CHAPTER

1

Introduction: Services in the Economy

LEARNING OBJECTIVES *The material in this chapter prepares students to:*

- Understand how and why services dominate the U.S. economy.
- Define "operations."
- Delineate the differences between goods and services.
- Categorize services according to the "customer contact model" and the "service process matrix" and understand the managerial ramifications of those conceptual models.

Why study service operations?

Several reasons make services, and the *operations* of services in particular, worthy of study:

- Service firms constitute an overwhelmingly large percentage of the economy of every industrialized nation, the size will only increase, and it is by far the most likely economic sector in which business school graduates will be employed.
- Despite the size of the service economy, academic research has largely ignored services. The relative lack of attention given to services provides a competitive edge to those students who pursue its study.
- Many services have characteristics that are strongly different from goods. Consequently, specialized and different managerial techniques are employed in services than are employed in many manufacturing firms, and knowledge and experience gained from studying manufacturing settings does not always transfer to services.

This chapter sets the stage for the study of service operations. Here, we will discuss the what, why, and how of service operations: What services are, why service operations should be studied, and two different views of how to look at service firms in frameworks that can help in organizing thought.

The Importance of the Service Sector

Economically, the term *services* is often defined not by what it is, but by what it is *not*. Historically, economic reports identify activities as "service producing" that are *not* "goods producing," which includes manufacturing and construction, and are *not* "extraction," such as agriculture, forestry, fishing, and mining. By this definition, "service producing" encompasses a wide variety of industries, including retailing, wholesaling, transportation, financial services, lodging, education, government, entertainment, and many others.

As defined above, services account for roughly 80% of the U.S. economy in both employment and gross domestic product. Unlike the manufacturing sector, services contribute positively to the balance of trade for the United States.[1] But it wasn't always the case. Figure 1.1 shows the radical shift in the U.S. economy over time. Even in recent times, the shift has been dramatic. The parents of students reading this book faced a very different economic structure from today's environment when looking for their first jobs.

A classic description of economic stages by Bell (1973) described the stages of economic growth as "preindustrial," "industrial," and "postindustrial." In 1800, the United States was in the position a great number of countries are in today, the "preindustrial society." The labor force was mostly engaged in the extraction industries, with agriculture the most prominent. At that time, more than 80% of the U.S. workforce was engaged in agriculture.

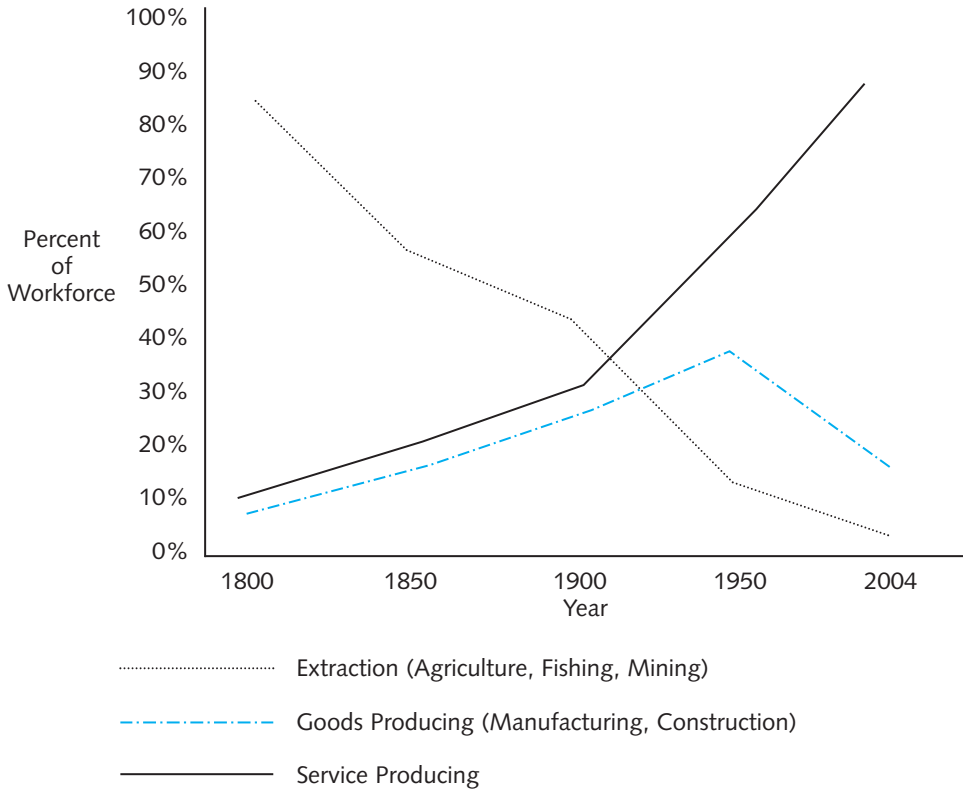
Government statistics report that the most prominent service occupations at the time were domestic servants and sailors. Because technology was extremely limited, much of the economy depended upon sheer brawn. According to Bell, the social ramifications of this type of economy are important. With a preindustrial economy, family relationships and traditions are important, while education and innovation are not important or even threatening. The quality of life depends largely upon nature, and upward mobility is difficult.

