

SOLUTIONS MANUAL

PRINCIPLES OF OPERATIONS MANAGEMENT



Nutrition Facts	
Ethics in OM	
Sustainability	
Real-life companies	
21 exciting video cases	
Value for you to use today	
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Great learning outcomes	100%
Ingredients: A state-of-the-art view of the activities of the operations function	

JAY
HEIZER

EIGHTH EDITION

BARRY
RENDER

CHAPTER 2

Operations Strategy in a Global Environment

DISCUSSION QUESTIONS

1. Global seems the better label for Boeing since authority and responsibility reside in the U.S.—the home country.
2. Six reasons to internationalize: Reduce costs, improve supply chain, provide better goods and services, attract new markets, learn to improve operations, attract and retain global talent.
3. No. Sweetness at Coca-Cola is adjusted for the tastes of individual countries.
4. A *mission* is an organization's purpose—what good or service it will contribute to society.
5. *Strategy* is an organization's action plan—how it is going to achieve its purpose.
6. A *mission* specifies where the organization is going and a *Strategy* specifies how it is going to get there.
7. The answer to this question will depend on the establishment studied, but should probably include some of the following considerations:

The mission: diagnose automobile problems and make the necessary repair at a fair price for the local customer.

Points to consider, or options, within the 10 decision areas are:

Decision:	Option:
Product	Repair work of American and/or foreign vehicles; specialized (tune-ups, lubrication, wheel alignment, etc.) versus general repair; frame and body repair versus engine and power train repair; repair and maintenance only, versus repair, maintenance, and sales of fuel; professional staffing versus rental of tools and space for do-it-yourself repair work
Quality	Appropriate level of quality; warranty; method of measuring and maintaining quality (customer complaints, inspection by supervising mechanic, etc.)
Process	Use of general versus special purpose diagnostic and repair equipment (in particular, the degree to which computer controlled diagnostic equipment is employed)
Location	In-town, shopping mall, highway
Layout	Single bay/multibay; general-purpose bay versus special-purpose bay (lubrication/tire repairs and installation/wheel alignment/engine and power train repair, etc.)

Human Resources	Employment of certified versus noncertified repair persons; employment of specialists versus general mechanics
Supply Chain	Choice of supplier(s) for both general and original manufacturer parts and supplies
Scheduling	Hours of operation (8:00 A.M.–5:00 P.M.; 24-hour towing; weekends/holidays), repairs versus motor vehicle safety inspections, etc.; service by appointment versus walk-in (or drive-up) service
Inventory	Quantity and variety of repair parts (fan belts, filters, mufflers, headlights, etc.) to stock; whether to stock generic or original manufacturer parts

8. Library or Internet assignment: Student is to identify a mission and strategy for a firm. *Business Week*, *Fortune*, *Wall Street Journal*, and *Forbes* all have appropriate articles.

9. OM strategy change during a product's life cycle: During the introduction stage, issues such as product design and development are critical, then during the growth stage the emphasis changes to product and process reliability; from there we move to concern for increasing the stability of the manufacturing process and cost cutting; and finally, in the decline stage pruning the line to eliminate items not returning good margin becomes important. Figure 2.5 provides a more expansive list.

10. The text focuses on three conceptual strategies—cost leadership, differentiation and response. Cost leadership by Wal-Mart—via low overhead, vicious cost reduction in the supply chain; Differentiation, certainly any premium product—all fine dining restaurants, up-scale autos—Lexus, etc.; Response, your local pizza delivery service, FedEx, etc.

11. The PIMs research suggest that high ROI results from (1) high product quality, (2) high capacity utilization, (3) high operating effectiveness, (4) low investment intensity, and (5) low direct cost per unit.

12. An operations strategy statement for Southwest Airlines would include a focus on efficient low cost service with high capital utilization (high aircraft and gate utilization), flexible non-union employees, low administrative overhead, etc.

13. The integration of OM with marketing and accounting is pervasive. You might want to cite examples such as developing new products. (Marketing must help with the design, the forecast and target costs; accounting must ensure adequate cash for development and the necessary capital equipment.) Similarly, new technology

or new processes emanating from operations must meet the approval of marketing and the capital constraints imposed by the accounting department.

