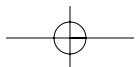
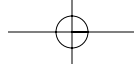


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CHAPTER TWO

Competitiveness, Strategy, and Productivity

CHAPTER OUTLINE

Introduction, 00
 Competitiveness, 00
 Strategy, 00
 Mission, 00
 Operations Strategy, 00
 Strategy Formulation, 00
 Quality and Time Strategies, 00
 Reading: Time-Based Innovation, 00
 Productivity, 00
 Computing Productivity, 00
 Productivity in the Service Sector, 00
 Factors that Affect Productivity, 00
 Improving Productivity, 00
 Reading: Get in the Game, 00
 Newsclip: Productivity Gains Curb
 Inflation, 00

Summary, 00
 Key Terms, 00
 Solved Problems, 00
 Discussion and Review Questions,
 00
 Memo Writing Exercises, 00
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 Reading: Productivity Gains at
 Whirlpool, 00
 Cases: An American Tragedy: How
 a Good Company Died, 00
 Home-Style Cookies, 00
 Hazel Revisited, 00
 Reading: Economic Vitality, 00
 Selected Bibliography and Further
 Reading, 00

LEARNING OBJECTIVES

After completing this chapter, you should be able to:

- 1** List and briefly discuss the primary ways that business organizations compete.
- 2** List five reasons for the poor competitiveness of some companies.
- 3** Define the term *strategy* and explain why strategy is important for competitiveness.
- 4** Contrast *strategy* and *tactics*.
- 5** Discuss and compare organization strategy and operations strategy, and explain why it is important to link them.
- 6** Describe and give examples of *time-based* strategies.
- 7** Define the term *productivity* and explain why it is important to organizations and to countries.
- 8** List some of the reasons for poor productivity and some ways of improving it.





The Cold Hard Facts

The name of the game is competition. Those who understand how to play the game will succeed; those who don't are doomed to failure. And don't think the game is just companies competing with each other. In companies that have multiple factories or divisions producing the same item or service, factories or divisions sometimes find themselves competing with

each other. When a competitor—another company or a sister factory or division in the same company can turn out products better, cheaper, and faster, that spells real trouble for the factory or division that is performing at a lower level. The trouble can be layoffs or even a shutdown if the managers can't turn things around. The bottom line? Better quality, higher productivity, lower costs, and the ability to quickly respond to customer needs are more important than ever, and the bar is getting higher. Business organizations need to develop solid strategies for dealing with these issues.

This chapter discusses competitiveness, strategy, and productivity: three separate but related topics that are vitally important to business organizations. *Competitiveness* relates to how effective an organization is in the marketplace compared with other organizations that offer similar products or services; *strategy* relates to the plans that determine the direction an organization takes in pursuing its goals; and *productivity* relates to effective use of resources.

Slumping productivity gains in the late 1980s and the impressive successes of foreign competition in the U.S. marketplace caused many U.S. companies to rethink their strategies and to place increased emphasis on *operations strategy*.

Introduction

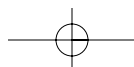
In this chapter you will learn about the different ways companies compete and why some firms do a very good job of competing. You will learn how effective strategies can lead to competitive organizations, and you will learn what productivity is, why it is important, and what organizations can do to improve it.

Competitiveness

Companies must be **competitive** to sell their goods and services in the marketplace. Competitiveness is an important factor in determining whether a company prospers, barely gets by, or fails. Business organizations compete with one another in a variety of ways. These include price, quality, product or service differentiation, flexibility, time to perform certain activities, and service.

1. *Price* is the amount a customer must pay for the product or service. If all other factors are equal, customers will choose the product or service that has the lowest price. Organizations that compete on price may settle for lower profit margins, but most focus on lowering costs of goods or services.
2. *Quality* refers to materials and workmanship as well as design. Usually, it relates to a buyer's perceptions of how well the product or service will serve its intended purpose.
3. *Product or service differentiation* refers to any special features (e.g., design, cost, quality, ease of use, convenient location, warranty) that cause a product or service to be perceived by the buyer as more suitable than a competitor's product or service.
4. *Flexibility* is the ability to respond to changes. The better a company or department is at responding to changes, the greater its competitive advantage over another company that is not as responsive. The changes might relate to increases or decreases in volume demanded, or to changes in the design of goods or services.
5. *Time* refers to a number of different aspects of an organization's operations. One is how quickly a product or service is delivered to a customer. This can be facilitated by faster movement of information backward through the supply chain. Another is how

competitiveness How effectively an organization meets the needs of customers relative to others that offer similar goods or services.





“Competitiveness” at Saratoga Springs, Thoroughbreds at the finish line in a New York Racing Association contest.

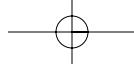


At Hertz, there is no paperwork and no waiting line once the customer is enrolled in their ‘Gold’ services. Car keys to a pre-selected vehicle are provided, along with a copy of the rental agreement, as soon as the driver’s license is shown.

quickly new products or services are developed and brought to the market. Still another is the rate at which improvements in products or processes are made.

6. *Service* might involve after-sale activities that are perceived by customers as value-added, such as delivery, setup, warranty work, technical support, or extra attention while work is in progress, such as courtesy, keeping the customer informed, and attention to little details.
7. *Managers* and *workers* are the people at the heart and sole of an organization, and if they are competent and motivated, they can provide a distinct competitive edge by their skills and the ideas they create. One skill that is often overlooked is answering the telephone. How complaint calls or requests for information are handled can be a positive or a negative. For example, if automated answering is used, that can turn off some callers. If the person answering the call is rude, not helpful, or cuts off the call, that can produce a negative image. Conversely, if calls are handled promptly and cheerfully, that can produce a positive image and, potentially, a competitive advantage.

Some of these dimensions overlap. For example, several of the items on the list may come under the heading of quality.



Another issue that can be overlooked in the drive to be more competitive is the importance of *ethical behavior*; it is something that all managers should adhere to and stress to their subordinates.

Also, in the past, business organization tended to focus inward as they sought to become more competitive by positively affecting one or more of the preceding list of items. More recently, however, business organizations have broadened their focus to include their *supply chains*, recognizing that other organizations in their supply chains also impact all or most of the items on that preceding list.

Organizations fail, or perform poorly, for a variety of reasons. Being aware of those reasons can help managers avoid making similar mistakes. Among the chief reasons are the following:

1. Putting too much emphasis on short-term financial performance at the expense of research and development.
2. Failing to take advantage of strengths and opportunities, and/or failing to recognize competitive threats.
3. Neglecting operations strategy.
4. Placing too much emphasis on product and service design and not enough on process design and improvement.
5. Neglecting investments in capital and human resources.
6. Failing to establish good internal communications and cooperation among different functional areas.
7. Failing to consider customer wants and needs.

The key to successfully competing is to determine what customers want and then direct efforts toward meeting (or even exceeding) customer expectations. There are two basic issues that must be addressed. First: What do the customers want? Which items on the preceding list of the ways business organizations compete are important to customers? Second: What is the best way to satisfy those wants?

Operations must work with marketing to obtain information on the relative importance of the various items to each major customer or target market.

Understanding competitive issues can help managers develop successful strategies.

Strategy

Strategies are plans for achieving goals. An organization's strategy has a long-term impact on the nature and characteristics of the organization. In large measure, strategies affect the ability of an organization to compete or, in the case of a nonprofit organization, the ability to serve its intended purpose.

In this section, you will learn about both organization strategies and operations strategies, and how they influence an organization. The nature of an organization's strategies depends on its mission.

MISSION

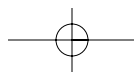
An organization's **mission** is the basis of the organization—the reason for its existence. Missions vary from organization to organization, depending on the nature of their business. Table 2–1 provides some sample mission statements.

It is important that an organization have a clear and simple **mission statement**, one which answers the question, “What business are we in?” The mission statement should serve to guide formulation of strategies for the organization as well as decision making at all levels. Not all organizations have mission statements; perhaps their leaders lack an awareness of how important such a statement is, or perhaps they are unclear about what the mission should be. Without a clear mission, an organization is unlikely to achieve its true potential, because there is little direction for formulating strategies.

strategy A plan for achieving organizational goals.

mission The reason for existence of an organization.

mission statement A statement of purpose that serves as a guide for strategy and decision making.



Globe Metallurgical

To provide products and services that lead the silicon metal and ferroalloy industries in the highest quality at the lowest manufacturing costs. To maintain our lead, we must continually improve our products and services.

We will meet our customers' needs with products, services, and technologies that represent true value. This will ensure long-term profits for growth, job security for our employees, and give our owners and shareholders sustained, high investment returns.

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IBM

We create, develop, and manufacture the industry's most advanced information technologies, including computer systems, software, networking systems, storage devices, and microelectronics.

We have two fundamental missions:

- We strive to lead in the creation, development, and manufacture of the most advanced information technologies.
- We translate advanced technologies into value for our customers as the world's largest information services company. Our professionals worldwide provide expertise within specific industries, consulting services, systems integration, and solution development and technical support.

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Skynet Worldwide Courier

The Skynet Worldwide Courier Network sets the standard for international delivery and distribution services by consistently exceeding customer expectations.

- Skynet delivers customer satisfaction by:
- Integrating all aspects of the transportation process.
- Personalizing service worldwide.
- Investing in quality people and technology.
- Innovating and adapting to meet customers' unique and changing requirements.

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Union Carbide

To grow the value of the Corporation by successfully pursuing strategies that capitalize on our business strengths in chemicals and polymers;

To successfully execute wealth creation strategies that consistently deliver value to all stakeholders over the course of the business cycle.

- Corporate Values
- Safety and environmental excellence
- Customer focus
- Technology leadership
- People excellence
- Simplicity and focus

Reprinted by permission of Union Carbide, Danbury, CT.

TABLE 2-1

Selected company mission statements



www.ibm.com



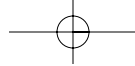
www.unioncarbide.com

Strategies and Tactics. A mission statement provides a general direction for an organization and gives rise to organizational *goals*, which provide substance to the overall mission. For example, one goal of an organization may be to capture a certain percentage of market share for a product; another goal may be to achieve a certain level of profitability. Taken together, the goals and the mission establish a destination for the organization.

