

BOYER/VERMA, *OPERATIONS AND
SUPPLY CHAIN MANAGEMENT FOR THE
21ST CENTURY*, 1E

INSTRUCTOR RESOURCE MANUAL

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CHAPTER ONE: OPERATIONS AND SUPPLY CHAIN STRATEGY

LEARNING OBJECTIVES

1. Discuss the importance of operations/supply chain management.
2. Describe the history and development of three exemplary organizations to be used as examples throughout this book.
3. Explain how single organizations can follow different competitive strategies to be successful.
4. Illustrate the differences and similarities between manufacturing and service activities.
5. Characterize supply chain strategy within a single organization and across multiple organizations.

TALKING POINTS FOR THE OPENING VIGNETTES

The opening vignettes feature three organizations—the Kellogg’s Company, Sony, and American Express, each of which is “world class.” In this chapter, the vignettes describe the three organizations, their histories, their product lines, their general operations strategies, and their supply chain structure.

The main points to emphasize are as follows:

- Operations and supply chain management are important for all business—for example, service firms and manufacturers, high tech and low tech, etc.
- Operations and supply chain management imperatives and challenges vary from company to company. There is no “one best way.”
- Because each company is different, the areas of operations and supply chain (forecasting, logistics, facilities, etc.) that are mission critical differ somewhat across the three organizations.

Kellogg’s: Kellogg’s has an extensive product line and serves international markets with a large network of plants. Important operations decisions include the product mix at each plant, the network of suppliers, inventory policies (plant, DC, retailer), and forecasting.

Sony: Sony makes and sells a huge variety of electronic goods all around the world. Note that much of the manufacturing occurs in Japan because it is Sony’s historical home. Much also occurs in China, first, due to cost and, second, because its proximity to Japan eases coordination. Only 22 percent of production takes place in the Americas and Europe, even though these are large markets. Manufacturing cost is higher in these regions; however, it is worth doing some manufacturing here because of the increased responsiveness of having supply near a major source of demand. Sony’s dispersed production and customer base create numerous logistical challenges. Third-party logistics is one way Sony manages these challenges.

American Express: American Express is a financial services company. As a services company, its supply chain is not as complex as those of the other two companies in the vignettes. Important decisions American Express must make include locating retail branches, locating other

operations, such as call centers, and choosing suppliers, such as manufacturers of credit cards and providers of IT and billing services.

LECTURE OUTLINE

I. Operations Strategy Within a Single Organization

There is no “best strategy.” Strategies can be thought of as *competitive priorities*.

These are cost, quality, time/delivery, and flexibility.

- A. Competitive priorities versus capabilities. Competitive priorities are the relative rankings of what the company would like to achieve. Capabilities are the relative effectiveness that the company is able to actually achieve.

Teaching Tip

It is useful to discuss whether companies “start with” a competitive priority they wish to emphasize, perhaps because there is a niche in the market that is not being filled, such as a high level of product flexibility in the PC arena (Dell, Gateway), or whether they start with an existing set of competitive priorities and then find products and markets that are a good fit for the priorities. In reality, it works both ways. For example, early on, Starbucks’ management saw the opportunity for high-quality, premium-priced coffee purveyed in an experience-centric setting (i.e., quality as a competitive priority). Much of their success comes from assembling the competitive capabilities necessary to deliver this (i.e., facilities, workforce, quality systems, production technology). On the other hand, once Starbucks had these elements in place, it was well positioned to pursue other opportunities for which the same capabilities are well suited (i.e., frozen drinks, music).

- i. Cost
 - Low-cost operations—those that seek to provide a product or service that is less expensive than similar products or services offered by competitors
- ii. Quality
 - 1. Consistent quality—meeting the product specifications and the promises made to customers with high reliability
 - 2. Superior quality—a term describing a product or service that clearly is better than another in one or more aspects

Best Practices in Operations Management

Rolex: No Copying the Original

Superior quality is Rolex’s competitive priority. Rolex makes the following operational decisions in order to ensure a superior-quality final product: certification and monitoring of dealers; testing for durability and quality during product development; a serial number and matching database to allow traceability; selection of suppliers that use superior materials and production methods; manufacturing watches by hand with highly trained craftsmen, rather than on a high-volume production line.

