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A Framework for Analyzing Service Operations

GABRIEL R. BITRAN, *Professor and Head of Management Science;* **MAUREEN LOJO**, *Doctoral Candidate, Sloan School of Management, Massachusetts Institute of Technology, USA*

Gabriel Bitran and Maureen Lojo develop a framework for analyzing the strengths and weaknesses of firms engaged in providing services, synthesizing and building on the literature addressing service operations. First, they summarize the distinguishing characteristics of service products, as compared to manufactured goods. They then partition the context in which firms operate into three segments. The external environment encompasses product definition and differentiation, as well as competitive forces. The internal environment concerns issues similar to those in traditional management of manufacturing operations. The customer interface is the most critical segment, representing the service firm's 'moment of truth.' They discuss each environment in turn in the first part of a two-part article.

Introduction

The service sector has become an important part of the world economy over the past several decades, as manufacturing's share of total employment and output has fallen dramatically.[1] Furthermore, service has become an important feature of manufactured products; repair and maintenance, sales, and training are examples of services that enhance and differentiate manufactured products. Today, there are very few firms that do not view providing service as part of their strategy. In this paper, we develop a framework for analyzing the strengths and weaknesses of service operations. There is a growing body of literature focusing on management of operations in service firms, and we use this work as fundamental building blocks in creating a unified framework. We begin by partitioning the context in which a firm operates into three segments: the external environment, the internal environment, and the customer interface. We then summarize the characteristics that distinguish service products from manufactured products. These characteristics will be our focus for the three remaining sections of the paper, in which we discuss each segment in depth.

The Framework

It is useful to classify the questions that we address according to the environments to which they pertain. Figure 1 illustrates this basic framework.[2] Although it cannot capture all of the complexity of the firm's environment, the framework presents a way of thinking about the relationships between the major functions and participants in service operations.

The *external environment* is where customers and competitors are present. The tasks of management in this environment consist of understanding what customers need and want (marketing-related) and sizing up the threats and opportunities of the competitive environment (strategy-related). Defining the product, differentiating it from similar products, and segmenting markets to better meet individual needs are necessary steps in developing a product concept and marketing strategy.

The *internal environment* means just that: the environment internal to the firm, with no customer contact. Because the customer is not present, the processing of information, paperwork, or articles

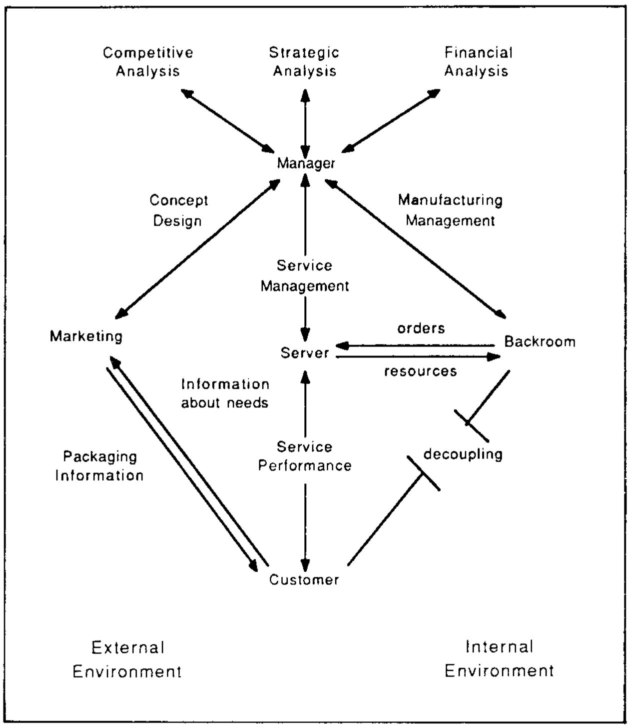

Figure 1 Framework for Analyzing Service Operations

belonging to customers can be done with efficiency as the major performance measure. Designing systems to efficiently deliver services entails planning human and physical resources, infrastructure, and operations control. Smoothing supply and demand is a critical task in efficiently managing the internal environment of service operations.

The *interface* is the segment in which the service is delivered to the customer. This service delivery is known as the 'moment of truth'; it is this interaction that will shape to a great extent the customer's perception of the service received. In this environment, service managers must consider the characteristics of participants in the encounter and factors that influence their interactions. Managing expectations and service quality are key tasks in the service encounter. This necessitates special attention to training and issues of power, control and respect. Because this is the most critical environment for service operations managers, it will be discussed at length in a sequel to this paper.[3]

Distinguishing Characteristics of Service Operations

A question that arises in the study of services is: how different is the management of such operations when contrasted with manufacturing firms? As it turns out, the basic management principles are the same for both services and manufacturing systems. However, there are characteristics of services that require a different emphasis on some of the principles, and some disciplines are also more or less relevant. The following attributes of services suggest the need for different skills in the management process: intangibility, perishability, heterogeneity, simultaneity, transferability, and cultural specificity.[4] We discuss each of these in turn.

