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**SANDERS, SUPPLY CHAIN MANAGEMENT**

**CHAPTER 1:**

**INTRODUCTION TO SUPPLY CHAIN ECONOMICS**

***Learning Objectives:***

1. Define “supply chain management” and the activities involved.

2. Identify the flows through a supply chain and explain the bullwhip effect.

3. Describe the rise of supply chain management and its global implications.

4. Describe the characteristics of a competitive supply chain.

5. Identify and explain key trends that drive today’s Supply Chains.

**Introduction**

* Today’s business environment has forced companies to compete in different ways than just a few years ago. Companies must now be rapid innovators as well as continue to compete on the traditional dimensions of time, quality, cost, and customization.
* The onset of the digital age (internet, mobile apps, etc.), threats to security, and the down economy has forced companies to become more responsive than they may have been in years prior.
* Successful companies understand that they cannot achieve a necessary level of competitive success in today’s global economy without supply chain management.

**What is Supply Chain Management?**

* **Supply Chain Management**  (SCM) is the design and management of flows of products, information, and funds throughout the supply chain. It involves the coordination and management of all the activities of a supply chain. SCM may appear to be simple, but it is a complex business concept that is far-reaching. **Supply Chain** is the network of all entities involved in producing and delivering a finished product to its final customer. This includes sourcing raw materials and parts, manufacturing, producing and assembling the products, storing goods in warehouses, order entry and tracking, distribution, and delivery to the final customer.
* A typical supply chain may involve many different trading partners, called stages, which include:
  + Suppliers
  + Producers
  + Wholesalers/Distributors
  + Retailers
  + Customers
* Every supply chain is different and may not necessarily include each of these components
* A supply chain is often called a **value chain** or a **value network.** A company’s supply chain is the means in which it competes with others. “Upstream” part of the supply chain: the part of the supply chain that comprise the inbound direction towards the company, or “focal firm.” The stages of the supply chain moving away from the focal firm are termed “downstream.” The term “supply chain” implies a linear chain of participants from suppliers to final customers. A supply chain network can take many different shapes, depending on the number of suppliers, their locations, and the type of products being produced.
* **SCM Activities**
  + SCM involves the coordination and management of all the activities of a supply chain; SCM activities include the following
    - Collaboration: SCM requires collaboration between supply chain members so they can jointly plan, operate, and execute business decisions as one entity.
    - Information Sharing: SCM requires sharing relevant information among members of the supply chain
      * includes sharing demand and sales forecasts, points-of-sale data, inventory levels, and promotional campaigns planned
    - Coordination: SCM involves coordinating the movements of goods and services through the supply chain, from suppliers to manufacturers to distributors to final customers
      * also involves the movement of goods back up the supply chain as products may be returned
      * also involves the movement of funds through the supply chain as products are bought and sold. This includes various financial arrangements and terms of purchase between buyers and suppliers
      * **Managing Flows Through the Supply Chain**
* There are many flows that move through a supply chain network.
* Products are the first through the supply chain, from the beginning, through production, and ending with the customer
* It is possible for goods to be flowed back in to the supply chain, in a process known as reverse logistics
* Information is the second important flow through the supply chain
* primary information is demand or sales data
* The flow of funds is of paramount importance
  + Products flow in both directions, and therefore so does the transfer of funds
  + The key to successful SCM is the management of the flow of funds through the supply chain
* **The Bullwhip Effect**
* The fluctuation and distortion of information increases as it moves up the supply chain
  + As a result, each stage of the chain carries progressively more inventory to compensate for the lack of information
* **Customer Focus**
* The main purpose for a supply chain is to respond to the demands of customers and to generate profits for companies that participate in the chain
* SCM is a dynamic process that involves the continuous flow of information, products and funds between different entities of the supply chain
* **The Service Supply Chain**
* Tend to be shorter than manufacturing supply chains; service supply chains differ from manufacturing in the role of the customer and the direction of flow of the delivery process
* Service supply chains do not have the buffers of inventory as in manufacturing

**The Boundary Spanning Nature of SCM**

* Intra-organizational coordination: spans and integrates functions and processes within the enterprise
* Cross-enterprise coordination: spans and integrates functions and processes between enterprises of the supply chain
* A supply chain needs to operate as an extended enterprise
* **Intraorganizational Integration**
  + Marketing: the function responsible for linking the organization to its customers and identifying what customers want in products and services
  + Operations: ensures that the products customers want are produced efficiently and in a cost-effective manner
  + Sourcing: function responsible for linking the organization to its suppliers and ensuring an adequate amount of materials
  + Logistics: responsible for moving and positioning inventory throughout the supply chain
* **Cross-Enterprise Integration**
* the ultimate goal of the supply chain is to operate as a single entity
  + - relationship management is key to achieving this goal
* supply chains need to reach a level of integration that involves collaboration among partners in developing strategic plans and joint setting of long term goals
* **SCM Versus Logistics**
* SCM focuses on the collaboration between the different actors involved to reach the desired level of competitiveness while logistics is composed of the tasks involved in moving and positioning inventory throughout the supply chain
  + - logistics is a function that supports SCM