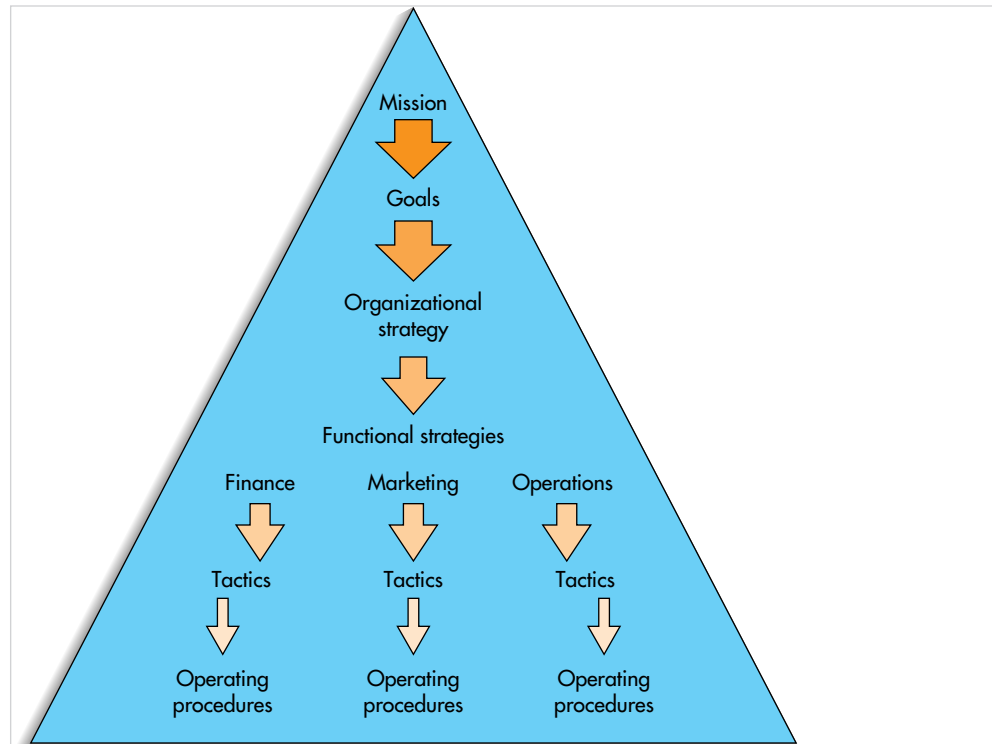


Is it a strategic, tactical, or operational issue? Sometimes the same issue may apply to all three levels. However, a key

difference is the time frame. From a strategic perspective, long-term implications are most relevant. From tactical and operational perspectives, the time frames are much shorter. In fact, the operational time frame is often measured in days.

**FIGURE 2-1**

Planning and decision making is hierarchical in organizations.



If you think of goals as destinations, then strategies are the roadmaps for reaching the destinations. Strategies provide *focus* for decision making. Generally speaking, organizations have overall strategies called *organization strategies*, which relate to the entire organization, and they also have *functional strategies*, which relate to each of the functional areas of the organization. The functional strategies should support the overall strategies of the organization, just as the organizational strategies should support the goals and mission of the organization.

tactics The methods and actions taken to accomplish strategies.

Tactics are the methods and actions used to accomplish strategies. They are more specific in nature than strategies, and they provide guidance and direction for carrying out actual *operations*, which need the most specific and detailed plans and decision making in an organization. You might think of tactics as the “how to” part of the process (e.g., how to reach the destination, following the strategy roadmap) and operations as the actual “doing” part of the process.

It should be apparent that the overall relationship that exists from the mission down to actual operations is *hierarchical* in nature. This is illustrated in Figure 2–1.

A simple example may help to put this hierarchy into perspective.

Example

Rita is a high school student in Southern California. She would like to have a career in business, have a good job, and earn enough income to live comfortably.

A possible scenario for achieving her goals might look something like this:

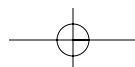
Mission: Live a good life.

Goal: Successful career, good income.

Strategy: Obtain a college education.

Tactics: Select a college and a major; decide how to finance college.

Operations: Register, buy books, take courses, study.



		Management Level	Time Horizon	Scope	Level of Detail	Relates to
The Overall Organization	Mission	Top	Long	Broad	Low	Survival, profitability
	Strategy	Senior	Long	Broad	Low	Growth rate, market share
Production/Operations	Strategic	Senior	Moderate to long	Broad	Low	Product design, choice of location, choice of technology, new facilities
	Tactical	Middle	Moderate	Moderate	Moderate	Employment levels, output levels, equipment selection, facility layout
	Operational	Low	Short	Narrow	High	Scheduling personnel, adjusting output rates, inventory management, purchasing

OPERATIONS STRATEGY

The organization strategy provides the overall direction for the organization. It is broad in scope, covering the entire organization. **Operations strategy** is narrower in scope, dealing primarily with the operations aspect of the organization. Operations strategy relates to products, processes, methods, operating resources, quality, costs, lead times, and scheduling. Table 2–2 provides a comparison of an organization’s mission, its overall strategy, and its operations strategy, tactics, and operations.

In order for operations strategy to be truly effective, it is important to link it to organization strategy; that is, the two should not be formulated independently. Rather, formulation of organization strategy should take into account the realities of operations’ strengths and weaknesses, capitalizing on strengths and dealing with weaknesses. Similarly, operations strategy must be consistent with the overall strategy of the organization, and formulated to support the goals of the organization. This requires that senior managers work with functional units to formulate strategies that will support, rather than conflict with, each other and the overall strategy of the organization. As obvious as this may seem, it doesn’t always happen in practice. Instead, we may find power struggles between various functional units. These struggles are detrimental to the organization because they pit functional units against each other rather than focusing their energy on making the organization more competitive and better able to serve the customer. Some of the latest approaches in organizations, involving teams of managers and workers, may reflect a growing awareness of the synergistic effects of working together rather than competing internally.

Operations strategy can have a major influence on the competitiveness of an organization. If it is well designed and well executed, there is a good chance that the organization will be successful; if it is not well designed or executed, the chances are much less that the organization will be successful.

In the 1970s and early 80s, operations strategy was often neglected in favor of marketing and financial strategies. That may have occurred because many chief executive officers did not come from operations backgrounds and perhaps did not fully appreciate the importance of the operations function. Mergers and acquisitions were common; leveraged buyouts were used, and conglomerates were formed that joined dissimilar operations. These did little to add value to the organization; they were purely financial in nature. Decisions were often made by individuals who were unfamiliar with the business, frequently to the detriment of that business. Meanwhile, foreign competitors began to fill the resulting vacuum with a careful focus on operations strategy.

In the late 1980s and early 90s, many companies began to realize this approach was not working. They recognized that they were less competitive than other companies. This caused them to focus attention on operations strategy. Toward that end, many firms are developing strategies that have *quality* or *time* as their central concern.

This correlates with a survey of manufacturing executives and managers who were asked to identify strategic and tactical issues that U.S. manufacturers must focus on to be

TABLE 2-2

Comparison of mission, organization strategy, and operations strategy

operations strategy The approach, consistent with the organization strategy, that is used to guide the operations function.





order qualifiers Characteristics that customers perceive as minimum standards of acceptability to be considered as a potential for purchase.

order winners Characteristics of an organization's goods or services that cause it to be perceived as better than the competition.

distinctive competencies The special attributes or abilities that give an organization a competitive edge.

competitive on a global basis in the 1990s.¹ The top two strategic issues were quality management and manufacturing strategy. The top two tactical issues were quality control, and manufacturing planning and control systems. A key element of both organization strategy and operations strategy is strategy formulation.

STRATEGY FORMULATION

To formulate an effective strategy, senior management must take into account the *distinctive competencies* of the organizations, and they must *scan the environment*. They must determine what competitors are doing, or planning to do, and take that into account. They must critically examine other factors that could have either positive or negative effects. This is sometimes referred to as the *SWOT* approach (strengths, weaknesses, opportunities, and threats).

In formulating a successful strategy, organizations must take into account both order qualifiers and order winners. Terry Hill, in his book *Manufacturing Strategy*, describes **order qualifiers** as those characteristics that potential customers perceive as minimum standards of acceptability to be considered as a potential for purchase. However, that may not be sufficient to get a potential customer to purchase from the organization. **Order winners** are those characteristics of an organization's goods or services that cause them to be perceived as better than the competition.

Characteristics such as price, delivery reliability, delivery speed, and quality can be order qualifiers or order winners. Thus, quality may be an order winner in some situations, whereas in others, it may be an order qualifier. Over time, a characteristic that was once an order winner may become an order qualifier, and vice versa.

Obviously, it is important to determine the set of order qualifier characteristics and the set of order winner characteristics, and it is also necessary to decide on the relative importance of each characteristic so that appropriate attention can be given to the various characteristics. Marketing must make that determination and communicate it to operations.

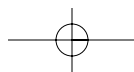
Distinctive competencies are those special attributes or abilities possessed by an organization that give it a *competitive edge*. In effect, distinctive competencies relate to the ways that organizations compete. As noted previously, these can include price (based on some combination of low costs of resources such as labor and materials, low operating costs, and low production costs); quality (high performance or consistent quality); time (rapid delivery or on-time delivery); flexibility (variety or volume); customer service; and location. Table 2–3 lists the major distinctive competencies and examples of services and companies that exhibit those competencies.

The most effective organizations seem to use an approach that develops distinctive competencies based on customer needs as well as on what the competition is doing. Marketing and operations work closely to match customer needs with operations capabilities. Competitor competencies are important for several reasons. For example, if a competitor is able to supply high-quality products, it may be necessary to meet that high quality as a baseline. However, merely *matching* a competitor is usually not sufficient to gain market share. It may be necessary to exceed the quality level of the competitor or gain an edge by excelling in one or more other dimensions, such as rapid delivery or service after the sale.

Some of the strategies various Japanese manufacturing companies have employed since World War II are:

- *Low labor cost strategy*. Immediately after the war, exploited the (then) inexpensive labor pool.
- *Scale-based strategy*. During the 1960s, used capital intensive methods to achieve higher labor productivity and lower unit costs.

¹Manoj K. Malhotra, Daniel C. Steele, and Varun Grover, "Important Strategic and Tactical Manufacturing Issues in the 1990s." *Decision Sciences* 25, no. 2 (March/April 1994), pp. 189–214.



	Competency	Examples of Companies or Services
Price	Low cost	U.S. first-class postage Motel-6, Red Roof Inns Mail-order computers
Quality	High-performance design and/or high quality	Sony TV Lexus, Cadillac Disneyland Five-star restaurants or hotels
	Consistent quality	Coca-Cola, Pepsi Cola Kodak, Xerox, Motorola Electrical power
Time	Rapid delivery	McDonald's restaurants Express Mail UPS
	On-time delivery	Domino's Pizza One-hour photo Federal Express Express Mail
Flexibility	Variety	Burger King ("Have it your way") Hospital emergency room
	Volume	McDonald's ("Buses welcome") Toyota Supermarkets (additional checkouts)
Service	Superior customer service	Disneyland Hewlett-Packard IBM Nordstroms
Location	Convenience	Supermarkets, dry cleaners Mall stores Service stations Banks, ATMs

TABLE 2-3*Examples of distinctive competencies*

Toyota, Japan's largest automobile manufacturer, also markets the upscale, award winning Lexus line. Quality is highly valued, and workers have the authority to stop the production line if quality problems are encountered.



www.lexus.com/



Automatic teller machines (ATMs) are numerous, carefully located for customer convenience, and available 24 hours. Networks have expanded to serve international customers.



Delivering groceries and specialty food items directly to the customer is a successful new e-based business. This organic produce truck delivers perishables to a customer in San Rafael, California.



environmental scanning The considering of events and trends that present threats or opportunities for a company.



