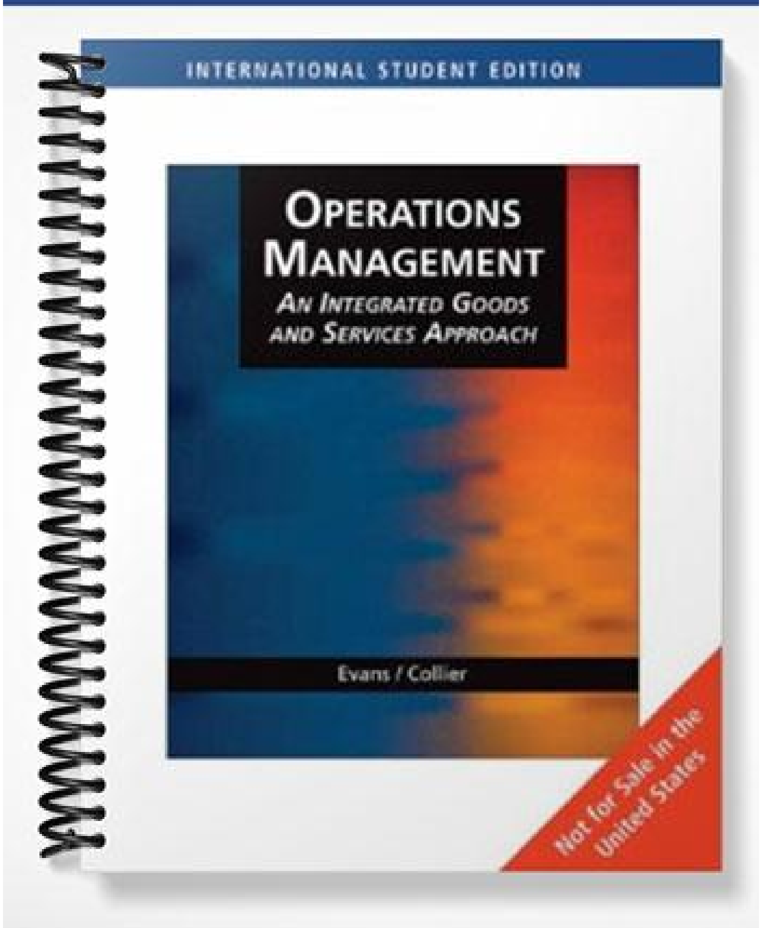
SOLUTIONS MANUAL



Instructor's/Solutions Manual
Chapter 2: Value Chains in Global Operations

Chapter 2 Outline

Learning Objectives

1. To define value and three ways to increase it, to describe a value chain using input-output or pre- and post-service paradigms, and to distinguish between a value chain and supply chain.
2. To describe the role of operations, vertical integration, and outsourcing in designing and managing value chains, and to apply break-even analysis to simple outsourcing decisions.
3. To describe the nature of a multinational enterprise and value chains in a global environment, to explain the advantages and disadvantages of offshoring decisions, to identify difficulties associated with managing global value chains, and to recognize the role of local culture in managing nondomestic operations.

Opening Episodes

It is almost impossible to think about a value chain today without putting it in a global context. All three opening episodes are based on real situations and highlight contemporary issues facing businesses in today's business environment, namely, the global nature of value chains, outsourcing, and off-shoring. The economic and political issues are complex and controversial. The discussion questions are designed to help students to critically evaluate these issues. If time permits, students might be asked to find some recent articles in the business press that address these issues. One good source for the pros and cons of offshoring is provided in the article "Outsourcing Innovation," *Business Week*, March 21, 2005, pp. 84-94. The article states that "CEOs are rethinking their R&D operations, wondering where mission-critical research ends and commodity work begins." (p. 87). This also might be a good place for instructors to discuss how these issues tie together with operations strategy that will be studied later in Chapter 4.

Questions for Review and Discussion

(1) Explain how technology can improve value chain effectiveness. Provide some examples.

Technology enables processes and value chains to lower the cost of goods and services, speed delivery, and provide customization where required. Examples include rental car transponders to speed checkout and check-in, computer driven machines to produce manufactured parts, geographic and wireless information systems to locate vehicles and inventory, and electronic patient medical records. Students should propose additional examples than those cited in the chapter.

(2) Explain the notion of *value*, and what organizations can do to provide value to customers.

