

# Operations and Supply Management: The Core

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# Section 1

# STRATEGY

1. Operations and Supply Strategy
2. Project Management

## TWENTY-FIRST-CENTURY OPERATIONS AND SUPPLY MANAGEMENT

Managing a modern supply chain involves specialists in manufacturing, purchasing, and distribution, of course. However, today it is also vital to the work of chief financial officers, chief information officers, operations and customer service executives, and chief executives. Changes in operations and supply management have been truly revolutionary, and the pace of progress shows no sign of moderating. In our increasingly interconnected and interdependent global economy, the process of delivering supplies and finished goods from one place to another is accomplished by means of mind-boggling technological innovation, clever new applications of old ideas, seemingly magical mathematics, powerful software, and old-fashioned concrete, steel, and muscle.

In the first section of *Operations and Supply Management: The Core* we lay a foundation for understanding the dynamic field of operations and supply

management. This book is about designing and operating processes that deliver a firm's goods and services in a manner that matches customers' expectations. Really successful firms have a clear and unambiguous idea of how they intend to make money. Be it high-end products or services that are custom-tailored to the needs of a single customer or generic inexpensive commodities that are bought largely on the basis of cost, competitively producing and distributing these products is a great challenge. In Chapter 1, "Operations and Supply Strategy," we show the critical link between the processes used to deliver goods and services and customers' expectations. Customers make a choice between different suppliers that is based on key attributes of the product or service. Aligning the processes used to deliver the product or service is important to success. If, for example, cost is the key customer order winning attribute, the firm must do everything it can to



design processes that are as efficient as possible. Competing on the basis of cost alone can be a brutal way to do business, and so many firms today move into other market segments by offering products with innovative service and feature characteristics that attract a loyal customer following.

Take, for example, the U.S. motorcycle manufacturer Harley-Davidson. Customers pay top dollar for a unique and classic motorcycle that can be individualized by each customer through the selection of dealer-installed options. Further, the firm has developed a highly profitable line of clothing, memorabilia, and other accessories to complete the Harley-Davidson concept. Processes needed to support that concept certainly need to be efficient, but even more important is the ready availability of the options and accessories that are often purchased on impulse and for gifts.

Business today is constantly changing. Harley-Davidson, for example, cannot continue to be successful without improving its motorcycles and delivering innovative new accessories every year. In Chapter 2, "Project Management," techniques for managing longer-duration projects are discussed. The topic is quite appropriate since (1) it is likely that many of the students in the course will participate in projects as an ongoing part of their jobs and (2) the concepts involved in managing projects are directly transferable to the design of repetitive processes, a topic that is covered in the second section of the book. The successful coordination of activities such as new product introductions, the construction of new plants and warehouses, and the building of new retail sites is important to a firm's growth in today's dynamic business environment.



**Internet**

# Chapter 1

## OPERATIONS AND SUPPLY STRATEGY

After reading the chapter you will:

1. Know why it is important to study operations and supply management.
2. Understand the meaning of efficient and effective operations.
3. See how operations and supply strategy relates to marketing and finance.
4. Understand the competitive dimensions of operations and supply strategy.
5. Know what order winners and order qualifiers are.
6. Know what measures Wall Street analysts use to evaluate operations.

### 5      **How IKEA Designs Its Sexy Prices**

### 6      **Operations and Supply Management: A Critical Responsibility of Every Manager**

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*Efficiency defined*

*Effectiveness defined*

*Value defined*

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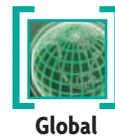
### **HOW IKEA DESIGNS ITS SEXY PRICES**

Competitive strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value. IKEA, the Swedish retailer of home products, dominates markets in 43 countries, and is poised to conquer North America.

Above all else, one factor accounts for IKEA's success: good quality at a low price. IKEA sells household items that are cheap but not cheapo, with prices that typically run 30 to 50 percent below those of the competition. While the price of other companies' products tends to rise over time, IKEA says it has reduced its retail prices by a total of about 20 percent during the last four years. At IKEA the process of driving down costs starts the moment a new item is conceived and continues relentlessly throughout the production run.

Consider IKEA's "Bang" mug, which has been redesigned three times so far, simply to maximize the number of mugs that can be stored on a pallet. Originally, only 864 mugs would fit. A redesign added a rim such as

you would find on a flowerpot so that each pallet could hold 1,280 mugs. Last year, yet another redesign created a shorter mug with a new handle, allowing 2,024 to squeeze onto a pallet. While the mug's sales price has remained at 50 cents, the shipping cost has been reduced by 60 percent, which is a significant savings, given that IKEA sells about 25 million mugs each year.



## OPERATIONS AND SUPPLY MANAGEMENT: A CRITICAL RESPONSIBILITY OF EVERY MANAGER

If you have an interest in becoming a great manager, the topics in this book are important for your achieving this goal. Whether the economy is booming or in a recession, delivering a firm's goods and services in the most effective manner is critical to its survival. And if you think this book is just about manufacturing and relevant only for people working in a factory, you are in for some surprises about this fascinating field.

At the most fundamental level, operations and supply management (OSM) is about getting work done quickly, efficiently, without error, and at low cost. In the context of this book the terms "operations" and "supply" take on special meaning. "Operations" refers to the processes that are used to transform the resources employed by a firm into products and services desired by customers. "Supply" refers to how materials and services are moved to and from the transformation processes of the firm. Take a simple manufacturing plant that makes golf balls. The manufacturing plant takes rubber, cork, and other material from suppliers and through a series of transformation processes makes golf balls. These golf balls are sold to customers after moving through a distribution system designed to supply retail outlets the golf balls. So when we use the term "operations and supply management" we are referring to this integrated system that at one end coordinates the purchase of material from suppliers and at the other end supplies the golf balls to the retail outlets where they can be purchased by customers.