- *Focused factories strategy.* During the 1970s, used smaller factories that focused on narrow product lines to take advantage of specialization and achieve higher quality.
- *Flexible factories strategy.* During the 1980s, reduced the time needed to incorporate new product and process designs. Used flexible equipment that allowed volume and design changes, as well as product variety. Continued to stress quality.²

In the 1990s, the leading Japanese manufacturers adopted an approach that incorporates introducing new product features and practicing continuous improvement of both products and processes.

Environmental scanning is the considering of events and trends that present either threats or opportunities for the organization. Generally these include competitors' activities; changing consumer needs; legal, economic, political, and environmental issues; the potential for new markets; and the like. Depending on the nature of an organization and the locations of its customers, these issues may be global, national, regional, or local. Thus, the disintegration of the former Soviet Union in 1991–92, the reunification of Germany, and the formation of the European Union would have major input into the strategic planning of such global companies as the Ford Motor Company, General Motors, Kodak, Coca-Cola, PepsiCo, and IBM, but would have little direct impact on local businesses such as supermarkets or landscaping firms. Companies that are *local suppliers* for global companies, however, may be affected by international events.

Another key factor to consider when developing strategies is technological change, which can present real opportunities and threats to an organization. Technological changes occur in products (high-definition TV, improved computer chips, improved cellular telephone systems, and improved designs for earthquakeproof structures); in services (faster order processing, faster delivery); and in processes (robotics, automation, computer-assisted processing, point-of-sale scanners, and flexible manufacturing systems). The obvious benefit is a competitive edge; the risk is that incorrect choices, poor execution, and higher-than-expected operating costs will create competitive *disadvantages*.

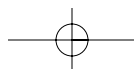
Important factors may be internal or external. The key external factors are:

1. *Economic conditions.* These include the general health and direction of the economy, inflation and deflation, interest rates, tax laws, and tariffs.
2. *Political conditions.* These include favorable or unfavorable attitudes toward business, political stability or instability, and wars.
3. *Legal environment.* This includes antitrust laws, government regulations, trade restrictions, minimum wage laws, product liability laws and recent court experience, labor laws, and patents.
4. *Technology.* This can include the rate at which product innovations are occurring, current and future process technology (equipment, materials handling), and design technology.
5. *Competition.* This includes the number and strength of competitors, the basis of competition (price, quality, special features), and the ease of market entry.
6. *Markets.* This includes size, location, brand loyalties, ease of entry, potential for growth, long-term stability, and demographics.

The organization must also take into account various *internal factors* that relate to possible strengths or weaknesses. Among the key internal factors are:

1. *Human resources.* These include the skills and abilities of managers and workers; special talents (creativity, designing, problem solving); loyalty to the organization; expertise; dedication; and experience.
2. *Facilities and equipment.* Capacities, location, age, and cost to maintain or replace can have a significant impact on operations.

²George Stalk Jr. and Thomas Hout, "Competing Against Time," *Research and Technology Management* 33, no. 2 (March–April 1990), pp. 19–24.



3. *Financial resources.* Cash flow, access to additional funding, existing debt burden, and cost of capital are important considerations.
4. *Customers.* Loyalty, existing relationships, and understanding of wants and needs are important.
5. *Products and services.* These include existing products and services, and the potential for new products and services.
6. *Technology.* This includes existing technology, the ability to integrate new technology, and the probable impact of technology on current and future operations.
7. *Suppliers.* Supplier relationships, dependability of suppliers, quality, flexibility, and service are typical considerations.
8. *Other.* Other factors include patents, labor relations, company or product image, distribution channels, relationships with distributors, maintenance of facilities and equipment, access to resources, and access to markets.

After assessing internal and external factors and an organization's distinctive competence, a strategy or strategies must be formulated that will give the organization the best chance of success. Among the types of questions that may need to be addressed are the following:

What role, if any, will the Internet play?

Will the organization have a global presence?

To what extent will *outsourcing* be used?

To what extent will new products or services be introduced?

What rate of growth is desirable and *sustainable*?

What emphasis, if any, should be placed on lean production?

The organization may decide to have a single, dominant strategy (e.g., be the price leader) or to have multiple strategies. A single strategy would allow the organization to concentrate on one particular strength or market condition. On the other hand, multiple strategies may be needed to address a particular set of conditions.

Many companies are increasing their use of outsourcing to reduce overhead, gain flexibility, and take advantage of suppliers' expertise. Dell Computers provides a great example of some of the potential benefits of outsourcing as part of a business strategy.



www.dell.com/



In 1984, Michael Dell, then a college student, started selling personal computers from his dorm room. He didn't have the resources to make computer components, so he let others do that, choosing instead to concentrate on selling the computers. And, unlike the major computer producers, he didn't sell to dealers. Instead, he sold directly to PC buyers, eliminating some intermediaries, which allowed for lower cost and faster delivery. Although direct selling of PCs is fairly commonplace now, in those days it was a major departure from the norm.

What did Dell do that was so different from the big guys? To start, he bought components from suppliers instead of making them. That gave him tremendous leverage. He had little inventory, no R&D expenditures, and relatively few employ-

ees. And the risks associated with these were spread among his suppliers. Suppliers were willing to do this because Dell worked closely with them, and kept them informed. And because he was in direct contact with his customers, he gained tremendous insight into their expectations and needs, which he communicated to his suppliers.

Having little inventory gave Dell several advantages over his competitors. Aside from the lower costs of inventory, when new, faster computer chips became available, there was little inventory to work off, so he was able to offer the newer models much sooner than competitors with larger inventories. Also, when the prices of various components dropped, as they frequently did, he was able to take advantage of the lower prices, which kept his average costs lower than competitors'.

Today the company is worth billions, and so is Michael Dell.



By offering dependable, on-time overnight delivery, Federal express serves customers throughout the U.S. and internationally in the delivery of urgent packages



Growth is often a component of strategy, especially for new companies. A key aspect of this strategy is the need to seek a growth rate that is sustainable. In the 1990s, fast-food company Boston Markets dazzled investors and fast-food consumers alike. Fueled by its success, it undertook rapid expansion. By the end of the decade, the company was nearly bankrupt; it had overexpanded. In 2000, it was absorbed by fast-food giant McDonald's.

As globalization has increased, many companies realized that strategic decisions with respect to globalization must be made. One issue companies must face is that what works in one country or region will not necessarily work in another, and strategies must be carefully crafted to take these variabilities into account. Another issue is the threat of political or social upheaval. Still another issue is the difficulty of coordinating and managing far-flung operations. Indeed, "In today's global markets, you don't have to go abroad to experience international competition. Sooner or later the world comes to you."³

Two factors that tend to have universal strategic importance relate to quality and time. The following section discusses quality and time strategies.

QUALITY AND TIME STRATEGIES

Traditional strategies of business organizations have tended to emphasize cost minimization or product differentiation. While not abandoning those strategies, many organizations have embraced strategies based on *quality* and/or *time*. These two approaches are rapidly gaining favor throughout the business world. They are exciting and challenging, for they promise to significantly change the way business organizations operate.

Quality-based strategies focus on maintaining or improving the quality of an organization's products or services. Quality is generally a factor in both attracting and retaining customers. Quality-based strategies may be motivated by a variety of factors. They may reflect an effort to overcome an image of poor quality, a desire to catch up with the competition, a desire to maintain an existing image of high quality, or some combination of these and other factors. Quality-based strategies are the rule rather than the exception. Interestingly enough, quality-based strategies can be part of another strategy such as cost reduction or increased productivity, both of which benefit from higher quality.

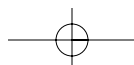
Time-based strategies focus on reducing the time required to accomplish various activities (e.g., develop new products or services and market them, respond to a change in customer demand, or deliver a product or perform a service). By doing so, organizations seek to improve service to the customer and to gain a competitive advantage over rivals who take more time to accomplish the same tasks.

Time-based strategies focus on reducing the time needed to conduct the various activities in a process. The rationale is that by reducing time, costs are generally less, productivity is higher, quality tends to be higher, product innovations appear on the market sooner, and customer service is improved.

³Christopher A. Bartlett and Sumantra Ghoshal. "Going Global: Lessons from Late Movers," *Harvard Business Review*, March–April 2000, p. 139.

quality-based strategy Strategy that focuses on quality in all phases of an organization.

time-based strategy Strategy that focuses on reduction of time needed to accomplish tasks.





NEWSCLIP

A Strategy for Continuous Improvement

www.howmedica.com

In April 1999, Stryker Howmedica set up a team to improve the running of its packaging line. A strategy based on continuous improvement was used. The team adopted an approach based on the production system of Toyota. The goal was to

satisfy the customer expectations for delivery and quality, while achieving gains in productivity. After the team identified needs and set objectives, a number of improvements were implemented. A one-piece flow was established that reduced bottlenecks in the flow of devices through a clean room and the total time spent blister sealing devices was lowered. Within a short time, productivity nearly doubled from 36 devices per hour to 60 devices per hour, work-in-progress inventory fell, and a 10 percent reduction in the standard cost of product was achieved.

Source: Based on Lauraine Howley, "A Strategy for Company Improvement," *Medical Device Technology* 11, no. 2, March 2000, p. 33.

Organizations have achieved time reduction in some of the following:

Planning time: The time needed to react to a competitive threat, to develop strategies and select tactics, to approve proposed changes to facilities, to adopt new technologies, and so on.

Product/service design time: The time needed to develop and market new or redesigned products or services.

Processing time: The time needed to produce goods or provide services. This can involve scheduling, repairing equipment, wasted efforts, inventories, quality, training, and the like.

Changeover time: The time needed to change from producing one type of product or service to another. This may involve new equipment settings and attachments, different methods, equipment, schedules, or materials.

Delivery time: The time needed to fill orders.

Response time for complaints: These might be customer complaints about quality, timing of deliveries, and incorrect shipments. These might also be complaints from employees about working conditions (e.g., safety, lighting, heat or cold), equipment problems, or quality problems.

The following reading from the *Harvard Business Review* provides two examples of companies improving their competitiveness through time-based changes in the way they operate.



READING

Time-Based Innovation

George Stalk Jr.

www.mitsubishica.com

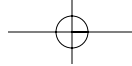
A company that can bring out new products three times faster than its competitors enjoys a huge advantage. Today, in one industry after another, Japanese manufacturers are doing just that to their Western competition:

- In projection television, Japanese producers can develop a new television in one-third the time required by U.S. manufacturers.

- In custom plastic injection molds, Japanese companies can develop the molds in one-third the time of U.S. competitors and at one-third the cost.
- In autos, Japanese companies can develop new products in half the time—and with half as many people—as the U.S. and German competition.

To accomplish their fast-paced innovations, leading Japanese manufacturers have introduced a series of organizational techniques that precisely parallel their approach to flexible manufacturing:

- In manufacturing, the Japanese stress short production runs and small lot sizes. In innovation, they favor smaller



increments of improvements in new products, but introduce them more often—versus the Western approach of more significant improvements made less often.