Figure 1.1 depicts 1900 to 1950 as being in the "industrial society," in which an important activity is goods production. To paraphrase Bell in a most unfair manner, it could be said that the quality of life in an industrial society is measured by accumulation of goods; "he who dies with the most toys, wins" representing the philosophy of the age. Industry focus is on maximizing the productivity of labor and machines to turn out more goods at a cheaper price. Extreme division of labor helps in accomplishing this task, and the assembly line epitomizes this way of thinking. Henry Ford's assembly line in the early 1900s purportedly cut the labor time required to assemble a car from 13 hours to 1½ hours.

The social ramifications of an industrial society included the view of an individual laborer as merely a cog in a machine, where showing up for work before the whistle blows is of paramount importance—after all, a 200-person assembly line can't be held up for a late employee. Further, doing what they are told is also an important trait for workers. Frederick Taylor, in his notable experiments, developed a science of movement, in which the one best way to accomplish a task was discovered by management and implemented—exactly—by workers. If commodity goods are produced, a firm must get more output from less input, as that is the only way to increase profitability. Consequently, the pressure is on to squeeze wages and provide workers, who supply muscle rather than brains, with the minimum of accommodations.

1. In 2003, U.S. net exports of services exceeded imports of services by about $59 billion. For goods, imports outdistanced exports by $549 billion. Source: *http://www.census.gov/indicator/www/ustrade.html*.

FIGURE 1.1 *Historical U.S. Employment by Economic Sector*



Sources: U.S. Department of Commerce. 1976. *Historical Statistics of the United States.* (Note: The 21% "unallocated" employment for the year 1800 was distributed evenly between sectors.) Bureau of Labor Statistics 2004. Accessed at *ftp.bls.gov/pub/suppl/empsit.ceseeb1.txt*.

The most egregious excesses of this era gave rise to strong labor unions as a counterweight to dehumanizing jobs. The poor working conditions in Birmingham, England, in the late 1800s also served as the inspiration for Karl Marx and his theories on Communism.

Since 1950, the United States entered the "postindustrial" era. From 1950 to the current time, service-producing industries increased, roughly, from 50% to 80% of the U.S. workforce. Bell stated that in the postindustrial society, services such as health, education, and recreation predominate. Taken a step further, recent arguments claim that a small subset of the service economy called "experiences" will be a dominant economic force (see Chapter 6). Information, rather than muscle, becomes the central figure in this economy, and organizations value workers more for their judgment, creativity, and theoretical reasoning than as mere executors of a plan.

Changes in job titles and characteristics reflect the changing nature of work done. According to government statistics, in 1900 "manual workers" outnumbered "white-collar workers" two to one. Today, the situation is entirely reversed, with twice as many white-collar workers as manual laborers.

The ramifications of this postindustrial society to service operations are twofold. The more obvious factor is that the economy is constructed of a far higher percentage

of service-producing activity than in previous times, resulting in far more jobs in the service sector than in any other. Consequently, merely due to its sheer bulk, the service sector merits study.

However, the importance of studying the service sector goes well beyond its size. If Bell is right and the postindustrial service economy requires different managerial skills, different ways of thinking, and a break with the traditions of the industrial society, then new thinking and new methods are required to excel in the service economy. We cannot rely on merely adapting the old paradigms, forged in an industrial age, to manage this new economy.

The Importance of Studying Operations in Services

The previous section attempted to answer the question "Why study services?" The question addressed by this section is "Why study the *operations* of services?"

