chapter thirteen

# *Balancing Demand and Capacity*

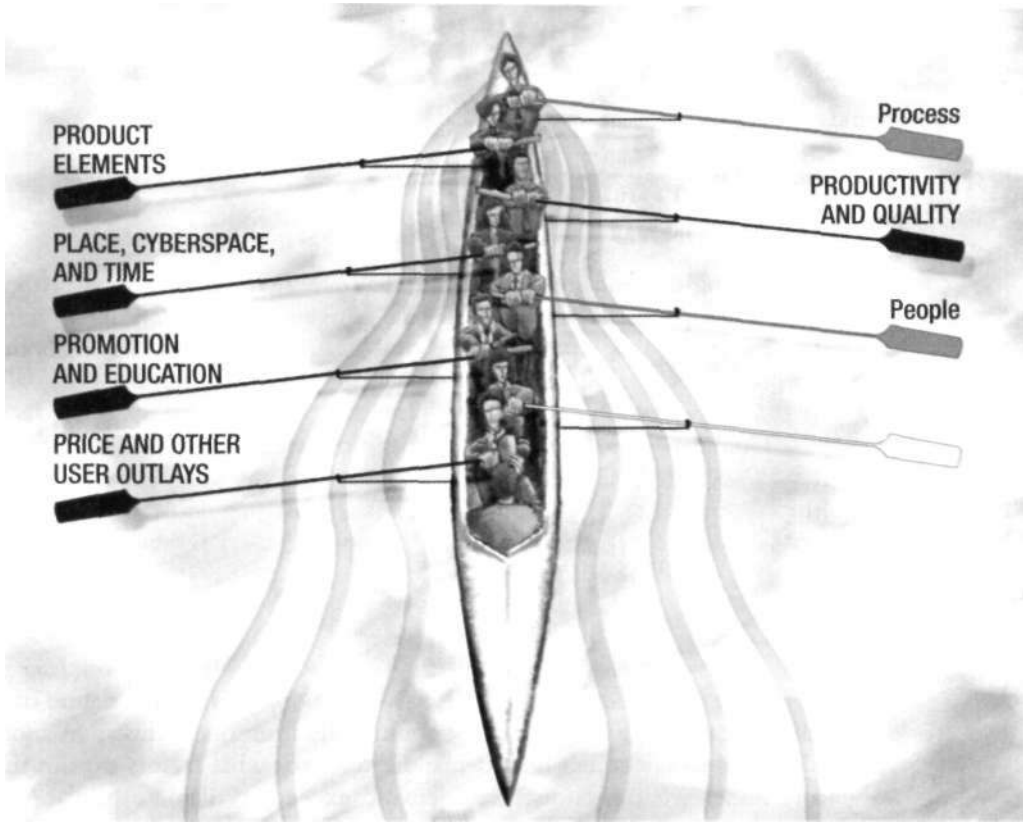
## Cape Cod: A Seasonal Tourist Destination

Cape Cod is a remarkable peninsula of narrow land, jutting out into the Atlantic off the Massachusetts coast like a long arm, bent at the elbow. Native Americans have lived there for thousands of years. The Pilgrims landed there in 1619 but continued across Cape Cod Bay to found Plymouth. Not long afterwards, more immigrants from England settled on the Cape itself. Fishing, whaling, agriculture, and salt works were among the principal industries in the nineteenth century. By the mid-twentieth century, all but fishing had virtually disappeared and tourism was beginning to assume some significance. Events in the early 1960s put the Cape firmly in the public eye. John F. Kennedy became president of the United States and was regularly photographed at his family's vacation home in Hyannisport. While in office he signed legislation that created the Cape Cod National Seashore, preserving large areas of the Outer Cape as a national park. And the song, "Old Cape Cod," commissioned by tourism promoters and sung by popular vocalist, Patti Page, unexpectedly climbed to the top of the charts and was heard around the world. With its beaches and salt marshes, sand dunes and fishing harbors, picturesque towns and lobster dinners, the Cape rapidly became a destination resort, drawing millions of visitors each year from New England, the Mid-Atlantic states, Eastern Canada, and beyond. In season, that is . . . .

In summer, the Cape is a busy place. Colorful umbrellas sprout like giant flowers along the miles of sandy beaches. The parking lots are full. There are lines outside most restaurants and managers complain about the difficulty of hiring and retaining sufficient serving staff. Thousands of students take summer jobs on the Cape (many come from Europe) and some employers recruit seasonal workers from Caribbean countries such as Jamaica. Stores and movie theaters are busy (especially when it rains). The Mid-Cape Highway is clogged. Hotels and motels sport "no vacancy" signs. Fishing trips have to be booked well in advance. Vacation cottages are rented, it's hard to get a car reservation on the ferries to the islands of Nantucket or Martha's Vineyard, and the visitor centers at the National Seashore are crowded with tourists.

But return for a weekend in mid-winter, and what do you find? A few walkers brave the chill winds on the otherwise empty beaches. You can park in almost any legal space you wish. Many restaurants have closed (their owners are wintering in Florida) and only the most popular of the remaining establishments even bother to suggest reservations. Student workers have gone back to college and employers have laid off their seasonal workers.

It's rare in winter to be unable to see the movie of your choice at your preferred time. The main problem on the Mid-Cape Highway is being stopped for speeding. If a motel displays a "no vacancy" sign, that means it's closed for the season; the open ones typically offer bargain rates. Recreational fishing? You must be crazy—there may even be ice on Cape Cod Bay! Owners of vacation cottages have drained their water systems and boarded up the windows. You can probably drive your vehicle straight onto one of the car ferries to the islands (although the sailing schedules are more limited), and the




rangers at the visitor centers are happy to talk with the few visitors who drop by during the shortened opening hours.