- In the organization of product development work, the Japanese use factory cells that are cross-functional teams. Most Western new product development activity is carried out by functional centers.
- In the scheduling of work, Japanese factories stress local responsibility, just as product development scheduling is decentralized. The Western approach to both requires plodding centralized scheduling, plotting, and tracking.

The effects of this time-based advantage are devastating; quite simply, American companies are losing leadership of technology and innovation—supposedly this country's source of long-term advantage. Unless U.S. companies reduce their new product development and introduction cycles from 36–48 months to 12–18 months, Japanese manufacturers will easily out-innovate and out-perform them. Taking the initiative in innovation will require even faster cycle times.

Residential air conditioners illustrate the Japanese ability to introduce more technological innovation in smaller increments—and how in just a few years these improvements add up to remarkably superior products. The Japanese introduce innovations in air conditioners four times faster than their American competitors; in technological sophistication the Japanese products are 7 to 10 years ahead of U.S. products.

Look at the changes in Mitsubishi Electric's three-horsepower heat pump between 1975 and 1985. From 1975 to 1979, the company did nothing to the product except change the sheet metal work, partly to improve efficiency but mostly to reduce materials cost. In 1979, the technological sophistication of the product was roughly equal to that of the U.S. competition. From this point on, the Japanese first established, and then widened the lead.

In 1980, Mitsubishi introduced its first major improvement: a new product that used integrated circuits to control the air-conditioning cycle. One year later, the company replaced the integrated circuits with microprocessors and added two important innovations to increase consumer demand. The first was "quick connect" Freon lines. On the old product (and on the U.S. product), Freon lines were made from copper tubing and cut to length, bent, soldered together, purged, and filled with Freon—an operation requiring great skill to produce a reliable air conditioner. The Japanese substituted quick-connect Freon lines—precharged hoses that simply clicked together. The second innovation was simplified wiring. On the old product (and still today on the U.S. product) the unit had six color-coded wires to connect. The advent of microprocessors made possible a two-wire connection with neutral polarity.

These two changes did not improve the energy-efficiency ratio of the product; nor were they intended to. Rather, the point was to fabricate a unit that would be simpler to install and more reliable, thereby broadening distribution and in-

creasing demand. Because of these innovations, white-goods outlets could sell the new product, and local contractors could easily install it.

In 1982, Mitsubishi introduced a new version of the air conditioner featuring technological advances related to performance. A high-efficiency rotary compressor replaced the outdated reciprocating compressor. The condensing unit had louvered fins and inner fin tubes for better heat transfer. Because the balance of the system changed, all the electronics had to change. As a result, the energy-efficiency ratio improved markedly.

In 1983, Mitsubishi added sensors to the unit and more computing power, expanding the electronic control of the cycle and again improving the energy-efficiency ratio.

In 1984, Mitsubishi came out with another version of the product, this time with an inverter that made possible an even higher energy-efficiency ratio. The inverter, which requires additional electronics for the unit, allows unparalleled control over the speed of the electric motor, dramatically boosting the appliance's efficiency.

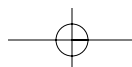
Using time-based innovation, Mitsubishi transformed its air conditioner. The changes came incrementally and steadily. Overall they gave Mitsubishi—and other Japanese companies on the same track—the position of technological leadership in the global residential air-conditioning industry.

In 1985, a U.S. air-conditioner manufacturer was just debating whether to use integrated circuits in its residential heat pump. In view of its four-to-five-year product development cycle, it could not have introduced the innovation until 1989 or 1990—putting the American company 10 years behind the Japanese. Faced with this situation, the U.S. air conditioner company followed the example of many U.S. manufacturers that have lost the lead in technology and innovation; it decided to source its air conditioners and components from its Japanese competition.

Consider the remarkable example of Atlas Door, a 10-year-old U.S. company. It has grown at an average annual rate of 15 percent in an industry with an overall annual growth rate of less than 5 percent. In recent years, its pre-tax earnings were 20 percent of sales, about five times the industry average. Atlas is debt free. In its 10th year the company achieved the number one competitive position in its industry.

The company's product: industrial doors. It is a product with almost infinite variety, involving limitless choices of width and height and material. Because of the importance of variety, inventory is almost useless in meeting customer orders; most doors can be manufactured only after the order has been placed.

Historically, the industry had needed almost four months to respond to an order for a door that was out of stock or customized. Atlas's strategic advantage was time; it could respond in weeks to any order. It had structured its order-entry, engineering, manufacturing, and logistics systems to move information and products quickly and reliably.



First, Atlas built just-in-time factories. These are fairly simple in concept. They require extra tooling and machinery to reduce changeover times and a fabrication process organized by product and scheduled to start and complete all of the parts at the same time. But even the performance of the factory—critical to the company's overall responsiveness—still only accounted for 2½ weeks of the completed product delivery cycle.

Second, Atlas compressed time at the front end of the system, where the order first entered and was processed. Traditionally, when customers, distributors, or salespeople called a door manufacturer with a request for price and delivery, they would have to wait more than one week for a response. If the desired door was not in stock, not in the schedule, or not engineered, the supplier's organization would waste even more time, pushing the search for an answer around the system.

Recognizing the opportunity to cut deeply into the time expenditure in this part of the system, Atlas first streamlined, then automated its entire order-entry, engineering, pricing, and scheduling processes. Today Atlas can price and schedule 95 percent of its incoming orders while the callers are still on the telephone. It can quickly engineer new special orders because it has preserved on computer the design and production data of all previous special orders—which drastically reduces the amount of reengineering necessary.

Third, Atlas tightly controlled logistics so that it always shipped only fully complete orders to construction sites. Orders require many components. Gathering all of them at the factory and making sure that they are with the correct order can be a time-consuming task. It is even more time-consuming, however, to get the correct parts to the job site *after* they have missed the initial shipment. Atlas developed a system to track the parts in production and the purchased parts for each order, ensuring arrival of all necessary parts at the shipping dock in time—a just-in-time logistics operation.

When Atlas started operations, distributors were uninterested in its product. The established distributors already carried the door line of a larger competitor; they saw no reason to switch suppliers except, perhaps, for a major price concession. But as a start-up, Atlas was too small to compete on price alone. Instead, it positioned itself as the door supplier of last resort, the company people came to if the established supplier could not deliver or missed a key date.

Of course, with industry lead times of almost four months, some calls inevitably came to Atlas. And when it did get a call, Atlas commanded a higher price because of its faster delivery. Atlas not only got a higher price but its time-based processes also yielded lower costs: it thus enjoyed the best of both worlds.

In 10 short years, the company replaced the leading door suppliers in 80 percent of the distributors in the country. With its strategic advantage the company could be selective, becoming the house supplier for only the strongest distributors.

In the wake of this indirect attack, the established competitors have not responded effectively. The conventional view is that Atlas is a “garage shop operator” that cannot sustain its growth: competitors expect the company's performance to degrade to the industry average as it grows larger. But this response—or nonresponse—only reflects a fundamental lack of understanding of time as the source of competitive advantage. The extra delay in responding only adds to the insurmountable lead the indirect time-based attack has created. While the traditional companies track costs and size, the new competitor derives advantage from time, staying on the cutting edge, leaving its rivals behind.

Source: Reprinted by permission of *Harvard Business Review*, “Time—The Next Source of Competitive Advantage,” by George Stalk, Jr., July–August 1988. Copyright 1988 by the President and Fellows of Harvard College.

Productivity

One of the primary responsibilities of a manager is to achieve *productive use* of an organization's resources. The term *productivity* is used to describe this. **Productivity** is an index that measures output (goods and services) relative to the input (labor, materials, energy, and other resources) used to produce them. It is usually expressed as the ratio of output to input:

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}} \quad (2-1)$$

A productivity ratio can be computed for a single operation, a department, an organization, or an entire country.

Productivity has important implications for business organizations and for entire nations. For nonprofit organizations, higher productivity means lower costs; for profit-based organizations, productivity is an important factor in determining how competitive a company is. For a nation, the rate of *productivity growth* is of great importance. Productivity growth is the increase in productivity from one period to the next relative to the productivity in the preceding period. Thus,

productivity A measure of the effective use of resources, usually expressed as the ratio of output to input.



Productivity in manufacturing can be greatly enhanced through the use of robotic equipment. Here, robots are building a Fiat Punto at the Melfi, Italy plant.



$$\text{Productivity growth} = \frac{\text{Current period productivity} - \text{Previous period productivity}}{\text{Previous period productivity}} \quad (2-2)$$

For example, if productivity increased from 80 to 84, the growth rate would be

$$\frac{84 - 80}{80} = .05 \text{ or } 5\%$$

Productivity growth is a key factor in a country's rate of inflation and the standard of living of its people. Productivity increases add value to the economy while keeping inflation in check. Productivity growth was a major factor in the recent long period of sustained economic growth in the United States.

COMPUTING PRODUCTIVITY

Productivity measures can be based on a single input (partial productivity), on more than one input (multifactor productivity), or on all inputs (total productivity). Table 2-4 lists some examples of productivity measures. The choice of productivity measure depends primarily on the purpose of the measurement. If the purpose is to track improvements in labor productivity, then labor becomes the obvious input measure.

Partial measures are often of greatest use in operations management. Table 2-5 provides some examples of partial productivity measures.

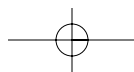
The units of output used in productivity measures depend on the type of job performed. The following are examples of labor productivity:

$$\frac{\text{Yards of carpet installed}}{\text{Labor hours}} = \text{Yards of carpet installed per labor hour}$$

$$\frac{\text{Number of offices cleaned}}{\text{Number of shifts}} = \text{Number of offices cleaned per shift}$$

$$\frac{\text{Board feet of lumber cut}}{\text{Number of weeks}} = \text{Board feet of lumber cut per week}$$

Similar examples can be listed for *machine productivity* (e.g., the number of pieces per hour turned out by a machine).