To answer that basic question, we begin by defining *operations*. The classic textbook definition states that operations is the "transformation process" that turns inputs into outputs, that is, the act of combining people, raw materials, technology, etc., into useable services and products.

Although accurate, that definition is less than satisfying as it seems too ethereal. A working definition of who is in the operations function in a firm would be the people who actually make a product or perform a service. The operations function typically employs—by far—more personnel than any other functional area. A large firm may need a marketing department of 50 and a treasury department of five at the same time it may need an operational force of 5,000 to deliver its services. Examples of positions in the operations function of a firm include football players, airline pilots, bank branch managers, NYSE bond traders, and university professors (yes, even a finance or marketing professor is officially in the "operations" functional area of a university), as each position is actually performing a service.

Consequently, one very basic reason to study the operations of service firms is due to their sheer size. If one is to become a top manager of a service firm, knowing how to manage and what to expect from the largest group of employees in that firm is essential.

Another reason to study operations is related to the traditional definition of operations as a "transformation process." At its heart, operations means "getting things done"—the transformation processes that make products and perform services. Regardless of the functional area a person is in, he or she must still engage in processes to produce work. A marketer must organize people and resources across different departments or different firms to deliver an advertising campaign. Finance must execute trades. Accounting may carry out lengthy procedures covering days to close the books at month-end. Because all these tasks involve service processes, the study of service operations includes the study and improvement of all service processes, regardless of their functional area.

Historically, however, another, more abstract reason motivates the study of operations. It relates to the future of the economies of postindustrial nations. Figure 1.1 may depict "what" happened in the United States over the past 200 years, but it does not indicate "why." Answering the "why" question underlies the importance of the operations function. Figure 1.1 shows that more than 80% of the workforce in the United States was required in 1800 just to feed the population, but in 2004 it required only 2% of the workforce to feed not only the U.S. population but part of the rest of

the world (the United States is a net exporter of agricultural goods to the rest of the world, with an expected net of $9.5 billion in exports in 2004).[2]

As the collective waistlines of America attest, the reason that fewer farmers are needed is not that we are eating less. Rather, the reason lies in increased productivity, where productivity is defined as outputs/inputs, which is the province of the operations function. The financing and marketing of farm products today is somewhat different from 200 years ago, but the actual day-to-day work done on a farm—the operations—is done far differently now and the productivity of farming has increased by orders of magnitude.

Because of improvements in the way agriculture was performed, wealth was created worldwide that allowed most human beings in industrialized nations to look beyond mere sustenance and accumulate goods. The same operational process improvements then moved the goods-producing sector forward. Just as in the agricultural sector, we are not consuming fewer manufactured goods now than in 1950, we're buying far more. The gross output of U.S. factories has doubled in the past 30 years (Geewax, 2003). Although other factors contributed, a primary reason that the percentage of workers employed in manufacturing in general is smaller today than in 1950 is because manufacturers became too good at their jobs. The labor hours required to produce basic goods is now a small fraction of what it was because of operational improvements, often related to adapting to better technology. This is not just happening in the United States. Although many people believe the United States is losing manufacturing jobs to countries such as China and South Korea, those countries are losing manufacturing jobs as well. China reports a decline in manufacturing employment of 15% between 1995–2002, and South Korea's manufacturing employment declined 12% during that time (Geewax, 2003). Worldwide, manufacturing jobs are being lost to productivity increases.

Baumol, Batey Blackman, and Wolff (1991) described the rise of services in similar, but negative terms: A relative "cost disease" in services arises because, even though more services are not being consumed, the low productivity in services makes it appear as though they are. The dramatic increases in productivity of agriculture and manufacturing mean that the same amount of food and manufactured goods purchased years ago cost far less today in real terms. Services, however, have not seen such productivity growth, so they cost relatively the same. Consequently, as a percentage of expenditures, services may look larger, even though as an economic sector it is staying the same. As a simple example, if $3 bought food, $3 bought goods, and $3 bought services, services would represent 33% of expenditures. If the same amount of food and manufactured goods now cost $1 each, services would represent 60% of expenditures, even though the amount spent on services stayed the same. This argument contains substantial flaws. It neglects the development of new services and the fulfillment of the new "quality of life" standards in the postindustrial era, which are met by services, rather than agriculture or manufacturing. However, it sets a "floor" below which the percentage of services in the economy is highly unlikely to go.