Faced with such a sharply peaked season, economic development agencies are working to extend the Cape's tourism season beyond the peak months of July and August, seeking to build demand during the spring and fall months. Among their targets are tourists from Europe, who appreciate the old-world charm of the Cape and tend to spend more money than visitors from Boston or New York.

## © Learning Objectives

**After reading this chapter, you should be able to**

=£> describe the forms that productive capacity can take in a service organization

==%> explain how to use capacity management techniques to address variations in demand

=£> understand the concept of demand cycles

=^> recognize different patterns of demand and their underlying causes

=^> formulate demand management strategies appropriate to specific situations

## THE UPS AND DOWNS OF DEMAND

Fluctuating demand for service, like that experienced by the retailers, movie theaters, motels, restaurants, ferries, and other establishments on Cape Cod, is not just found in vacation resorts. It's a problem for a huge cross-section of businesses serving both individual and corporate customers. These demand fluctuations—which may be as long as a season of the year or as short as an hourly cycle—play havoc with efficient use of productive assets.

**inventory:** for *manufacturing,* physical output stockpiled after production for sale at a later date; for *services,* future output that has not yet been reserved in advance, such as the number of hotel rooms still available for sale on a given day.

Unlike manufacturing, service operations create a perishable **inventory** that cannot be stockpiled for sale at a later date. That's a problem for any capacity-constrained service that faces wide swings in demand. The problem is most commonly found among services that process people or physical possessions, like transportation, lodging, food service, repair and maintenance, entertainment, and health care. It also affects labor-intensive information-processing services that face cyclical shifts in demand. University education and accounting and tax preparation are cases in point.

This chapter—and the one that follows—address the question, *How should we match demand and productive capacity?* The task starts with defining the nature of the firm's productive capacity, which may vary significantly from one industry to another. Managers also need to document how demand levels vary, what factors explain those variations, and under what circumstances demand exceeds available capacity. Armed with this understanding, they should then be in a position to develop strategies for matching demand and capacity.

### From Excess Demand to Excess Capacity

At any given moment, a fixed-capacity service may face one of four conditions (see Figure 13.1):

**excess demand:** demand for a service at a given time exceeds the firm's ability to meet customer needs.

- *Excess demand*—the level of demand exceeds maximum available capacity, with the result that some customers are denied service and business is lost.
- *Demand exceeds optimum capacity*—no one is actually turned away, but conditions are crowded and all customers are likely to perceive a decline in service quality.
- *Demand and supply are well balanced at the level oj optimum capacity*—staff and facilities are busy without being overtaxed, and customers receive good service without delays.

**excess capacity:** a firm's capacity to create service output is not fully utilized.

- *Excess capacity*—demand is below optimum capacity and productive resources are underutilized, resulting in low productivity. In some instances, this poses a risk that customers may find the experience disappointing or have doubts about the viability of the service.

**maximum capacity:** the upper limit to a firm's ability to meet customer demand at a particular time.

**optimum capacity:** the point beyond which a firm's efforts to serve additional customers will lead to a perceived decline in service quality.

You'll notice that we've drawn a distinction between **maximum capacity** and **optimum capacity.** When demand exceeds the maximum available capacity, some potential customers may be turned away and their business could be lost forever. When the demand level is between optimum and maximum capacity, all customers can be served but there's a risk that they may receive inferior service and thus become dissatisfied.

Sometimes optimum and maximum capacities are one and the same. At a live theater or sports performance, a full house is very desirable since it stimulates the players and creates a sense of excitement and audience participation. The net result is a more satisfying experience for all. But with most other services, you probably feel that you get better service if the facility is not operating at full capacity. The quality of restaurant service, for instance, often deteriorates when every table is occupied. The employees are rushed and there's a greater likelihood of errors or delays. And if you're traveling by air you tend to feel more comfortable if the seat next to you is empty.

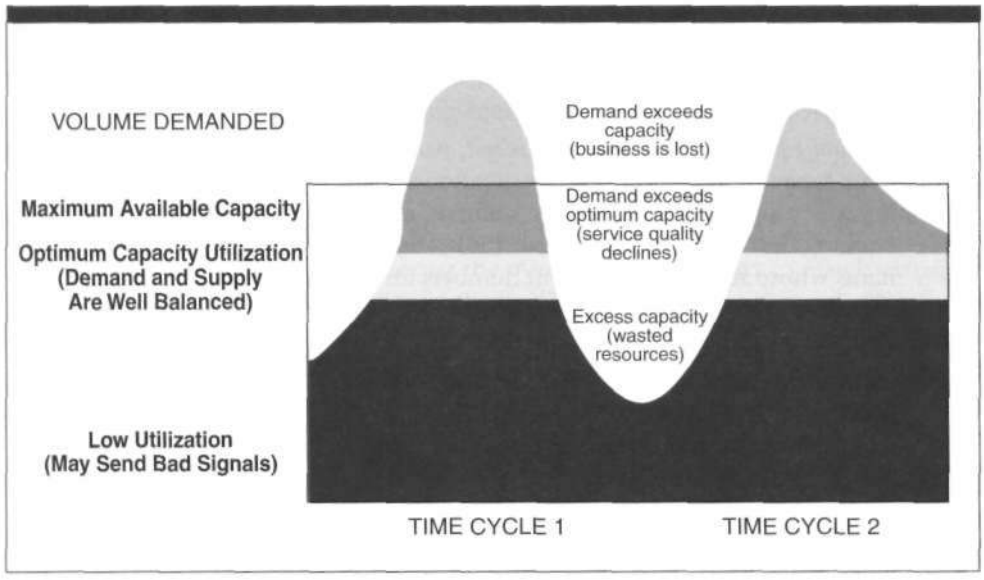



FIGURE 13.1
Implications of Variations in Demand Relative to Capacity

There are two basic solutions to the problem of fluctuating demand. One is to adjust the level of capacity to meet variations in demand. This approach, which involves cooperation between operations and human resource management, requires an understanding of what constitutes productive capacity and how it may be increased or decreased on an incremental basis. The second approach is to manage the level of demand, using marketing strategies to smooth out the peaks and fill in the valleys to generate a more consistent flow of requests for service. Astute firms employ a mix of both strategies, which requires close collaboration between operations and marketing.