The topics in this book include those that it is felt that all managers should understand. We consider the topics included in this book the foundation or "core" material. Many other topics could be included, but these are the most important. All managers should understand the basic principles that guide the design of transformation processes. This includes understanding how different types of processes are organized, how to determine the capacity of a process, how long it should take a process to make a unit and how the quality of a process is monitored. Oil refineries, automobile manufacturing, computer makers and food products all use different types of manufacturing processes. Similarly, services such as insurance companies, fast food restaurants, and call centers are organized in unique ways. Other than understanding how the processes within these operations are organized, another major set of topics relates to how the operations are supplied. Parts and other raw materials must be moved into and out of these operations. On the input side suppliers' coordination is needed so that appropriate quantities of material and other items are made available. Further, on the output or customer side, the finished goods are distributed often through a complex network of distribution centers and retailers. These supply topics include where to locate the facilities, strategic sourcing and outsourcing of material and service, and managing the supply inventories.

Companies today have found how essential great operations and supply management is to the success of the firm. Saving a dollar or a Euro in how a product is produced or distributed results directly in an extra dollar or Euro of profit. What other area can claim this? If Marketing sells an extra dollar or Euro's worth of product, profit only sees a few percent of this. If Finance figures out a way to get an extra  $\frac{1}{2}$  percent on an investment, by the time the extra cost of procuring the investment, managing the transaction and accounting for the investment is factored in little return is left to show in added profit. Operations and supply management is focused on the actions of providing services and products. Doing this at low cost and at a level of service that meets customer expectations is essential for business success.

In this chapter we study companies that have had great success due largely to great operations and supply management. IKEA, the Swedish home products retailer described in





the opening vignette and later in the chapter, is a model of operations and supply efficiency. Products are designed so that they can be produced, sold to the retail market through their superstores and delivered by the customer quickly and at very low cost. In the following section Progressive Insurance, a service company, is described. Their innovative use of the Internet and mobile claims agents have given the firm significant competitive advantage through innovative operations and supply management.

### Case: Progressive Insurance

Consider Progressive Insurance, an automobile insurer based in Mayfield Village, Ohio. In 1991, the company had approximately \$1.3 billion in sales. By 2006, that figure had grown to \$14.5 billion. What trendy strategies did Progressive employ to achieve eleven-fold growth in just over a decade? Was it positioned in a high-growth industry? Did it come up with a new insurance product? Did it diversify into new businesses? Did it go global? Did it hire a new, aggressive sales force? Did it grow through acquisitions or clever marketing schemes? It did none of these things. For years Progressive did little advertising, and some of its campaigns were notably unsuccessful. It did not unveil a slew of new products, nor did it grow at the expense of its profit margins, even when it set low prices.

A key measure that sheds light on what Progressive did is the combined ratio (expenses plus claims payouts, divided by insurance premiums), the measure of financial performance in the insurance industry. Most auto insurers have a combined ratio that fluctuates around 102 percent; that is, they run a 2 percent loss on their underwriting activities and recover the loss with investment income. By contrast, Progressive's combined ratio fluctuates around 96 percent. The company has not only seen dramatic growth but it is now the country's third largest auto insurer—and it also has been profitable.

The secret of Progressive's success is simple: It out-operated its competitors. By offering lower prices and better service than its rivals, it simply took their customers away. What enabled Progressive to have better prices and service was innovations in operations, new and better ways of doing the day-to-day work of providing automobile insurance.

Progressive realized that possibly the only way to compete with much larger companies was to actually change the rules for how to play the insurance game. The company introduced what it calls Immediate Response claims handling: A claimant can reach a Progressive representative by phone 24 hours a day, and the representative then schedules a time when an adjuster will inspect the vehicle. Adjusters no longer work out of offices from 9 to 5 but out of mobile claims vans. Instead of taking between 7 and 10 days for an adjuster to see the vehicle, Progressive's target is now just 9 hours. The adjuster not only examines the vehicle but also prepares an on-site estimate of the damage and, if possible, writes a check on the spot.

The approach has many benefits. Claimants get faster service with less hassle, which means they are less likely to abandon Progressive because of an unsatisfactory claims experience. The shortened cycle time has reduced Progressive's costs dramatically. The cost of storing a damaged vehicle or renting a replacement car for one day, around \$28, is roughly equal to the expected underwriting profit on a six-month policy. It's not hard to calculate the saving this translates into for a company that handles more than 10,000 claims each day. Other benefits for Progressive are an improved ability to detect fraud (because it is easier to conduct an accident investigation before skid marks wash away and witnesses leave the scene), lower operating costs (because fewer people are involved in handling claims), and a reduction in claim payouts (because claimants often accept less money if it's given sooner and with less hassle).

No single innovation conveys a lasting advantage, however. In addition to Immediate Response, Progressive has introduced a system that allows customers to call an 800 number or visit its Web site and, by providing a small amount of information, compare Progressive's



Service

rates with those of three competitors. Because insurance is a regulated industry, rates are on file with state insurance commissioners. The company also has devised even better ways to assess an applicant's risk profile to calculate the right rate to quote. When Progressive realized that an applicant's credit rating was a good proxy for responsible driving behavior, it changed its application process. Now its computer systems automatically contact a credit agency, and the applicant's credit score is factored into its pricing calculation. More accurate pricing translates into increased underwriting profit. Put all these improvements together and Progressive's remarkable growth becomes comprehensible.

### Efficiency, Effectiveness, and Value

Compared with most of the other ways managers try to stimulate growth—technology investments, acquisitions, and major market campaigns, for example—innovations in operations are relatively reliable and low cost. As a business student, you are perfectly positioned to come up with innovative operations-related ideas. You understand the big picture of all the processes that generate the costs and support the cash flow essential to the firm's long-term viability.

#### Efficiency

#### Effectiveness

Through this book, you will become aware of the concepts and tools now being employed by companies around the world as they craft efficient and effective operations. **Efficiency** means doing something at the lowest possible cost. Later in the book we define this more thoroughly, but roughly speaking the goal of an efficient process is to produce a good or provide a service by using the smallest input of resources. **Effectiveness** means doing the right things to create the most value for the company. Often maximizing effectiveness and

## Breakthrough

### Efficiency: It's the Details That Count

Getting passengers on a plane quickly can greatly affect an airline's costs. Southwest says that if its boarding times increased by 10 minutes per flight, it would need 40 more planes at a cost of \$40 million each to run the same number of flights it does currently.