The "cost disease" argument presents both a picture of the future of services as well as a global reason for their study. Productivity improvements in agriculture and manufacturing continue. Consequently, low productivity improvements in services are likely to make the service sector an even larger portion of the economy, even if no net increase in services consumed occurs. On an individual basis, however, the

2. *Source: http://www.fas.usda.gov/cmp/outlook/2004/Feb-04/outlook-0204.html.*

productivity challenge is on. Managers of services need to take advantage of opportunities to replicate the productivity success stories of other sectors of the economy.

Opportunities in Service Operations

From an academic perspective, exploring the field of services versus manufacturing is akin to following Columbus to the "new world" versus staying back in Europe. The vast and untapped opportunities to improve service businesses are just as great as the historic lack of effort in attacking them. For example, Geoffrion (1992) noted that of the manuscripts sent for publication in the prestigious academic journal, *Operations Research*, manufacturing-based manuscripts outnumbered services-based manuscripts by a ratio of six to one.

The attitude about services goes further than simply ignoring them. In fact, some researchers show an active disdain for the service economy. Cohen and Zysman (1987) wrote about the "myth" of the postindustrial economy, and Dertouzos, Lester, and Solow (1989) popularized the idea that only manufacturing matters to a modern economy. The arguments presented by these and other authors depict service businesses as a mere derivative activity of a manufacturing-based economy, which would surely dry up and fade away as manufacturing was withdrawn.

Although both time and the progress of the world economy show these sentiments to be greatly exaggerated, the bulk of academic training, work, and classroom teaching remains in manufacturing. This imbalance represents an enormous opportunity for students who wish to focus on the service sector as its issues create a heavier demand for knowledge about the service sector among potential employers.

Characteristics of Services

Focused study of the problems of service firms is useful because services, in general, have different characteristics than goods. Consequently, analogies and conceptual models formed by a study of how goods-producing industries work may not always translate to service firms. Various characteristics have been listed over the years as to how services differ from goods. Some of the ways in which services are said to differ from goods include the following:

- Services are intangible whereas goods are tangible.
- Sources are simultaneously consumed as they are produced.
- Services often require closer proximity to the customer.
- Services cannot be inventoried.

Each of these characteristics makes management more challenging and requires a different mindset from traditional managerial practices. However, a closer look at these traditionally discussed differences indicate that they are only partially true.

Intangibility of Services

The results from a service may be an emotion from hearing a song or seeing a tennis match, but frequently no *thing* is left behind. However, most services come with "facilitating goods." For example, a playbill can remind one of a good performance, or a photograph of a friend on the roller coaster at the amusement park can serve as a physical reminder of a service. Of course, the results of many service firms are quite tangible: A car that runs again or a sack full of groceries both come from service-producing businesses.

Conversely, physical goods frequently have intangible aspects. For example, the U.S. government officially defines vodka as a "colorless, odorless, tasteless" alcoholic beverage, yet consumers gladly pay four times the price of a lesser brand for a premium brand. Even though distinctions regarding the quality of vodka brands may be debatable, an intangible feeling clearly can be derived from owning a premium car, a premium antique furnishing, or an original painting by a master, which goes well beyond the physical good.

Further, just as services have "facilitating goods," nearly every good has a "facilitating service" that is tangible. At a minimum, goods often must be transported to the customer, and transportation is a service.

Simultaneous Production and Consumption

Many services are "produced" by the seller and "consumed" by the buyer at the same time. Live performances of plays or music are the quintessential examples. Simultaneity of production and consumption makes quality control (Chapters 10 and 11) and matching capacity to demand especially difficult. Some services, however, such as computer system upgrading and janitorial work, are specifically designed to be produced while the customer is *not* there. Also, many manufacturers face similar managerial difficulties with rush orders that must be done immediately and to a customer's specification.

Proximity to the Customer

Many services must be physically close to the customer. For example, placing one giant McDonald's in the middle of Nebraska isn't a good business model. For this reason, large service firms operate hundreds or thousands of units, while manufacturers operate only a few. McDonald's and Dell Computer record roughly the same revenues, yet McDonald's operates a "few" more facilities than the six Dell plants worldwide. (A method for managing large numbers of units is explained in Chapter 17.) Also, even choosing where to locate a service requires totally different criteria than a manufacturing facility, because services generally must be close to the customer (Chapter 16).

