

Operations Strategy in a Global Environment

2 CHAPTER

CHAPTER OUTLINE

GLOBAL COMPANY PROFILE: *Boeing*

- ◆ A Global View of Operations and Supply Chains **32**
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- ◆ Achieving Competitive Advantage Through Operations **36**
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- ◆ Strategic Planning, Core Competencies, and Outsourcing **44**
- ◆ Global Operations Strategy Options **49**



Alaska Airlines

Boeing's Global Supply-Chain Strategy Yields Competitive Advantage

Boeing's strategy for its 787 Dreamliner is unique for its technologically advanced product design and vast global supply chain.

The Dreamliner incorporates the latest in a wide range of aerospace technologies, from airframe and engine design to super-lightweight titanium-graphite laminate and carbon-fiber composites. The electronic monitoring system that allows the airplane to report maintenance



Peter Carey/Alamy



Dan Lamont/Alamy

With the 787's state-of-the-art design, more spacious interior, and global suppliers, Boeing has garnered record sales worldwide.

Some of the International Suppliers of Boeing 787 Components

SUPPLIER	HQ COUNTRY	COMPONENT
Latecoere	France	Passenger doors
Labinel	France	Wiring
Dassault	France	Design and product life cycle management software
Messier-Bugatti	France	Electric brakes
Thales	France	Electrical power conversion system
Messier-Dowty	France	Landing gear structure
Diehl	Germany	Interior lighting
Cobham	UK	Fuel pumps and valves
Rolls-Royce	UK	Engines
Smiths Aerospace	UK	Central computer system
BAE Systems	UK	Electronics
Alenia Aeronautica	Italy	Upper center fuselage
Toray Industries	Japan	Carbon fiber for wing and tail units
Fuji Heavy Industries	Japan	Center wing box
Kawasaki Heavy Ind.	Japan	Forward fuselage, fixed sections of wing
Teijin Seiki	Japan	Hydraulic actuators
Mitsubishi Heavy Ind.	Japan	Wing box
Chengdu Aircraft	China	Rudder
Hafei Aviation	China	Parts
Korean Airlines	South Korea	Wingtips
Saab	Sweden	Cargo and access doors

requirements in real time to ground-based computer systems is another product innovation. Boeing's collaboration with General Electric and Rolls-Royce has resulted in the development of more efficient engines and an emissions reduction of 20%. The advances in engine technology contribute as much as 8% of the increased fuel/payload efficiency of the new airplane, representing a nearly two-generation jump in technology.

Boeing's design group at its Everett, Washington, facility led an international team of aerospace companies in development of this state-of-the-art plane. Technologically advanced design, new manufacturing processes, and a committed international supply chain have helped Boeing and its partners achieve unprecedented levels of performance in design and manufacture.

LEARNING OBJECTIVES

- LO 2.1** *Define* mission and strategy 36
- LO 2.2** *Identify* and explain three strategic approaches to competitive advantage 36
- LO 2.3** *Understand* the significance of key success factors and core competencies 42
- LO 2.4** *Use* factor rating to evaluate both country and outsource providers 47
- LO 2.5** *Identify* and explain four global operations strategy options 49

A Global View of Operations and Supply Chains

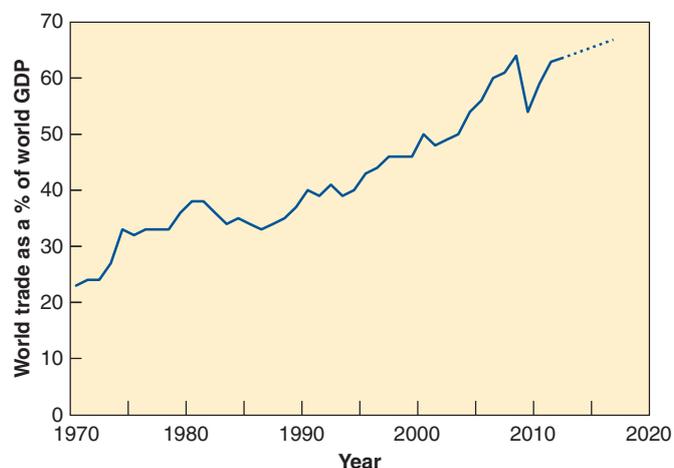
Today's successful operations manager has a global view of operations strategy. Since the early 1990s, nearly 3 billion people in developing countries have overcome the cultural, religious, ethnic, and political barriers that constrain productivity. And now they are all players on the global economic stage. As these barriers disappear, simultaneous advances are being made in technology, reliable shipping, and inexpensive communication. These changes mean that, increasingly, firms find their customers and suppliers located around the world. The unsurprising result is the growth of world trade (see Figure 2.1), global capital markets, and the international movement of people. This means increasing economic integration and interdependence of countries—in a word, globalization. In response, organizations are hastily extending their distribution channels and supply chains globally. The result is innovative strategies where firms compete not just with their own expertise but with the talent in their entire global supply chain. For instance:

- ◆ Boeing is competitive because both its sales and supply chain are worldwide.
- ◆ Italy's Benetton moves inventory to stores around the world faster than its competition with rapid communication and by building exceptional flexibility into design, production, and distribution.
- ◆ Sony purchases components from a supply chain that extends to Thailand, Malaysia, and elsewhere around the world for assembly of its electronic products, which in turn are distributed around the world.
- ◆ Volvo, considered a Swedish company, was purchased by a Chinese company, Geely. But the current Volvo S40 is assembled in Belgium, South Africa, Malaysia, and China, on a platform shared with the Mazda 3 (built in Japan) and the Ford Focus (built in Europe).
- ◆ China's Haier (pronounced "higher") is now producing compact refrigerators (it has one-third of the U.S. market) and refrigerated wine cabinets (it has half of the U.S. market) in South Carolina.

Figure 2.1

Growth of World Trade as a Percent of World GDP

Sources: World Bank; World Trade Organization; and IMF.





Kraijit Phanvut/Sipa Press

A worldwide strategy places added burdens on operations management. Because of economic and lifestyle differences, designers must target products to each market. For instance, clothes washers sold in northern countries must spin-dry clothes much better than those in warmer climates, where consumers are likely to line-dry them. Similarly, as shown here, Whirlpool refrigerators sold in Bangkok are manufactured in bright colors because they are often put in living rooms.

unemployment during times of economic downturn. During economic downturns in one country or continent, a global firm has the means to relocate unneeded personnel to more prosperous locations.

So, to recap, successfully achieving a competitive advantage in our shrinking world means maximizing all the possible opportunities, from tangible to intangible, that international operations can offer.

Cultural and Ethical Issues

While there are great forces driving firms toward globalization, many challenges remain. One of these challenges is reconciling differences in social and cultural behavior. With issues ranging from bribery, to child labor, to the environment, managers sometimes do not know how to respond when operating in a different culture. What one country's culture deems acceptable may be considered unacceptable or illegal in another. It is not by chance that there are fewer female managers in the Middle East than in India.

In the last decade, changes in international laws, agreements, and codes of conduct have been applied to define ethical behavior among managers around the world. The WTO, for example, helps to make uniform the protection of both governments and industries from foreign firms that engage in unethical conduct. Even on issues where significant differences between cultures exist, as in the area of bribery or the protection of intellectual property, global uniformity is slowly being accepted by most nations.