Not all the innovation in the airline industry is from Southwest. America West, working with researchers at Arizona State University, has developed an innovative boarding system called "reverse pyramid." The first economy-class passengers to get on the plane are those with window seats in the middle and rear of the plane. Then America West gradually fills in the plane, giving priority to those with window or rear seats, until it finally boards those seated along aisles in the front. This is in contrast to the approach used by many airlines of just boarding all seats starting from the back of the plane and working forward.

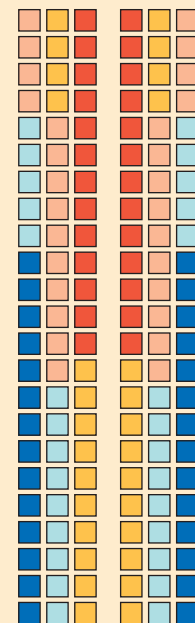
The time it takes for passengers to board has more than doubled since 1970, according to studies by Boeing Co. A study in the mid-1960s found that 20 passengers boarded the plane per minute. Today that figure is down to nine per minute as

#### Creating Order

America West's reverse pyramid system boards coach-class passengers in back-row window seats first.

#### Order of boarding

First Last



Source: Interfaces, May/June 2005, p. 194.

passengers bring along heftier carry-on luggage. Both Boeing and Airbus, the two top commercial-aircraft makers, are working on improving boarding time as a selling point to airlines.



efficiency at the same time creates conflict between the two goals. We see this trade-off every day in our lives. At the customer service counter at a local store or bank, being efficient means using the fewest people possible at the counter. Being effective, though, means minimizing the amount of time customers need to wait in line. Related to efficiency and effectiveness is the concept of **value**, which can be metaphorically defined as quality divided by price. If you can provide the customer with a better car without changing price, value has gone up. If you can give the customer a better car at a *lower* price, value goes way up. A major objective of this book is to show how smart management can achieve high levels of value.

Besides its importance to corporate competitiveness, reasons for studying OSM are as follows:

1. **A business education is incomplete without an understanding of modern approaches to managing operations.** Every organization produces some product or service, so students must be exposed to modern approaches for doing this effectively. Moreover, hiring organizations now expect business graduates to speak knowledgeably about many issues in the field. While this has long been true in manufacturing, it is becoming equally important in services, both public and private. For example, “reinventing government” initiatives draw heavily on supply chain management, total quality management, business process reengineering, and just-in-time delivery—concepts that fall under the OSM umbrella.
2. **Operations and supply management provides a systematic way of looking at organizational processes.** OSM uses analytical thinking to deal with real-world problems. It sharpens our understanding of the world around us, whether we are talking about how to expand globally or how many lines to have at the bank teller’s window.
3. **Operations and supply management presents interesting career opportunities.** These can be in direct supervision of operations or in staff positions in OSM specialties such as supply chain management, purchasing, and quality assurance. In addition, consulting firms regularly recruit individuals with strong OSM capabilities to work in such areas as process reengineering and enterprise resource planning systems.
4. **The concepts and tools of OSM are widely used in managing other functions of a business.** All managers have to plan work, control quality, and ensure productivity of individuals under their supervision. Other employees must know how operations work to effectively perform their jobs.



Service

Value



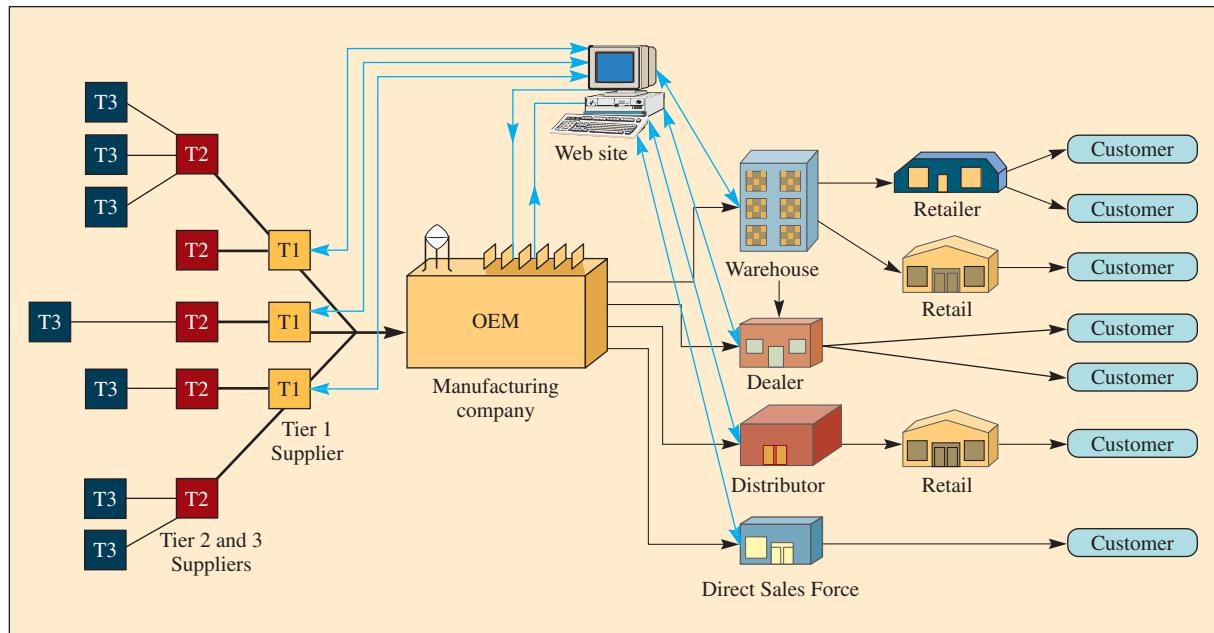
Service

Cross  
Functional

## WHAT IS OPERATIONS AND SUPPLY MANAGEMENT?

**Operations and supply management (OSM)** is defined as the design, operation, and improvement of the systems that create and deliver the firm’s primary products and services. Like marketing and finance, OSM is a functional field of business with clear line management responsibilities. This point is important because operations and supply management is frequently confused with operations research and management science (OR/MS) and industrial engineering (IE). The essential difference is that OSM is a field of management, whereas OR/MS is the application of quantitative methods to decision making in all fields and IE is an engineering discipline. Thus, while operations and supply managers use the decision-making tools of OR/MS (such as critical path scheduling) and are concerned with many of the same issues as IE (such as factory automation), OSM’s distinct management role distinguishes it from these other disciplines.