## MEASURING AND MANAGING CAPACITY

Many service organizations are capacity constrained. There's an upper limit to their capacity to serve additional customers at a particular point in time. They may also be constrained in terms of being unable to reduce their productive capacity during periods of low demand. In general, organizations that engage in physical processes like people processing and possession processing are more likely to face capacity constraints than those that engage in information-based processes. A radio station, for instance, may be constrained in its geographic reach by the strength of its signal. But within that radius, any number of listeners can tune in to a broadcast.

### Defining Productive Capacity

What do we mean by **productive capacity?** The term refers to the resources or assets that a firm can use to create goods and services. In a service context, productive capacity can take at least five potential forms.

**productive capacity:** the extent of the facilities, equipment, labor, infrastructure, and other assets available to a firm to create output for its customers.

1. *Physical facilities designed to contain customers* that are used for delivering people-processing or mental stimulus-processing services. Examples include medical clinics, hotels, passenger aircraft, buses, restaurants, swimming pools, movie theaters, concert halls, executive education facilities, and college classrooms. In these situations, the primary capacity constraint is likely to be defined in terms of furnishings like beds, rooms, seats, tables, or desks. In some cases, local regulations may set an upper limit in the interest of health or fire safety.

2. *Physical facilities designed for storing or processing goods* that either belong to customers or are being offered to them for sale. Examples include supermarket shelves, pipelines, warehouses, parking lots, freight containers, or railroad freight wagons.
3. *Physical equipment used to process people, possessions, or information* may embrace a huge range of items and be very situation specific—machinery, telephones, hair dryers, computers, diagnostic equipment, airport security detectors, toll gates, cooking ovens, bank ATMs, repair tools, and cash registers are among the many items whose absence in sufficient numbers for a given level of demand can bring service to a crawl (or a complete stop).
4. *Labor* is a key element of productive capacity in all high-contact services and many low-contact ones. It may be used for both physical and mental work. Staffing levels for customer-contact personnel, from restaurant servers to nurses to telephone customer service personnel, need to be sufficient to meet anticipated demand—otherwise customers are kept waiting or service is rushed. Human beings tend to be far more variable than equipment in their ability to sustain consistent levels of output over time. One tired or poorly trained employee staffing a single station in an assembly-line service operation like a cafeteria restaurant or a motor vehicle license bureau can slow the entire service to a crawl. Professional services are especially dependent on highly skilled staff to create high value-added, information-based output. Abraham Lincoln captured it well when he remarked, "A lawyer's time and expertise are his stock in trade."
5. *Access to sufficient capacity in the public or private infrastructure* is critical in order for many organizations to deliver quality service to their own customers. Capacity problems related to infrastructure may include busy telephone circuits, electrical power failures (or "brown outs" caused by reduced voltage), congested airways that lead to air traffic restrictions on flights, and traffic jams on major highways.

## Stretching and Shrinking the Level of Capacity

Measures of capacity utilization include the number of hours (or percentage of total available time) that facilities, labor, and equipment are productively employed in revenue operation, and the percentage of available space (e.g., seats, cubic freight capacity, telecommunications bandwidth) that is actually utilized in revenue operations. Some capacity is elastic in its ability to absorb extra demand. A subway car, for instance, may offer 40 seats and allow standing room for another 60 passengers with adequate handrail and floor space for all. Yet at rush hours, when there have been delays on the line, perhaps 200 standees can be accommodated under sardine-like conditions. Service personnel may be able to work at high levels of efficiency during these short periods of time, but they would tire quickly and begin providing inferior service if required to work that fast all day long.

Even where capacity appears fixed, as when it's based on the number of seats, there may still be opportunities to accept extra business at busy times. Some airlines, for example, increase the capacity of their aircraft by slightly reducing legroom throughout the cabin and cramming in another couple of rows. A restaurant may add extra tables and chairs. Upper limits to such practices are often set by safety standards or by the capacity of supporting services, such as the kitchen.

Another strategy for stretching capacity within a given time frame is to utilize the facilities for longer periods. Examples of this include restaurants that are open for early dinners and late meals, universities that offer evening classes and summer semester programs, and airlines that extend their schedules from 14 to 20 hours a day. Alternatively,

the average amount of time that customers (or their possessions) spend in the process may be reduced. Sometimes this is achieved by minimizing slack time, as when the bill is presented promptly to a group of diners relaxing at the table after a meal. In other instances, it may be achieved by cutting back the level of service—like offering a simpler menu at busy times of day.

## Chasing Demand

Another set of options involves tailoring the overall level of capacity to match variations in demand. This strategy is known as **chase demand.** There are several actions that managers can take to adjust capacity as needed:

**chase demand strategy:** adjusting the level of capacity to meet the level of demand at any given time.

- *Schedule downtime during periods of low demand.* To ensure that 100 percent of capacity is available during peak periods, repairs and renovations should be conducted when demand is expected to be low. Employee holidays should also be taken during such periods (e.g., Cape Cod restaurant owners vacation in Florida during the quiet winter months).
- *Use part-time employees.* Many organizations hire extra workers during their busiest periods. Examples include postal workers and retail store clerks during the pre-Christmas season, extra staff in tax preparation firms at the end of the financial year, and additional hotel employees during holiday periods and major conventions.
- *Rent or share extra facilities and equipment.* To limit investment in fixed assets, a service business may be able to rent extra space or machines at peak times. Firms with complementary demand patterns may enter into formal sharing agreements.
- *Cross-train employees.* Even when the service delivery system appears to be operating at full capacity, certain physical elements—and their attendant employees—may be under-utilized. If employees can be cross-trained to perform a variety of tasks, they can be shifted to bottleneck points as needed to help increase total system capacity. In supermarkets, for instance, the manager may call on stockers to operate cash registers when checkout queues start to get too long. During slow periods, the cashiers may be asked to help stock shelves.