Despite cultural and ethical differences, we live in a period of extraordinary mobility of capital, information, goods, and even people. We can expect this to continue. The financial sector, the telecommunications sector, and the logistics infrastructure of the world are healthy institutions that foster efficient and effective use of capital, information, and goods. Globalization, with all its opportunities and risks, is here. It must be embraced as managers develop their missions and strategies.

Developing Missions and Strategies

An effective operations management effort must have a *mission* so it knows where it is going and a *strategy* so it knows how to get there. This is the case for a small domestic organization as well as a large international organization.

STUDENT TIP

Getting an education and managing an organization both require a mission and strategy.

Mission

The purpose or rationale for an organization's existence.

LO 2.1 Define mission and strategy

Mission

Economic success, indeed survival, is the result of identifying missions to satisfy a customer's needs and wants. We define the organization's **mission** as its purpose—what it will contribute to society. Mission statements provide boundaries and focus for organizations and the concept around which the firm can rally. The mission states the rationale for the organization's existence. Developing a good strategy is difficult, but it is much easier if the mission has been well defined. Figure 2.2 provides examples of mission statements.

Once an organization's mission has been decided, each functional area within the firm determines its supporting mission. By *functional area* we mean the major disciplines required by the firm, such as marketing, finance/accounting, and production/operations. Missions for each function are developed to support the firm's overall mission. Then within that function lower-level supporting missions are established for the OM functions. Figure 2.3 provides such a hierarchy of sample missions.

Strategy

Strategy

How an organization expects to achieve its missions and goals.

LO 2.2 Identify and explain three strategic approaches to competitive advantage

With the mission established, strategy and its implementation can begin. **Strategy** is an organization's action plan to achieve the mission. Each functional area has a strategy for achieving its mission and for helping the organization reach the overall mission. These strategies exploit opportunities and strengths, neutralize threats, and avoid weaknesses. In the following sections, we will describe how strategies are developed and implemented.

Firms achieve missions in three conceptual ways: (1) differentiation, (2) cost leadership, and (3) response. This means operations managers are called on to deliver goods and services that are (1) *better*, or at least different, (2) *cheaper*, and (3) more *responsive*. Operations managers translate these *strategic concepts* into tangible tasks to be accomplished. Any one or combination of these three strategic concepts can generate a system that has a unique advantage over competitors.

VIDEO 2.1

Operations Strategy at Regal Marine

Achieving Competitive Advantage Through Operations

Each of the three strategies provides an opportunity for operations managers to achieve competitive advantage. **Competitive advantage** implies the creation of a system that has a unique advantage over competitors. The idea is to create customer value in an efficient and sustainable way. Pure forms of these strategies may exist, but operations managers will more likely

Competitive advantage

The creation of a unique advantage over competitors.

Figure 2.2

Mission Statements for Three Organizations

Source: Mission statement from Merck. Copyright © by Merck & Co., Inc. Reprinted with permission.

Merck
The mission of Merck is to provide society with superior products and services—innovations and solutions that improve the quality of life and satisfy customer needs—to provide employees with meaningful work and advancement opportunities and investors with a superior rate of return.
PepsiCo
Our mission is to be the world's premier consumer products company focused on convenient foods and beverages. We seek to produce financial rewards to investors as we provide opportunities for growth and enrichment to our employees, our business partners and the communities in which we operate. And in everything we do, we strive for honesty, fairness and integrity.
Arnold Palmer Hospital
Arnold Palmer Hospital for Children provides state of the art, family-centered healthcare focused on restoring the joy of childhood in an environment of compassion, healing, and hope.

Response strategy wins orders at Super Fast Pizza. Using a wireless connection, orders are transmitted to \$20,000 kitchens in vans. The driver, who works solo, receives a printed order, goes to the kitchen area, pulls premade pizzas from the cooler, and places them in the oven—it takes about 1 minute. The driver then delivers the pizza—sometimes even arriving before the pizza is ready.



Darren Hauck/AP Images

Issues in Operations Strategy

Whether the OM strategy is differentiation, cost, or response (as shown in Figure 2.4), OM is a critical player. Therefore, prior to establishing and attempting to implement a strategy, some alternate perspectives may be helpful. One perspective is to take a **resources view**. This means thinking in terms of the financial, physical, human, and technological resources available and ensuring that the potential strategy is compatible with those resources. Another perspective is Porter's value-chain analysis.² **Value-chain analysis** is used to identify activities that represent strengths, or potential strengths, and may be opportunities for developing competitive advantage. These are areas where the firm adds its unique *value* through product research, design, human resources, supply-chain management, process innovation, or quality management. Porter also suggests analysis of competitors via what he calls his **five forces model**.³ These potential competing forces are immediate rivals, potential entrants, customers, suppliers, and substitute products.

In addition to the competitive environment, the operations manager needs to understand that the firm is operating in a system with many other external factors. These factors range from economic, to legal, to cultural. They influence strategy development and execution and require constant scanning of the environment.

The firm itself is also undergoing constant change. Everything from resources, to technology, to product life cycles is in flux. Consider the significant changes required within the firm as its products move from introduction, to growth, to maturity, and to decline (see Figure 2.5). These internal changes, combined with external changes, require strategies that are dynamic.

In this chapter's *Global Company Profile*, Boeing provides an example of how strategy must change as technology and the environment change. Boeing can now build planes from carbon fiber, using a global supply chain. Like many other OM strategies, Boeing's strategy has changed with technology and globalization. Microsoft has also had to adapt quickly to a changing environment. Faster processors, new computer languages, changing customer preferences, increased security issues, the Internet, the cloud, and Google have all driven changes at Microsoft. These forces have moved Microsoft's product strategy from operating systems to office products, to Internet service provider, and now to integrator of computers, cell phones, games, and television via the cloud.

The more thorough the analysis and understanding of both the external and internal factors, the more likely that a firm can find the optimum use of its resources. Once a firm understands itself and the environment, a SWOT analysis, which we discuss next, is in order.

Resources view

A method managers use to evaluate the resources at their disposal and manage or alter them to achieve competitive advantage.

Value-chain analysis

A way to identify those elements in the product/service chain that uniquely add value.

Five forces model

A method of analyzing the five forces in the competitive environment.