**Operations and  
supply  
management  
(OSM)**

**exhibit 1.1****Supply Chain of a Typical Original Equipment Manufacturer**

As this schematic suggests, a value chain is not a simple linear series of connections. It typically involves a complex series of business interactions and channel configurations. The Web is a key technology enabling efficient communication throughout the chain.



As Exhibit 1.1 shows, OSM is concerned with the management of the entire system that produces a good or delivers a product. Producing a product such as a cell phone, or providing a service such as a cellular phone account, involves a complex series of transformation processes. Exhibit 1.1 is a supply network for an original equipment manufacturer (OEM), such as Nokia, the Finnish maker of cell phones. To actually produce the phones and get them to the customer, many transformations must take place. For example, the suppliers purchase raw materials and produce the parts for the phone. The Nokia manufacturing plant takes these parts and assembles the various popular cell phone models. Orders for the phones are taken over the Internet from all the distributor, dealer, and warehouse sites around the world. Local retailers work directly with customers in setting up and managing the cell phone accounts. OSM is concerned with managing all of these individual processes as effectively as possible.

## WHAT IS OPERATIONS AND SUPPLY STRATEGY?

### Operations and supply strategy

**Operations and supply strategy** is concerned with setting broad policies and plans for using the resources of a firm to best support its long-term competitive strategy. A firm's operations and supply strategy is comprehensive through its integration with corporate strategy. The strategy involves a long-term process that must foster inevitable change. An operations and supply strategy involves decisions that relate to the design of a process and the infrastructure needed to support the process. Process design includes the selection of

appropriate technology, sizing the process over time, the role of inventory in the process, and locating the process. The infrastructure decisions involve the logic associated with the planning and control systems, quality assurance and control approaches, work payment structures, and organization of the operations function.

Operations and supply strategy can be viewed as part of a planning process that coordinates operational goals with those of the larger organization. Since the goals of the larger organization change over time, the operations strategy must be designed to anticipate future needs. A firm's operations capabilities can be viewed as a portfolio best suited to adapt to the changing product and/or service needs of the firm's customers.

### Competitive Dimensions

Given the choices customers face today, how do they decide which product or service to buy? Different customers are attracted by different attributes. Some customers are interested primarily in the cost of a product or service and, correspondingly, some companies attempt to position themselves to offer the lowest prices. The major competitive dimensions that form the competitive position of a firm include the following.

**Cost or Price: “Make the Product or Deliver the Service Cheap”** Within every industry, there is usually a segment of the market that buys solely on the basis of low cost. To successfully compete in this niche, a firm must be the low-cost producer, but even this does not always guarantee profitability and success. Products and services sold strictly on the basis of cost are typically commoditylike; in other words, customers cannot distinguish the product or service of one firm from those of another. This segment of the market is frequently very large, and many companies are lured by the potential for significant profits, which they associate with the large unit volumes. As a consequence, however, competition in this segment is fierce—and so is the failure rate. After all, there can be only one low-cost producer, who usually establishes the selling price in the market.

Price, however, is not the only basis on which a firm can compete (although many economists appear to assume it is!). Other companies, such as BMW, seek to attract those who want *higher quality*—in terms of performance, appearance, or features—than that available in competing products and services, even though accompanied by a higher price.

**Quality: “Make a Great Product or Deliver a Great Service”** There are two characteristics of a product or service that define quality: design quality and process quality. Design quality relates to the set of features the product or service contains. This relates directly to the design of the product or service. Obviously a child's first two-wheel bicycle is of significantly different quality than the bicycle of a world-class cyclist. The use of special aluminum alloys and special lightweight sprockets and chains is important to the performance needs of the advanced cyclist. These two types of bicycle are designed for different customers' needs. The higher-quality cyclist product commands a higher price in the marketplace due to its special features. The goal in establishing the proper level of design quality is to focus on the requirements of the customer. Overdesigned products and services with too many or inappropriate features will be viewed as prohibitively expensive. In comparison, underdesigned products and services will lose customers to products that cost a little more but are perceived by customers as offering greater value.

Process quality, the second characteristic of quality, is critical because it relates directly to the reliability of the product or service. Regardless of whether the product is a child's first two-wheeler or a bicycle for an international cyclist, customers want products without defects. Thus, the goal of process quality is to produce defect-free products and services.

Product and service specifications, given in dimensional tolerances and/or service error rates, define how the product or service is to be made. Adherence to these specifications is critical to ensure the reliability of the product or service as defined by its intended use.

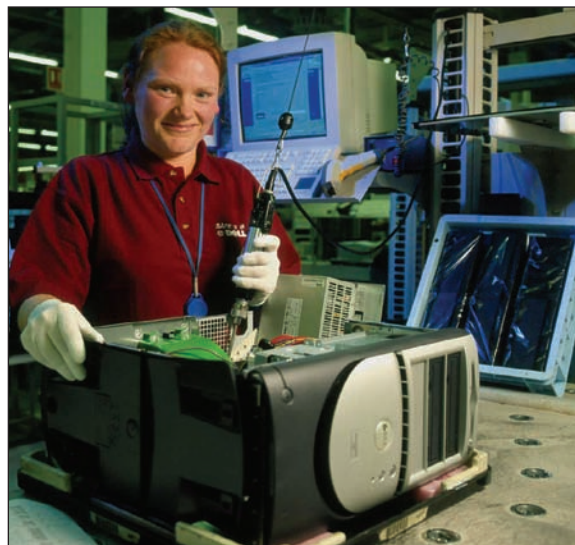
**Delivery Speed: “Make the Product or Deliver the Service Quickly”** In some markets, a firm’s ability to deliver more quickly than its competitors is critical. A company that can offer an on-site repair service in only 1 or 2 hours has a significant advantage over a competing firm that guarantees service only within 24 hours. Progressive Insurance discussed earlier is an example of a company that has raised the bar in speed.