***Value** is the perception of the benefits associated with a good, service, or bundle of goods and services (i.e., the customer benefit package) in relation to what buyers are willing to pay for them.* A simple way of expressing value is: Perceived benefits/ Price (cost) to the customer. If the value ratio is high, the good or service is perceived favorably by customers, and the organization providing it is more likely to be successful. To increase value, an organization must

(a) increase perceived benefits while holding price or cost constant,
(b) increase perceived benefits while reducing price or cost, or
(c) decrease price or cost while holding perceived benefits constant.

(3) Explain the six categories of foreign factories and how they impact operations management. Under what circumstances would you develop a lead factory in a foreign country? Explain.

The six categories are offshore factories, outpost factories, server factories, source factories, contributor factories, and lead factories. **Offshore factories** established to gain access to low wages and other ways to reduce costs such as avoiding trade tariffs. **Outpost factories** established primarily to gain access to local employee skills and knowledge. **Server factories** established to supply specific national or regional markets. **Source factories**, like offshore factories, established to gain access to low cost production but also have the expertise to design and produce a component part for the company's global value chain. **Contributor factories** established to serve a local market and conduct activities like product design and customization. **Lead factories** established to innovate and create new processes, products, and technologies.

Growing global markets with unique customer wants and needs may require a company to establish a lead factory in the country. China, India, and Russia are countries where more and more lead factories are being established.

(4) Explain why it is important for operations managers to understand the culture and practices of the countries in which a firm does business. What are some of the political consequences if they don't?

Culture defines the unique lifestyle for a nation or region. Since businesses locate their factories, call centers, warehouses, and offices around the world, operations managers need to be sensitive and understand the local culture. Notions of authority, time, color, value, respect, humor, work ethic, manners, and social status may be quite different from one's own norms. See Exhibit 2.14 for cultural differences that impact business operations.

(5) How does the operational structure of a value chain influence the operations management decisions that need to be made in managing the value chain?

The operational structure of a value chain is the configuration of resources such as suppliers, factories, warehouses, distributors, technical support centers, engineering design and sales offices, and communication links. Different management skills are required for different operational structures as illustrated by the contrast between Wal-Mart and General Electric in the text.

(6) One study that focused on the impact of China trade on the U.S. textile industry noted that 19 U.S. textile factories were closed and 26,000 jobs lost in 2004 and 2005. If these factories had not closed, it would have cost U.S. consumers $6 billion more in higher textile prices. Assuming these facts are true, offer an argument for or against off-shoring U.S. jobs.

This is a difficult issue with economic, social, and political consequences. How does one trade off the loss of jobs with national economics? This could be the subject of a classic debate, and students will most likely have strong opinions in either direction.

(7) Provide an example where you have compared a good or service by its value and compared perceived benefits and price. How did your assessment of value led to a purchase (or non-purchase) decision?

Students should easily be able to provide examples from their personal experience, such as computers, automobiles, pizza delivery, and mp3 players. This question helps them to internalize the notion of value and better understand how organizations should understand the "voice of the customer."

(8) Summarize the key issues that managers face with global value chains in comparison with simple, domestic value chains.

- Global supply chains face higher levels of risk and uncertainty, requiring more inventory and day-to-day monitoring to prevent product shortages.
- Transportation is more complex in global value chains.
- The transportation infrastructure may vary considerably in foreign countries.
- Global purchasing can be a difficult process to manage when sources of supply, regional economies, and even governments change.
- International purchasing can lead to disputes and legal challenges relating to such things as price fixing and quality defects.
- Privatizing companies and property is another form of major changes in global trade and regulatory issues.

(9) Think of some bundle of goods and services that you have recently purchased. Provide two examples of pre- and/or post-production services that created value.

Exhibit 2.3 provides a variety of examples. Students should be able to identify specifics for some good or service they have purchased.

(10) What are the advantages and disadvantages of Rocky Shoe & Boot Company moving all production and assembly off U.S. shores? What should be the policy for federal and state governments for Rocky Shoe & Boot Company employees who were laid off? What type of resource support should government provide, or should government not interfere—whatever the consequences?

Advantages: Survival, remaining competitive, meeting lower global prices for shoes
Disadvantages: USA job lost and shift, transfer of goods-producing knowledge
Displaced US manufacturing employees need help in learning new jobs skills and student may argue for government funded or corporate funded training programs. Others may argue that in a free market system government should not interfere.

(11) What do you think of the idea of using small U.S. towns to locate call centers instead of locating offshore? What are the advantages and disadvantages of these two options?