ETHICAL DILEMMA

Here is an interesting scenario. A firm can save \$10 million in production costs per year. All it has to do is locate manufacturing in China, which is not a democracy and where some employees are exploited. Nike faced a similar dilemma in Vietnam, where it was accused of paying less than a livable wage (\$1.60 per day). Students may be prepared to discuss this current and sensitive subject.

END-OF-CHAPTER PROBLEMS

2.1 The three methods are cost leadership, differentiation, and response. Cost leadership can be illustrated by Wal-Mart, which uses its buying power to pressure its suppliers into concessions. Differentiation can be illustrated by almost any restaurant or restaurant chain, such as Red Lobster, which offers a distinct menu and style of service than others. Response can be illustrated by a courier service such as FedEx, that guarantees specific delivery schedules; or by a custom tailor, who will hand make a suit specifically for the customer.

2.2 Cost leadership: institutional food services, such as Sodexo-Marriott, provide meal service to college campuses and similar institutions. Such firms often get their contracts by being low bidder to provide service. Response: a catering firm (the customer picks the menu, the customer picks the time and date). Differentiation: virtually all restaurants seek differentiation in menu, in taste, in service. This is particularly true of fine dining restaurants, but also true of fast food restaurants. For instance, Burger King likes to talk about meals “anyway you want them” and McDonald’s has a playground for the children.

2.3 Students may find articles about German work rules or Latin American siestas that interfere with work schedules. Also, some Hindu workers will not touch metal objects, or touch objects touched by “untouchables.” There are rules concerning kitchen equipment and ingredient mixing in Kosher food preparation. Computer keyboards in English versus Chinese pose a serious training issue. There are many other possibilities.

2.4 Arrow; Bidermann International, France
Braun Household Appliances; Procter & Gamble, U.S.
Lotus Autos; Proton, Malaysia
Firestone Tires; Bridgestone, Japan
Godiva Chocolate; Campbell Soup, U.S.
Haagen-Dazs Ice Cream; Grand Metropolitan, Great Britain
Jaguar Autos; Ford, U.S.
MGM Movies; Credit Lyonnais, France
Lamborghini; Volkswagen, Germany
Goodrich; Michelin, France
Alpo Pet Foods; Nestle, Switzerland

2.5 (a) The maturing of a product may move the OM function to focus on more standardization, make fewer product changes, find optimum capacity, stabilize the manufacturing process, lower labor skills, use longer production runs, and institute cost cutting and design compromises.

- (b) Technological innovation in the manufacturing process may mean new human resources skills (either new personnel and/or training of existing personnel), and added capital investment for new equipment or processes. Product design, layout, maintenance procedures, purchasing, inventory, quality standards, and procedures may all need to be revised.
- (c) A change for a move from 3 1/2" drives to CD-ROM drives will, at least potentially, require the same changes as noted in (b) above.

2.6 Specific answers to this question depend on the organization considered. Some general thoughts follow.

- (a) For a producer with high energy costs, major oil prices change the cost structure, result in higher selling prices, and, if the company is energy inefficient compared to other producers, result in a change in competitive position. Conversely, when oil prices dropped in 1997, it was a bonanza for heavy fuel users such as airlines.
- (b) More restrictive quality of water and air legislation increases the cost of production and may, in some cases, prohibit the use of specific technologies. The high cost of process modification to meet more rigid standards has resulted in the closing of numerous plants including paper mills and steel mills.
- (c) A decrease in the number of young prospective employees entering the U.S. labor market in 1985–1998 contributed to a much tighter job market. It is also required organizations to “slimdown” (reduce personnel and add automation) as it became increasingly difficult to replace persons who left.
- (d) Inflation, especially at high or uncertain rates, makes it more difficult to predict both the cost of production and the market demand.
- (e) Legislation moving health insurance from a before-tax benefit to taxable income will reduce the take-home pay of employees by the amount of the taxes. This could have a significant effect on the income of employees in the lower pay classifications, putting substantial pressure on operations managers to increase wages in these classifications. (This does not mean that it is not a good idea for society—i.e., to make employees more sensitive to the cost of health insurance.)