**Delivery Reliability: “Deliver It When Promised”** This dimension relates to the firm’s ability to supply the product or service on or before a promised delivery due date. For an automobile manufacturer, it is very important that its supplier of tires provide the needed quantity and types for each day’s car production. If the tires needed for a particular car are not available when the car reaches the point on the assembly line where the tires are installed, the whole assembly line may have to be shut down until they arrive. For a service firm such as Federal Express, delivery reliability is the cornerstone of its strategy.

**Coping with Changes in Demand: “Change Its Volume”** In many markets, a company’s ability to respond to increases and decreases in demand is important to its ability to compete. It is well known that a company with increasing demand can do little wrong. When demand is strong and increasing, costs are continuously reduced due to economies of scale, and investments in new technologies can be easily justified. But scaling back when demand decreases may require many difficult decisions about laying off employees and related reductions in assets. The ability to effectively deal with dynamic market demand over the long term is an essential element of operations strategy.

**Flexibility and New-Product Introduction Speed: “Change It”** Flexibility, from a strategic perspective, refers to the ability of a company to offer a wide variety of products to its customers. An important element of this ability to offer different products is the time required for a company to develop a new product and to convert its processes to offer the new product.

DELL’S COMPETITIVE DIMENSIONS INTRODUCE THE LATEST RELEVANT TECHNOLOGY MUCH MORE QUICKLY THAN COMPANIES WITH INDIRECT DISTRIBUTION CHANNELS, TURNING OVER INVENTORY IN JUST UNDER FIVE DAYS ON AVERAGE. NEARLY ONE OUT OF EVERY FIVE COMPUTER SYSTEMS SOLD IN THE WORLD TODAY IS A DELL.



**Other Product-Specific Criteria: “Support It”** The competitive dimensions just described are certainly the most common. However, other dimensions often relate to specific products or situations. Notice that most of the dimensions listed next are primarily service in nature. Often special services are provided to augment the sales of manufactured products.

1. **Technical liaison and support.** A supplier may be expected to provide technical assistance for product development, particularly during the early stages of design and manufacturing.
2. **Meeting a launch date.** A firm may be required to coordinate with other firms on a complex project. In such cases, manufacturing may take place while development work is still being completed. Coordinating work between firms and working simultaneously on a project will reduce the total time required to complete the project.
3. **Supplier after-sale support.** An important competitive dimension may be the ability of a firm to support its product after the sale. This involves availability of replacement parts and, possibly, modification of older, existing products to new performance levels. Speed of response to these after-sale needs is often important as well.
4. **Other dimensions.** These typically include such factors as colors available, size, weight, location of the fabrication site, customization available, and product mix options.

### The Notion of Trade-Offs

Central to the concept of operations and supply strategy is the notion of operations focus and trade-offs. The underlying logic is that an operation cannot excel simultaneously on all competitive dimensions. Consequently management has to decide which parameters of performance are critical to the firm's success and then concentrate the resources of the firm on these particular characteristics.

For example, if a company wants to focus on speed of delivery, it cannot be very flexible in its ability to offer a wide range of products. Similarly, a low-cost strategy is not compatible with either speed of delivery or flexibility. High quality is also viewed as a trade-off to low cost.

A strategic position is not sustainable unless there are compromises with other positions. Trade-offs occur when activities are incompatible so that more of one thing necessitates less of another. An airline can choose to serve meals—adding cost and slowing turnaround time at the gate—or it can choose not to, but it cannot do both without bearing major inefficiencies.

**Straddling** occurs when a company seeks to match the benefits of a successful position while maintaining its existing position. It adds new features, services, or technologies onto the activities it already performs. The risky nature of this strategy is shown by Continental Airlines' ill-fated attempt to compete with Southwest Airlines. While maintaining its position as a full-service airline, Continental set out to match Southwest on a number of point-to-point routes. The airline dubbed the new service Continental Lite. It eliminated meals and first-class service, increased departure frequency, lowered fares, and shortened gate turnaround time. Because Continental remained a full-service airline on other routes, it continued to use travel agents and its mixed fleet of planes and to provide baggage checking and seat assignments.

Trade-offs ultimately grounded Continental Lite. The airline lost hundreds of millions of dollars, and the chief executive officer lost his job. Its planes were delayed leaving congested hub cities or slowed at the gate by baggage transfers. Late flights and cancellations generated a thousand complaints a day. Continental Lite could not afford to compete

### Straddling

on price and still pay standard travel agent commissions, but neither could it do without agents for its full-service business. The airline compromised by cutting commissions for all Continental flights. Similarly, it could not afford to offer the same frequent-flier benefits to travelers paying the much lower ticket prices for Lite service. It compromised again by lowering the rewards of Continental's entire frequent-flier program. The results: angry travel agents and full-service customers. Continental tried to compete in two ways at once and paid an enormous straddling penalty.



Cross  
Functional

Order winner

Order qualifier



Global

## Order Winners and Order Qualifiers: The Marketing–Operations Link

An interface between marketing and operations is necessary to provide a business with an understanding of its markets from both perspectives. Terry Hill, a professor at Oxford University, has coined the terms *order winner* and *order qualifier* to describe marketing-oriented dimensions that are key to competitive success. An **order winner** is a criterion that differentiates the products or services of one firm from another. Depending on the situation, the order-winning criterion may be the cost of the product (price), product quality and reliability, or any of the other dimensions developed earlier. An **order qualifier** is a screening criterion that permits a firm's products to even be considered as possible candidates for purchase. Professor Hill states that a firm must "requalify the order qualifiers" every day it is in business.

It is important to remember that the order-winning and order-qualifying criteria may change over time. For example, when Japanese companies entered the world automobile markets in the 1970s, they changed the way these products won orders, from predominantly price to product quality and reliability. American automobile producers were losing orders through quality to the Japanese companies. By the late 1980s, product quality was raised by Ford, General Motors, and Chrysler (now DaimlerChrysler); today they are "qualified" to be in the market. Consumer groups continually monitor the quality and reliability criteria, thus requalifying the top-performing companies. Today the order winners for automobiles vary greatly depending on the model. Customers know the set of features they want (such as reliability, design features, and gas mileage), and they want to purchase a particular combination at the lowest price, thus maximizing value.