As described in the chapter, Dell opened a call center in Bangalore, India to lower costs yet closed it and relocated to smaller towns in Texas, Idaho, and Tennessee. Small town employees have few alternative job opportunities and low turnover, work hard, learn the technical issues to help demanding customers, and protect the intellectual property of the company. Even though labor costs are higher Dell justifies this small USA town location policy on non economic criteria.

(12) What is a multinational enterprise? What challenges does it present to operations managers?

A ***multinational enterprise*** *is an organization that sources, markets, and produces its goods and services in several countries to minimize costs, and to maximize profit, customer satisfaction, and social welfare.* Some issues that operations managers must confront in a global business environment include (1) How to design a value chain to meet the slower growth of industrialized countries and more rapid growth of emerging economies? (2) Where to locate manufacturing and distribution facilities around the globe to capitalize on value chain efficiencies and improve customer value? (3) What performance metrics to use in making critical value chain decisions? (4) Should partnerships be developed with competitors to share engineering, manufacturing, or distribution technology and knowledge?

(13) What is a supply chain? How does it differ from a value chain?

A ***supply chain*** *is the portion of the value chain that focuses primarily on the physical movement of goods and materials, and supporting flows of information and financial transactions through the supply, production, and distribution processes.* A value chain is broader in scope than a supply chain, and encompasses all pre- and post- production services to create and deliver the entire customer benefit package. A value chain views an organization from the customer's perspective – the integration of goods and services to create value – while a supply chain is more internally-focused on the creation of physical goods. The value chain idea is more applicable to services where service, information, and entertainment play an increasing role in the total bundle of goods and services, that is, the customer benefit package.

(14) What is a *value chain*? Why is it important for every manager to understand this concept?

A ***value chain*** *is a network of facilities and processes that describes the flow of goods, services, information, and financial transactions from suppliers through the facilities and processes that create goods and services and deliver them to customer.* The success of the entire value chain depends on the design and management of all aspects of the value chain (suppliers, inputs, processes, outputs or outcomes) including both short- and longer-term decisions; thus, managers in every function of an organization should understand this concept. A pre- and postproduction idea of a value chain is introduced in Exhibit 2.3.

(15) What is a *value proposition*? How does this relate to the concept of a customer benefit package that we discussed in Chapter 1?

A competitively dominant customer experience is often called a ***value proposition****.* A winning value proposition is one that meets the full set of customer needs, including price. The focus on value has forced many traditional goods-producing companies to add services to their customer benefit packages. If the quality or features of goods cannot be improved at a reasonable cost and prices cannot be lowered, then enhanced or additional services may provide better total value to customers. Frequently, the profits (or gross margins) made from services are higher than for goods.

(16) What is *offshoring*? For what reasons do firms choose this strategy?

***Offshoring** is the building, acquiring, or moving of process capabilities from a domestic location to another country location while maintaining ownership and control.* Offshoring generally lowers unit costs and reduces overhead. See also Exhibit 2.10 for a summary of economic and non-economic reasons.

(17) What is *outsourcing*? How does it differ from vertical integration? What implications have the three waves of outsourcing had for the national and global economy?

***Outsourcing** is the process of having suppliers provide goods and services that were previously provided internally.* Vertical integration is essentially the opposite. The three waves of outsourcing – moving goods-producing jobs abroad, then moving simple service work, and finally moving skilled knowledge work – has certainly improved the global economy and created much technical expertise in other companies, but they have also had detrimental effects for many domestic workers and in some cases, customers, who have had difficulties communicating with foreign employees, such as call center representatives.

(18) What is *value chain integration*? Explain the role of third party integrators.

***Value chain integration** is the process of managing information, physical goods, and services to ensure their availability at the right place, at the right time, at the right cost, at the right quantity, and with the highest attention to quality.* (A focus solely on coordinating the physical flow of materials to ensure that the right parts are available at various stages of the supply chain, such as manufacturing and assembly plants, is commonly called *supply chain integration*.) For goods-producing firms it requires consolidating information systems among suppliers, factories, distributors, and customers, managing the supply chain and scheduling factories, and studying new ways to use technology. The major challenge is to coordinate and manage information, physical goods, and services among all the players in the value chain. Third party integrators manage the process, allowing firms to concentrate on their value creation processes.

(19) What is *vertical integration*? What issues must managers consider when deciding the level of vertical integration?

***Vertical integration** refers to the process of acquiring and consolidating elements of a value chain to achieve more control.* Managers must consider the balance between control and the complexity that vertical integration adds to the value chain.

(20) When should primary processes and core competencies be outsourced to other countries?

Some global trade experts recommend keeping some primary processes or key parts of a manufacturing process out of foreign lands to protect the firm' core competency. See Exhibit 2.7 for further information on this issue.