2.7 The corruption perception index maintained by Transparency International (www.transparency.de/documents/cpi/) gives a 1 to 99 scale (1 being least corrupt to 99 being most corrupt). Also see Chapter 8, Table 8.2.

A lively class discussion can also take place regarding who pays bribes, as shown on the same Web site. Other perspectives of “corruption” are shown on the Asia Pacific Management News page (<http://www.pmforum.com/news/>).

2.8 *The Economist* does an analysis similar to this on occasion but the “Growth Competitiveness Index,” *World Economic Forum*, Geneva (www.weforum.org/pdf/gcr) does one every year. (Also see Table 8.1 in the text) For 2004–2005 U.S. 2; U.K. 11; Singapore 7; Hong Kong 21; Italy 47 are the rankings.

CASE STUDY

Minit-Lube, Inc.

- (a) What constitutes the mission of Minit-Lube?
To provide economical preventative maintenance and interior auto cleaning, primarily to vehicles owned by individuals (as opposed to businesses), in the U.S.
- (b) How does the Minit-Lube strategy provide competitive advantage?
- This case is a good way to get the student thinking about the 10 decisions around which the text is organized. Minit-Lube's approach to these 10 decisions includes:

Product Design:

- A narrow product strategy could be defined as "lubricating automobiles" (more in Chapter 5).

Quality Strategy:

- Because of limited task variety, high repetition, good training, and good manuals, quality should be relatively easy to maintain.

Process Strategy:

- The process strategy allows employees and capital investment to focus on doing this mission well, rather than trying to be a "general purpose" garage or gas station.

Location Strategy:

- Facilities are usually located near residential areas.

Layout Strategy:

- The three bays are designed specifically for the lubrication and vacuuming tasks to minimize wasted movement on the part of the employees and to contribute to the speedier service.

Supply Chain Strategy:

- Purchasing is facilitated by negotiation of large purchases and custom packaging.

Human Resources Strategy:

- Human resources strategy focuses on hiring a few employees with limited skills and training them in a limited number of tasks during the performance of which they can be closely supervised.

Inventory:

- Inventory investment should be relatively low, and they should expect a high turnover.

Scheduling:

- Scheduling is quite straightforward with similar times for most cars. Once volume and fluctuation in volume are determined, scheduling should be very direct—assisting both staffing and customer relations.

Maintenance:

- There is relatively little equipment to be maintained, therefore little preventive maintenance required. With three bays and three systems, there is backup available in the case of failure.
- Specialization of personnel and facilities should make Minit-Lube more efficient. Jobs/tasks accomplished per man hour would be a good place to start.

VIDEO CASE STUDY

1 STRATEGY AT REGAL MARINE

There is a short video (7 minutes) available from Prentice Hall and filmed specifically for this text that supplements this case. There is a 2 minute version of this video that also appears on the student CD in the text.

1. Regal Marine's mission is to provide luxury performance boats to the world through constant innovation, unique features, and high quality that will differentiate the boats in the marketplace.

2. A strength of Regal Marine is continued innovation that is being recognized in the marketplace. One current weakness is maintaining an effective, well-trained labor force in a tight Florida labor market. The *opportunities* for Regal include an increase in boat sales brought about through the reduction of the luxury tax and Regal Marine's increasing market presence in the world boat market. The *threats* to Regal are a huge number of small competitors going after various parts of the market. Brunswick goes after the mass market, and hundreds of small boat manufacturers go after various niche markets.

3. Regal Marine's strategy is to focus constant innovation, high quality, and good value for the money with sales through effective dealers.

4. Each of the 10 Operations Management decisions is important to Regal's success.

Product:

- Must be unique, full of features, and richly appointed, which puts constant pressure on the design, styling, and appointments

Quality:

- Because the typical Regal Marine customer is interested in exceptional quality for his/her substantial investment

Process Selection and Design:

- Because of the large number of boats and custom features, building via repetitive processes in a modular way has proven to be an effective and efficient process.