## STRATEGIC FIT: FITTING OPERATIONAL ACTIVITIES TO STRATEGY

All the activities that make up a firm's operation relate to one another. To make these activities efficient, the firm must minimize its total cost without compromising customers' needs. IKEA targets young furniture buyers who want style at a low cost. IKEA has chosen to perform activities differently from its rivals.

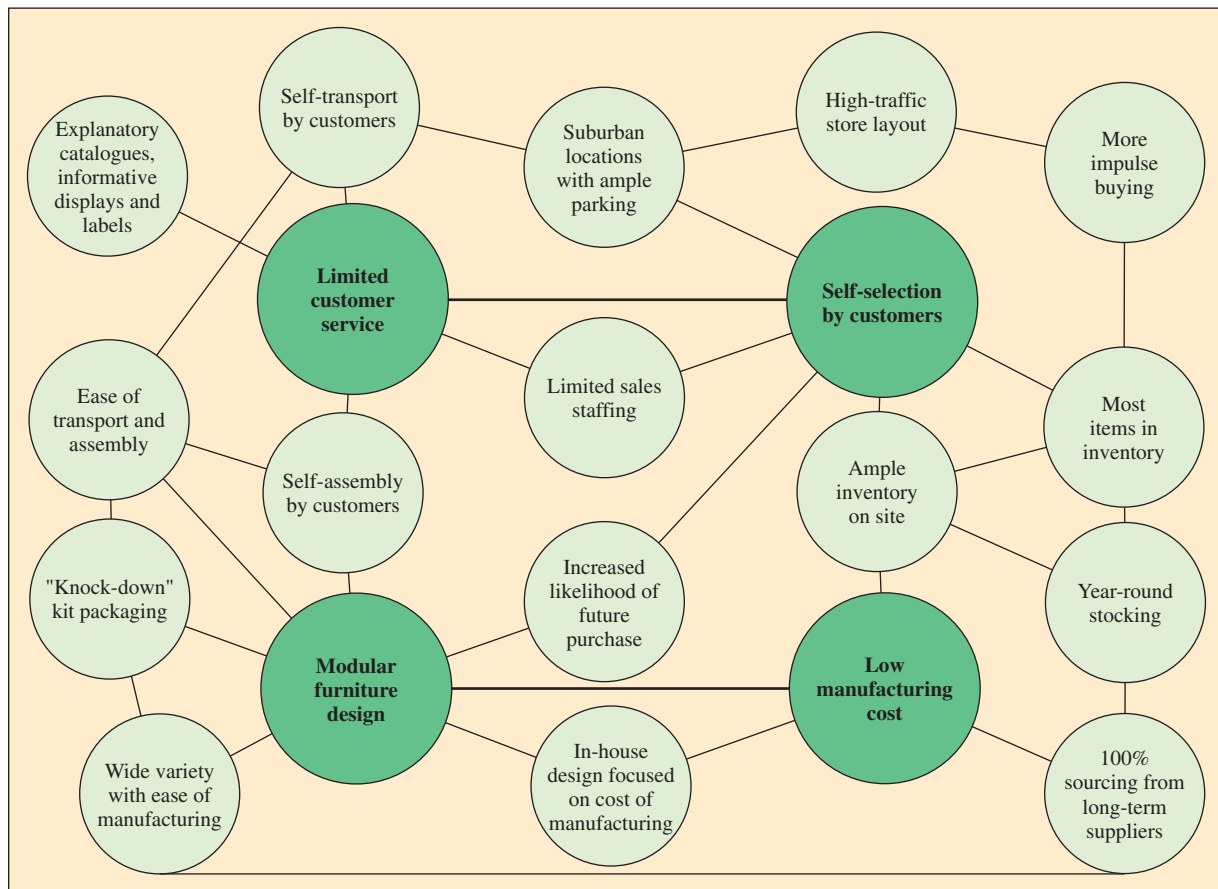
Consider the typical furniture store, where showrooms display samples of the merchandise. One area may contain many sofas, another area displays dining tables, and there are many other areas focused on particular types of furniture. Dozens of books displaying fabric swatches or wood samples or alternative styles offer customers thousands of product varieties from which to choose. Salespeople escort customers through the store, answering questions and helping them navigate through the maze of choices. Once a customer decides what he or she wants, the order is relayed to a third-party manufacturer. With a lot of luck, the furniture will be delivered to the customer's home within six to eight weeks. This is a supply chain that maximizes customization and service but does so at a high cost.

In contrast, IKEA serves customers who are happy to trade service for cost. Instead of using sales associates, IKEA uses a self-service model with roomlike displays where



## Mapping Activity Systems

## exhibit 1.2



Activity-system maps, such as this one for Ikea, show how a company's strategic position is contained in a set of tailored activities designed to deliver it. In companies with a clear strategic position, a number of higher-order strategic themes (in darker green circles) can be identified and implemented through clusters of tightly linked activities (in lighter circles).

Source: M. E. Porter, *On Competition*, Boston: HBS, 1998, p. 50.

furniture is shown in familiar settings. Rather than relying on third-party manufacturers, IKEA designs its own low-cost, modular, ready-to-assemble furniture. In the store there is a warehouse section with the products in boxes ready for delivery. Customers do their own picking from inventory and delivery. Much of its low-cost operation comes from having customers service themselves, yet IKEA offers extra services such as in-store child care and extended hours. Those services align well with the needs of its customers, who are young, not wealthy, likely to have children, and who need to shop at odd hours.

Exhibit 1.2 shows how IKEA's strategy is implemented through a set of activities designed to deliver it. **Activity-system maps** such as the one for IKEA show how a company's strategy is delivered through a set of tailored activities. In companies with a clear strategy, a number of higher-order strategic themes (in darker green) can be identified and implemented through clusters of tightly linked activities. This type of map can be useful in understanding how good the fit is between the system of activities and the company's strategy. Competitive advantage comes from the way a firm's activities fit with and reinforce one another.