(21) Contrast the difference between backward integration and forward integration. What are the pros and cons of each strategy?

Backward integration *refers to acquiring capabilities at the front-end of the supply chain (for instance, suppliers), while* **forward integration** *refers to acquiring capabilities toward the back-end of the supply chain (for instance, distribution or even customers).* Backward integration provides more control over the production portion of the supply chain. Forward integration can provide better marketing advantages.

(22) Contrast the two views of a value chain. What are the advantages of each?

This refers to Exhibits 2.1 and 2.3. Exhibit 2.1 is the classic process flow diagram of a value chain from suppliers to customers, along with supporting management infrastructure. This view makes it easy to understand the value chain from a process perspective. Exhibit 2.3 shows a view of the value chain from pre- and post-production service perspectives, focusing on gaining a customer, value creation, and keeping the customer. This view of the value chain emphasizes the notion that service is a critical component of traditional manufacturing processes.

PROBLEMS AND ACTIVITIES

(1) Describe a value chain based upon your work experience, summer job, or as a customer. Sketch a picture of it (as best you can). List suppliers, inputs, resources, outputs, customers and target markets (similar to Exhibits 2.1 or 2.2).

This is a good exercise for students to apply the ideas to an organization with which they are familiar.

(2) Document the global supply chain for a business of interest to you and sketch out a picture similar to the Procter & Gamble diagram. Why did the organization use global resources to accomplish its goals? Explain.

Similar to Problem 1, this forces the student to think of the key elements of the supply chain, and perhaps to do some research about a particular business. It helps them better understand the global environment in which they will eventually work.

(3) A firm is evaluating the alternative of manufacturing a part that is currently being outsourced from a supplier. The relevant information is provided below:

For in-house manufacturing

Annual fixed cost = $45,000

Variable cost per part = $130

For purchasing from supplier

Purchase price per part = $160

a. Using this information, determine the break-even quantity for which the firm would be indifferent between manufacturing the part in-house or outsourcing it.

$$Q^* = \frac{FC}{VC_2 - VC_1} = \frac{\$45{,}000}{\$160 - \$130} = 1{,}500 \text{ parts}$$

Variable cost is the same as the purchase price here.

b. If demand is forecast to be greater than 1,500 parts, should they make the part in-house or purchase from a supplier?

Whenever the anticipated demand (volume) is greater than Q*, the firm should produce the part in-house.

c. The marketing department forecasts that the upcoming year's demand will be 1,200 units. A new supplier offers to make the parts for $140 each. Should the company accept the offer?

$$Q^* = \frac{FC}{VC_2 - VC_1} = \frac{\$45{,}000}{\$140 - \$130} = 4{,}500 \text{ parts}$$

Whenever the anticipated demand (volume) is less than Q*, the firm should outsource (purchase) the part.

d. What is the maximum price per part the manufacturer should be willing to pay to the supplier if the forecast is 800 parts?

$$\begin{aligned} Q(VC_2 - VC_1) &= FC \text{ or} \\ 800(VC_2 - \$130) &= \$45{,}000 \\ 800VC_2 - \$104{,}000 &= \$45{,}000 \\ 800VC_2 &= \$149{,}000 \\ VC_2 &= \$186.25 \end{aligned}$$

(4) Read the *Harvard Business Review* article by J.L. Graham and N.M. Lam, "The Chinese Negotiation," October 2003, pp. 19-28. Summarize its lessons in one page or less.

This article may be more appropriate for graduate students than undergraduates but it does highlight cultural differences such as:

a. Two-thirds of Chinese people still live on communal farms, and therefore, group cooperation, harmony, loyalty, obedience to family hierarchy, and taking time for decision making are very important. Two-thirds of U.S. people live in urban areas with a focus on individualism, assertiveness, excitable, and the need to quick decision making.
b. Chinese culture and language is pictographic, and therefore, holistic. Americans tend to think sequentially and in detail.
c. Eight other contrasts are made in the article such as the role of *shehui dengji* (social status), *renji hexie* (interpersonal harmony), *zhongjian ren* (the intermediary), *guanxi* (personal connections), *jiejian* (thrift), *zhengti guannian* (holistic thinking), *mianzi* (face or social capital), and *chiku nailao* (endurance).

(5) Research current articles relating to off shoring and outsourcing, focusing on both business, operations, and political issues. Summarize your findings in a 3-5 page paper.

This exercise is intended to get students reading contemporary business literature and tie the text material to current events.