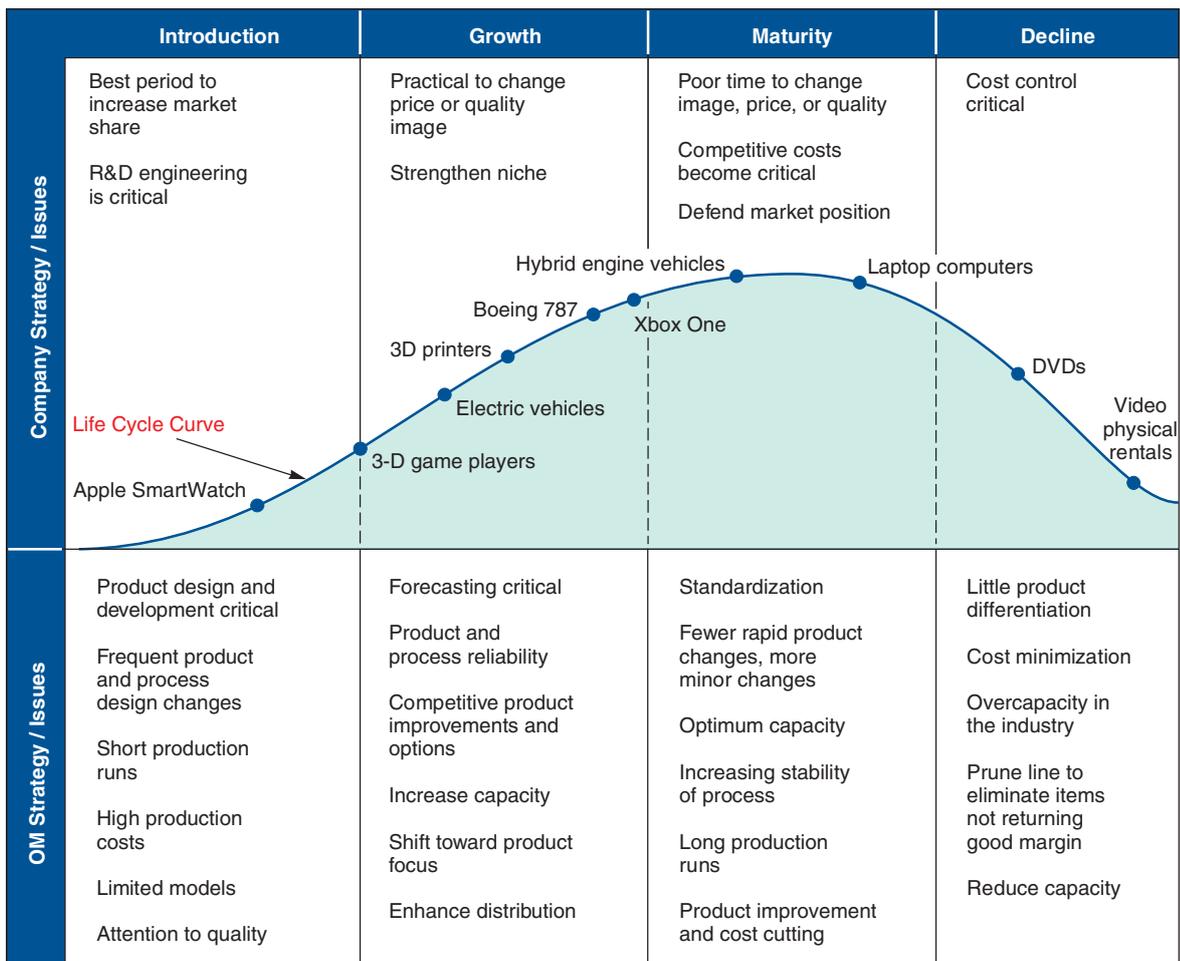


Figure 2.5 Strategy and Issues During a Product's Life

Strategy Development and Implementation

A **SWOT analysis** is a formal review of internal strengths and weaknesses and external opportunities and threats. Beginning with SWOT analyses, organizations position themselves, through their strategy, to have a competitive advantage. A firm may have excellent design skills or great talent at identifying outstanding locations. However, it may recognize limitations of its manufacturing process or in finding good suppliers. The idea is to maximize opportunities and minimize threats in the environment while maximizing the advantages of the organization's strengths and minimizing the weaknesses. Any preconceived ideas about mission are then reevaluated to ensure they are consistent with the SWOT analysis. Subsequently, a strategy for achieving the mission is developed. This strategy is continually evaluated against the value provided customers and competitive realities. The process is shown in Figure 2.6. From this process, key success factors are identified.

STUDENT TIP

A SWOT analysis provides an excellent model for evaluating a strategy.

SWOT analysis

A method of determining internal strengths and weaknesses and external opportunities and threats.

Key Success Factors and Core Competencies

Because no firm does everything exceptionally well, a successful strategy requires determining the firm's key success factors and core competencies. **Key success factors (KSFs)** are those activities that are necessary for a firm to achieve its goals. Key success factors can be so significant

Key success factors (KSFs)

Activities or factors that are key to achieving competitive advantage.

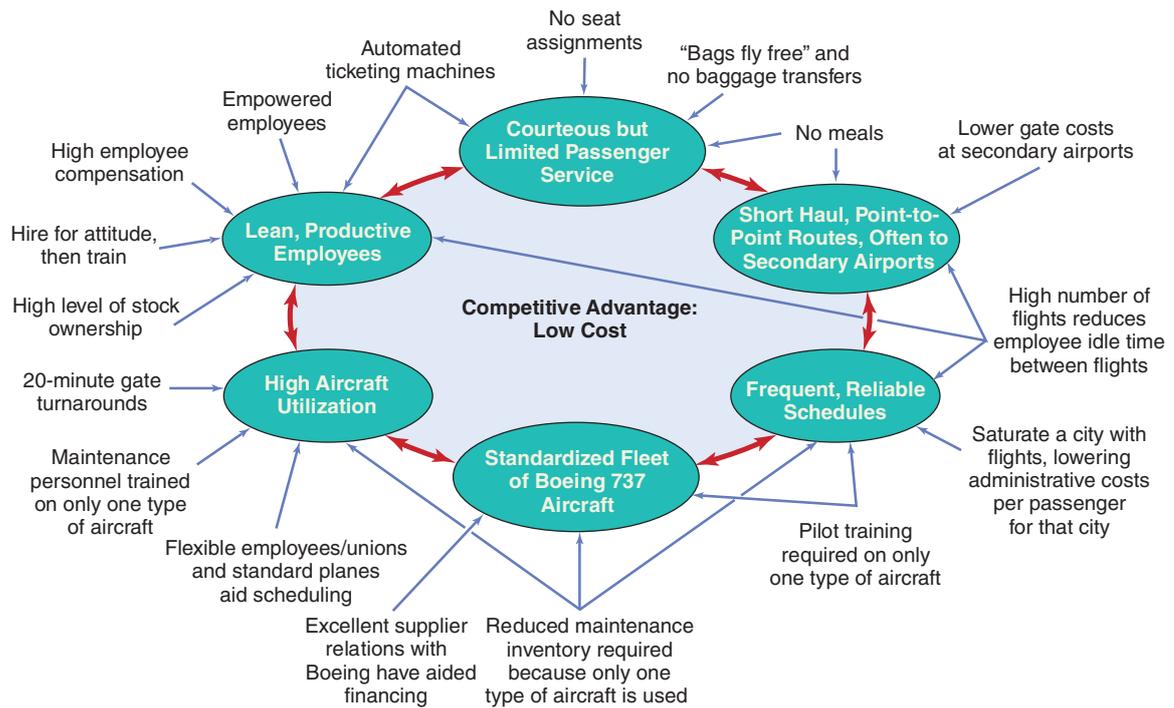


Figure 2.8

Activity Mapping of Southwest Airlines' Low-Cost Competitive Advantage

To achieve a low-cost competitive advantage, Southwest has identified a number of key success factors (connected by red arrows) and support activities (shown by blue arrows). As this figure indicates, Southwest's low-cost strategy is highly dependent on a very well-run operations function.

ways. The organization charts shown in Chapter 1 (Figure 1.1) indicate the way some firms have organized to perform the required activities. *The operations manager's job is to implement an OM strategy, provide competitive advantage, and increase productivity.*

Implementing the 10 Strategic OM Decisions

As mentioned earlier, the implementation of the 10 strategic OM decisions is influenced by a variety of issues—from missions and strategy to key success factors and core competencies—while addressing such issues as product mix, product life cycle, and competitive environment. Because each product brings its own mix of attributes, the importance and method of implementation of the 10 strategic OM decisions will vary. Throughout this text, we discuss how these decisions are implemented in ways that provide competitive advantage. How this might be done for two drug companies, one seeking competitive advantage via differentiation and the other via low cost, is shown in Table 2.1.