Partial measures	$\frac{\text{Output}}{\text{Labor}}$	$\frac{\text{Output}}{\text{Machine}}$	$\frac{\text{Output}}{\text{Capital}}$	$\frac{\text{Output}}{\text{Energy}}$
Multifactor measures	$\frac{\text{Output}}{\text{Labor} + \text{Machine}}$		$\frac{\text{Output}}{\text{Labor} + \text{Capital} + \text{Energy}}$	
Total measure	$\frac{\text{Goods or Services produced}}{\text{All inputs used to produce them}}$			

Labor Productivity	Units of output per labor hour Units of output per shift Value-added per labor hour Dollar value of output per labor hour
Machine Productivity	Units of output per machine hour Dollar value of output per machine hour
Capital Productivity	Units of output per dollar input Dollar value of output per dollar input
Energy Productivity	Units of output per kilowatt-hour Dollar value of output per kilowatt-hour

TABLE 2-4

Some examples of different types of productivity measures

TABLE 2-5

Some examples of partial productivity measures

Example 2

Determine the productivity for these cases:

- Four workers installed 720 square yards of carpeting in eight hours.
- A machine produced 68 usable pieces in two hours.

$$\begin{aligned}
 \text{a. Productivity} &= \frac{\text{Yards of carpet installed}}{\text{Labor hours worked}} \\
 &= \frac{720 \text{ square yards}}{4 \text{ workers} \times 8 \text{ hours/worker}} \\
 &= \frac{720 \text{ yards}}{32 \text{ hours}} \\
 &= 22.5 \text{ yards/hour}
 \end{aligned}$$

$$\begin{aligned}
 \text{b. Productivity} &= \frac{\text{Usable pieces}}{\text{Production time}} \\
 &= \frac{68 \text{ pieces}}{2 \text{ hours}} \\
 &= 34 \text{ pieces/hour}
 \end{aligned}$$

Solution

Calculations of multifactor productivity measure inputs and outputs using a common unit of measurement, such as cost or value. For instance, the measure might use cost of inputs and price of the output:

$$\frac{\text{Quantity of production at standard price}}{\text{Labor cost} + \text{Materials cost} + \text{Overhead}} \quad (2-3)$$

Determine the multifactor productivity for the combined input of labor and machine time using the following data:

Output: 7,040 units

Example 3



	<p>Input</p> <p>Labor: \$1,000</p> <p>Materials: \$520</p> <p>Overhead: \$2,000</p> <p>Solution</p> $\text{Multifactor Productivity} = \frac{\text{Output}}{\text{Labor} + \text{Materials} + \text{Overhead}} = \frac{7,040 \text{ units}}{\$1,000 + \$520 + \$2,000} = .2 \text{ units/dollar}$
--	--

Productivity measures are useful on a number of levels. For an individual department or organization, productivity measures can be used to track performance *over time*. This allows managers to judge performance and to decide where improvements are needed. For example, if a manager finds that productivity has slipped in a certain area, the manager can examine the factors used to compute productivity to determine what has changed and then devise a means of improving productivity in subsequent periods.

Productivity measures can also be used to judge the performance of an entire industry or the productivity of a country as a whole. These productivity measures are *aggregate* measures.

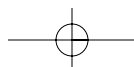
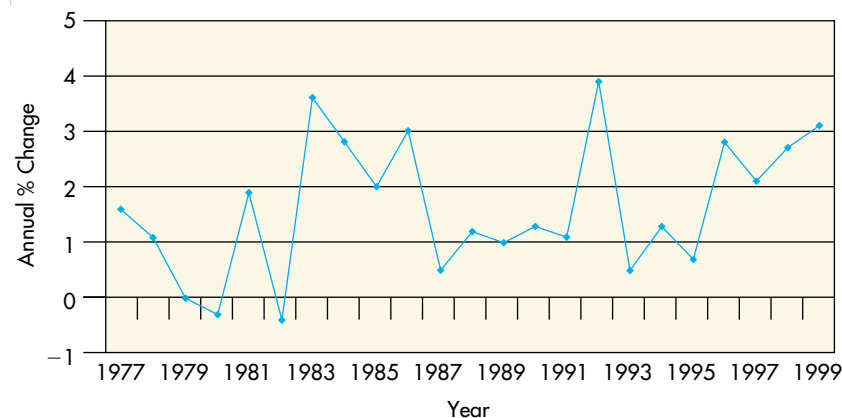
In essence, productivity measurements serve as scorecards of the effective use of resources. Business leaders are concerned with productivity as it relates to *competitiveness*: If two firms both have the same level of output but one requires less input because of higher productivity, that one will be able to charge a lower price and consequently increase its share of the market. Or that firm might elect to charge the same price, thereby reaping a greater profit. Government leaders are concerned with national productivity because of the close relationship between productivity and a nation's standard of living. High levels of productivity are largely responsible for the relatively high standards of living enjoyed by people in industrial nations. Furthermore, wage and price increases not accompanied by productivity increases tend to create inflationary pressures on a nation's economy.

Productivity growth in the United States in the 1970s and 80s lagged behind that of other leading industrial countries, most notably Japan, Korea, the U.K., and West Germany. That caused concern among government officials and business leaders. Although U.S. productivity was still among the highest in the world, it was losing ground to other nations. Moreover, a significant portion of U.S. productivity could be attributed to high *agricultural* productivity; *manufacturing* productivity tended to be lower. It slowed during the 80s, but it was strong in mid to late 90s. (See Figure 2-2.)



FIGURE 2-2

Percentage change in U.S. productivity (output per hour), 1989–1997



PRODUCTIVITY IN THE SERVICE SECTOR

Service productivity is more problematic than manufacturing productivity. In many situations, it is more difficult to measure, and thus to manage, because it involves intellectual activities and a high degree of variability. Think about medical diagnosis, surgery, consulting, legal services, customer service, and computer repair work. This makes productivity improvements more difficult to achieve. Nonetheless, because service is becoming an increasingly large portion of our economy, the issues related to service productivity will have to be dealt with.

FACTORS THAT AFFECT PRODUCTIVITY

Numerous factors affect productivity. Generally, they are methods, capital, quality, technology, and management.

A commonly held misconception is that workers are the main determinant of productivity. According to that theory, the route to productivity gains involves getting employees to work harder. However, the fact is that many productivity gains in the past have come from *technological* improvements. Familiar examples include:

Fax machines	Computerized billing and inventories
Copying machines	Automation
Microwave ovens	Calculators
The Internet	Computers, personal computers, laptops
Answering machines, voice mail, cellular phones	E-mail
	Software

However, technology alone won't guarantee productivity gains; it must be used wisely and thoughtfully. Without careful planning, technology can actually *reduce* productivity, especially if it leads to inflexibility, high costs, or mismatched operations. Another current productivity pitfall results from employees' use of computers for non-work-related activities (playing games or checking stock prices or sports scores on the Internet). Beyond all of these is the dip in productivity that results while employees learn to use new equipment or procedures that will eventually lead to productivity gains after the learning phase ends.

Standardizing processes and procedures wherever possible can have a significant impact on both productivity and quality.

Quality differences may distort productivity measurements. One way this can happen is when comparisons are made over time, such as comparing the productivity of a factory now with one in the 1970s. Quality is now much higher than it was then, but there is no simple way to incorporate quality into productivity measurements.

Use of the Internet can lower costs of a wide range of transactions, thereby increasing productivity. It is likely that this effect will continue to increase productivity in the foreseeable future.

Computer viruses can have an immense negative impact on productivity.

Searching for lost or misplaced items wastes time, hence negatively affecting productivity.

Scrap rates have an adverse effect on productivity, implying inefficient use of resources.

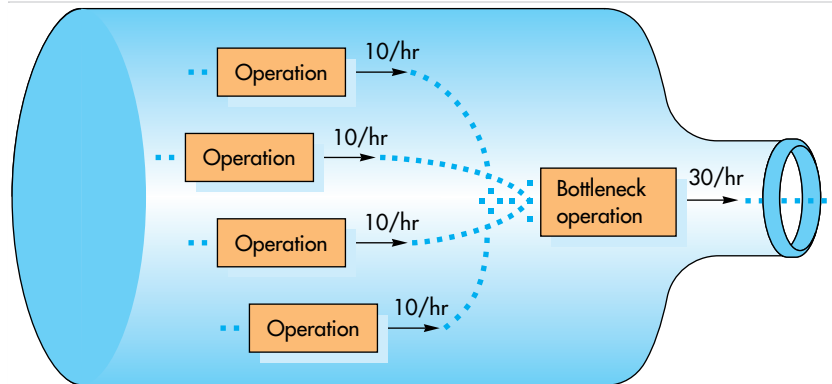
New workers tend to have lower productivity than seasoned workers. Thus, growing companies may experience a productivity lag.

Safety should be addressed. Accidents can take a toll on productivity.

A shortage of information technology workers and other technical workers hampers the ability of companies to update computing resources, generate and sustain growth, and take advantage of new opportunities.

Layoffs often affect productivity. The effect can be positive and negative. Initially, productivity may increase after a layoff, because the workload remains the same but fewer



**FIGURE 2-3***Bottleneck operation*

workers do the work—although they have to work harder and longer to do it. However, as time goes by, the remaining workers may experience an increased risk of burnout, and they may fear additional job cuts. The most capable workers may decide to leave.

Labor turnover has a negative effect on productivity; replacements need time to get up to speed.

Design of the workspace can impact productivity. For example, having tools and other work items within easy reach can positively impact productivity.

Incentive plans that reward productivity increases can boost productivity.

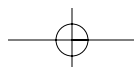
IMPROVING PRODUCTIVITY

A company or a department can take a number of key steps toward improving productivity:

1. Develop productivity measures for all operations; measurement is the first step in managing and controlling an operation.
2. Look at the system as a whole in deciding which operations are most critical; it is overall productivity that is important. This concept is illustrated in Figure 2–3, which shows several operations feeding their output into a *bottleneck* operation. The capacity of the bottleneck operation is less than the combined capacities of the operations that provide input, so units queue up waiting to be processed; hence the term bottleneck. Productivity improvements to any *nonbottleneck* operation will not affect the productivity of the system. Improvements in the bottleneck operation *will* lead to increased productivity, up to the point where the output rate of the bottleneck equals the output rate of the operations feeding it.
3. Develop methods for achieving productivity improvements, such as soliciting ideas from workers (perhaps organizing teams of workers, engineers, and managers), studying how other firms have increased productivity, and reexamining the way work is done.
4. Establish reasonable goals for improvement.
5. Make it clear that management supports and encourages productivity improvement. Consider incentives to reward workers for contributions.
6. Measure improvements and publicize them.
7. Don't confuse productivity with *efficiency*. Efficiency is a narrower concept that pertains to getting the most out of a *fixed* set of resources; productivity is a broader concept that pertains to effective use of overall resources. For example, an efficiency perspective on mowing a lawn given a hand mower would focus on the best way to use the hand mower; a productivity perspective would include the possibility of using a power mower.



Vol. 1, Tape 2, Seg. 4
Nucor Steel





NEWSCLIP

Productivity Gains Curb Inflation

www.burgerking.com
www.whirlpool.com



Wage increases can lead to inflationary pressure—they can cause the prices consumers pay for products and services to rise. Unless, that is, they are offset by gains in productivity, which lead to an increase in profits. If that happens,

a portion of the resulting profits can be used to cover the wage increases without having to raise prices.

Some Burger Kings were recently able to increase the starting pay of new workers by \$1 by achieving productivity gains. The restaurants restructured the menu, combining items into meal packages such as a burger, fries, and soft drink. This enabled the counter staff to enter orders with a single key stroke instead of multiple key strokes on their point-of-sale machines, reducing the time needed to take an order. That, in turn, enabled them to take orders more quickly, increasing productivity and, consequently, reducing labor requirements, which produced higher profits.

Source: Based on “Despite Pay Increases, Gains in Productivity, Profits Curb Inflation,” *The Wall Street Journal*, May 22, 1997, p. A1.