## Creating Flexible Capacity

Sometimes the problem is not in the overall capacity but in the mix that's available to serve the needs of different market segments. For example, on a given flight, an airline may have too few seats in economy even though there are empty places in the business-class cabin. A hotel may find itself short of suites when there are standard rooms still available. One solution to this problem is to design physical facilities to be flexible. Some hotels build rooms with connecting doors. With the door between two rooms locked, the hotel can sell two bedrooms. With the door unlocked and one of the bedrooms converted into a sitting room, the hotel can now offer a suite.

The Boeing Co. received what were described, tongue-in-cheek, as "outrageous demands" from prospective customers in terms of flexible capacity when it was designing its new 777 airliner. The airlines wanted an aircraft in which galleys and lavatories could be relocated, plumbing and all, almost anywhere in the cabin within a matter of hours. Boeing gulped but solved this challenging problem (it was facing stiff competition from Airbus Industrie at the time). Airlines can rearrange the passenger cabin of the "Triple Seven" within hours, reconfiguring it with varying numbers of seats allocated among one, two, or three classes.

Another good example of highly flexible capacity comes from an eco-tourism operator in the South Island of New Zealand. During the spring, summer, and early autumn months the firm provides guided walks and treks, and during the snow season it offers cross-country skiing lessons and trips. Bookings all year round are processed through a contracted telephone-answering service. Guides and instructors are employed on a part-time basis as required. The firm has negotiated agreements to use national parks, huts, and cabins, and it has an exclusive arrangement with a local sports goods store that allows clients to purchase or rent equipment at reduced rates. As needed, the company can arrange charter bus service for groups. The firm has the capacity to provide a wide range of services, yet the owners' capital investment in the business is remarkably low.

Not all unsold productive capacity is wasted. Many firms take a strategic approach to disposition of anticipated surplus capacity, allocating it in advance to build relationships with customers, suppliers, employees, and intermediaries.[3] Possible applications include free trials for prospective customers and for intermediaries who sell to end users, customer or employee rewards, and bartering with the firm's own suppliers. Among the most widely traded services are advertising space or airtime, airline seats, and hotel rooms.

## UNDERSTANDING THE PATTERNS AND DETERMINANTS OF DEMAND

Now that we've covered capacity-related issues, let's look at the other side of the equation. To control variations in demand for a particular service, managers need to determine the answers to a series of important questions about the patterns of demand and their underlying causes.[4]

As you think about some of the seemingly "random" causes of fluctuations in demand, consider how rain and cold affect the use of indoor and outdoor recreational or entertainment services. Then reflect on how heart attacks and births affect the demand for hospital services. Imagine what it's like to be a police officer, firefighter, or

*Emergency medical technicians never know when their services will next be needed.*

ambulance driver—you never know exactly where your next call will come from or what the nature of the emergency will be. Finally, think about the impact of natural disasters like earthquakes, tornadoes, and hurricanes, not only on emergency services but also for disaster recovery specialists and insurance firms.

Random fluctuations are usually caused by factors beyond management's control. Where relevant, it's useful to record weather conditions and other special factors (a strike, an accident, a big convention in town, a price change, launch of a competing service, etc.) that might have influenced demand. Detailed market analysis may sometimes reveal that a predictable **demand cycle** is concealed within a broader, seemingly random pattern. For example, while a convenience store might experience wide swings in daily patronage, research may indicate that a core group of customers visits every weekday to buy staple items such as newspapers, candy, and lottery tickets.

**demand cycles** a period of time during which the level of demand for a service will increase and decrease in a somewhat predictable way before repeating itself.

A repair and maintenance shop servicing industrial electrical equipment may already know that a certain proportion of its work consists of regularly scheduled contracts to perform preventive maintenance. The balance may come from "walk-in" business and emergency repairs. While it might seem hard to predict or control the timing and volume of such work, further analysis could show that walk-in business was more prevalent on some days of the week than others and that emergency repairs were frequently requested following damage sustained during thunderstorms (which tend to be seasonal in nature and can often be forecast a day or two in advance).

## *Questions About the Patterns of Demand and Their Underlying Causes'*

1. **Do demand levels follow a predictable cycle?**

   If so, is the duration of the demand cycle:

   >• one *day* (varies by hour)

   s* one *week* (varies by day)

   »- one *month* (varies by day or by week)

   >• one *year* (varies by month or by season; or reflects annual public holidays)

   »- some other period

2. **What are the underlying causes of these cyclical variations?**

   >- employment schedules

   >- billing and tax payment/refund cycles

   *- wage and salary payment dates

   >- school hours and vacations

   >- seasonal changes in climate

   5* occurrence of public or religious holidays

   »- natural cycles, such as coastal tides

**Do demand levels seem to change randomly?**

If so, could the underlying causes be:

>- day-to-day changes in the weather

>- health events whose occurrence cannot be pinpointed exactly

>> accidents, fires, and certain criminal activities

>- natural disasters, from earthquakes to storms to mudslides and volcanic eruptions

**Can demand for a particular service over time be disaggregated by market segment?**

If so, do demand patterns reflect:

>» use patterns by a particular type of customer or for a particular purpose?

>- variations in the net profitability of each completed transaction?