Intangibility

In contrast to manufacturers, service firms usually sell bundles of goods and services, composed of both physical items and intangibles that are both explicit (having sensual benefits) and implicit (having psychological benefits). The intangible nature of service products makes it difficult to promote their consumption exclusively on technical grounds. They satisfy customer needs associated with convenience and personal satisfaction, and frequently involve feelings such as anxiety, relief, or joy. Of course, these factors are also present in the consumption of tangible goods. However, the physical characteristics of manufactured products provide some objective measures on which customers can evaluate their purchases.

Expectations and Perceptions

From the discussion above, it is apparent that service managers need to be very sensitive to the psychology of the customer in managing his or her expectations and perceptions. Fast food chains have recognized how to address their customers' psychological needs, for example, by using slogans such as 'We do it all for you' and 'Have it your way.' At McDonald's, the same amount of french fries (chips) delivered in a large paper bag can be perceived as a much smaller portion than if the same number of french fries are delivered in a bag from which they will overflow onto the tray as soon as the customer carries it away from the counter. The present bag size gives the consumers a sense of abundance and they start eating the fries before reaching their table.

Another example that illustrates the importance of shaping perceptions is a popular advertising campaign by a fast food chain entitled 'Where's the beef?' The basic idea is that a McDonald's hamburger is not visible from the outside of the bun, while Wendy's hamburger, being square, is visible from the outside. Based on these facts, Wendy's campaign 'Where's the beef?' suggested that there is more beef in Wendy's sandwiches than in McDonald's. Because service companies can deal with the psychology of the consumers in order to attract their business, and because they are not restricted to the same degree as manufacturing companies by the physics and chemistry of tangible goods, they have more degrees of freedom to create desirable services. Success in services is therefore directly related to the creativity of the organization.

Appropriability

Patents for services are very difficult to obtain and protect. The intangible nature of services makes it difficult for innovators to capture the benefit of their developments. For example, when an airline introduced the concept of a discount coupon for frequent flyers, within a week, one of its competitors had introduced one of its own and indicated that they would honor the coupon of the first airline as well. When a firm introduces a new service it is not unusual for it to be copied within a very short period of time.

In the financial services industry, whenever an institution introduces a new type of account, others not only copy it very quickly, but often introduce an improved service since they have some time to assess the strengths and weaknesses of the original service. In order to be a leader in the service industry in terms of new product introduction, therefore, it is important to have the next service almost ready by the time the first one is introduced. This makes it much more difficult for competitors to catch up.

A better alternative is to design and introduce services that are hard to copy. Usually, the difficulty in copying a service is related to the fact that the service introduced is highly dependent on the infrastructure of the company. That infrastructure can be embodied in 'hard' or 'soft' technology. For instance, a company's information systems may be very flexible, favoring the introduction of new services, while competitors may have very rigid information systems infrastructures that require extensive modifications to permit the introduction of the same services. An example of this occurred when a 'phone company introduced a new service. One of its competitors rushed to offer the same thing, but could not charge for the new service until six months later, when its billing systems were updated. Therefore, it is important to design a service firm that is flexible and capable of changing quickly — faster than any of its competitors.

Materialization

Another consequence of the intangible nature of services is the need to *materialize* the service, to make the customer aware that he has been served. Examples of materialization of services are very abundant in practice. Insurance companies illustrate the case in point. The Prudential Insurance Company of America uses a rock as its symbol. The purpose is to convey to the customers that the company is financially solid and will be around for a long time. These are two major concerns of customers purchasing an insurance product. Similarly, The Travelers Insurance Company had adopted an umbrella as its symbol to suggest protection.

In hotels we also find many cases of materialization of services. The paper band around the toilet seat in a hotel room is used to reassure the customer that the toilet has been cleaned. There is no other purpose for it. Similarly, the service personnel leave chocolates on the pillows in hotel rooms to convey to the customer 'I care about you. I came to make sure that everything is right. Have a good night.' Mail order businesses use a similar mechanism, enclosing check-lists in their packages that indicate someone inspected the contents and verified that the order was correct, often giving the name of the person who is responsible for this quality control.