### Activity-system maps

## A FRAMEWORK FOR OPERATIONS AND SUPPLY STRATEGY

Operations strategy cannot be designed in a vacuum. It must be linked vertically to the customer and horizontally to other parts of the enterprise. Exhibit 1.3 shows these linkages among customer needs, their performance priorities and requirements for manufacturing operations, and the operations and related enterprise resource capabilities to satisfy those needs. Overlying this framework is senior management's strategic vision of the firm. The vision identifies, in general terms, the target market, the firm's product line, and its core enterprise and operations capabilities.

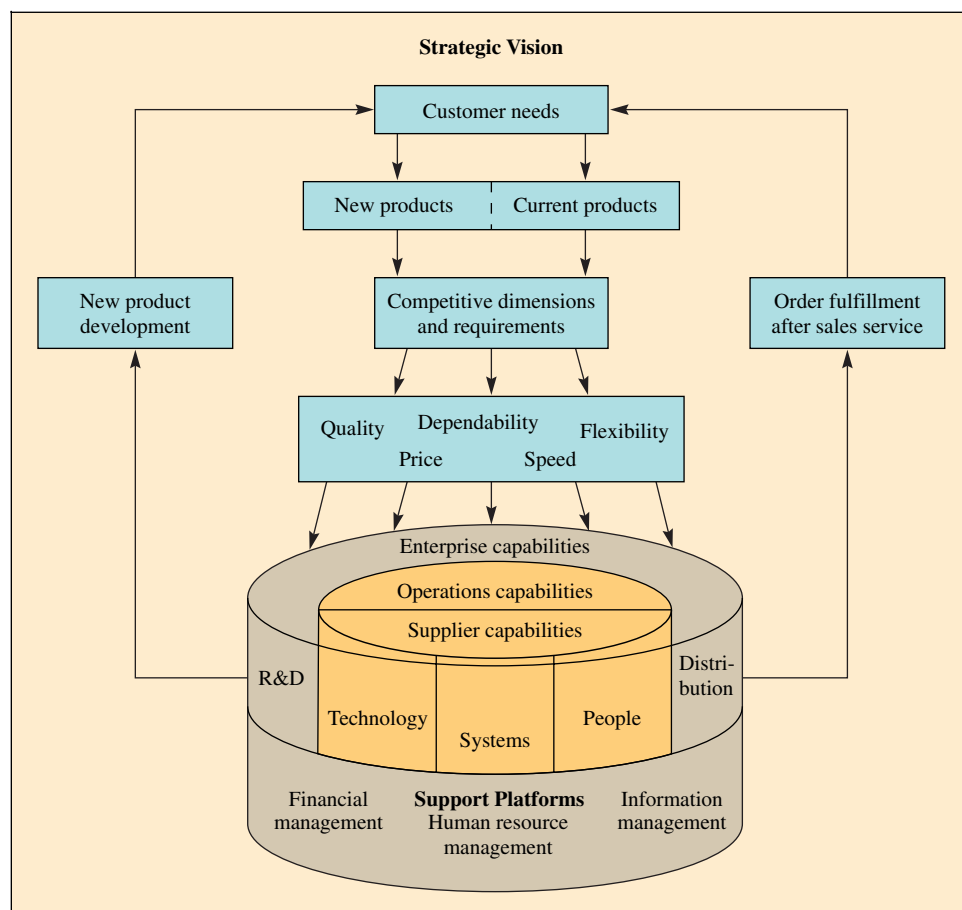
The choice of a target market can be difficult, but it must be made. Indeed, it may lead to turning away business—ruling out a customer segment that would simply be unprofitable or too hard to serve given the firm's capabilities. An example here is clothing manufacturers not making half-sizes in their dress lines. **Core capabilities** (or competencies) are the skills that differentiate the service or manufacturing firm from its competitors.

Possibly the most difficult thing for a firm to do is part with tradition. Top-level managers often make their mark based on innovations made 15 to 20 years ago. These

### Core capabilities

exhibit 1.3

Operations and Supply Strategy Framework: From Customer Needs to Order Fulfillment



managers are often too comfortable with just tinkering with the current system. All the new advanced technologies present themselves as quick fixes. It is easy to patch these technologies into the current system with great enthusiasm. While doing this may be exciting to managers and engineers working for the firm, they may not be creating a distinctive core competence—a competence that wins future customers. What companies need in this world of intense global competition is not more techniques but a way to structure a whole new product realization system differently and better than any competitor.

## HOW DOES WALL STREET EVALUATE OPERATIONS PERFORMANCE?

Comparing firms from an operations view is important to investors since the relative cost of providing a good or service is essential to high earnings growth. When you think about it, earnings growth is largely a function of the firm's profitability and profit can be increased through higher sales and/or reduced cost. Highly efficient firms usually shine when demand drops during recession periods since they often can continue to make a profit due to their low cost structure. These operations-savvy firms may even see a recession as an opportunity to gain market share as their less-efficient competitors struggle to remain in business.

Take a look at the automobile industry, where efficiency has been such an important factor. Exhibit 1.4 shows a comparison of some of the major companies. As you can see, Toyota dominates the group. Toyota's net income per employee is five times greater than that of Ford and DaimlerChrysler, truly an amazing accomplishment. Toyota also shines in receivables turnover, inventory turnover, and asset turnover. Ford and General Motors have worked hard at implementing the inventory management philosophy that was pioneered by Toyota in Japan. True efficiency goes beyond inventory management and requires an integrated product development, sales, manufacturing, and supply system. Toyota is very mature in its approach to these activities, and that clearly shows on its bottom line.

Each summer, *USA Today* publishes annual reports of productivity gains by the largest U.S. firms. Productivity has been on the rise for the past few years, which is very good for the economy. Productivity often increases in times of recession; as workers are fired, those remaining are expected to do more. Increases also come from technological advances. Think of what the tractor did for farm productivity.