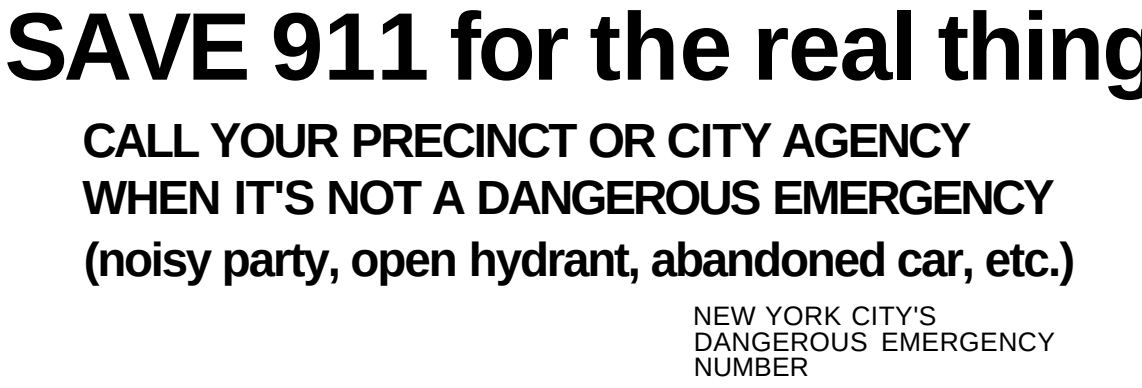
### Analyzing Demand by Market Segment

No strategy for smoothing demand is likely to succeed unless it's based on an understanding of why customers from a specific market segment choose to use the service when they do. For example, it's difficult for hotels to convince business travelers to remain on Saturday nights since few executives do business away from home over the weekend. Instead, many hotels promote weekend use of their facilities for conferences or pleasure travel. Attempts to get commuters to shift their travel to off-peak periods will probably fail too, since such travel is determined by people's employment hours. Instead, efforts should be directed at employers to persuade them to adopt flextime or staggered working hours. Resort areas like Cape Cod may have good opportunities to build business during the "shoulder seasons" of spring and fall (which some consider the most attractive times to visit the Cape) by adapting the mix and focus of services to appeal to new target segments. For example, different attractions could be promoted—like hiking, bird watching, visiting museums, and looking for bargains in antique stores.

## *Discouraging Demand for Nonemergency Calls'*

Have you ever wondered what it's like to be a dispatcher for an emergency service such as 911 in the United States or 999 in Britain? Imagine yourself in the huge communications room at police headquarters in New York City. A gray-haired sergeant is talking patiently by phone to a woman who has dialed 911 because her cat has run up a tree and she's afraid it's stuck there. "Ma'am, have you ever seen a cat skeleton in a tree?" the sergeant asks her. "All those cats get down somehow, don't they?" After the woman has hung up, the sergeant turns to a visitor and shrugs. "These kinds of calls keep pouring in," he says. "What can you do?" The trouble is, when people call the emergency number with complaints about noisy parties next door, pleas to rescue cats, or requests to turn off leaking fire hydrants, there may be slower response times to fires, heart attacks, or violent crimes.

At one point, the situation in New York City got so bad that officials were forced to develop a marketing campaign to discourage people from making inappropriate requests for emergency assistance through the 911 telephone number. The problem was that what might seem like an emergency to the caller was not a life- (or property-) threatening situation of the type that the city's emergency services were designed to resolve. So a communications campaign, using a variety of media, was developed to urge people not to call 911 unless they were reporting a *dangerous emergency.* For help in resolving other problems, they were asked to call their local police station or other city agencies. The ad shown here appeared on New York buses and subways.



Keeping good records of customer transactions helps when it comes to analyzing demand patterns by market segment. Computer-based services can track customer consumption patterns by date and time of day automatically and enter them into a company's database. For example, Harrah's recently installed magnetic card readers at its slot machines and gaming tables to track casino customers' gambling behavior. Customers are issued Total Gold cards that they swipe through the magnetic readers before gambling to earn reward points that are redeemable at any Harrah's location.This allows the company to collect accurate information about when customers visit its casinos and how much they spend by day, by week, and by trip.

If each customer transaction is recorded separately and backed up by detailed notes (as in a medical or dental visit, or an accountant's audit), then the task of analyzing demand by market segment is greatly simplified. In subscription and charge account services, when each customer's identity is known and itemized monthly bills are sent, managers can gain immediate insights into usage patterns. Some services, such as telephone and electrical, even have the ability to track subscriber consumption patterns by time of day. Although this data may not always yield specific information on the purpose for which the service is being used, it is often possible to make informed judgments about the volume of sales generated by different user groups.

Sometimes it is in a firm's best interest to discourage demand from certain types of customers—or at least to encourage these customers to use the services at nonpeak times. Some requests for service are inappropriate and make it difficult for the organization to respond to the legitimate needs of its target segments. Discouraging **undesirable demand** through marketing campaigns or screening procedures may help keep peak demand levels within the service capacity of the organization.

**undesirable demand:** requests for service that conflict with the organization's mission, priorities, or capabilities.

## Multiple Influences on Demand

Periodic cycles influencing demand for a particular service can vary in length from one day to one year. In many instances, multiple cycles may operate simultaneously. For example, demand levels for public transportation may differ by time of day (highest during commute hours), day of week (less travel to work on weekends but more leisure travel), and season of year (more travel by tourists in summer). The demand for service during the peak period on a Monday in summer may be different from the level during the peak period on a Saturday in winter, reflecting day-of-week and seasonal variations jointly.