Inventory:

- Regal tries to drive down finished goods inventory, but must maintain inventory of purchased parts to meet changing production schedules. Additionally, the tooling inventory, that is the various molds, create an inventory problem all their own. This is a good point for class discussion, as most students may not be familiar with the process.

Scheduling:

- Regal tries to move the components from workstation to workstation on a one-day JIT basis. Good, reliable schedules are necessary to get the job done.

Supply Chain Management:

- Of course suppliers are important because of many of the appointments—from galley features through engines, and hardware make a huge difference in the perceptions and performance of marine craft. Consequently, the selection of these suppliers and their performance is critical to Regal.

Maintenance:

- Much of Regal's maintenance hinges on keeping fiberglass guns and molds ready for use.

Location:

- Because Florida is one of the major markets for boats in America, Regal is positioned to supply this large market rapidly and economically.

Layout:

- Because of the bulkiness of the product, the layout must be designed, as it is, to minimize loads times the distances times the difficulty factor. There is a clean logical flow of material through the plant.

Human Resources:

- Is important because boat hulls, decks, assembly, and finishing out the boats have a high labor content. Additionally, the diverse labor market of the early 2000's in Florida creates special challenges for operations managers at Regal.

VIDEO CASE STUDY**2 HARD ROCK CAFE'S GLOBAL STRATEGY**

There is a short video (9 minutes) available from Prentice Hall and filmed specifically for this text that supplements this case. This video also appears in a 2 minute version on the student CD in the text

1. Identify the strategic changes that have taken place at Hard Rock Café. What we want to do here is help the student understand that an optimum mix of internal strengths and opportunities drives strategies in a changing environment.

- Initially, Hard Rock was a London Café serving classic American food.
- Then it became a 'theme' chain with memorabilia in tourist destinations.
- Then it added stores.
- Then it added live music and a rock concert.
- Then it became an established name and began opening hotels and casinos.
- Then it upgraded its menu.
- Then it moved into cities that are not the typical tourist destination.

2. As these strategic changes have taken place – the 10 decisions of OM change:

- Location (from a London Café, to tourist destinations, to non-tourist locations)
- Product Design (new menu items)
- Quality – (the entire evaluation of quality and quality control got much more complex.)
- Process – (the kitchen process changed when Hard Rock went from hamburgers to lobster and additional changes were made as the firm moved to retail merchandising.)
- Layout (added retail stores, added live music facilities)
- Supply chain – (purchase memorabilia and lobsters – new expectations of the supply chain)
- Inventory (from food to clothing to memorabilia, to expanded food items in inventory – how do you keep lobsters alive and how long?).
- Human Resources – (the range of talents needed keeps expanding; from cooks of classic American fare and wait staff and bartenders,

to merchandisers, to cooks for a wider more expensive menu, to coordinators and performers for the live music facilities.)

The case says little about scheduling and maintenance, but every change in product (food or merchandise and every change in equipment and processes changes scheduling and maintenance.)

3. Hard Rock fits in the multidomestic strategy, which uses the existing domestic model globally.

INTERNET CASE STUDIES***1 JOHANNSEN STEEL COMPANY**

This is a great case to discuss mission and matching OM strategy to that mission. The case can address these issues at several levels of sophistication to meet the needs of either undergraduate or graduate students.

Johannsen Steel Company (name disguised) did actually exist from the late 1920s until its final bankruptcy in 1982. The case writer worked for the company as an industrial engineer for nearly six years.

1. (a) Johannsen Steel's mission did change over time. Some students will focus on what the mission was, others on what it is, and still others on what the mission should be. Perhaps what it was and might have remained is a good mission with which to start.

The JSC mission was (could have remained): To identify and sell to those markets for which JSC's engineering and processing provide a competitive advantage. Specifically, to be a high quality "finished wire" job shop/small batch producer working closely with customers to manufacture high-quality high-margin products to the mutual advantage of both the customer and JSC in the U.S. market.

