


# SOLUTIONS MANUAL

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# OM<sup>2</sup>

**WHAT'S INSIDE:**  
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*Operations Management*  
Student Driven, Faculty Approved  
Useful Online Study Resources

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END-OF-CHAPTER REVIEW CARDS



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## OM 2 Chapter 2: Value Chains

### Problems, Activities, and Discussions

- (1) 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, iPods, pizza delivery, and cell phones. This question helps them to internalize the notion of value and better understand how organizations should understand the “voice of the customer.” It is also important for the students to understand the importance of the words “perceived benefits.” What the customer “perceives” is the true benefit(s). Make sure you tie this class discussion to the definition of value in Section 1, discuss the numerator and denominator of value, ways to increase value, and what role OM plays.

- (2) 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. Three to six major stages of the value chain is the focus here. Make sure you emphasize the differences between value chain versus supply chain. For example, the value chain for a hospital is much broader than just the supply of physical goods (i.e., supply chain). It also includes the supply of resources such as information services, janitorial services, nurses, doctors, training programs, temporary employees, insurance claims and processing, equipment manufacturers and maintenance services, community programs, hospice services, transportation services, and hospital volunteers, and so on.

- (3) 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 Problems 1 and 2, 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. Here the focus is more on the creation and delivery of a physical good.

- (4) Research current articles relating to off shoring and outsourcing, focusing on both business, operations, and political issues. Summarize your findings in a 1-2 page paper.

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

- (5) 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. Companies must learn how to compete in a global economy.

- (6) 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 = \$140

For purchasing from supplier (outsourced)

Purchase price per part = \$160

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

Using Equation 2.1 we compute

$$Q^* = \frac{FC}{VC_2 - VC_1} = \frac{\$45,000}{\$160 - \$140} = 2,250 \text{ parts}$$

If demand is greater than 2,250 produce in-house (make)

If demand is less than or equal to 2,250 outsource

- (7) (a) If demand is forecast to be 2,500 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. If demand is less than 2,250 then purchase from a supplier (outsource). In this case the part should be made in-house.

- (b) The marketing department forecasts that the upcoming year's demand will be 2,500 units. A new supplier offers to make the parts for \$150 each. Should the company accept the offer?

$$Q^* = \frac{FC}{VC_2 - VC_1} = \frac{\$45,000}{\$150 - \$140} = 4,500 \text{ parts}$$

Whenever the anticipated demand (volume) is less than  $Q^*$ , the firm should outsource (purchase) the part. Since 2,500 is less than 4,500 the part should be outsourced to the new supplier (accept the offer).

- (c) What is the maximum price per part the manufacturer should be willing to pay to the supplier if the forecast is revised to 1,500 parts using the information in the original problem (Question # 6)?

$$\begin{aligned} Q(VC_2 - VC_1) &= FC \text{ or} \\ 1500(VC_2 - \$140) &= \$45,000 \\ 1500VC_2 - \$210,000 &= \$45,000 \\ 1500VC_2 &= \$255,000 \\ VC_2 &= \$170.00 \end{aligned}$$

- (8) 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 domestic jobs with global economics? This question can trigger a robust class debate, and students will most likely have strong opinions in either direction. Other issues may come up such as the role of firms and government in retraining people who lose their jobs, the importance of an educated workforce in today's information society, etc. One student made a very convincing argument that the "true cost" to U.S. society of losing 26,000 jobs far exceeds \$6 billion and placed much of the blame on government policies such as taxes, regulatory laws, lack of retraining programs, etc.

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

These issues are discussed in Section 6.2 such as

- 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.
- 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?
- Why go global?
- What are different global customer and market segments?
- Which functions need to be present in the region?
- How will you enter a region?
- Who will do the globalization work in your company?
- Are core staff willing to relocate overseas?

You can also tie in Chevron Texaco in the Phillipines, Rocky Brands, globalization at Toyota, and Exhibit 2.6 into this discussion.

- (10) 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 Sections 6.2 and 6.3 in Chapter 2 for cultural differences that impact business operations.