- iii. Time/delivery
 - 1. On-time delivery—delivering a product when promised, but not necessarily quickly

2. Delivery speed—when a corporation offers to deliver a product or service faster than a competitor
3. Product development speed—the time between generations or major changes to a product

Teaching Tip

Product development speed is not as easy for students to understand as many of the other priorities. Competing video game consoles, such as Xbox and Nintendo, are a good example with which most students are familiar.

iv. Flexibility

1. Customization—the ability to make a product to exactly fit customer needs
2. Postponement—keeping products in a standard format and then adding unique components for the individual customer at the last possible moment
3. Mass customization—the process in which products are produced in high volume at roughly the same cost as standard products, but are customized to individual customer tastes
4. Variety—the ability to handle a wide range or assortment of products without undue costs
5. Volume flexibility—the ability to adjust production volume either up or down to meet fluctuations in demand

Best Practices in Operations Management**Apple: Maintaining a Steady Supply of Innovation**

Apple's success with handheld electronics (iPod, iPhone) owes much to its ability to develop the initial product quickly and then develop a steady stream of new versions of the product. In other words, new product development speed is a key competitive priority for Apple. Note that because Apple's strategy includes creating buzz around new product launches, a missed launch date or other launch-related problems can be (and have been) disastrous.

- B. Operations' role within business strategy. Operations represent one of many functional areas that must be integrated and coordinated into the overall business.
 - i. The entire company is generally guided by a *business strategy*. The business strategy defines the markets, products, and target customers and sets both short- and long-term objectives for the company.
 - ii. A *mission statement* often accompanies a business strategy. A mission statement defines why a company exists, outlines its core values, and seeks to position the company within the larger market. Mission statements tend to sound very nice and positive, but they do not offer much prescriptive guidance.
 - iii. Functional strategies specify the core goals of areas such as operations, marketing, finance, IT, and R & D.

1. Functional strategies must align with the business strategy and be aligned with one another. For example, Kmart's low cost *marketing strategy* did not work because its operations were not configured for low costs.
 2. Marketing considerations such as product variety and sales channels (number of stores, Internet presence, etc.) have implications for operations. For example, selling pens of ten colors rather than three (for a company that manufactures pens) means more inventory, complexity, and manufacturing changeovers.
 3. The need for all functions to be "on the same page" sometimes creates tension between functions. This usually requires balancing the priorities of multiple functions.
 4. Back to the pen example, finance may become involved if there is an option to buy a new machine that can change between ten colors of ink quickly and easily. Finance can evaluate whether the investment is worthwhile.
- C. Operational decision areas:
- i. Operational decision areas are the tactical tools that allow an organization to achieve its priorities.
 - ii. Two categories:
 1. Structural decisions—long-term, high-capital-investment decisions that occur less frequently but have a lasting impact on the organization
 - a. Capacity
 - b. Technology
 - c. Facilities
 - d. Vertical integration/sourcing
 2. Infrastructural decisions—decisions that are shorter-term, more frequent, less capital-intensive, and easier to change or modify
 - a. Workforce
 - b. Production planning and scheduling
 - c. Quality systems
 - d. Organization

Teaching Tip

Use the boxed insert earlier in the chapter to "map" Rolex's number one competitive priority and "operations characteristics" onto the structure and infrastructure framework.

Competitive priority: Quality

Dealer certification and monitoring: Organization

Limited number of retail outlets/dealers: Facilities

Extensive testing: Quality systems

Individualized serial number: Quality systems

Use of superior suppliers: Vertical integration/sourcing

Manufacturing by hand: Technology, workforce

II. Services

A. Differences between services and manufacturing:

- i. The manufacturing process consists of transformations of the input materials in one or more of the following ways:
 1. Physical properties
 2. Shape
 3. Fixed dimension
 4. Surface finish
 5. Joining parts and materials
- ii. If a process does not lead to one of the five changes listed here, it is considered to be a service process
 1. Service bundle—All the value-added physical and intangible items that an organization provides to the customer.
- iii. Services are intangible. They differ from manufacturing in the following ways:
 1. Customers are often involved in production (coproduction). This is especially true in *high-contact services*, but not in *low-contact services*.
 2. Production and consumption occur simultaneously.