**The Rise of SCM**

* Interest in SCM grew as companies realized it was necessary as the economy became more globalized in the 1980s and 1990s

**Characteristics of a Competitive Supply Chain**

* Responsiveness
  + a supply chain needs to have agility, or the ability to quickly respond to customer demands
* Reliability
  + improved visibility throughout the supply chain is key, as uncertainty leads to higher costs than necessary
  + a lack of coordination may lead to the bullwhip effect
* Relationship Management
  + It is important for a competitive supply chain to focus on relationship building and collaboration
  + Collaborative relationships leads to a competitive advantage

**Trends in SCM**

* **Globalization**
  + the concept of the global marketplace has changed how and where business is conducted, which has led to the opening of new markets and sources of supply for most companies
  + much of this has been possible due to the rise of information technology, which has helped breach far distances
  + the distance factor in a global marketplace does lead to some difficulties for the actors in SCM
* **Outsourcing**
  + Outsourcing: hiring a third party to perform a set of tasks for a fee
  + outsourcing is happening on a much grander scale than ever before
  + increased competition has forced companies to create a superior value for their customers by managing their core competencies better than competitors
  + the convergence of technologies has led to the possibility of outsourcing nearly any job imaginable
* **Information Technology**
  + advancements in information technology have had a large impact on SCM
  + Enterprise Resource Planning (ERP) are large software programs used for planning and coordinating all resources throughout the entire enterprise
  + allow collaborative decision making in and outside the office
  + Wireless Communication Technologies, like cellular phones, significantly improve business operations as wireless technologies rapidly transmit information from one source to another
  + Global Positioning System (GPS) is another beneficial technology
  + Radio Frequency Identification (RFID) is useful as it can identify product movement
  + technology has changed how buyers and sellers interact in the marketplace, both business to business (B2B) and business to consumer (B2C)
* **Big Data Analytics**
  + This area has had one of the biggest impacts on supply chain management
  + **Big data** refers to large datasets of enormous size
  + Businesses capture data from several sources. This data includes point-of-sale (POS), radio-frequency identification (RFID), or global positioning systems (GPS) data
  + **Analytics** is applying math and statistics to these large datasets.
  + Few areas of business have been transformed by big data analytics as much as supply chain management
  + The connectivity of physical objects with electronic devices is called the **Internet of Things (IoT)**
  + Achieving high responsiveness requires a data-driven, end-to-end, supply chain system
* **3-D Printing, Additive Manufacturing, and Robotics**
  + Research has identified three emerging and transformative manufacturing technologies: three-dimensional (3-D) printing, intelligent assembly robots, and open-source hardware.
  + 3-D printing, or additive manufacturing, is changing the way manufacturing is being conducted. These printers work by depositing thick layers of materials one on top of the other. The layering of the materials gradually builds up until the object is produced.
  + A new generation of intelligent assembly robots have greater capabilities than in the past, but at a cheaper cost. These new robots cost a fraction of the price of the older systems and can be installed in a day.
  + Open-source hardware allows electronic and computer hardware designs to be made available for use at no charge.
  + These new manufacturing technologies can now be run through software.
* **Postponement**
  + when the completion of the final product is postponed to the last possible minute until local demands are known with certainty, this is known as postponement
  + an important strategy for companies to reach diverse geographic areas while still providing customization
* **The Lean Supply Chain**
  + refers to the elimination of waste; has helped many companies become more competitive
  + can be defined as the set of all organizations directly linked by upstream and downstream flows of products, services, finances, and information that collaboratively work to reduce waste and costs
* **Managing Supply Chain Disruptions**
  + SCM and global sourcing have lowered purchase prices and expanded market access, but with that supply chain risked has also increased
  + these disruptions can be extremely costly
  + backup suppliers, enforcing excess capacity into the system, screening and monitoring suppliers the development of disruption plans and anticipating the costs of disruptions are all ways of lessening the effects of such disruptions
* **Supply Chain Security**
  + maintaining product integrity throughout transport is key; this especially rings true for products that are exceptionally valuable
  + there are many means used to protect a product, including the use of electronic seals to using RFID and GPS to track products in transit
* **Sustainability and the “Green” Supply Chain**
  + sources of supply and the movement of goods are large factors in ensuring sustainability
  + “green” measures are not only important for complying with environmental regulations and consumer demand, but are also good business practices
* **Innovation**
  + innovation is key as competition rises; the entire supply chain must be designed to support such innovation
  + innovative products usually operate on shorter supply chains and require greater protection
* **The Financial Supply Chain** 
  + companies are always searching for the least costly source of supply
  + masked hidden costs and higher inventory costs are common
  + “Cash-to-cash” cycle: the time it takes to convert an order into cash
  + as cost-cutting opportunities increase, managing finances and identifying risks will become even more important