Strategic Planning, Core Competencies, and Outsourcing

As organizations develop missions, goals, and strategies, they identify their strengths—what they do as well as or better than their competitors—as their *core competencies*. By contrast, *non-core activities*, which can be a sizable portion of an organization's total business, are good candidates for outsourcing. **Outsourcing** is transferring activities that have traditionally been internal to external suppliers.

Outsourcing is not a new concept, but it does add complexity and risk to the supply chain. Because of its potential, outsourcing continues to expand. The expansion is accelerating due to

Outsourcing

Transferring a firm's activities that have traditionally been internal to external suppliers.

Global Operations Strategy Options

As we suggested early in this chapter, many operations strategies now require an international dimension. An **international business** is any firm that engages in international trade or investment. A **multinational corporation (MNC)** is a firm with *extensive* international business involvement. MNCs buy resources, create goods or services, and sell goods or services in a variety of countries. The term *multinational corporation* applies to most of the world's large, well-known businesses. Certainly IBM is a good example of an MNC. It imports electronics components to the U.S. from over 50 countries, exports to over 130 countries, has facilities in 45 countries, and earns more than half its sales and profits abroad.

Operations managers of international and multinational firms approach global opportunities with one of four strategies: *international*, *multidomestic*, *global*, or *transnational* (see Figure 2.9). The matrix of Figure 2.9 has a vertical axis of cost reduction and a horizontal axis of local responsiveness. Local responsiveness implies quick response and/or the differentiation necessary for the local market. The operations manager must know how to position the firm in this matrix. Let us briefly examine each of the four strategies.

An **international strategy** uses exports and licenses to penetrate the global arena. This strategy is the least advantageous, with little local responsiveness and little cost advantage. But an international strategy is often the easiest, as exports can require little change in existing operations, and licensing agreements often leave much of the risk to the licensee.

The **multidomestic strategy** has decentralized authority with substantial autonomy at each business. These are typically subsidiaries, franchises, or joint ventures with substantial independence. The advantage of this strategy is maximizing a competitive response for the local market; however, the strategy has little or no cost advantage. Many food producers, such as Heinz, use a multidomestic strategy to accommodate local tastes because global integration of the production process is not critical. The concept is one of “we were successful in the home market; let’s export the management talent and processes, not necessarily the product, to accommodate another market.”

A **global strategy** has a high degree of centralization, with headquarters coordinating the organization to seek out standardization and learning between plants, thus generating economies of scale. This strategy is appropriate when the strategic focus is cost reduction but has little to recommend it when the demand for local responsiveness is high. Caterpillar, the world leader in earth-moving equipment, and Texas Instruments, a world leader in semiconductors, pursue global strategies. Caterpillar and Texas Instruments find this strategy advantageous because the end products are similar throughout the world. Earth-moving equipment is the same in Nigeria as in Iowa.

International business

A firm that engages in cross-border transactions.

Multinational corporation (MNC)

A firm that has extensive involvement in international business, owning or controlling facilities in more than one country.

International strategy

A strategy in which global markets are penetrated using exports and licenses.

Multidomestic strategy

A strategy in which operating decisions are decentralized to each country to enhance local responsiveness.

Global strategy

A strategy in which operating decisions are centralized and headquarters coordinates the standardization and learning between facilities.

LO 2.5 Identify and explain four global operations strategy options

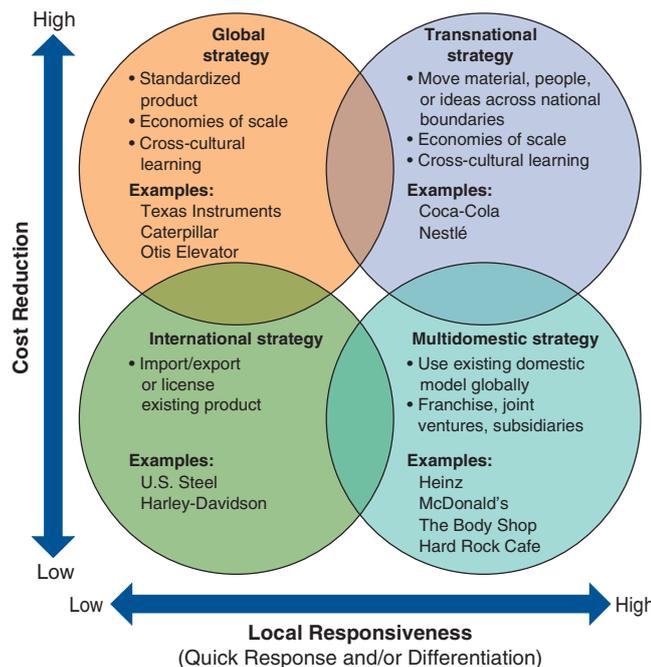


Figure 2.9

Four International Operations Strategies

Source: See a similar presentation in M. Hitt, R. D. Ireland, and R. E. Hoskisson, *Strategic Management: Concepts, Competitiveness, and Globalization*, 8th ed. (Cincinnati: Southwestern College Publishing).

In a continuing fierce worldwide battle, both Komatsu and Caterpillar seek global advantage in the heavy equipment market. As Komatsu (left) moved west to the UK, Caterpillar (right) moved east, with 13 facilities and joint ventures in China. Both firms are building equipment throughout the world as cost and logistics dictate. Their global strategies allow production to move as markets, risk, and exchange rates suggest.



Washington Imaging/Alamy



Bernad Wustneck/dpa/picture-alliance/Newscom

Transnational strategy

A strategy that combines the benefits of global-scale efficiencies with the benefits of local responsiveness.

A **transnational strategy** exploits the economies of scale and learning, as well as pressure for responsiveness, by recognizing that core competence does not reside in just the “home” country but can exist anywhere in the organization. *Transnational* describes a condition in which material, people, and ideas cross—or *transgress*—national boundaries. These firms have the potential to pursue all three operations strategies (i.e., differentiation, low cost, and response). Such firms can be thought of as “world companies” whose country identity is not as important as their interdependent network of worldwide operations. Nestlé is a good example of such a company. Although it is legally Swiss, 95% of its assets are held and 98% of its sales are made outside Switzerland. Fewer than 10% of its workers are Swiss.

Summary

Global operations provide an increase in both the challenges and opportunities for operations managers. Although the task is difficult, operations managers can and do improve productivity. They build and manage global OM functions and supply chains that contribute in a significant way to competitiveness. Organizations identify their strengths and weaknesses. They then develop effective missions and strategies that account for these strengths and weaknesses and complement the opportunities and threats in the environment. If this procedure is performed well, the organization can have competitive advantage through some combination of product differentiation, low cost, and response.

Increasing specialization provides economic pressure to build organizations that focus on core competencies and to outsource the rest. But there is also a need for planning outsourcing to make it beneficial to all participants. In this increasingly global world, competitive advantage is often achieved via a move to international, multidomestic, global, or transnational strategies.

