow has become an extremely important factor for success in supply chain management, noting the two way flow. The third flow is financials or, more specifically, cash, and a major impact of supply chain compression and faster order cycle times has been faster cash flow. (Page 20)

7. During the 1980s and 1990s, managing the transportation function in supply chains was recognized as being important but not critical. Has this perspective changed, and if so, how and why?

Answer: Transportation can be viewed as the glue that unites the supply chain model. The critical outcomes of the supply chain are to deliver the right product, at the right time, in the right quantity and quality, at the right cost, and to the right destination. Economic changes among transportation providers, such as shortages of drivers, higher fuel costs, and changes in driver hours of service regulations, have led to what some individuals have called a transportation crisis or the “perfect storm,” a much greater challenge for users. (Page 27)

8. Collaboration is a critical ingredient for successful supply chains. Why? What types of collaboration are important? What are some of the challenges and issues that need to be addressed?

Supply chain management emphasizes a horizontal process orientation which cuts across traditional functional silos within organizations and necessitates collaboration with external vendors, customers, transportation companies, 3 PLs, and others in the supply chain. In other words, internal collaboration or cooperation with marketing, sales, operations/manufacturing, and accounting/finance are very important as well as collaboration or cooperation with external organizations. Communication is critical to explain the opportunities for system tradeoffs that will make the supply chain more competitive. (Page 27)

Some of the challenges are optimizing between various entities and insuring the least cost solution is achieved even if some of those entities have a higher cost.

9. Why is information so important in supply chains? What are the challenges to the successful development and implementation of effective information?

The technology and communication systems that are available to organizations today lead to the collection and storage of vast amounts of data, but interestingly enough, organizations may not be taking advantage of the abundant data to develop information systems to improve decision making. The accumulation and storage of data unless they are shared horizontally and vertically in the supply chain and used to make better decisions about inventory, customer service, transportation, etc., are almost useless. Information can be a powerful tool if it is timely, accurate, managed, and shared. It can be a substitute for inventory because it can reduce uncertainty. The latter is one of the major causes of higher inventory levels because it leads to the accumulation of safety stock. The challenge, frequently, is the sharing of information along the supply chain and the discipline to ensure the integrity of the data collected—a big challenge but one with much potential. (Page 24-25)

10. What special role do networks play in supply chains? What are some of the challenges for efficient and effective networks? How can companies address these challenges and issues?

Networks allow collaboration between participants which helps achieve optimization. A challenge for supply chains is the prevention of suboptimization. In today's environment, global supply chains compete against global supply chains, which mean that the cost and value at the very end of the supply chain are what is important. If a competing supply chain is offering a comparable product at a lower cost and higher value, it does not matter if a company is effective and efficient but in the middle of another supply chain. Companies may need to reconfigure their assets; leasing facilities rather than owning them so that relocation is made easier. Companies should seek to build flexibility into their production and transportation infrastructures that will allow them to respond to system shocks (Page 24-25).

CHAPTER CASE 1.1: Central Transport, Inc. p.31

Case Notes:

1. Why and how has the competitive market place for SAB changed in the last five to seven years?

   -Large retailers, such as Wal-Mart are putting pressure on distribution companies like SAB since they can buy directly from manufacturers, cutting down on costs
   -Major external changes include globalization, technology, organizational consolidation, the empowered consumer, and government policy and regulation

2. What advantages might Central experience in the proposed new venture?

   -SAB's desire to increase its transportation base and customer services means that Central will likely receive additional business

3. What issues would SAB and Central face in the proposed new approach?

   SAB: Adding services could add costs that make them unappealing to profit-squeezed customers
   Central: "Growing pains" due to challenges from driver shortages, higher fuel costs, and changes in driver hours regulations