**Careers in SCM**

* SCM has become essential for corporate managers and executives
* SCM enables professionals to see every aspect of their product
* Potential employers range from traditional manufacturers to consulting firms to transportation service providers

**Discussion Questions**

1. Identify the primary ways in which SCM has improved the order fulfillment process. What other benefits has SCM provided to businesses?

*SCM has provided a network system for which manufacturers and suppliers to operate; benefits include improved organization, communication and effectiveness at reaching consumers*

2. Explain the relationship between SCM and logistics. Identify the differences and similarities. Is one a part of the other? How does one support the other?

*Logistics is the function that supports SCM; SCM focuses on the collaboration between the different actors involved to reach the desired level of competitiveness while logistics is composed of the tasks involved in moving and positioning inventory throughout the supply chain*

3. Identify two competing enterprises and their supply chains (e.g., Dell Computer versus Apple; K-Mart versus Wal-Mart; Toyota versus GM; UPS versus FedEx). Identify the elements of each chain from source of supply to final customer, and explain how the two chains are meeting (or not meeting) business objectives. Which supply chain appears longer? Does the structure of one appear simpler than the other?

*Each student’s answer is dependent on the company chosen and how the chapter material is applied.*

4. Identify the primary flows in a supply chain. Explain why there is flow in both directions and provide examples of each.

*Products are the first through the supply chain, beginning with production and ending with the customer. It is possible for goods to be flowed back into the supply chain, in a process known as reverse logistics. Since products flow in both directions, so do the funds-the management of funds is of paramount importance.*

5. Identify key activities of SCM. Identify other drivers not mentioned in the text.

*Key activities of SCM include collaboration, information sharing, and coordination. Other drivers include maintaining a nations infrastructure, such as roads and harbors.*

6. Identify at least three trends that impact SCM. Identify other trends not discussed in

the text.

*Trends that impact SCM include globalization, outsourcing, technology, postponement, the lean SCM, managing supply chain disruptions, supply chain security, sustainability and the “green” supply chain, innovation, and the financial supply chain. Other trends include socio-economic and demographic changes, national investment in infrastructure, etc.*

**Web Exercise**

Go to Amazon.com and familiarize yourself with this site. Many of us have used this site or one similar. How does Amazon illustrate the concepts discussed in Chapter 1?

It is apparent that the company continues to reinvent itself, from a book seller to major retail platform now a competitor to Netflix!

In what ways can Amazon continue to use SCM to keep their competitive edge? what ‘Trends in SCM’ should Amazon be attentive to and why? Be creative!

**Discuss Now!** (Application to Current Events)

“The old joke is that Best Buy is Amazon's showroom," said Scot Ciccarelli, a senior retail analyst with RBC Capital Markets. Many consumers still prefer to "touch and feel" a product while making up their minds, he said, but go online to actually make a purchase.

Read the recent article [Best Buy to downsize](http://www.latimes.com/business/la-fi-best-buy-bigbox-20110622,0,7818324.story).

How has Amazon used the principles outlined in Chapter 1 to dominate its’ markets and create a competitive advantage using the principles of Supply Chain Management? What ‘best practices’ can Best Buy utilize to more effectively compete?

**Case Study Questions:**

1. What potential options does Clayton have to procure the needed volume of fabrics in order

to meet the deadline?

*Clayton can research other suppliers and producers for all or part of the needed fabric. He will need to balance time to deliver, overall costs, quality, and quantity. Postponement is not an option.*

1. What are the trade-offs for each of these potential options?

*If Clayton chooses a different vendor all together for the fabric, he loses his current vendor and relationship. If he is able to attain another vendor to supplement the current one, he has more of a win-win for all of them.*

*If postponement was an option, he could manage the time and amount to be delivered.*

*New vendors may offer better or competitive pricing on fabric to win the job.*

*The short timeframe overall presents a risk of quality; Clayton will need to address this.*

1. What should Clayton do?

*Clayton should investigate another one or two vendors for fabric especially since his company could grow from this contract.*

1. What lessons can be learned from Clayton’s situation?

*Don’t put all your eggs in one basket; He should always have a few vendors to choose from just for these purposes.*