Effective use of resources, whether domestic or international, is the responsibility of the professional manager, and professional managers are among the few in our society who *can* achieve this performance. The challenge is great, and the rewards to the manager and to society are substantial.

Key Terms

Maquiladoras (p. 34)
World Trade Organization (WTO) (p. 34)
North American Free Trade Agreement (NAFTA) (p. 34)
European Union (EU) (p. 34)
Mission (p. 36)
Strategy (p. 36)
Competitive advantage (p. 36)
Differentiation (p. 38)

Experience differentiation (p. 38)
Low-cost leadership (p. 38)
Response (p. 39)
Resources view (p. 40)
Value-chain analysis (p. 40)
Five forces model (p. 40)
SWOT analysis (p. 41)
Key success factors (KSFs) (p. 41)
Core competencies (p. 42)

Activity map (p. 43)
Outsourcing (p. 44)
Theory of comparative advantage (p. 46)
International business (p. 49)
Multinational corporation (MNC) (p. 49)
International strategy (p. 49)
Multidomestic strategy (p. 49)
Global strategy (p. 49)
Transnational strategy (p. 50)

Ethical Dilemma

As a manufacturer of athletic shoes whose image—indeed performance—is widely regarded as socially responsible, you find your costs increasing. Traditionally, your athletic shoes have been made in Indonesia and South Korea. Although the ease of doing business in those countries has been improving, wage rates have also been increasing. The labor-cost differential between your current suppliers and a contractor who will get the shoes made in China now exceeds \$1 per pair. Your sales next year are projected to be 10 million pairs, and your analysis suggests that this cost differential is not offset by any other tangible costs; you face only the political risk and potential damage to your commitment to social responsibility. Thus, this \$1 per pair savings should flow directly to your bottom line. There is no doubt that the Chinese government engages in censorship, remains repressive, and is a long way from a democracy. Moreover, you will have little or no control over working conditions, sexual harassment, and pollution. What do you do, and on what basis do you make your decision?



Michael S. Yamashita/Corbis

Discussion Questions

- Based on the descriptions and analyses in this chapter, would Boeing be better described as a global firm or a transnational firm? Discuss.
- List six reasons to internationalize operations.
- Coca-Cola is called a global product. Does this mean that Coca-Cola is formulated in the same way throughout the world? Discuss.
- Define *mission*.
- Define *strategy*.
- Describe how an organization's *mission* and *strategy* have different purposes.
- Identify the mission and strategy of your automobile repair garage. What are the manifestations of the 10 strategic OM decisions at the garage? That is, how is each of the 10 decisions accomplished?
- As a library or Internet assignment, identify the mission of a firm and the strategy that supports that mission.
- How does an OM strategy change during a product's life cycle?
- There are three primary ways to achieve competitive advantage. Provide an example, not included in the text, of each. Support your choices.
- Given the discussion of Southwest Airlines in the text, define an *operations* strategy for that firm now that it has purchased AirTran.
- How must an operations strategy integrate with marketing and accounting?
- How would you summarize outsourcing trends?
- What potential cost-saving advantages might firms experience by using outsourcing?
- What internal issues must managers address when outsourcing?
- How should a company select an outsourcing provider?
- What are some of the possible consequences of poor outsourcing?
- What global operations strategy is most descriptive of McDonald's?

Using Software to Solve Outsourcing Problems

Excel, Excel OM, and POM for Windows may be used to solve many of the problems in this chapter.

CREATING YOUR OWN EXCEL SPREADSHEETS

Program 2.1 illustrates how to build an Excel spreadsheet for the data in Example 1. In this example the factor rating method is used to compare National Architects' three potential outsourcing providers.

This program provides the data inputs for seven important factors, including their weights (0.0–1.0) and ratings (1–5 scale where 5 is the highest rating) for each country. As we see, BIM is most highly rated, with a 3.9 score, versus 3.3 for S.P.C. and 3.8 for Telco.

X USING EXCEL OM

Excel OM (free with your text and also found in [MyOMLab](#)) may be used to solve Example 1 (with the Factor Rating module).

P USING POM FOR WINDOWS

POM for Windows also includes a factor rating module. For details, refer to Appendix IV. POM for Windows is also found in [MyOMLab](#) and can solve all problems labeled with a **P**.

Enter factor names and weights in columns A and B.

Enter scores (that come from manager ratings) for BIM, S.P.C., and Telco on each factor in columns C, D, and E.

FACTOR (CRITERION)	IMPORTANCE WEIGHT	BIM (U.S.)	S.P.C. (INDIA)	TELCO (ISRAEL)
1. Can reduce operating costs	0.2	3	3	5
2. Can reduce capital investment	0.2	4	3	3
3. Skilled personnel	0.2	5	4	3
4. Can improve quality	0.1	4	5	2
5. Can gain access to technology not in the company	0.1	5	3	5
6. Can create additional capacity	0.1	4	2	4
7. Aligns with policy/philosophy/culture	0.1	2	3	5
Total Weighted Score		3.9	3.3	3.8

Actions
Copy C14 to D14 and E14

=SUMPRODUCT(\$B\$6:\$B\$12,C6:C12)

Compute the weighted scores as the sum of the product of the weights and the scores for each option using the SUMPRODUCT function.

Program 2.1

Using Excel to Develop a Factor Rating Analysis, With Data from Example 1.

Solved Problems

Virtual Office Hours help is available in MyOMLab.

SOLVED PROBLEM 2.1

The global tire industry continues to consolidate. Michelin buys Goodrich and Uniroyal and builds plants throughout the world. Bridgestone buys Firestone, expands its research budget, and focuses on world markets. Goodyear spends almost 4% of its sales revenue on research. These three aggressive firms have come to dominate the world tire market, with total market share approaching 60%. And the German tire maker Continental AG has strengthened its position as fourth in the world, with a dominant presence in Germany and a research budget of 6%. Against this formidable array, the old-line Italian tire company Pirelli SpA is challenged to respond effectively. Although Pirelli still has almost 5% of the market, it is a relatively small player in a tough, competitive business.

And although the business is reliable even in recessions, as motorists still need replacement tires, the competition is getting stronger. The business rewards companies that have large market shares and long production runs. Pirelli, with its small market share and 1,200 specialty tires, has neither. However, Pirelli has some strengths: an outstanding reputation for tire research and excellent high-performance tires, including supplying specially engineered tires for performance automobiles, Ducati motorcycles, and Formula 1 racing teams. In addition, Pirelli's operations managers complement the creative engineering with world-class innovative manufacturing processes that allow rapid changeover to different models and sizes of tires.

Use a SWOT analysis to establish a feasible strategy for Pirelli.

SOLUTION

First, find an opportunity in the world tire market that avoids the threat of the mass-market onslaught by the big-three tire makers. Second, use the internal marketing strength represented by Pirelli's strong brand name supplying Formula 1 racing and a history of winning World Rally Championships. Third, maximize the innovative capabilities of an outstanding operations function. This is a classic differentiation strategy, supported by activity mapping that ties Pirelli's marketing strength to research and its innovative operations function.