Summary

Competition is the driving force in many organizations. It may involve price, quality, special features or services, time or other factors. To develop effective strategies for business, it is essential for organizations to determine what combinations of factors are important to customers, which factors are order qualifiers, and which are order winners.

Strategies are plans for achieving organizational goals. They provide focus for decision making. Strategies must take into account present and future customer wants, as well as the organization's strengths and weaknesses, threats and opportunities. These can run the gamut from what competitors are doing, or are likely to do, to technology, supply chain management, and e-business. Organizations generally have overall strategies that pertain to the entire organization and strategies that pertain to each of the functional areas. Functional strategies are narrower in scope and should be linked to overall strategies. Time-based strategies and quality-based strategies are among the most widely used strategies business organizations employ to serve their customers and to become more productive.

Productivity is a measure of the use of resources. There is considerable interest in productivity both from an organizational standpoint and from a national standpoint. Business organizations want higher productivity because it yields lower costs and helps them to become more competitive. Nations want higher productivity because it makes their goods and services more attractive, offset inflationary pressures associated with higher wages, and results in a higher standard of living for their people.

competitiveness, 00
distinctive competencies, 00
environmental scanning, 00
mission, 00
mission statement, 00
operations strategy, 00
order qualifiers, 00

order winners, 00
productivity, 00
quality-based strategy, 00
strategy, 00
tactics, 00
time-based strategy, 00

Key Terms

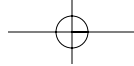
A company that processes fruits and vegetables is able to produce 400 cases of canned peaches in one-half hour with four workers. What is labor productivity?

$$\begin{aligned} \text{Labor productivity} &= \frac{\text{Quantity produced}}{\text{Labor hours}} = \frac{400 \text{ cases}}{4 \text{ workers} \times 1/2 \text{ hour/worker}} \\ &= 200 \text{ cases per hour per worker} \end{aligned}$$

Solved Problems

Problem 1

Solution



Problem 2

A wrapping paper company produced 2,000 rolls of paper one day. Labor cost was \$160, material cost was \$50, and overhead was \$320. Determine the multifactor productivity.

Solution

$$\begin{aligned} \text{Multifactor productivity} &= \frac{\text{Quantity produced @ standard price}}{\text{Labor cost + Material cost + Overhead}} \\ &= \frac{2,000 \text{ rolls}}{\$160 + \$50 + \$320} \\ &= 3.77 \text{ rolls per dollar} \end{aligned}$$

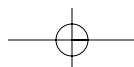
A variation of the multifactor productivity calculation incorporates the standard price in the numerator by multiplying the units by the standard price.

Discussion and Review Questions

1. From time to time, various groups clamor for import restrictions or tariffs on foreign-produced goods, particularly automobiles. How might these be helpful? Harmful?
2. List the key ways that organizations compete.
3. Explain the importance of identifying and differentiating order qualifiers and order winners.
4. Select two stores you shop at, and state how they compete.
5. What are distinctive competencies and how do they relate to strategy formulation?
6. Contrast the terms *strategies* and *tactics*.
7. Contrast *organization strategy* and *operations strategy*.
8. Explain the term *time-based strategies* and give three examples.
9. What is productivity and why is it important? Who is primarily responsible for productivity in an organization?
10. List some factors that can affect productivity and some ways that productivity can be improved.
11. It has been said that a typical Japanese automobile manufacturer produces more cars with fewer workers than its U.S. counterpart. What are some possible explanations for this, assuming that U.S. workers are as hardworking as Japanese workers?
12. Boeing's strategy appears to focus on its 777 mid-size plane's ability to fly into smaller, non-hub airports. Rival European Airbus' strategy appears to focus on large planes. Compare the advantages and disadvantages of these two strategies.

Memo Writing Exercises

1. Last year, your company initiated a major effort to improve productivity throughout the company. During the first few months, little improvement was made. Recently, however, major gains, exceeding 20 percent, have been made in both the packaging and equipment repair departments. You would like to commend them for their achievements, and announce to the other departments that gains are possible. You are also aware that some production employees believe that significant gains in productivity means the loss of some jobs because the company will be able to achieve the same output with fewer employees. Another local company laid off 5 percent of its workforce shortly after announcing productivity gains. Nonetheless, you believe that by achieving even modest productivity gains, your company will become more competitive and therefore be able to capture a larger share of the market. You believe that increased demand will more than offset productivity gains, and may even require hiring more employees. Naturally, you cannot guarantee this, although you are optimistic about the chances that this will occur.
Write a one-page memo to employees that covers these points.
2. Assume the role of vice president of manufacturing of Eastern Products, Philadelphia. You are thinking about the forthcoming annual retreat of top-level managers of manufacturing, engineering, marketing, and product design to discuss strategic planning. Competitive pressures from several domestic and foreign companies give this year's meeting special significance, and you want to arrange for a truly productive session.
In the past, some meetings haven't been as successful as you would have liked. You learned from experience that holding the meeting at corporate headquarters didn't work because the managers were too accessible to their subordinates. It's much better if the group can meet away



from home territory, allowing them the opportunity to concentrate and develop camaraderie. You also found that traditional vacation spots are not conducive to achieving the best results. You want your administrative assistant to investigate agencies that specialize in business retreats.

Twelve to 14 people will attend the conference. Each will require a separate hotel room. Exercise facilities should be on the premises. Audiovisual support will be needed for video presentations, and overhead projectors and flip charts will also be needed. Light lunches should be arranged. You need to get dietary preferences from those attending.

The location for the annual retreat should not require excessive travel costs or travel time. Arrangements must be completed within two weeks.

Write a one-page memo outlining these requirements to your assistant, Armin Joseph. It is his task to investigate possible retreat locations and make all the arrangements.

- Suppose that a company produced 300 standard bookcases last week using eight workers and it produced 240 standard bookcases this week using six workers. In which period was productivity higher? Explain.
- The manager of a crew that installs carpeting has tracked the crew's output over the past several weeks, obtaining these figures:

Week	Crew Size	Yards Installed
1	4	960
2	3	702
3	4	968
4	2	500
5	3	696
6	2	500

Compute the labor productivity for each of the weeks. On the basis of your calculations, what can you conclude about crew size and productivity?

- Compute the multifactor productivity measure for each of the weeks shown. What do the productivity figures suggest? Assume 40-hour weeks and an hourly wage of \$12. Overhead is 1.5 times weekly labor cost. Material cost is \$6 per pound. Standard price is \$140 per unit.

Week	Output (units)	Workers	Material (lbs)
1	300	6	45
2	338	7	46
3	322	7	46
4	354	8	48

- A company that makes shopping carts for supermarkets and other stores recently purchased some new equipment that reduces the labor content of the jobs needed to produce the shopping carts. Prior to buying the new equipment, the company used five workers, who produced an average of 80 carts per hour. Labor cost was \$10 per hour and machine cost was \$40 per hour. With the new equipment, it was possible to transfer one of the workers to another department, and equipment cost increased by \$10 per hour while output increased by four carts per hour.
 - Compute labor productivity under each system. Use carts per worker per hour as the measure of labor productivity.
 - Compute the multifactor productivity under each system. Use carts per dollar cost (labor plus equipment) as the measure.
 - Comment on the changes in productivity according to the two measures, and on which one you believe is the more pertinent for this situation.
- An operation has a 10 percent scrap rate. As a result, 72 pieces per hour are produced. What is the potential increase in labor productivity that could be achieved by eliminating the scrap?
- A manager checked production records and found that a worker produced 160 units while working 40 hours. In the previous week, the same worker produced 138 units while working 36 hours. Did the worker's productivity increase, decrease, or remain the same? Explain.

Q to PR/Client:

The [antx] is meant to appear only in instructor's edition, correct?
The web addresses, which look the same, are to appear in regular book, correct?

COMP

Problems

Last week: 37.5 bookcases/worker.
 This week: 40 bookcases/worker.

Week	Crew Size	Labor Productivity
1	4	240 yd.
2	3	234
3	4	242
4	2	250
5	3	232
6	2	250

Possibly even-sized crews are better than odd sizes, and a crew of 2 works best.

Week	Productivity
1	5.62
2	5.45
3	5.20
4	5.01

Multifactor productivity dropped steadily from an early high of 5.62.

- Before: 16 carts per worker per hour.
After: 21 carts per worker per hour.
- Before: 89 carts/\$.
After: 93 carts/\$.
- Labor productivity increased by 31%.
Multifactor productivity increased by only 4.5%.

8.33%

4.3%



READING

Productivity Gains at Whirlpool

www.whirlpool.com

Workers and management at Whirlpool Appliance's Benton Harbor plant in Michigan have set an example of how to achieve productivity gains, which has benefited not only the company and its stockholders, but Whirlpool customers, and the workers themselves.

Things weren't always rosy at the plant. Productivity and quality weren't good. Neither were labor-management relations. Workers hid defective parts so management wouldn't find them, and when machines broke down, workers would simply sit down until sooner or later someone came to fix it. All that changed in the late 1980s. Faced with the possibility that the plant would be shut down, management and labor worked together to find a way to keep the plant open. The way was to increase productivity—producing more without using more resources. Interestingly, the improvement in productivity didn't come by spending money on fancy machines. Rather, it was accomplished by placing more emphasis on quality. That was a shift from the old way, which emphasized volume, often at the expense of quality. To motivate workers,

the company agreed to gain sharing, a plan that rewarded workers by increasing their pay for productivity increases.

The company overhauled the manufacturing process, and taught its workers how to improve quality. As quality improved, productivity went up because more of the output was good, and costs went down because of fewer defective parts that had to be scrapped or reworked. Costs of inventory also decreased, because fewer spare parts were needed to replace defective output, both at the factory and for warranty repairs. And workers have been able to see the connection between their efforts to improve quality and productivity, and their pay.

Not only was Whirlpool able to use the productivity gains to increase workers' pay, it was also able to hold the lid on price increases and to funnel some of the savings into research, which added to cost saving and quality improvement.

Questions

1. What were the two key things that Whirlpool management did to achieve productivity gains?
2. Who has benefited from the productivity gains?
3. How are productivity and quality related?
4. How can a company afford to pay its workers for productivity gains?

Source: Based on "A Whirlpool Factory Raises Productivity—And Pay of Workers," by Rick Wartzman, from *The Wall Street Journal*, 1992.



CASE

An American Tragedy: How a Good Company Died

Zachary Schiller

The Rust Belt is back. So say bullish observers as U.S. exports surge, long-moribund industries glow with newfound profits, and unemployment dips to lows not seen in a decade. But in the smokestack citadels, there's disquiet. Too many machine-tool and auto parts factories are silent; too many U.S. industries still can't hold their own.

What went wrong since the heyday of the 1960s? That's the issue Max Holland, a contributing editor of *The Nation*, takes up in his nutsy-boltsy but fascinating study, *When the Machine Stopped*.*

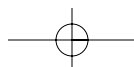
The focus of the story is Burgmaster Corp., a Los Angeles-area machine-tool maker founded in 1944 by Czechoslovakian immigrant Fred Burg. Holland's father worked there for 29 years, and the author interviewed 22 former employees. His

shop-floor view of this small company is a refreshing change from academic treatises on why America can't compete.