(b) The production function mission: To provide state-of-the-art processes and systems that maximize the traditional capability of JSC to manufacture high-quality, custom-wire in job lots and small batches, and to maintain advantages in engineering, cost, and delivery that will keep JSC a leader in its industry segment.

2. In the early 1960s the external conditions for competition changed:

(a) External threats/opportunities

- Prompted by the steel shortage caused by the 1960 steel strike (lasting 14 weeks), the Japanese got their feet in the U.S. industry door—never again to be shut out. This resulted in:

- falling prices on margins for steel products, particularly for common grades, shapes, and finishes
- more pressure on reduced delivery times (The Japanese would produce steel wire in Japan, ship to warehouses in Connecticut, and offer better delivery times to the New England area than U.S. steel mills operating in Massachusetts.)

- Grades of steel wire, which at one time were considered difficult to make (e.g., music wire for pianos, violins, etc. and coated wires), were now near-commodities and could not attract their historical high margins.

*Solutions to cases that appear on our companion web site (www.prenhall.com/heizer).

- With the U.S., Japanese, and Germans strongly competing to sell steel wire-drawing equipment in the later 1960s and 1970s, the state of wire-drawing technology advanced dramatically. No longer were JSC's process machinery competitive for standard or even semi-difficult quality grades and no longer could it design and build its own machinery that could rival the newest equipment offered by domestic and foreign manufacturers.
- The steel shortage days of the 1940s and 1950s were finished; now the industry had excess capacity further depressing prices on common steel products.
- The combination of Japanese equipment productivity coupled with lower wages at least for the 1960s, 1970s, and early 1980s made them formidable competitors despite the cost of trans-Pacific shipping. No longer was the Pacific Ocean the wide cost and delivery barrier it had once been.
- Backward integration; standard technology, commodity type products are candidates for backward integration by large users. Large tire companies such as B.F. Goodrich and Firestone purchased outright or made significant investments in small steel wire producers. Although this provided the large tire producers with closer, lower cost and more dependable sources of wire, it cut into JSC's volume orders for tire wire (and later value spring and hose wire).

(b) Internal Strengths and Weaknesses

The changes did not occur rapidly. The set of problems and errors that befell JSC occurred over a 25-year period, probably beginning in the middle 1950s with a failure to reinvest in new equipment, followed in the 1960s by a failure to assess the changes in the competitive environment. Comparing the most recent year's performance to last year's or the last several years would not provide a sufficient means or depth of analysis.

Constraints were overbearing. The combination of constraints on outmoded equipment and facilities, insufficient funds for capital expenditures, decreasing product pricing and margins, increasing labor costs and OSHA/EPA expenses, and rod coil sourcing restrictions had probably doomed JSC in its present form—it was only a matter of time.

Inability to assess what the company's operational and marketing strengths had been, what areas/markets they wanted to compete in and how, whether or not the company had the operational capabilities to compete in these areas, and, if not, what operational changes in process equipment, jobs, facility locations, etc., were needed to support the corporate strategy. OM strategy must support the mission.

In summary JSC had gradually drifted from a profitable, high-quality, high-margin, efficient job shop to a mixed job shop/medium batch producer of medium- and low-margin products with outmoded job shop equipment. JSC now tried to compete simultaneously with small-order specialty wire producers and large batch, commodity wire producers. Although originally a job shop, JSC had been migrating towards more standard wire orders, which competitively necessitated a high-volume, large-batch process. JSC had never realized it could not compete in

both the job shop/high or unique quality/high margin and large batch/standard quality/low-margin worlds at the same time from the same facilities and with the same equipment — equipment that was still operable, but too obsolete to compete effectively even in its original business arena.

What Happened

JSC's mother corporation, WVS, declared bankruptcy about 1980. JSC was then sold to an internal JSC management group that tried, unsuccessfully, to downsize JSC by eliminating unprofitable products, renegotiate a contract with the United Steel Workers union, and renegotiate bank loans. Despite these efforts the new JSC passed from existence in 1982.