Proximity is not always essential in services. For example, Internet-based services employ radically different strategies (Chapter 3) than services that are location-dependent. Many back-office services such as credit approval or insurance claim processing are performed halfway across the globe from the customer (Chapter 8). Also, manufacturers of products like cement and sheetrock must be close to the customer because the cost of transportation is large relative to the cost of the product.

Services Cannot Be Inventoried

The lack of ability to build inventory or use backorders seriously influences managerial choices. Imagine approaching a store clerk for help only to be told, "I'm busy now, I'll get back to you in four to six weeks." Consumers routinely wait that long for goods delivery, but services often must be provided in a very short time or suffer a lost sale. Consequently, many services manage waiting time (Chapter 14), rather than inventory. Of course, some exceptions are notable. Restaurant reservations are a clear example of a service that can be backordered.

For many service industries, such as retailing and wholesaling, managing physical inventory is a highly strategic endeavor. Chapter 13 is dedicated to the special inventory problems of these services. For other service firms, like hotels and airlines,

effectively managing their "inventory" of hotel rooms and airline seats is essential, and is the subject of Chapter 12.

On the other hand, some manufacturers must more closely manage customer waiting time than inventory. Manufacturers of custom goods suffer some of the same problems of traditional services. If all finished goods are custom-made, finished goods inventory cannot be kept, and customers may make their purchasing decision based on waiting time.

The foregoing discussion is not meant to imply that goods-producing and service-producing industries do not differ. Clear differences distinguish the management problems of the Bolshoi Ballet from those of Bethlehem Steel. However, the differences between goods and services fall on a continuum. Some service firms and manufacturers may share many similarities at the same time that firms lumped together under the "services" umbrella exhibit extreme differences. A customer of a grocery store mainly buys goods, though a grocer is a service industry, whereas the customer of a nail salon is purchasing nearly 100% service. Naturally, such firms face different managerial challenges.

Classification Frameworks

A number of proposed service firm classification frameworks attempt to show where similarities among service firms may yield insights. Many service business managers seem to believe their problems are unique to their particular business, or at most their particular industry, and that they share little in common with other service industries. If this view is correct, then only individuals with vast experience within the firm or industry should be hired for management positions, and firms could at best only look at their direct competitors for help on ideas on how to improve.

The basis for academic study of the field of service operations lies in the opposite view: Commonalities can be found among the problems and challenges many businesses face. This view contends that methods, ideas, and people can span industries, and employees and ideas from other industries can bring a fresh, vital approach to a business.

To gain a perspective about which industries share certain characteristics, it is useful to classify service firms. Classification schemes provide a mental lens for viewing the commonalities between businesses that may also demonstrate vast differences.

A well-known classification scheme for service operations is called the Customer Contact Model[3] and is depicted in Figure 1.2. Here, services are classified according to the amount of customer contact. High contact services, or "pure services," include hospitals and restaurants, and a high percentage of their activity must take place in the presence of the customer. Low contact services—called "quasi-manufacturing" firms—include distribution centers, wholesalers, and back-office facilities such as the check-processing centers of retail banks, which require virtually no face-to-face contact with customers. Services with elements of both are termed "mixed services," and include the branch offices of banks and insurance firms.

The customer as the dominant force to be considered in designing service systems represents the central guiding principle in this view. This simple, yet powerful idea can be formulated as:

$$\text{Potential Efficiency} = f(1 - \text{Customer Contact Time} / \text{Service Creation Time})$$

3. The Customer Contact Model was proposed by Chase (1978). The discussion of this view is summarized from Chase (1978, 1981) and Chase and Tansik (1983).

FIGURE 1.2 *Customer Contact Model of Services*

High Contact			Low Contact
Pure Services	Mixed Services	Quasi-Manufacturing	Manufacturing
Medical Restaurants Transportation	Branch offices	Home offices Distribution centers	

Source: Chase (1978).

This equation indicates that the "potential" efficiency of a service is limited by the amount of time the customer is involved in the system. Note, however, that it is not necessarily desirable to maximize efficiency.

Several essential insights are associated with this line of thinking. Most obviously, firms with similar levels of customer contact may encounter similar problems, and could benefit from sharing "best practices" across industry boundaries. Further, this idea states that the high contact and low contact areas within a company should be managed differently. For example, contact-enhancing strategies, such as specifically hiring people-oriented workers and partitioning back-office, noncontact activities away from the customer's view, should be employed in the high contact areas. On the other hand, those pesky customers sometimes interfere with the efficiency of low contact facilities. In such cases, contact-reduction strategies, such as appointment systems or drop-off points such as Automated Teller Machines are appropriate. It is in the low contact facilities where traditional manufacturing techniques could be effectively borrowed to increase efficiency. Chapter 7 elaborates further on this view.