The discussions of spindles and numerical control can be tough going. But Holland compensates by conveying the excitement and innovation of the company's early days and the disgust and cynicism accompanying its decline. Moreover, the fate of Burgmaster and its brethren is crucial to the U.S. industrial economy: Any manufactured item is either made by a machine tool or by a machine made by a machine tool.

Producing innovative turret drills used in a wide variety of metalworking tasks, Burgmaster was a thriving enterprise by 1965, when annual sales amounted to about \$8 million. The company needed backing to expand, however, so it sold out to Buffalo-based conglomerate Houdaille Industries Inc. Houdaille was in turn purchased in a 1979 leveraged buyout led by Kohlberg Kravis Roberts & Co. By 1982, when debt, competition, and a sickly machine-tool market had battered Burgmaster badly, Houdaille went to Washington with a petition to withhold the investment tax credit for certain Japanese-made machine tools.

Thanks to deft lobbying, the Senate passed a resolution supporting Houdaille's position, but President Reagan refused to go along. Houdaille's subsequent attempt to link Burgmaster



up with a Japanese rival also failed, and Burgmaster was closed.

Holland uses Burgmaster's demise to explore some key issues of economic and trade policy. Houdaille's charge that a cartel led by the Japanese government had injured U.S. tool-makers, for example, became a rallying point for those who would blame a fearsome Japan Inc. for the problems of U.S. industry.

Holland describes the Washington wrangling over Houdaille in painful detail. But he does show that such government decisions are often made without much knowledge of what's going on in industry. He shows, too, that Japanese producers succeeded less because of government help than because they made better, cheaper machines.

For those who see LBOs as a symptom of what ails the U.S. economy, Holland offers plenty of ammunition. He argues persuasively that the LBO crippled Burgmaster by creating enormous pressure to generate cash. As Burgmaster pushed its products out as fast as possible, he writes, it routinely shipped defective machines. It promised customers features that engineers hadn't yet designed. And although KKR disputes the claim, Holland concludes that the LBO choked off Burgmaster's investment funds just when foreign competition made them most necessary. As for Houdaille, it was recapitalized and sold to Britain's Tube Investments Group.

But Burgmaster's problems had started even before the LBO. Holland's history of the company under Houdaille is a veritable catalog of modern management techniques that flopped. One of the most disastrous was a system for computerizing production scheduling that was too crude for complex machine-tool manufacturing. Holland gives a dramatic depiction of supply snafus that resulted in delays and cost increases.

As an independent company, "Burgmaster thrived because the Burgs knew their business," Holland writes. Their departure under Houdaille was followed by an "endless and ultimately futile search for a better formula." But, he concludes: "No formula was a substitute for management involvement on the shop floor."

In the end, however, Holland puts most of the blame for the industry's decline on government policy. He targets tax laws and macroeconomic policies that encourage LBOs and speculation instead of productive investment. He also criticizes Pentagon procurement policies for favoring exotic, custom machines over standard, low-cost models. This adds up to an industrial policy, Holland writes—a bad one.

The point is well taken, but Holland gives it excessive weight. Like their brethren in Detroit and Pittsburgh, domestic tool-makers in the 1970s were too complacent when imports seized the lower end of the product line. The conservatism that had for years served them in their cyclical industry left them ill-prepared for change. Even now some of the largest U.S. tool-makers are struggling to restructure. Blame the government, yes. But blame the industry, too.

Question

1. Write a brief report that outlines the reasons (both internal and external) for Burgmaster's demise, and whether operations management played a significant role in the demise.

*Max Holland, *When the Machine Stopped: A Contemporary Tale from Industrial America* (Boston, Mass.: Harvard Business School Press, 1988).

Source: Reprinted from April 17, 1989, issue of *Business Week* by special permission, copyright © 1989 by The McGraw-Hill companies.



CASE

Home-Style Cookies

The Company

The Lew-Mark Baking Company is located in a small town in western New York State. The bakery is run by two brothers, Lew and Mark, who formed the company after they purchased an Archway Cookie franchise. With exclusive rights in New York and New Jersey, it is the largest Archway franchise. The company employs fewer than 200 people, mainly blue-collar workers, and the atmosphere is informal.

The Product

The company's only product is soft cookies, of which it makes over 50 varieties. Larger companies, such as Nabisco, Sunshine, and Keebler, have traditionally produced biscuit cook-

ies, in which most of the water has been baked out, resulting in crisp cookies. Archway cookies have no additives or preservatives. The high quality of the cookies has enabled the company to develop a strong market niche for its product.

The Customers

The cookies are sold in convenience stores and supermarkets throughout New York and New Jersey. Archway markets its cookies as "good food"—no additives or preservatives—and this appeals to a health-conscious segment of the market. Many customers are over 45 years of age, and prefer a cookie that is soft and not too sweet. Parents with young children also buy the cookies.

The Production Process

The company has two continuous band ovens that it uses to bake the cookies. The production process is called a batch



processing system. It begins as soon as management gets orders from distributors. These orders are used to schedule production. At the start of each shift, a list of the cookies to be made that day is delivered to the person in charge of mixing. That person checks a master list, which indicates the ingredients needed for each type of cookie, and enters that information into the computer. The computer then determines the amount of each ingredient needed, according to the quantity of cookies ordered, and relays that information to storage silos located outside the plant where the main ingredients (flour, sugar, and cake flour) are stored. The ingredients are automatically sent to giant mixing machines where the ingredients are combined with proper amounts of eggs, water, and flavorings. After the ingredients have been mixed, the batter is poured into a cutting machine where it is cut into individual cookies. The cookies are then dropped onto a conveyor belt and transported through one of two ovens. Filled cookies, such as apple, date, and raspberry, require an additional step for filling and folding.

The nonfilled cookies are cut on a diagonal rather than round. The diagonal-cut cookies require less space than straight-cut cookies, and the result is a higher level of productivity. In addition, the company recently increased the length of each oven by 25 feet, which also increased the rate of production.

As the cookies emerge from the ovens, they are fed onto spiral cooling racks 20 feet high and 3 feet wide. As the cookies come off the cooling racks, workers place the cookies into boxes manually, removing any broken or deformed cookies in the process. The boxes are then wrapped, sealed, and labeled automatically.

Inventory

Most cookies are loaded immediately onto trucks and shipped to distributors. A small percentage are stored temporarily in the company's warehouse, but they must be shipped shortly because of their limited shelf life. Other inventory includes individual cookie boxes, shipping boxes, labels, and cellophane for wrapping. Labels are reordered frequently, in small batches, because FDA label requirements are subject to change, and the company does not want to get stuck with labels it can't use. The bulk silos are refilled two or three times a week, depending on how quickly supplies are used.

Cookies are baked in a sequence that minimizes downtime for cleaning. For instance, light-colored cookies (e.g., chocolate chip) are baked before dark-colored cookies (e.g., fudge), and oatmeal cookies are baked before oatmeal raisin cookies. This permits the company to avoid having to clean the processing equipment every time a different type of cookie is produced.

Quality

The bakery prides itself on the quality of its cookies. Cookies are sampled randomly by a quality control inspector as they

come off the line to assure that their taste and consistency are satisfactory, and that they have been baked to the proper degree. Also, workers on the line are responsible for removing defective cookies when they spot them. The company has also installed an X-ray machine on the line that can detect small bits of metal filings that may have gotten into cookies during the production process. The use of automatic equipment for transporting raw materials and mixing batter has made it easier to maintain a sterile process.

Scrap

The bakery is run very efficiently and has minimal amounts of scrap. For example, if a batch is mixed improperly, it is sold for dog food. Broken cookies are used in the oatmeal cookies. These practices reduce the cost of ingredients and save on waste disposal costs. The company also uses heat reclamation: The heat that escapes from the two ovens is captured and used to boil the water that supplies the heat to the building. Also, the use of automation in the mixing process has resulted in a reduction in waste compared with the manual methods used previously.

New Products

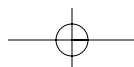
Ideas for new products come from customers, employees, and observations of competitors' products. New ideas are first examined to determine whether the cookies can be made with existing equipment. If so, a sample run is made to determine the cost and time requirements. If the results are satisfactory, marketing tests are conducted to see if there is a demand for the product.

Potential Improvements

There are a number of areas of potential improvement at the bakery. One possibility would be to automate packing the cookies into boxes. Although labor costs are not high, automating the process might save some money and increase efficiency. So far, the owners have resisted making this change because they feel an obligation to the community to employ the 30 women who now do the boxing manually. Another possible improvement would be to use suppliers who are located closer to the plant. That would reduce delivery lead times and transportation costs, but the owners are not convinced that local suppliers could provide the same good quality. Other opportunities have been proposed in recent years, but the owners rejected them because they feared that the quality of the product might suffer.

Questions

1. Briefly describe the cookie production process.
2. What are two ways that the company has increased productivity? Why did increasing the length of the ovens result in a faster output rate?



3. Do you think that the company is making the right decision by not automating the packing of cookies? Explain your reasoning. What obligation does a company have to its employees in a situation such as this? What obligation does it have to the community? Is the size of the town a factor? Would it make a difference if the company was located in a large city? Is the size of the company a factor? What if it was a much larger company?
4. What factors cause the company to carry minimal amounts of certain inventories? What benefits result from this policy?
5. As a consumer, what things do you consider in judging the quality of cookies you buy in a supermarket?
6. What advantages and what limitations stem from the company's not using preservatives in cookies?
7. Briefly describe the company's strategy.



CASE

Hazel Revisited

(Refer to p. 00 for the Hazel Case.)

1. What competitive advantage does Hazel have over a professional lawn care service?
2. Hazel would like to increase her profits, but she doesn't believe that it would be wise to raise her prices considering the current state of the local economy. Instead, she has given some thought to increasing productivity.
 - a. Explain how increased productivity could be an alternative to increased prices.
 - b. What are some ways that Hazel could increase productivity?
3. Hazel is thinking about the purchase of new equipment. One would be power sidewalk edgers. She believes edgers will lead to an increase in productivity. Another would be a chain saw, which would be used for tree pruning. What trade-offs should she consider in her analysis?
4. Hazel has been fairly successful in her neighborhood, and now wants to expand to other neighborhoods, including some that are five miles away. What would be the advantages and disadvantages of doing this?
5. Hazel does not have a mission statement or a set of objectives. Take one of the following positions and defend it:
 - a. Hazel doesn't need a formal mission statement and objectives. Many small businesses don't have them.
 - b. She definitely needs a mission statement and a set of objectives. They would be extremely beneficial.
 - c. There may be some benefit to Hazel's business, and she should consider developing one.



READING

Economic Vitality

Alan Greenspan

It is safe to say that we are witnessing this decade, in the United States, history's most compelling demonstration of the productive capacity of free peoples operating in free markets . . .