### Case Teaching Notes: TuneMan Case Study

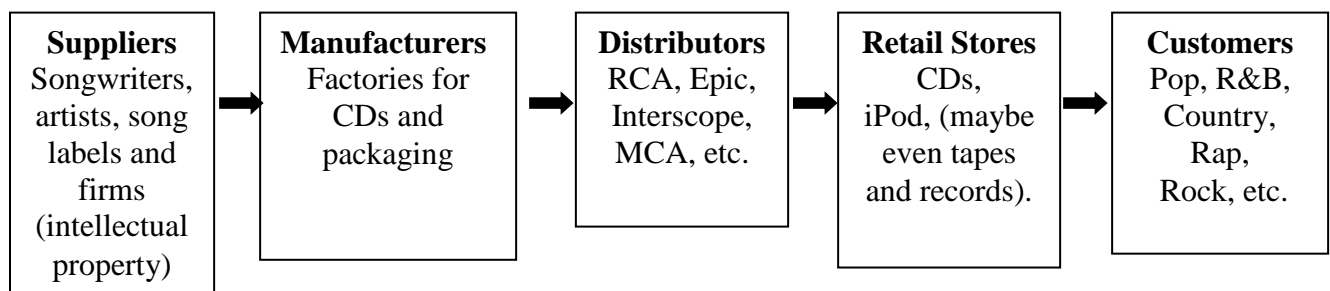
The objective of the case is to study bricks and mortar versus internet-based value chains for acquiring music. Students should be familiar with the issues and alternative value chain structures and policies. Music downloading has become a very controversial subject. The Recording Industry Association of America (RIAA) argues that 2.6 billion music files are illegally downloaded each month and this law is needed to identify downloading culprits. On September 8, 2003, RIAA filed lawsuits against 261 people for allegedly downloading thousands of copyrighted songs via popular Internet file sharing networks. These people copied an average of 1,000 songs into their files for free. Many other lawsuits have followed such as a current 2009 court case of Napster versus RIAA.

Facts in the original TuneMan case are based on Holland, G. "Supreme Court rejects appeal in music downloading battle," *The Northwest Herald*, October 19, 2004. See the article on the Web at <http://www.nwherald.com/print/281665778400853.php>. However, TuneMan is fictitious so it would be fruitless to search for this firm's name! If you search the Internet, you will find many references on downloading music, Recording Industry Association of American policies on downloading music, lawsuits, etc.

### Case Questions and Brief Answers

- (1) Draw the “bricks and mortar” process stages by which traditional CDs are created, distributed, and sold in retail stores. How does each player in the value chain make money? (You can use the exhibits in the chapter to help you identify major stages in the value chain.)

#### Traditional Music Bricks and Mortar Value Chain (5 stage view)

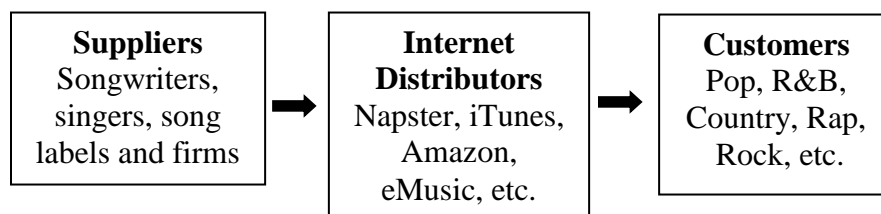


Students can describe how the traditional value chains works. **Advantages** of this bricks and mortar value chain include control over the artistic content and entire value chain, high prices for suppliers, distributors and retail stores; easier to catch cheaters duplicating CDs and tapes, etc. **Disadvantages** of this value chain structure include the difficulty for the customer to customize music to their tastes and most favorite songs (and must buy

entire CD), the physical act of going to and from the store, high price for the customer, slower speed of service, less convenient with more trips, customer must buy the entire CD or tape and therefore cannot customize, etc. Ask students – **What does a CD cost in a bricks and mortar store?** Answer: about \$10 to \$15 and you get many songs you don't want/need.

- (2) Draw the process stages for creating and downloading music today. How does each player in this electronic/digital value chain make money?