3. The management of JSC made the error of not aligning its mission with the OM capabilities. They failed to operate with quality, equipment, processes, capacity, product development, layout, scheduling, personnel, inventory, maintenance, pricing, and margins all properly aligned.

Chapter 7 introduces the distinctions between low volume/high variety and high volume/low variety. The left side of Table 7.2 provides a good outline for looking at the low-volume (job shop/ process focused) facility that was the traditional JSC operation. The failure was that management and some of the market moved to the high volume, low variety (product focused) without making the investment in the facilities and new systems required to make such a system work.

Product Strategy:

- They continued to try to compete in markets that formerly had held high margins (e.g., music wire), but now were medium priced at best. Although this in itself is not fatal, they did not adequately respond to these downward margin shifts by aggressively soliciting high-margin orders (experimental wire, hard-to-produce wire, small jobs, etc.) that JSC was best suited to produce.
- With little or no profits and with little or no capital expenditures allowed, JSC focused on productivity improvements and cost cutting for solutions—not an analysis of the kinds of orders that were profitable and on which they could successfully compete.

Process Strategy:

- To fill its excess capacity, spread its overhead costs, and attempt to raise profit levels, JSC sought orders of standard, commodity type wires (e.g., stitching wire, tire bead wire), despite the fact that most of JSC's process equipment was flexible, but slow running. These were the easiest orders to get (sales commissions were paid on revenue—not margins). Because of its reputation for high quality and flexibility, JSC was able to obtain these orders. In fact these types of orders increasingly represented the majority of orders taken and tonnage produced. However, because of their commodity pricing and JSC's antiquated and competitively inefficient production process, there was little or no profit in them.

Quality and Supply Chain Management Strategy:

- Another reason for the moves in the commodity direction was that JSC's president was under pressure to buy WVS's steel rod—okay for commodity quality wire, but unsuited for higher quality products. This mandate also prevented JSC from benefiting from the larger Bethlehem Steel rod coils.

Layout Strategy:

- The layout requirements for job shop/small batch differ from product-focused facilities as briefly noted in Table 7.2 and discussed in Chapter 9.

Location Strategy:

- With the tire companies moving toward manufacture of their own wire, an option may have been to preempt that trend by locating plants adjacent to their factories (as steel and aluminum can companies have located next to breweries). Alternatively, JSC may have been able to develop management contracts for the wire plants next to the tire factories.

Scheduling and Inventory Tactics:

- Finished inventory is seldom held in a Job Shop, but almost always held in a product focused facility. Different policies and systems are required for scheduling and inventory (again see Table 7.2). There is no clear evidence that these accommodations were made.

Maintenance Tactics:

- Because machinery does work and can be maintained does not mean it is competitive for all products it can produce. JSC did not replenish its stock of process equipment for future competitive needs when it did have the money (1950s). Now that it desperately needs to update its “antiques,” it cannot afford to do so. Several indirect costs of outmoded equipment and aging facilities are the increasing cost of maintenance and increasing downtime due to more frequent preventive maintenance and/or breakdowns. JSC suffered from all these ailments.

Human Resources:

- Although different skills are needed in a job shop as opposed to a product-focused facility, deteriorating morale may have been the long-run failure.

4. The product-by-value techniques of Chapter 5 are very useful to identify high-margin items.

The checklist of Table 7.2 is a good way to identify the distinction between job shops and product-focused facilities.

Briefing top management on the items discussed in points 2 and 3 above would help focus on the issues.

2 INTERNATIONAL OPERATIONS AT GENERAL MOTORS

Key Points

- With 80% of its cars produced in the U.S., GM has been a multinational, but domestically oriented, organization.
- Many cars produced outside of the U.S. were often old U.S. models with minor updates.
- GM's current approach is to achieve a low-cost strategy by becoming a global corporation.
- Four modern flexible, but standardized, plants is one of the techniques that GM is using to become a global corporation, with 50% of its cars produced outside the U.S.
- This is an emulation of the Toyota approach.