Figure 13.2 shows how the combination of four time-of-day periods (morning peak, midday, afternoon peak, evening/night), two day-of-week periods (weekday, weekend), and three seasonal periods (peak, shoulder, off-peak) can be combined to create 24 different demand periods. In theory, each of these might have its own distinct

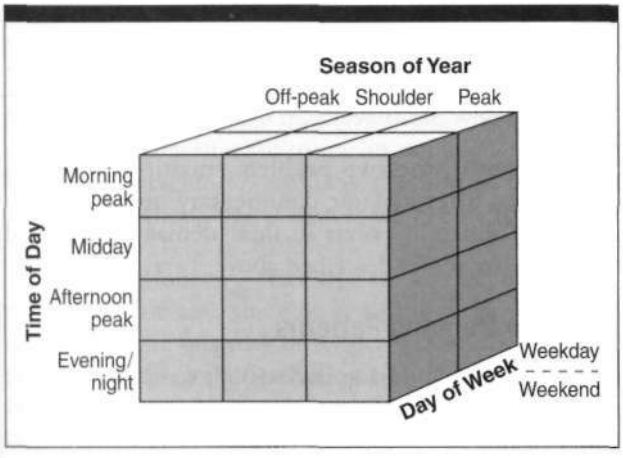



FIGURE 13.2
Identifying Variations in Demand by Time Period

demand level (at a given price) and customer profiles (with resulting differences in needs and expectations). But in practice, analysis might show close similarities between many of the periods. This would make it possible to collapse the framework into a total of three to six cells, each requiring a distinct marketing treatment to optimize the use of available capacity and obtain the most desirable customer mix.

## STRATEGIES FOR MANAGING DEMAND

Many services, such as health care or repair and maintenance, involve multiple actions delivered sequentially. What this means is that a service organization's capacity to satisfy demand is constrained by one or more elements of its productive capacity—its physical facilities, equipment, personnel, or the number and sequence of services provided. Consequently, financial success in capacity-constrained businesses is, in large measure, a function of management's ability to use productive capacity as efficiently and as profitably as possible. Services involving tangible actions to customers or their possessions are more likely to be subject to capacity constraints than are information-based services. In the latter instance, however, similar capacity problems may occur when customers are obliged to come to a service site for delivery, as in live entertainment or traditional retail banking.

In a well-designed, well-managed service operation, the capacity of the facility, supporting equipment, and service personnel will be in balance. Sequential operations will be designed to minimize the risk of bottlenecks at any point in the process. This ideal, however, may prove difficult to achieve. The level of demand may vary, often randomly, and the time and effort required to process each person or thing may vary widely at any point in the process. In general, processing times for people are more variable than for objects or things, reflecting varying levels of customer preparedness ("I've lost my credit card"), argumentative versus cooperative personalities ("If you won't give me a table with a view, I'll have to ask for your supervisor"), and so forth. But information-processing and possession-processing service tasks are not necessarily homogeneous either. For both professional services and repair jobs, service delivery times vary according to the nature of the customers' needs.

### Managing Demand Under Different Conditions

There are five basic approaches to managing demand. The first, which has the virtue of simplicity but little else, involves *taking no action and leaving demand to find its own levels.* Eventually customers learn from experience or word-of-mouth when they can expect to stand in line to use the service and when it will be available without delay. The problem is that they may also learn about a competitor who is more responsive.

More strategic approaches attempt to influence the level of demand at any given time by taking active steps to *reduce demand in peak periods* and *increase demand when there is excess capacity.*.Two additional strategies involve *inventorying demand until capacity becomes available.* A firm can accomplish this either by introducing a *reservations system* that promises customers access to capacity at specified times, or by *creating formalized queuing systems* (or by a combination of the two).

Table 13.1 links these five approaches to the two problem situations of excess demand and excess capacity and provides a brief strategic commentary on each. Many service businesses face both situations at different points in their demand cycles and should consider using one or more of the strategies described above.

### Using Marketing Strategies to Shape Demand Patterns

Four of the 8Ps play a part in stimulating demand during periods of excess capacity and decreasing it during periods of insufficient capacity. Price is often the first variable companies use to bring demand and supply into balance, but changes in product, distribu-

TABLE 13.1
Alternative Demand Management Strategies for Different Capacity Situations

| Approach Used to Manage Demand | Capacity Situation Relative to Demand: Insufficient Capacity (Excess Demand) | Capacity Situation Relative to Demand: Excess Capacity (Insufficient Demand) |
|---|---|---|
| Take no action | Unorganized queuing results (may irritate customers and discourage future use) | Capacity is wasted (customers may have a disappointing experience for services like theater) |
| Reduce demand | Higher prices will increase profits; communication can encourage usage in other time slots (can this effort be focused on less profitable and desirable segments?) | Take no action (but see above) |
| Increase demand | Take no action, unless opportunities exist to stimulate (and give priority to) more profitable segments | Lower prices selectively (try to avoid cannibalizing existing business; ensure all relevant costs are covered); use communications and variation in products and distribution (but recognize extra costs, if any, and make sure appropriate trade-offs are made between profitability and usage levels) |
| Inventory demand by reservation system | Consider priority system for most desirable segments; make other customers shift to outside peak period or to future peak | Clarify that space is available and that no reservations are needed |
| Inventory demand by formalized queuing | Consider override for most desirable segments; try to keep waiting customers occupied and comfortable; try to predict wait period accurately | Not applicable |

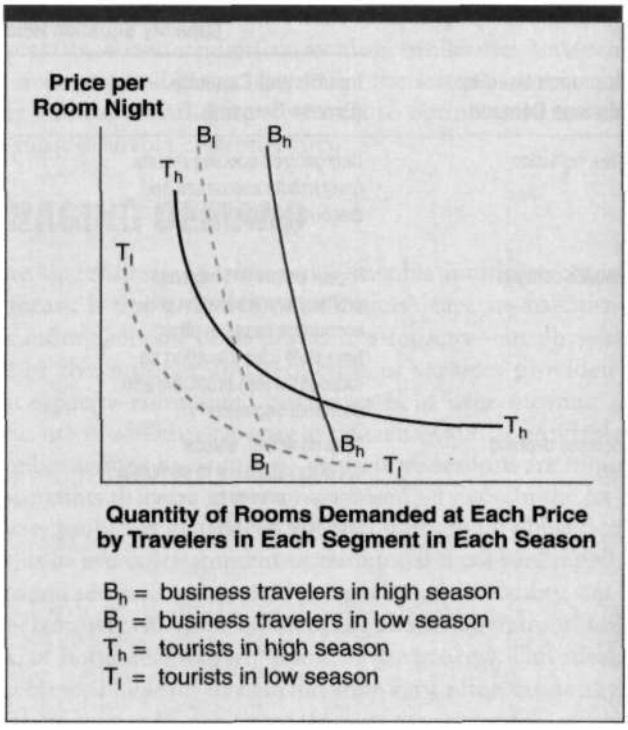
tion strategy, and communication efforts can also play an important role. Although we discuss each element separately here, effective demand management efforts often require changes in two or more elements simultaneously.