To implement this strategy, Pirelli is differentiating itself with a focus on higher-margin performance tires and away from the low-margin standard tire business. Pirelli has established deals with luxury brands Jaguar, BMW, Maserati, Ferrari, Bentley, and Lotus Elise and established itself as a provider of a large share of the tires on new Porsches and S-class Mercedes. Pirelli also made a strategic decision to divest itself of other businesses. As a result, the vast majority of the company's tire production is now high-performance tires. People are willing to pay a premium for Pirellis.

The operations function continued to focus its design efforts on performance tires and developing a system of modular tire manufacture that allows much faster switching between models. This modular system, combined with billions of dollars in new manufacturing investment, has driven batch sizes down to as small as 150 to 200, making small-lot performance tires economically feasible. Manufacturing innovations

at Pirelli have streamlined the production process, moving it from a 14-step process to a 3-step process.

Pirelli still faces a threat from the big three going after the performance market, but the company has bypassed its weakness of having a small market share with a substantial research budget and an innovative operations function. The firm now

has 19 plants in 13 countries and a presence in more than 160 countries, with sales approaching \$8 billion.

Sources: Based on *The Economist* (January 8, 2011): 65; www.pirelli.com; and RubberNews.com.

SOLVED PROBLEM 2.2

DeHoratius Electronics, Inc., is evaluating several options for sourcing a critical processor for its new modem. Three sources are being considered: Hi-Tech in Canada, Zia in Hong Kong,

and Zaragoza in Spain. The owner, Nicole DeHoratius, has determined that only three criteria are critical. She has rated each firm on a 1–5 scale (with 5 being highest) and has also placed an importance weight on each of the factors, as shown below:

FACTOR (CRITERION)	IMPORTANCE WEIGHT	OUTSOURCE PROVIDERS					
		HI-TECH (CANADA)		ZIA (HONG KONG)		ZARAGOZA (SPAIN)	
		Rating	Wtd. Score	Rating	Wtd. score	Rating	Wtd. Score
1. Cost	.5	3	1.5	3	1.5	5	2.5
2. Reliability	.2	4	.8	3	.6	3	.6
3. Competence	.3	5	1.5	4	1.2	3	.9
Totals	1.0		3.8		3.3		4.0

SOLUTION

Nicole multiplies each rating by the weight and sums the products in each column to generate a total score for each outsourcing

provider. For example the weighted score for Hi-Tech equals $(.5 \times 3) + (.2 \times 4) + (.3 \times 5) = 1.5 + .8 + 1.5 = 3.8$. She selects Zaragoza, which has the highest overall rating.

Problems

Note: **Px** means the problem may be solved with POM for Windows and/or Excel OM.

Problems 2.1–2.3 relate to A Global View of Operations and Supply Chains

- **2.1** Match the product with the proper parent company and country in the table below:

PRODUCT	PARENT COMPANY	COUNTRY
Arrow Shirts	a. Volkswagen	1. France
Braun Household Appliances	b. Bidermann International	2. Great Britain
Volvo Autos	c. Bridgestone	3. Germany
Firestone Tires	d. Campbell Soup	4. Japan
Godiva Chocolate	e. Credit Lyonnais	5. U.S.
Häagen-Dazs Ice Cream (USA)	f. Tata	6. Switzerland
Jaguar Autos	g. Procter & Gamble	7. China
MGM Movies	h. Michelin	8. India
Lamborghini Autos	i. Nestlé	
Goodrich Tires	j. Geely	
Alpo Pet Foods		

- **2.2** Based on the corruption perception index developed by Transparency International (www.transparency.org), rank the following countries from most corrupt to least: Venezuela, Denmark, the U.S., Switzerland, and China.

- **2.3** Based on the competitiveness ranking developed by the Global Competitiveness Index (www.weforum.org), rank the following countries from most competitive to least: Mexico, Switzerland, the U.S., and China.

Problems 2.4 and 2.5 relate to Achieving Competitive Advantage Through Operations

- **2.4** The text provides three primary strategic approaches (differentiation, cost, and response) for achieving competitive advantage. Provide an example of each not given in the text. Support your choices. (*Hint:* Note the examples provided in the text.)
- **2.5** Within the food service industry (restaurants that serve meals to customers, but not just fast food), find examples of firms that have sustained competitive advantage by competing on the basis of (1) cost leadership, (2) response, and (3) differentiation. Cite one example in each category; provide a sentence or two in support of each choice. Do not use fast-food chains for all categories. (*Hint:* A “99¢ menu” is very easily copied and is not a good source of sustained advantage.)

Problem 2.6 relates to Issues in Operations Strategy

- **2.6** Identify how changes within an organization affect the OM strategy for a company. For instance, discuss what impact the following internal factors might have on OM strategy:
 - Maturing of a product.
 - Technology innovation in the manufacturing process.
 - Changes in laptop computer design that builds in wireless technology.

Problem 2.7 relates to Strategy Development and Implementation

- **2.7** Identify how changes in the external environment affect the OM strategy for a company. For instance, discuss what impact the following external factors might have on OM strategy:
 - Major increases in oil prices.
 - Water- and air-quality legislation.

CASE STUDIES

Rapid-Lube

A huge market exists for automobile tune-ups, oil changes, and lubrication service for more than 250 million vehicles on U.S. roads. Some of this demand is filled by full-service auto dealerships, some by Walmart and Firestone, and some by other tire/service dealers. However, Rapid-Lube, Mobil-Lube, Jiffy-Lube and others have also developed strategies to accommodate this opportunity.

Rapid-Lube stations perform oil changes, lubrication, and interior cleaning in a spotless environment. The buildings are clean, usually painted white, and often surrounded by neatly trimmed landscaping. To facilitate fast service, cars can be driven through three abreast. At Rapid-Lube, the customer is greeted by service representatives who are graduates of Rapid-Lube U. The Rapid-Lube school is not unlike McDonald's Hamburger University near Chicago or Holiday Inn's training school in Memphis. The greeter takes the order, which typically includes fluid checks (oil, water, brake fluid, transmission fluid, differential grease) and the necessary lubrication, as well as filter changes for air and oil. Service personnel in neat uniforms then move into action. The standard three-person team has one

person checking fluid levels under the hood, another assigned interior vacuuming and window cleaning, and the third in the garage pit, removing the oil filter, draining the oil, checking the differential and transmission, and lubricating as necessary. Precise task assignments and good training are designed to move the car into and out of the bay in 10 minutes. The business model is to charge no more, and hopefully less, than gas stations, automotive repair chains, and auto dealers, while providing better and faster service.

Discussion Questions

1. What constitutes the mission of Rapid-Lube?
2. How does the Rapid-Lube operations strategy provide competitive advantage? (*Hint:* Evaluate how Rapid-Lube's traditional competitors perform the 10 decisions of operations management vs. how Rapid-Lube performs them.)
3. Is it likely that Rapid-Lube has increased productivity over its more traditional competitors? Why? How would we measure productivity in this industry?

Strategy at Regal Marine



Regal Marine, one of the U.S.'s 10 largest power-boat manufacturers, achieves its mission—providing luxury performance boats to customers worldwide—using the strategy of differentiation. It differentiates its products through constant innovation, unique features, and high quality. Increasing sales at the Orlando, Florida, family-owned firm suggest that the strategy is working.