There are many services that are taken for granted by customers and they tend to go unnoticed unless not performed. For instance, we expect the streets to be clean but are likely to notice only when they are *not* clean. Preventive maintenance services face a similar phenomenon. Consider a service offered by a firm for the maintenance of heating, air conditioning, plumbing and electrical systems for private homes. The company may sell such a service on an annual contract basis for a fixed fee. If the company does an excellent job at preventive maintenance, the clients may not experience any serious inconvenience for the duration of the contract. At the renewal time these customers may feel that they do not need the services of the company any longer since they have not had any problems. In other words, the company may be a victim of its own outstanding services.

To avoid this situation, it is important that the company materializes the services performed during the life of the contract by making customers conscious that the lack of problems is a direct consequence of their excellent preventive maintenance. This can be done by providing customers with information concerning the work done, statistics on the problems faced by unprotected homeowners, as well as actual stories by residents of the neighborhood who did not rely on this type of service.

The industrial services sector faces identical challenges. One firm that provides maintenance services to another company has made collecting information on air quality standard practice whenever their personnel visit the client's facilities for preventive maintenance but also interesting and easy to obtain information related to the environment in those facilities. The latter services do give unexpected additional value from their visits and bring the customer's attention to their presence in the facilities. Other examples include the tag that cleaners attach to a replacement button for one that was missing from a shirt, and the instructions that lawn care personnel leave after applying a fertilizer or pesticide.

Perishability

The fact that most tangible goods have an extended life means that they can be stocked and distributed through a network of outlets. For example, a manufactured durable good can be produced long in advance of its consumption and stocked at strategic distribution centers. Manufacturing managers can use inventories for a wide variety of purposes, including seasonal inventories, cycle stock, inventories to separate two machine centers, and safety stocks to absorb fluctuations in demand and forecast errors. However, the intangible nature of services means that they are perishable and cannot be inventoried in the traditional sense. As a consequence, managers in service organizations are often faced with situations in which their facilities and other assets are idle for long periods of time, which is very costly. Hotels in resorts may stand half empty during the low tourist season. Subway systems tend to be idle during the night. Telecommunication systems have very low utilization in the early morning hours.

Managers in the service industry often have to turn to special mechanisms to solve the problem of matching supply and demand. Preventive maintenance can be scheduled for idle hours or off-seasons. In some sense, this creates inventories of services in that capacity during peak periods will be higher due to fewer breakdowns. Similarly, pre-packaged goods in supermarkets can be viewed as service inventories. If a customer wants to purchase some cold cuts at the deli counter and does not want to wait in line for a clerk, he can simply pick up a package that was prepared earlier in the day when demand was slack. Preprocessing of queues can also be used to smooth the supply of services. For instance, at hospitals customers need to complete forms prior to receiving service. By providing these forms to customers who are waiting in line, they can have their forms completed by the time the server is available, thereby reducing their time at the service counter and extending the capacity of the available servers.

For smoothing demand, managers often explore pricing strategies that offer, for example, an incentive to customers to go to resort hotels off season (to attract a wide variety of conferences and other group meetings), or to have customers utilize the subway or 'phone systems during off-peak hours. The matching of supply and demand is one of the most critical operational tasks for managers of services, and we will discuss it extensively later in the section of this paper covering the internal environment.

Heterogeneity

Although technology provides frequent opportunities for services to be delivered by machines, it is still fairly common to encounter services delivered by human beings. Humans, however, tend to be inconsistent in their behavior and therefore in their delivery and consumption of services. This fact creates a major challenge for the manager of quality in service firms. Ensuring that workers will behave consistently and be well prepared to deal with customers' diversity requires extensive training and organizational support.

Several firms have developed programs to encourage consistency in their employees' work. For example the Marriott Corporation recognized that their service personnel, who make many beds per shift, need something to add excitement to their workday and make their jobs more satisfying. The training of such workers is expensive and their turnover (attrition) is very high in most hotels. To reduce turnover and thereby reduce costs and ensure more consistent service, the firm instituted a set of raffles. Employees receive one raffle ticket per shift, plus an additional ticket for every perfect room found by inspectors. At the end of the day, a ticket is drawn and the winner receives a dinner for two, or some other prize. Other examples of employee training and retention programs abound, ranging from McDonald's Hamburger University to a three-month program for retail clerks at Seibu Stores in Japan. After very meticulous personnel selection, Seibu trains their future servers for forty days on how to deal with customers, and then follows up with additional training on the specific goods and services of the department in which they will serve. Although encouraging consistency is crucial for dealing with the heterogeneous nature of services, flexibility to customize services is also important, as we will discuss later in this paper.