Another way to view services is provided by the Service Process Matrix proposed by Schmenner (1986) and shown in Figure 1.3. Schmenner differentiates service processes according to two major differentiating factors: the degree of interaction and customization and the degree of labor intensity.

FIGURE 1.3 *The Service Process Matrix*

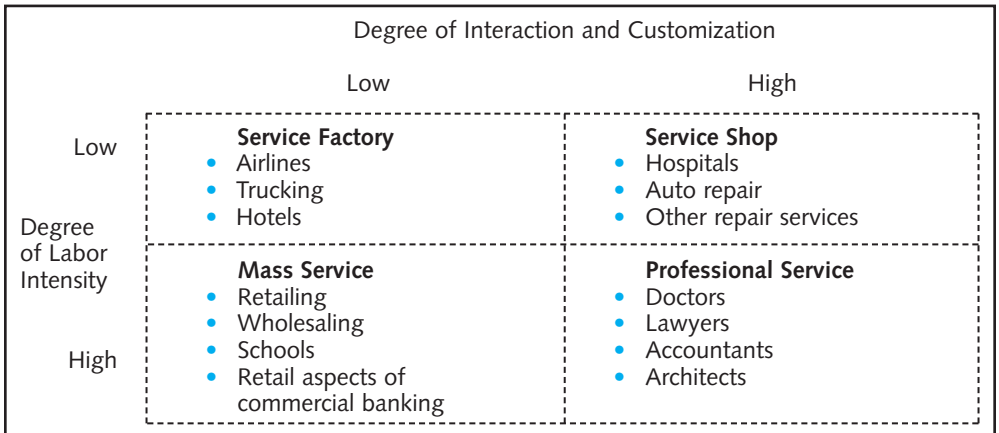


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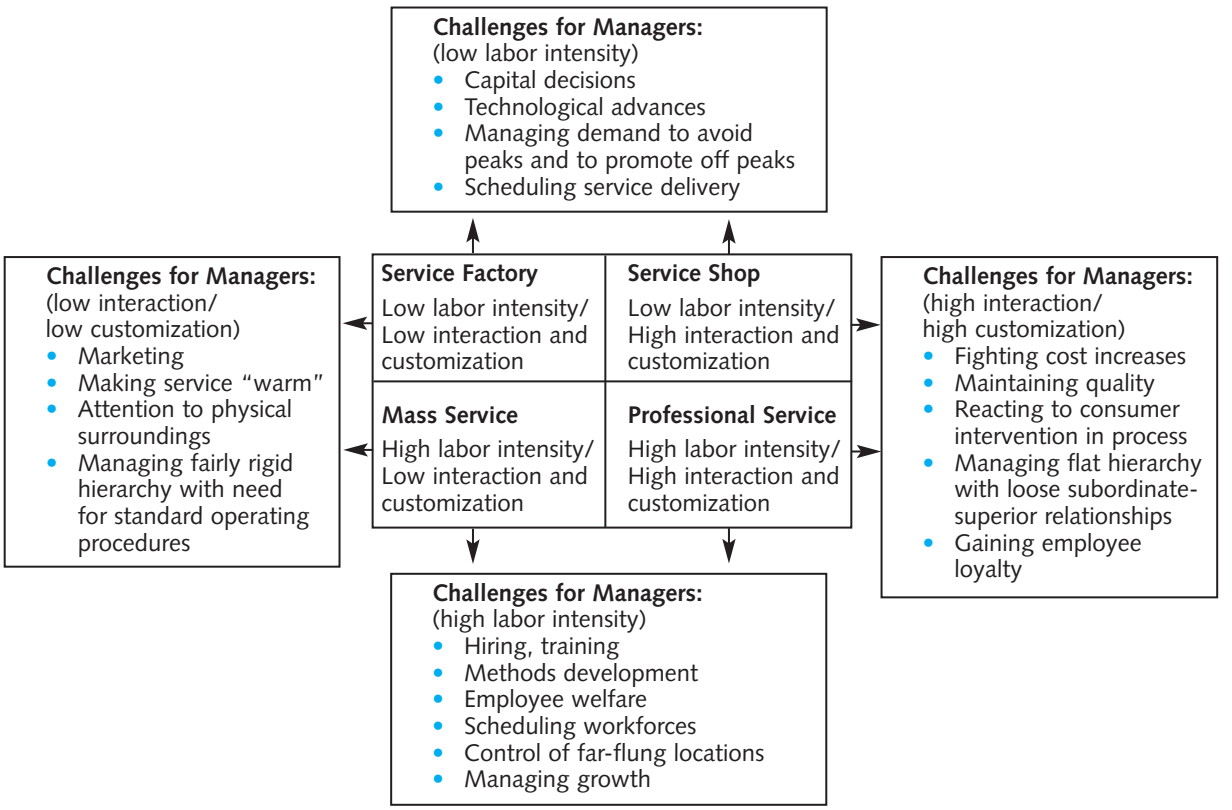
FIGURE 1.4 *The Service Process Matrix: Challenges for Service Managers*