As a quality boat manufacturer, Regal Marine starts with continuous innovation, as reflected in computer-aided design (CAD), high-quality molds, and close tolerances that are controlled through both defect charts and rigorous visual inspection. In-house quality is not enough, however. Because a product is only as good as the parts put into it, Regal has established close ties with a large number of its suppliers to ensure both flexibility and perfect parts. With the help of these suppliers, Regal can profitably produce a product line of 22 boats, ranging from the \$14,000 19-foot boat to the \$500,000 44-foot Commodore yacht.

"We build boats," says VP Tim Kuck, "but we're really in the 'fun' business. Our competition includes not only 300 other boat, canoe, and yacht manufacturers in our \$17 billion industry, but home theaters, the Internet, and all kinds of alternative family

entertainment." Fortunately Regal has been paying down debt and increasing market share.

Regal has also joined with scores of other independent boat makers in the American Boat Builders Association. Through economies of scale in procurement, Regal is able to navigate against billion-dollar competitor Brunswick (makers of the Sea Ray and Bayliner brands). The *Global Company Profile* featuring Regal Marine (which opens Chapter 5) provides further background on Regal and its strategy.

Discussion Questions*

1. State Regal Marine's mission in your own words.
2. Identify the strengths, weaknesses, opportunities, and threats that are relevant to the strategy of Regal Marine.
3. How would you define Regal's strategy?
4. How would each of the 10 operations management decisions apply to operations decision making at Regal Marine?

*You may wish to view the video that accompanies the case before addressing these questions.

Hard Rock Cafe's Global Strategy



Hard Rock brings the concept of the "experience economy" to its cafe operation. The strategy incorporates a unique "experience" into its operations. This innovation is somewhat akin to mass customization in manufacturing. At Hard Rock, the experience concept is to provide not only a custom meal from the menu but a dining event that includes a unique visual and sound experience not duplicated anywhere else in the world. This strategy is succeeding. Other theme restaurants have come and gone while Hard Rock continues to grow. As Professor C. Markides of the London Business School says, "The trick is not to play the game

better than the competition, but to develop and play an altogether different game."³⁸ At Hard Rock, the different game is the experience game.

From the opening of its first cafe in London in 1971, during the British rock music explosion, Hard Rock has been serving food and rock music with equal enthusiasm. Hard Rock Cafe has 40 U.S. locations, about a dozen in Europe, and the remainder

³⁸Constantinos Markides, "Strategic Innovation," *MIT Sloan Management Review* 38, no. 3: 9.

scattered throughout the world, from Bangkok and Beijing to Beirut. New construction, leases, and investment in remodeling are long term; so a global strategy means special consideration of political risk, currency risk, and social norms in a context of a brand fit. Although Hard Rock is one of the most recognized brands in the world, this does not mean its cafe is a natural everywhere. Special consideration must be given to the supply chain for the restaurant and its accompanying retail store. About 48% of a typical cafe's sales are from merchandise.

The Hard Rock Cafe business model is well defined, but because of various risk factors and differences in business practices and employment law, Hard Rock elects to franchise about half of its cafes. Social norms and preferences often suggest some tweaking of menus for local taste. For instance, Hard Rock focuses less on hamburgers and beef and more on fish and lobster in its British cafes.

Because 70% of Hard Rock's guests are tourists, recent years have found it expanding to "destination" cities. While this has been a winning strategy for decades, allowing the firm to grow

from one London cafe to 145 facilities in 60 countries, it has made Hard Rock susceptible to economic fluctuations that hit the tourist business hardest. So Hard Rock is signing a long-term lease for a new location in Nottingham, England, to join recently opened cafes in Manchester and Birmingham—cities that are not standard tourist destinations. At the same time, menus are being upgraded. Hopefully, repeat business from locals in these cities will smooth demand and make Hard Rock less dependent on tourists.

Discussion Questions*

1. Identify the strategy changes that have taken place at Hard Rock Cafe since its founding in 1971.
2. As Hard Rock Cafe has changed its strategy, how has its responses to some of the 10 decisions of OM changed?
3. Where does Hard Rock fit in the four international operations strategies outlined in Figure 2.9? Explain your answer.

*You may wish to view the video that accompanies the case before addressing these questions.

Outsourcing Offshore at Darden

Video Case

Darden Restaurants, owner of popular brands such as Olive Garden, Bahama Breeze, and Longhorn Grill, serves more than 320 million meals annually in over 1,500 restaurants across the U.S. and Canada. To achieve competitive advantage via its supply chain, Darden must achieve excellence at each step. With purchases from 35 countries, and seafood products with a shelf life as short as 4 days, this is a complex and challenging task.

Those 320 million meals annually mean 40 million pounds of shrimp and huge quantities of tilapia, swordfish, and other fresh purchases. Fresh seafood is typically flown to the U.S. and monitored each step of the way to ensure that 34°F is maintained.

Darden's purchasing agents travel the world to find competitive advantage in the supply chain. Darden personnel from supply chain and development, quality assurance, and environmental relations contribute to developing, evaluating, and checking suppliers. Darden also has seven native-speaking representatives living on other continents to provide continuing support and evaluation of suppliers. All suppliers must abide by Darden's food standards, which typically exceed FDA and other industry standards. Darden expects continuous improvement in durable relationships that increase quality and reduce cost.

Darden's aggressiveness and development of a sophisticated supply chain provide an opportunity for outsourcing. Much food preparation is labor intensive and is often more efficient when handled in bulk. This is particularly true where large volumes may justify capital investment. For instance, Tyson and Iowa Beef prepare meats to Darden's specifications much more economically than can individual restaurants. Similarly, Darden has found that it can outsource both the cutting of salmon to the proper portion size and the cracking/peeling of shrimp more cost-effectively offshore than in U.S. distribution centers or individual restaurants.

Discussion Questions*

1. What are some outsourcing opportunities in a restaurant?
2. What supply chain issues are unique to a firm sourcing from 35 countries?
3. Examine how other firms or industries develop international supply chains as compared to Darden.
4. Why does Darden outsource harvesting and preparation of much of its seafood?

*You may wish to view the video that accompanies this case study before answering these questions.

- **Additional Case Study:** Visit [MyOMLab](#) for this free case study:
Outsourcing to Tata: The Indian outsourcing firm is hired by New Mexico.

Endnotes

1. The 28 members of the European Union (EU) as of 2015 were Austria, Belgium, Bulgaria, Cyprus, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom. Not all have adopted the euro. In addition, Iceland, Macedonia, Montenegro, and Turkey are candidates for entry into the European Union.
2. M. E. Porter, *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: The Free Press, 1985.
3. M. E. Porter, *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: The Free Press, 1980, 1998.
4. J. Whitaker, M. S. Krishnan, and C. Fornell. "How Offshore Outsourcing Affects Customer Satisfaction." *The Wall Street Journal* (July 7, 2008): R4.