The quintessential manifestations of America's industrial might earlier this century—large steel mills, auto assembly plants, petrochemical complexes, and skyscrapers—have been replaced by a gross domestic product that has been downsized as ideas have replaced physical bulk and effort as creators of value. Today, economic value is best symbolized by exceedingly complex, miniaturized integrated circuits and the ideas—the software—that utilize them. Most of what we currently perceive as value and wealth is intellectual and impalpable.

The American economy, clearly more than most, is in the . . . continuous process by which emerging technologies push out the old. Standards of living rise when incomes created by the productive facilities employing older, increasingly obsolescent, technologies are marshaled to finance the newly produced capital assets that embody cutting-edge technologies.

This is the process by which wealth is created, incremental step by incremental step. It presupposes a continuous churning of an economy as the new displaces the old. Although this process of productive obsolescence has ancient roots, it appears to have taken on a quickened pace in recent years and changed its character. The remarkable, and partly fortuitous, coming together of the technologies that make up what we label IT—information technologies—has begun to alter, fundamentally, the manner in which we do business and create economic value, often in ways that were not readily foreseeable even a decade ago.



Before the advent of what has become a veritable avalanche of information technology innovation, most twentieth-century business decisionmaking had been hampered by dated and incomplete information about customer preferences in markets and flows of materials through a company's production systems. Relevant information was hours, days, or even weeks old. Accordingly, business managers had to double up on materials and people to protect against the inevitable misjudgments that were part and parcel of production planning. Ample inventory levels were needed to ensure output schedules, and backup teams of people and machines were required to maintain quality control and respond to unanticipated developments.

Of course, large remnants of imprecision still persist, but the remarkable surge in the availability of real-time information in recent years has sharply reduced the degree of uncertainty confronting business management. This has enabled businesses to remove large swaths of now unnecessary inventory, and dispense with much programmed worker and capital redundancies. As a consequence, growth in output per work hour has accelerated, elevating the standards of living of the average American worker.

Intermediate production and distribution processes, so essential when information and quality control were poor, are being bypassed and eventually eliminated. The proliferation of Internet web sites is promising to alter significantly the way large parts of our distribution system are managed. Moreover, technological innovations have spread far beyond the factory floor and retail and wholesale distribution channels. Biotech, for example, is revolutionizing medicine and agriculture, with far reaching consequences for the quality of life not only in the United States but around the world. . . .

But scientific proficiency will not be enough. Skill alone may not be sufficient to move the frontier of technology far enough to meet the many challenges that our nation will confront in the decades ahead. And technological advances alone will not buttress the democratic institutions, supported by a rule of law, which are so essential to our dynamic and vigorous American economy. Each is merely a tool, which, without the enrichment of human wisdom, is of modest value.

A crucial challenge of education is to transform skills and intelligence into wisdom—into a process of thinking capable of forming truly new insights. But learning and knowledge—and even wisdom—are not enough.

National well-being, including material prosperity, rests to a substantial extent on the personal qualities of the people who inhabit a nation. Civilization, our civilization, rests on the presumption of a productive interaction of people engaged in the division of labor, driven by a process economists label comparative advantage. This implies mutual exchange to mutual advantage among free people.

It is decidedly not true that “nice guys finish last,” as that highly original American baseball philosopher, Leo Durocher, was once alleged to have said. I do not deny that many in our society appear to have succeeded in a material way by cutting corners and manipulating associates, both in their professional and in their personal lives. But material success is possible in this world without exploiting others, and clearly, having a reputation for fair dealing is a profoundly practical virtue. We call it “good will” in business and add it to our balance sheets.

Trust is at the root of any economic system based on mutually beneficial exchange. In virtually all transactions, we rely on the word of those with whom we do business. Were this not the case, exchange of goods and services could not take place on any reasonable scale. Our commercial codes and contract law presume that only a tiny fraction of contracts, at most need be adjudicated. If a significant number of businesspeople violated the trust upon which our interactions are based, our court system and our economy would be swamped into immobility.

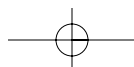
In today's world, where ideas are increasingly displacing the physical in the production of economic value, competition for reputation becomes a significant driving force, propelling our economy forward. Manufactured goods often can be evaluated before the completion of a transaction. Service providers, on the other hand, usually can offer only their reputations.

The extraordinarily complex machine that we call the economy of the United States is, in the end, made up of human beings struggling to improve their lives. The individual values of those Americans and their reputations will continue to influence the structure of the institutions that support market transactions, as they have throughout our history. Without mutual trust, and market participants abiding by a rule of law, no economy can prosper. Our system works fundamentally on individual fair dealing. We need only look around today's world to realize how rare and valuable this is.

Source: Excerpted from Remarks by Federal Reserve Board Chairman Alan Greenspan *Maintaining Economic Vitality* Millennium Lecture Series, sponsored by the Gerald R. Ford Foundation and Grand Valley State University, Grand Rapids, Michigan, September 8, 1999.

Questions

1. What factors have caused the output of workers per hour (productivity) to accelerate, and what has been the benefit of this?
2. What is the crucial challenge of education? What else is needed?
3. Explain the phrase “competition for reputation.” What are some ways a company might do this? Does ethics play a part in this?





OPERATIONS TOUR

The US Postal Service

“Neither rain, nor snow...”

The US Postal Service is the largest postal service in the world, handling about 41% (630 million pieces a day) of the world’s mail volume. The second largest is Japan, which handles only about 6% of the world’s mail. The US Postal Service is huge by any standard. It employs over 760,000 workers, making it the largest civilian employer in the U.S. It has over 300,000 mail collection boxes, 38,000 post offices, 130 million mail delivery points, more than 300 processing plants to sort and ship mail, and more than 75,000 pieces of mail processing equipment. It handles over 100 billion pieces of first class mail a year, and ships about 3 billion pounds of mail on commercial airline flights, making it the airlines’ largest shipper.

Processing First-Class Mail

The essence of processing the mail is sorting, which means organizing the mail into smaller and smaller subgroups to facilitate its timely delivery. Sorting involves a combination of manual and automatic operations. Much of the mail that is processed is first class mail.

Most first class mail is handled using automated equipment. A small portion that cannot be handled by automated equipment must be sorted by hand, just the way it was done in colonial times.

The majority of first class mail begins at the advanced facer canceling system. This system positions each letter so that it is face up, with the stamp in the upper corner, checks to see if the address is handwritten, and pulls the hand-addressed letters off the line. It also rejects letters that have the stamp covered by tape, have no postage, third class mail, or have meter impressions that are too light to read. The rejects are handled manually. The remaining letters are cancelled and date stamped, and then sorted to one of seven stackers.

Next the letters go to the multi-line optical character readers, which can handle both printed and pre-barcoded mail, but not hand-addressed mail. The optical reader sprays a barcode on the mail that hasn’t been pre-barcoded, which represents up to an 11-digit ZIP code. For hand-addressed mail, a picture is taken of the front of the letter, and the image is displayed on a remote terminal, often in another city, where an operator views the image and provides the information that the optical readers could not determine so that a barcode can be added.

Barcode readers then sort the mail into one of 96 stackers, doing this at a rate of more than 500 a minute. The mail goes through another sort using manually-controlled mechanical

equipment. At that point, the mail is separated according to whether it is local or out-of-town mail. The out-of-town mail is placed into appropriate sacks according to its destination, and moved to the outgoing send area where it will be loaded on trucks.

The local mail is moved to another machine that not only sorts the mail into local carrier delivery routes, it sorts it according to delivery walk sequence!

Small parcels, bundles of letters, and bundles of flats are sorted by a bundle-sorting machine.

Productivity

Over the years, the postal service has experienced an ever increasing volume of mail. Productivity has been an important factor for the postal service in keeping postal rates low and maintaining rapid delivery service. Two key factors in increased have been the increased use of automation and the introduction of sip codes.

Mail processing underwent a major shift to mechanization during the 1950s and 1960s, which lead to more rapid processing and higher productivity. In 1978, an expanded Zip Code was introduced. That was followed in 1983 by a four-digit expansion in zip codes. These changes required new, automated processing equipment, including the use of barcodes and optical readers. All of these changes added greatly to productivity. But even with these improvements, the Postal Service faced increasing competitive pressures.

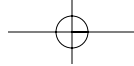
Competition

In the late 1980s, the Postal Service experienced a slowdown in the volume of mail. Some of this was due to a slowing of the economy, but most of it was the result of increasing competition. Delivery giants FedEx and UPS, as well as other companies that offer speedy delivery and package tracking gave businesses and the general public convenient alternatives for some mail services. At the same time, there was a growing use of fax machines, electronic communications, and increased use of alternate forms of advertising such as cable TV, all of which cut into the volume of mail.

Strategies and Tactics Used to Make the Postal Service More Competitive

To meet these challenges, the Postal Service developed several strategies to become more competitive. These included reorganizing, continuing to seek ways to keep costs down, increasing productivity, and emphasizing quality and customer service. Here is an overview of the situation and the strategies and tactics used by the Postal Service.

The Postal Service began working more closely with customers to identify better ways to meet their needs and expanded customer conveniences such as stamps on consignment. With



the help of business mailers, the Postal Service continued support for rates reflecting customer work-sharing features, many tied to automation, to give customers more flexibility. At the same time, the Postal Service began forming Customer Advisory Councils, groups of citizens who volunteered to work with local postal management on postal issues of interest to the community. In 1990, the Postal Service awarded two contracts to private firms to measure First-Class Mail service and customer satisfaction. In 1992, the Postal Service stepped up its quest to become more competitive by reducing bureaucracy and overhead in order to improve service and customer satisfaction, and to reduce the need to increase postage rates.

To help accomplish these goals, the Postal Service underwent a reorganization. Layers of management were eliminated and overhead positions were cut by about 30,000. Five regions and 73 field divisions were replaced by 10 areas, each with a manager for customer services and a manager for processing and distribution. Ten customer services areas were established, with managers for customer service and processing and distribution in each area, as well as a marketing and sales office. The new structure allowed postal managers to be focused, improved communications, and empowered employees to meet customer needs. The Postal Service also took other steps to improve service. In 1993 it implemented improvements in pro-

cessing and mail delivery at major postal facilities, expanded retail hours, and developed a more user-friendly *Domestic Mail Manual*. In cooperation with business customers, the Postal Service began to develop new services to meet specific mailer needs and to overhaul and simplify its complex rate structure. It also awarded contracts for two more external tracking systems, one to measure satisfaction levels of business mailers, and the other to measure service performance of third-class mail.

The reorganization eliminated some programs, cut costs, attracted new business, and reduced the Postal Service's projected deficit.

Questions

1. Why is it important for the Postal Service to have a high volume of mail to process?
2. What caused productivity to increase?
3. What impact did competitive pressures have on the Postal Service?
4. What measures did the Postal Service adopt to increase competitiveness?
5. What results were achieved by the Postal Service's changes?

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fyi to PR/Client:
Chapter 3 begins a new part, so it will open recto. (Chapter 2 is correct to end on verso.)

COMP