Teaching Tip

One implication of coproduction and simultaneity of production and consumption is that the presence/behavior of other customers in the service system affects the service experience of any given customer. Ask students for examples of this (e.g., the student who talks too much in class, other campers in a campground) and for ideas on how the service business can control or mitigate these effects.

- iv. Other operational considerations:
 1. Services are labor intensive
 2. Many manufactured goods are bundled with services (e.g., new car)

B. Similarities between services and manufacturing

- i. Most service firms deal with inventories, and most manufacturing firms bundle their goods with services; so most firms must be good at both.
- ii. It is better to look at an individual process than at the organization level.

III. Supply Chain Strategy

A. The global nature of supply chains

B. Supply chain within a single organization

- i. Sourcing/purchasing—the processes associated with identifying material and service needs, locating and selecting suppliers, negotiating contract and payment terms, and tracking to assess supplier performance.
- ii. Logistics—the function that plans, implements, and manages the efficient and effective flow and storage of goods and services from the point of origin to the point of end consumption.

- C. Supply chain across multiple organizations
- i. Supply chain—a network of organizations that work together to convert and move goods from the raw materials stage to the end customer. These organizations are linked together through physical, information, and monetary flows.
 - ii. There are a number of challenges in managing a supply chain across numerous organizations. These include conflicting objectives, mismatched communication systems, differences in organizational and national culture, competitive pressures, lack of trust, and government regulations.
 - iii. Despite these challenges, companies have seen a huge return on investments in broadening their focus to the entire supply chain.

Technology in Operations Management

Supply Chain Challenges in Tracing Food

Food supply chains are complex, but safety is paramount. Therefore, traceability in the food supply chain is an issue of increasing importance. Techniques that help Maple Leaf Foods and other food producers include supplier audits and radio frequency identification (RFID). Instructors may want to review Roth et al.'s article in *Journal of Supply Chain Management* (2008, Issue 1) on this topic. The authors discuss a nutrition bar and point out, using a nice graphic, that there are over 100 ingredients coming from a vast number of countries. Students might mention local supply as a solution because it is becoming very popular among food retailers and manufacturers (and indeed it is often an excellent solution), but many ingredients (such as those that are highly processed or technically advanced) may not be available locally.

IV. Organization of the Book

- A. The book is divided into three parts:

Part 1: Strategic Operations Management

Chapter 1: **Operations and Supply Chain Strategy**

Chapter 2: Quality Management

Chapter 3: New Product Development

Part 2: Tools and Tactical Issues

Chapter 4: Process Design and Analysis

Chapter 5: Forecasting

Chapter 6: Independent Demand Inventory

Chapter 7: Dependent Demand Inventory

Chapter 8: Project Management

Chapter 9: Optimization and Simulation Modeling

Chapter 10: Capacity Planning

Chapter 11: Quality Improvement Methods

Part 3: Extended Enterprise

Chapter 12: Lean Enterprise

Chapter 13: Technology and Integrated Supply Management

Chapter 14: Global Supply Chain and Services Integrations

ADDITIONAL EXERCISE***The Internet and Competitive Priority***

Technology is an important part of structure (as in Structure and Infrastructure). The Internet constantly makes new technology-related applications available to companies. These tools can be used to serve customers or deal with suppliers. However, these tools are not silver bullets. Payoffs from investments in these applications often come from matching Internet-enabled tools with a firm's competitive priorities. Explain one or more ways the Internet could be used to achieve each competitive priority.

Sample responses:

Cost	E-mail specials to customers; Internet-only specials; Option to list products in order of low-to-high price; Supplier reverse auction
Flexibility	Allowing customers to configure products online
Speed	Providing customers with e-mail updates of their order status ("your order is now in production," " your order shipped today"); e-mailing customers a Fed Ex or UPS tracking number so they can track their package once it has shipped; sharing customer demand and forecast information with suppliers
Quality	Allowing customers to compare the features of several products on a single screen; allowing customers to write and read reviews; collecting and reporting customer satisfaction information; using a third-party service quality rating service such as BizRate.com

Note that many companies' technology investments fail not because the technologies themselves are faulty but because the technologies do not complement the competitive priorities that are important to the company.