**Price and Other User Outlays** One of the most direct ways of reducing excess demand at peak periods is to charge customers more money to use the service during those times. Increases in nonfinancial outlays may have a similar effect. For instance, if customers learn that they are likely to spend more time and physical effort during peak periods, this information may lead those who dislike waiting in crowded and unpleasant conditions to try later (or to use an arm's length delivery alternative like the Internet or self-service machines). Similarly, the lure of cheaper prices and an expectation of no waiting may encourage at least some people to change the timing of their consumption behavior.

For the monetary price of a service to be effective as a demand management tool, managers must have some sense of the shape and slope of a product's demand curve—that is, how the quantity of service demanded responds to increases or decreases in the price per unit at a particular point in time (Figure 13.3 shows a sample demand curve). It's important to determine whether the demand curve for a specific service varies sharply from one time period to another. (For example, will the same person be willing

FIGURE 13.3

Differing Demand Curves for Business Travelers and Tourists in High and Low Seasons (Hypothetical Hotel Example)




to pay more for a weekend stay in a hotel on Cape Cod in summer than in winter? The answer is probably "y[es]-") If so, significantly different pricing schemes may be needed to fill capacity in each time period. To complicate matters further, there may be separate demand curves for different segments within each time period (for instance, business travelers are typically less price sensitive than vacationers).

One of the most difficult tasks facing service marketers is to determine the nature of all these different demand curves. Research, trial and error, and analysis of parallel situations in other locations or in comparable services are all ways of obtaining an understanding of the situation. Many service businesses explicitly recognize the existence of different demand curves by establishing distinct classes of service, each priced at levels appropriate to the demand curve of a particular segment. In essence, each segment receives a variation of the basic product, with value being added to the core service through supplementary services to appeal to higher-paying segments. For instance, first-class service on airlines offers travelers larger seats, free drinks, and better food. In computer and printing service firms, product enhancement takes the form of faster turnaround and more specialized services; and in hotels, a distinction is made between rooms of different size and amenities, and different types of views. The Outrigger Hotel on the Big Island of Hawaii charges premium prices for its ocean view suites and rooms. Rooms overlooking the hotel gardens and golf course are in the middle of the hotel's pricing tier, while parking lot views command the lowest prices.

When capacity is constrained, the goal in a profit-seeking business should be to ensure that as much capacity as possible is utilized by the most profitable segments available at any given time. Airlines, for instance, hold a certain number of seats for business passengers paying full fare and place restrictive conditions on excursion fares for tourists (such as requiring advance purchase and a Saturday night stay) in order to prevent business travelers from taking advantage of cheap fares designed to attract tourists who can help fill the aircraft.

**Changing Product Elements** Although pricing is often a commonly advocated method of balancing supply and demand, it is not quite as universally feasible for services as for goods. A rather obvious example is provided by the respective demand problems of a ski manufacturer and a ski slope operator. The manufacturer can either produce for inventory or try to sell skis in the spring and summer at a discount. If the skis are sufficiently discounted, some customers will buy early in order to save money. However, in the absence of skiing opportunities, no skiers would buy lift tickets for use on a midsummer day at any price. So, to encourage summer use of the lifts, the operator has to change the service offering.

Similar thinking prevails in a variety of other businesses that undergo significant modifications according to the season. For example, tax preparation firms like H&R Block offer bookkeeping and consulting services to small businesses in slack months. Educational institutions offer weekend and summer programs for adults and senior citizens. Small pleasure boats offer cruises in the summer and a dockside venue for private functions in winter months. And resort hotels sharply alter the mix and focus of their peripheral services like dining, entertainment, and sports to reflect customer preferences in different seasons. All of these firms recognize that no amount of price discounting is likely to develop business out of season.

## *Summer on the Ski Slopes*

Ski resorts traditionally shut down once the snow melted and the slopes became unskiable. The chairlifts stopped operating, the restaurants closed, and the lodges were locked and shuttered until winter approached and the snows fell again. However, some ski operators recognized that mountains offer summer pleasures, too, and started keeping lodging and restaurants open for hikers and picnickers. Some even built Alpine Slides—curving tracks in which wheeled toboggans could run from the summit to the base—to create demand for tickets on the ski lifts. With the construction of new condominiums, demand increased for warm-weather activities as the owners flocked to the mountains in summer and early fail.

The arrival of the mountain biking craze in the 1980s created opportunities for equipment rentals as well as chairlift rides. Killington Resort in Vermont has long encouraged summer visitors to ride to the summit, see the view, and eat at the mountaintop restaurant. But now it also enjoys a booming business in renting mountain bikes and related equipment (such as helmets). Beside the base lodge, where in winter skiers would find rack after rack of skis for rent, the summer visitor can now choose from rows of mountain bikes. Bikers transport their vehicles up to the summit on specially equipped lift-chairs, and then ride them down designated trails. Serious hikers reverse the process by climbing to the summit via trails that seek to avoid descending bikes. They get refreshments at the restaurant, and then take the chairlift back down to the base. Once in a while, a biker will actually choose to ride up the mountain, but such gluttons for punishment are few and far between.