When evaluating the largest productivity winners and losers, it is important to look for unusual explanations. For example, energy companies have had big productivity gains due almost exclusively to higher oil prices, which boosted the companies' revenue without

Efficiency Measures Used by Wall Street

exhibit 1.4

| A COMPARISON OF AUTOMOBILE COMPANIES |           |           |                |                 |           |
|--------------------------------------|-----------|-----------|----------------|-----------------|-----------|
| MANAGEMENT EFFICIENCY MEASURE        | TOYOTA    | FORD      | GENERAL MOTORS | DAIMLERCHRYSLER | INDUSTRY  |
| Income per employee                  | \$40,000  | \$8,000   | \$10,000       | \$8,000         | \$15,000  |
| Revenue per employee                 | \$663,000 | \$535,000 | \$597,000      | \$510,000       | \$568,000 |
| Receivable turnover                  | 4.0       | 1.5       | 1.0            | 2.2             | 2.1       |
| Inventory turnover                   | 12.0      | 11.5      | 11.7           | 5.9             | 11.0      |
| Asset turnover                       | .8        | .6        | .4             | .8              | .8        |

forcing them to add employees. Pharmaceutical companies such as Merck and Pfizer have not done well recently. Their productivity plunges were due primarily to one-time events, Merck because it spun off a company and Pfizer because it bought a company. Such one-time quirks create a lot of noise for anybody who wants to know how well companies are run. It is best to examine multiyear productivity patterns.

## SUMMARY

In this chapter we have stressed the importance of the link between operations and supply management and the competitive success of the firm. The topics in this book include those that all managers should be familiar with. The operations and supply activities of the firm need to strategically support the competitive priorities of the firm. We have included examples of three major firms that have great operational strategic fit.

IKEA's entire integrated process, including the design of products, design of the packaging, manufacturing, distribution, and retail outlets are all wired toward delivering functionally innovative products at the lowest cost possible. Progressive Insurance uses the Internet and an innovative network of mobile representatives to significantly lower the cost of delivering to the customer while actually beating the competition with service. Finally, Harley-Davidson is able to capitalize on the desire of its customers to have a unique motorcycle by offering many options. Rather than being burdened with the high inventory associated with preconfigured bikes, they are able to install the options late in the process at their dealers' service centers, allowing customers to get what they want and improving the value and profitability of their business.

In this chapter we show how the overall strategy of the firm can be tied to operations and supply strategy. Important concepts are the operational competitive dimensions, order winner and qualifiers, and strategic fit. The ideas apply to virtually any business and are critical to the firm's ability to sustain a competitive advantage. For a firm to remain competitive, all of the operational activities must buttress the firm's strategy. Wall Street analysts are constantly monitoring how efficient companies are from an operations view. Companies that are strong operationally are able to generate more profit for each dollar of sales, thus making them attractive investments.

## Key Terms

**Efficiency** Doing something at the lowest possible cost.

**Effectiveness** Doing the right things to create the most value for the company.

**Value** Ratio of quality to price paid. Competitive "happiness" is being able to increase quality and reduce price while maintaining or improving profit margins. (This is the way operations can directly increase customer retention and gain market share.)

**Operations and Supply Management (OSM)** Design, operation, and improvement of the systems that create and deliver a firm's primary products and services.

**Operations and Supply Strategy** Setting broad policies and plans for using the resources of a firm to best support the firm's long-term competitive strategy.

**Straddling** Occurs when a firm seeks to match what a competitor is doing by adding new features, services, or technologies to existing activities. This often creates problems if certain trade-offs need to be made.

**Order winner** A dimension that differentiates the products or services of one firm from those of another.

**Order qualifier** A dimension used to screen a product or service as a candidate for purchase.

**Activity-system map** A diagram that shows how a company's strategy is delivered through a set of supporting activities.

**Core capabilities** Skills that differentiate a manufacturing or service firm from its competitors.

## Review and Discussion Questions

- 1 Look at the want ads in *The Wall Street Journal* and evaluate the opportunities for an OSM major with several years of experience.
- 2 What factors account for the current resurgence of interest in OSM?
- 3 Can a factory be fast, dependable, and flexible; produce high-quality products; and still provide poor service from a customer's perspective?
- 4 What are the major priorities associated with operations and supply strategy? How do you think their relationship to one another has changed over the years? It might be best to think about this relative to a specific industry. Personal computers would be a good industry to think about.
- 5 Why does the "proper" operations and supply strategy keep changing for companies that are world-class competitors?
- 6 What is meant by the expressions *order winners* and *order qualifiers*? What was the order winner for your last major purchase of a product or service?

## Internet Exercise: Harley - Davidson Motorcycles

Harley-Davidson has developed a Web site that allows potential customers to customize their new motorcycles. Working from a "basic" model, the customer can choose from an assortment of bags, chrome covers, color schemes, exhausts, foot controls, mirrors, and other accessories. The Web-based application is set up so that the customer cannot only select from the extensive list of accessories but also see exactly what the motorcycle will look like. These unique designs can be shared with friends and family by printing the final picture or transferring it via e-mail. What a slick way to sell motorcycles!

Go to the Harley-Davidson (HD) Web site ([www.Harley-Davidson.com](http://www.Harley-Davidson.com)). From there select "Customize Your Harley." After this you need to select "The Customizer." This should get you into the application.

- 1 How many different bike configurations do you think are possible? Could every customer have a different bike? To make this a little simpler, what if HD had only two types of bikes, three handle bar choices, four saddlebag combinations, and two exhaust pipe choices? How many combinations are possible in this case?
- 2 To keep things simple, HD has the dealer install virtually all these options. What would be the trade-off involved if HD installed these options at the factory instead of having the dealers install the options?
- 3 How important is this customization to HD's marketing strategy? What are HD's order winner and qualifiers? Concisely describe HD's operations and supply strategy.



## Selected Bibliography

Hayes, Robert; Gary Pisano; David Upton; and Steven Wheelwright. *Operations, Strategy, and Technology: Pursuing the Competitive Edge*. New York: John Wiley & Sons, 2004.

Hill, T. J. *Manufacturing Strategy—Text and Cases*. Burr Ridge, IL: Irwin/McGraw-Hill, 2000.

Slack, N., and M. Lewis. *Operations Strategy*. Harlow, England, and New York: Prentice Hall, 2002.

Sower, Victor E.; Jaideep Motwani; and Michael J. Savoie. "Classics in production and operations management," *International Journal of Operations & Production Management*, Vol. 17, no. 1 (1997), pp. 15–28.