### Today's Music Internet-based (Digital) Value Chain (3 stages)



In such an Internet-based on-line value chain, there is little need for expensive retail stores. Customers can download music in their homes, automobile, office, or when walking around the wireless neighborhood or city. *The Internet is a disruptive technology that is dramatically reducing the costs (price) as it restructures the value chain.*

**Advantages** of an Internet-based value chain include much lower prices for suppliers, distributors *and customers*; ability to customize a package of songs to meet individual tastes (*mass customization using self-service*), much less need for packaging material and no shipping services, and incredibly fast download speeds and extraordinary customer convenience with no trips to a store. Today, legal download prices range from 99 to 49 cents per song.

**Disadvantages** focus on eliminating the economic incentive for artists to record their songs, jobs lost at retail stores, empty retail stores, and a total restructuring of the worldwide music and video (digital) value chain(s). Students will most likely know more about how the new Internet-based value chains work than the instructor so let them explain it to the class.

Have fun discussing this case! The students know much more about this value chain than you do so let them describe how it works, the advantages and disadvantages, etc. Ask questions such as (1) How long does it take a customer to buy a CD in a store? (2) How long does it take you to download one song on-line? (3) What is the percent improvement in processing time? (4) What is the cost of a downloaded song? (5) Is there value to the convenience of downloading a song at 3 am in your own apartment? (6) How does the nature of the service

encounter change between the two value chains? The answer to the last question focuses on customer to service provider in a retail store setting while today when you download a song on-line it is customer to computer/technology interaction.

- (3) Compare and contrast the approaches in the previous two questions. What changed? What's new? Are there any advantages/disadvantage to each approach?

The advantages and disadvantages were previously described. Other issues include: **What role does operations management play in this traditional bricks and mortar value chain?** Students may give examples and mention OM areas such as (1) scheduling recording sessions, delivery trucks, and retail store staff, (2) inventory management (physical assets), (3) project management in getting albums, etc. to market, (4) forecasting demand by store, (5) quality management of physical goods, (6) quality of service encounters at retail stores, (7) purchasing raw materials and packaging, (8) preventive maintenance of equipment, and (9) warehousing and logistics.

**What role does operations management play in an Internet-based music downloading value chain?** Students may give examples and mention OM areas such as (1) scheduling recording sessions, delivery trucks, and on-line and telephone customer service staff, (2) inventory management of files on a computer, (3) project management in getting songs to the digital market, (4) song payment processes, (5) quality management of digital downloads, (6) quality of service encounters at telephone and on-line customer contact centers, (7) capacity management for on-line servers, and number of telephone and on-line customer service center staff, (8) preventive maintenance of networks and equipment, and so on.

### Teaching Plan

You can read this case in class in 5 minutes and then discuss. I teach this case on the first day of class and it works very well. The following outline of questions in addition to previous ones can serve to discuss this case in class. I put much of this on the board especially the two drawing of a five versus three stage value chain.

- (1) What do the “bricks and mortar” value chains developed by your students look like? Explain how they operate. What are their advantages and disadvantages?
- (2) What do the alternative Internet-based value chains look like? Explain how they operate. What are the advantages and disadvantages?
- (3) Explain and compare the role of operations in two value chain structures developed in parts (a) and (b).
- (4) What is a fair price to download one song, or should it be free? Why? (49 to 99 cents/song seems to be the definition of a fair price based on iPod/iTunes).
- (5) What lessons can we learn from our class discussion? (List on board)



Some general lessons include: (a) a disruptive technology called the Internet is redefining the value chain in this industry, (b) price and cost and speed reductions are dramatic, (c) the nature of the service encounters are greatly changed, (d) value chain capability now exists to do mass customization using self-service, (e) operations plays a major role in the old and new value chain designs and execution with OM and IT integrated in the Internet value chain, and (f) this is an example of physical assets beginning replaced by information. This case also ties to the Chapter 5 discussion of high or low scalability so use it as an example if you teach OM2-Chapter 5 later. Today's on-line downloading value chain is highly scalable.