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The *Service Factory*, has both low interaction and customization and low labor intensity. A quintessential example is a traditional commercial airline. Customization is quite low. If flights are scheduled for 10 A.M. and 6 P.M., they won't accommodate a customer who wants to go "around two-ish." Capital cost are enormous, with typical commercial jets costing as much as $50 to $100 million each.

Service Shops, such as hospitals, also experience high capital costs. Fortunately, hospitals can customize their services a bit more than the airlines do. *Professional Services*, such as lawyers, consultants, and accountants, combine highly customized service with a high labor intensity. Finally, *Mass Services*, like retailers and wholesalers, show higher ratios of labor to capital costs than do Service Factory firms, but do not offer highly customized services.

In theory, then, each quadrant faces managerial challenges unique to the processes within that quadrant (Figure 1.4). Both the Service Factory and Service Shop processes are capital intensive, so, of course, capital purchases and technology choices are highly important. The amount of capital goods cannot easily change and usually must be highly utilized to be profitable; therefore, the challenge to managers is to smooth out demand peaks that cannot be served.

Mass Service and Professional Service firms are more labor intensive. In these areas, hiring and training of labor is of greater importance. The list of challenges is

likewise different for processes with varying degrees of interaction and customization. Service Factory and Mass Service firms, with low interaction and customization, are challenged to make their services feel "warm" to the customer. Service Shop and Professional Service firms' challenges are associated with high interaction and customization issues, such as quality control.

The lists of managerial challenges in Figure 1.4 would not surprise veterans of the industries listed. In many ways, the value of this view is similar to the Customer Contact Model discussed earlier: When service businesses are categorized according to problem similarities, techniques and solutions adapted from entirely different industries within the same quadrant may be effective in addressing these problems. Further, Schmenner poses another use for the service process matrix: Companies often change their positioning over time. When their positioning within the matrix changes, they face different challenges and should adopt different managerial responses. For example, a traditional hospital should be managed differently from a clinic that focuses solely on eye laser procedures, even though both are in medicine, and a traditional law firm should be managed differently from a legal services chain like Jacoby & Meyers that specializes in personal injury cases. Although simple enough in principle, such a transformation of internal processes and procedures is difficult to accomplish. The management team of firms that are changing position within the matrix typically have years of experience in the old framework, so they have deeply imbedded views on how to manage an operation in their field.

Summary

Over the years, the service sector has assumed a preeminent position in the U.S. economy. Both in overall employment and in trade with other countries, it far outdistances other sectors of the economy. This change did not take place in a vacuum. It is theorized that concurrently with the rise of the service economy came the "post-industrial society." In this new society different values and desires from consumers have accompanied the rise of the service sector and have changed the emphasis of management.

Physically, much of this economic change took place through the operations function. The enhanced productivity of agriculture means that only 2% of our nation's workforce is required for this sector that previously employed more than 80%. Likewise in manufacturing, the ever-increasing amount and variety of goods is produced by fewer and fewer laborers. The challenge of effectively using the operations function of the service sector, the subject of this text, is therefore laid before us.

Review Questions

1. In the economic sectors of extraction, goods-producing, and service-producing industries, how has the U.S. economy shifted since the nation began?
2. True or false: The decrease in farmers from more than 80% of the population to just 2% results from rising U.S. imports of farm goods.
3. Define *services* and *operations*.
4. In what ways is the postindustrial economy different from the industrial economy?
5. The "Customer Contact Model" and the "Service Process Matrix" may be true, but how can they be used in managerial decision making?

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