Most large ski resorts look for a variety of additional ways to attract guests to their hotels and rental homes during the summer. While hikers and mountain bikers come to ride the lifts up the mountain at Mont Tremblant, Quebec, others come to enjoy swimming and water sports on the attractive lake beside the resort. Additional attractions include a championship golf course, tennis, roller-blading, and a children's day camp.

Riding the chairlift up Mont Tremblant to hike and bike rather than ski.

There can be variations in the product offering even during the course of a 24-hour period. Some restaurants provide a good example of this, marking the passage of the hours by changing menus and levels of service, variations in lighting and decor, opening and closing the bar, and the presence or absence of entertainment. The intent is to appeal to different needs within the same group of customers, to reach out to different customer segments, or to do both, according to the time of day.

**Modifying the Place and Time of Delivery** Some firms attempt to modify demand for a service by changing the time and place of delivery by choosing one of two basic options. The first strategy involves *varying the times when the service is available* to reflect changes in customer preference by day of week, by season, and so forth. Theaters and cinema complexes often offer matinees on weekends when people have more leisure time. During the summer, cafes and restaurants may stay open later because of daylight savings time and the general inclination of people to enjoy the longer, warmer evenings outdoors. Retail shops may extend their hours in the pre-Christmas season or during school holiday periods.

A second strategy involves *offering the service to customers at a new location.* One approach is to operate mobile units that take the service to customers rather than requiring them to visit fixed-site service locations. Examples include traveling libraries, mobile car wash and windshield repair services, in-ofBce tailoring services, home-delivered meals and catering services, and vans equipped with primary care medical facilities. A cleaning and repair firm that wishes to generate business during low-demand periods might offer free pickup and delivery during these times for portable items that need servicing. Alternatively, service firms whose productive assets are mobile may choose to follow the market when that, too, is mobile. For instance, some car rental firms establish seasonal branch offices in resort communities. In these locations, they will tailor the schedule of service hours (as well as certain product features) to meet local needs and preferences.

Customers using information-based services can be offered a cyberspace option, in the form of Internet or telephone-based delivery from a remote server or core center. Networked systems allow firms to transfer demand across time zones to locations where capacity is readily available.

**Promotion and Education** Communication efforts alone may be able to help smooth demand even if the other variables of the marketing mix remain unchanged. Signage, advertising, publicity, and sales messages can be used to educate customers about the timing of peak periods and encourage them to use the service at off-peak times when there will be fewer delays. Examples include requests and incentives to "Mail Early for Christmas," public transportation messages urging noncommuters like shoppers or tourists to avoid the overcrowded conditions of the commute hours, and communications from sales reps for industrial maintenance firms advising customers of time periods when preventive maintenance work can be done quickly. Management can ask service personnel (or intermediaries such as travel agents) to encourage customers with discretionary schedules to favor off-peak periods. Short-term promotions, combining both pricing and communication elements as well as other incentives, may also provide customers with attractive incentives to shift the timing of service usage.

## Conclusion

Several of the 8Ps of integrated service management underlie the discussion in this chapter. The first is *productivity.* Since many capacity-constrained service organizations have heavy fixed costs, even modest improvements in capacity utilization can have a significant effect on the bottom line. In this chapter we have explored how managers can transform fixed costs into variable costs through such strategies as using rented facilities

or part-time labor. Creating a more flexible approach to productive capacity allows a firm to adopt a "chase demand" strategy, thereby improving productivity.

Decisions about *place, cyberspace, and time* are closely associated with balancing demand and capacity. Demand is often a function of where the service is located and when it is offered. As we saw with the opening example of Cape Cod, the appeal of many destinations varies seasonally. Marketing strategies involving the use of *price and other user outlays, product elements,* and *promotion and education* are often useful in managing the level of demand for a service at a particular place and time.

## Study Questions and Exercises

1. Review each of the services described in the opening story about Cape Cod. Are there any that might attract increased business in nonpeak seasons by changing some part of their marketing mix? If so, what strategies would you suggest to increase off-season demand?
2. Why is capacity management particularly important in a service setting?
3. What does "inventory" mean for service firms and why is it perishable?
4. What is the difference between maximum capacity and optimal capacity? Provide examples of (a) a situation where the two might be the same, and (b) a situation where they might be different.
5. Select a specific service provider and discuss variations in demand that it experiences relative capacity with reference to Figure 13.1. What is the nature of this service organization's approach to capacity and demand management? What changes would you recommend in relation to its management of capacity and demand and why?
6. What does the term "chasing demand" mean? Describe the actions that firms can take in pursuing a chase demand strategy.
7. Choose a service organization and describe its demand cycles based on the questions about the patterns of demand and their underlying causes described in the boxed material on page 293.
8. Provide examples of service providers in your community (or region) that encourage business during what would otherwise be periods of low demand by (a) changing their pricing, (b) changing product elements, (c) modifying the place and time of service delivery, and (d) using promotional and educational tools.

## Endnotes

1. Kenneth J. Klassen and Thomas R. Rohlader, "Combining Operations and Marketing to Manage Capacity and Demand in Services," *The Services Industries Journal* 21 (April 2001): 3-30
2. Based on material in James A. Fitzsimmons and M.J. Fitzsimmons, *Service Management: Operations, Strategy, and Information Technology,* 2nd ed. (New York: Irwin McGraw-Hill, 1998); and W. Earl Sasser, Jr., "Match Supply and Demand in Service Industries," *Harvard Business Review* (November-December 1976).
3. Irene C. L. Ng, Jochen Wirtz, and Khai Sheang Lee, "The Strategic Role of Unused Service Capacity," *International Journal of Service Industry Management* 10, no. 2 (1999): 211-238.
4. Christopher H. Lovelock, "Strategies for Managing Capacity-Constrained Service Organisations," *Service Industries Journal* (November 1984).
5. "Harrah's Takes a Chance on Its Best Customers," *Colloquy* 6, no. 3 (1998): 4—6.