1. GM's international strategy has been rather typical. First, it exports, then builds local subsidiaries (i.e., Germany and Argentina), then joint ventures (the NUMMI plant with Toyota in

Fremont, California), but is now moving toward a global strategy. The global strategy will provide a standardized (if not identical) product with economies of scale. GM hopes this approach will allow it to succeed in emerging markets.

2. This strategy is appropriate in those industries where the demand for local customization or responsiveness to local tastes is overwhelmed by economies of scale. A global strategy such as this is not appropriate in other industries where local and changing tastes dominate (i.e., food, cosmetics, some clothes, etc.). GM's global strategy with very similar products may be weak in its ability to respond to local conditions and cultures.

3. The case demonstrates the advantages of a low-cost strategy as opposed to a strategy of differentiation or responsiveness. The issues presented in the case are: product design (standard modules), process selection (replicating a repetitive process), location (low cost locations that minimize transportation cost and overcome local trade barriers), layout (balanced assembly line), supply chain management (delivery directly to the assembly line, cutting down on warehousing), and inventory (reduced inventory via less warehousing and JIT deliveries).

3 MOTOROLA'S GLOBAL STRATEGY

This case examines Motorola's strategy in the cellular telephone and pager market. Motorola's strategy is based on Japanese-style techniques and continuous improvement of quality.

Key Points

- Motorola has been a leader in microchip and semiconductor production for years. It also established itself as a leader in mobile communication technology. However, Motorola has not achieved this leadership position without a fight.
- Motorola's initial reaction to the invasion of Japanese producers in the cellular telephone and pager market in 1980s was slow and uncertain. Eventually, Motorola decided to fight the Japanese using a two-pronged strategy, first by learning from them and then by competing with them.
- Motorola was committed to lowering costs, improving quality, and regaining market share. To that end, managers studied Japanese operations and learned how to compete more effectively. Motorola simultaneously increased its R&D and employee training budgets. In fact, a total reengineering of the company took place.
- The turnaround at Motorola was hugely successful. The company won the prestigious Malcolm Baldrige National Quality Award and is currently the number three producer of pagers and cellular telephones for the Japanese market. On a world-wide scale, Motorola controls some 15 percent of the market for these products and is the number two producer of semiconductor chips. In addition, the company is rapidly introducing new products.
- Motorola is working to avoid the complacent position it found itself in during the early 1980s and has set enormously challenging goals of continuous improvement for itself. In addition, it has decided that more than three quarters of its revenues should accrue from foreign sources.

1. *What are the components of Motorola's international strategy?*

The basic components of international strategy are scope of operations, resource deployment, distinctive competence, and

synergy. Motorola's scope of operations, or where it is going to conduct business, can be defined geographically as a worldwide operation. In terms of its resource deployment strategy, or how it allocates resources, Motorola initially abandoned some areas and then began to concentrate on cellular telephones, pagers, and semiconductors. It has also devoted considerable resources to R&D and new product development. Motorola's distinctive competence, or what it does exceptionally well, clearly revolves around its commitment to quality. Finally, Motorola is able to achieve synergy in its operations as the different elements of its operation benefit others.

2. *Describe how Motorola might have arrived at its current strategy as a result of a SWOT analysis.*

A SWOT analysis is an assessment of a firm's strengths, weaknesses, opportunities, and threats. A good SWOT analysis should provide the basis for strategy development that allows a

firm to exploit strengths and opportunities, neutralize weaknesses, and minimize threats. Clearly Motorola identified the Japanese as a threat in the early 1980s, but also saw an opportunity in the world marketplace. Motorola at the time was weak in the areas of costs and quality, but exceptional leadership and R&D were able to neutralize the weaknesses and turn the company around.

3. *Discuss Motorola's primary business strategy.*

Motorola's primary business strategy is one of differentiation. The company has committed to distinguishing its products from those of competitors on the basis of quality. In fact, the company currently has a perfection rate of 99.9997 percent, but has set an even loftier goal for the future.

Sources: Adapted from R.W. Griffin and M.W. Pustay, *International Business*, Addison Wesley Longman, Reading, MA, 1996, pp. 373–74; updated with company data at www.motorola.com.