Chapter 2 *Rapid Review*

Main Heading	Review Material	MyOMLab
A GLOBAL VIEW OF OPERATIONS AND SUPPLY CHAINS (pp. 32–35)	<p>Domestic business operations decide to change to some form of international operations for six main reasons:</p> <ol style="list-style-type: none"> 1. Improve supply chain 2. Reduce costs and exchange rate risks 3. Improve operations 4. Understand markets 5. Improve products 6. Attract and retain global talent <ul style="list-style-type: none"> ■ Maquiladoras—Mexican factories located along the U.S.–Mexico border that receive preferential tariff treatment. ■ World Trade Organization (WTO)—An international organization that promotes world trade by lowering barriers to the free flow of goods across borders. ■ NAFTA—A free trade agreement between Canada, Mexico, and the United States. ■ European Union (EU)—A European trade group that has 28 member states. 	Concept Questions: 1.1–1.4 Problems: 2.1–2.3
DEVELOPING MISSIONS AND STRATEGIES (pp. 35–36)	<p>An effective operations management effort must have a <i>mission</i> so it knows where it is going and a <i>strategy</i> so it knows how to get there.</p> <ul style="list-style-type: none"> ■ Mission—The purpose or rationale for an organization’s existence. ■ Strategy—How an organization expects to achieve its missions and goals. <p>The three strategic approaches to competitive advantage are:</p> <ol style="list-style-type: none"> 1. Differentiation 2. Cost leadership 3. Response 	Concept Questions: 2.1–2.4 VIDEO 2.1 Operations Strategy at Regal Marine
ACHIEVING COMPETITIVE ADVANTAGE THROUGH OPERATIONS (pp. 36–40)	<ul style="list-style-type: none"> ■ Competitive advantage—The creation of a unique advantage over competitors. ■ Differentiation—Distinguishing the offerings of an organization in a way that the customer perceives as adding value. ■ Experience differentiation—Engaging the customer with a product through imaginative use of the five senses, so the customer “experiences” the product. ■ Low-cost leadership—Achieving maximum value, as perceived by the customer. ■ Response—A set of values related to rapid, flexible, and reliable performance. 	Concept Questions: 3.1–3.4 Problems: 2.4–2.5 VIDEO 2.2 Hard Rock’s Global Strategy
ISSUES IN OPERATIONS STRATEGY (pp. 40–41)	<ul style="list-style-type: none"> ■ Resources view—A view in which managers evaluate the resources at their disposal and manage or alter them to achieve competitive advantage. ■ Value-chain analysis—A way to identify the elements in the product/service chain that uniquely add value. ■ Five forces model—A way to analyze the five forces in the competitive environment. <p>Forces in Porter’s five forces model are (1) immediate rivals, (2) potential entrants, (3) customers, (4) suppliers, and (5) substitute products.</p> <p>Different issues are emphasized during different stages of the product life cycle:</p> <ul style="list-style-type: none"> ■ Introduction—Company strategy: Best period to increase market share, R&D engineering is critical. OM strategy: Product design and development critical, frequent product and process design changes, short production runs, high production costs, limited models, attention to quality. ■ Growth—Company strategy: Practical to change price or quality image, strengthen niche. OM strategy: Forecasting critical, product and process reliability, competitive product improvements and options, increase capacity, shift toward product focus, enhance distribution. ■ Maturity—Company strategy: Poor time to change image or price or quality, competitive costs become critical, defend market position. OM strategy: Standardization, less rapid product changes (more minor changes), optimum capacity, increasing stability of process, long production runs, product improvement and cost cutting. ■ Decline—Company strategy: Cost control critical. OM strategy: Little product differentiation, cost minimization, overcapacity in the industry, prune line to eliminate items not returning good margin, reduce capacity. 	Concept Questions: 4.1–4.4 Problem: 2.6

Chapter 2 **Rapid Review** *continued*

MyOMLab

Main Heading	Review Material	
STRATEGY DEVELOPMENT AND IMPLEMENTATION (pp. 41–44)	<ul style="list-style-type: none"> ■ SWOT analysis—A method of determining internal strengths and weaknesses and external opportunities and threats. ■ Key success factors (KSFs)—Activities or factors that are key to achieving competitive advantage. ■ Core competencies—A set of unique skills, talents, and activities that a firm does particularly well. A core competence may be a combination of KSFs. ■ Activity map—A graphical link of competitive advantage, KSFs, and supporting activities. 	Concept Questions: 5.1–5.4 Problem: 2.7 Virtual Office Hours for Solved Problem: 2.1
STRATEGIC PLANNING, CORE COMPETENCIES, AND OUTSOURCING (pp. 44–48)	<ul style="list-style-type: none"> ■ Outsourcing—Procuring from external sources services or products that are normally part of an organization. ■ Theory of comparative advantage—The theory which states that countries benefit from specializing in (and exporting) products and services in which they have relative advantage and importing goods in which they have a relative disadvantage. <p>Perhaps half of all outsourcing agreements fail because of inappropriate planning and analysis.</p> <p>Potential risks of outsourcing include:</p> <ul style="list-style-type: none"> ■ A drop in quality or customer service ■ Political backlash that results from outsourcing to foreign countries ■ Negative impact on employees ■ Potential future competition ■ Increased logistics and inventory costs <p>The most common reason given for outsourcing failure is that the decision was made without sufficient understanding and analysis.</p> <p>The factor-rating method is an excellent tool for dealing with both country risk assessment and provider selection problems.</p>	Concept Questions: 6.1–6.4 Problems: 2.8–2.12 Virtual Office Hours for Solved Problem: 2.2 VIDEO 2.3 Outsourcing Offshore at Darden
GLOBAL OPERATIONS STRATEGY OPTIONS (pp. 49–50)	<ul style="list-style-type: none"> ■ International business—A firm that engages in cross-border transactions. ■ Multinational corporation (MNC)—A firm that has extensive involvement in international business, owning or controlling facilities in more than one country. <p>The four operations strategies for approaching global opportunities can be classified according to local responsiveness and cost reduction:</p> <ul style="list-style-type: none"> ■ International strategy—A strategy in which global markets are penetrated using exports and licenses with little local responsiveness. ■ Multidomestic strategy—A strategy in which operating decisions are decentralized to each country to enhance local responsiveness. ■ Global strategy—A strategy in which operating decisions are centralized and headquarters coordinates the standardization and learning between facilities. ■ Transnational strategy—A strategy that combines the benefits of global-scale efficiencies with the benefits of local responsiveness. These firms transgress national boundaries. 	Concept Questions: 7.1–7.4 Problem 2.13

Self Test

■ **Before taking the self-test**, refer to the learning objectives listed at the beginning of the chapter and the key terms listed at the end of the chapter.

LO 2.1 A mission statement is beneficial to an organization because it:

- a) is a statement of the organization's purpose.
- b) provides a basis for the organization's culture.
- c) identifies important constituencies.
- d) details specific income goals.
- e) ensures profitability.

LO 2.2 The three strategic approaches to competitive advantage are ____, ____, and ____.

LO 2.3 Core competencies are those strengths in a firm that include:

- a) specialized skills.
- b) unique production methods.
- c) proprietary information/knowledge.
- d) things a company does better than others.
- e) all of the above.

LO 2.4 Evaluating outsourcing providers by comparing their weighted average scores involves:

- a) factor-rating analysis.
- b) cost-volume analysis.
- c) transportation model analysis.
- d) linear regression analysis.
- e) crossover analysis.

LO 2.5 A company that is organized across international boundaries, with decentralized authority and substantial autonomy at each business via subsidiaries, franchises, or joint ventures, has:

- a) a global strategy.
- b) a transnational strategy.
- c) an international strategy.
- d) a multidomestic strategy.

Answers: LO 2.1. a; LO 2.2. differentiation, cost leadership, response; LO 2.3. e; LO 2.4. a; LO 2.5. c.