Simultaneity

Many services are produced and consumed at the same time. Like heterogeneity, this characteristic presents a challenge for the manager of quality since the service cannot be inspected before being consumed by the customer. Once a server commits a blunder with a customer, it may be very difficult to correct. Since it is impossible for managers to be present with every worker all of the time, the firm will be lucky if the blunder is even recorded for corrective action (if the worker has not already taken it) and for learning how to improve future encounters. We will return to the issue of quality control later in this paper.

Simultaneity also creates another effect. The customer often needs to visit the service facility, or the server must go to the customer's location. For example, customers need to come into a salon for a haircut, and home repair services require workers to visit their customers. Travel time is involved in both instances, implying a waste of time for either the customer or the server. For this reason, service facilities that have the simultaneity characteristic can attract customers only from a limited geographical region. This may be even more of a problem in European service operations, since customers may be limited not only by geographical but also cultural barriers.

Hence, in order to have significant market share this type of service firm must have facilities distributed in many locations, which increases costs and reduces economies of scale. The latter can still be exploited, however, by sharing planning and other managerial systems among individual facilities. This sharing enables small service firms to obtain advantages that would otherwise be unaffordable. An example is the Century 21 real estate franchise, which offers a management umbrella for a network of independent real estate agencies that are widely spread geographically. Benefits to franchisees include national advertising, brand name recognition, a centralized referral service that is available to customers all over the country, and a proven management system. Franchising is a common response to this need for distributed locations, because the investment cost of establishing numerous directly-owned outlets can be prohibitive, creating a significant barrier to entry.

Technology is changing and reducing the impact of travel time in many services. For instance, most banking transactions can be done through computer communications, products can be ordered on the telephone and delivered by mail, and meetings with professionals can be held via televideo conferencing. But even over such distances, simultaneity is still an issue. In fact, there is an even greater need for accurate and efficient information processing in such transactions. Any necessary data must be immediately available, necessitating an infrastructure that can fully support the server. Of course, not all face-to-face services are affected by technological innovations. A customer wanting a haircut or massage still needs to be in the immediate presence of the server.

Transferability

Diverse services tend to have more in common with each other than diverse goods do because there are so many similar elements among distinct types of services. For instance, customer interactions with dry cleaners and fast food restaurants share the common features of standing in line at a counter, giving payment and possibly special instructions to the server, waiting for the goods and then picking them up. The level of personal contact between the customer and employee and the length of time spent are about the same. In contrast, it is rather difficult to compare the features of, for instance, a tennis racket with those of a car. Beyond the general quality of the workmanship, there is very little that the two items have in common. This means that a customer's experience with one is not likely to affect his or her expectations of the other.

The distinction between the service component and the actual good being purchased is important here. Although a car and a tennis racket are difficult to compare, the service components of these purchases are comparable. For example, the quality of the salesperson's assistance, the comfort of the environment in which the sale is made, the response time of the organization, and guarantees of satisfaction can be compared for tennis rackets and automobiles. Therefore, a customer's experience buying a tennis racket shapes to some extent his or her expectations and perceptions of the car-buying experience. It is important for managers to be sensitive to this difference between the comparability of services and manufactured goods because customers compare them not only to their direct competitors, but also to other non-related service providers. Since customer expectations are transferable from one type of service to another, service firms should monitor new developments not only in their own industry, but also in other service industries.

Cultural Specificity

The cultural context in which a service is consumed can be viewed as an attribute of the service itself. Culture influences the expectations and behavior of customers and service providers, and gaps that may exist between their cultural orientations can either enhance or detract from the service encounter. For example, 'good service' in restaurants in the northeast region of the US means keeping a formal distance between the servers and the customers. However, in the south, servers tend to be more informal and friendly. This can be a bit disconcerting to non-natives, who may feel that such behavior is intrusive. Although familiarity and shared culture is reassuring and comfortable for customers, differences can also be interesting and satisfying. For instance, tourism is based largely on people's desire to experience other cultures, and different customs regarding service delivery is a valued feature in visits to other countries. Whether a culture gap enhances or detracts from the service experience depends on how prepared the participants are for such differences. Unexpected gaps are probably less pleasurable than ones that are anticipated.

The cultural specificity of services is especially pertinent for companies that are expanding their international operations because their services may be received very differently in foreign countries. For example, the clothing company L.L. Bean has developed an excellent reputation in the US, in part by allowing customers to return any merchandise with which they are not completely satisfied. The company wants to deliver the same kind of service to their customers in Japan, but has discovered that Japanese customers are less comfortable returning items than Americans. They have a cultural value concerning 'saving face' — to return an item is to insult the store, and to admit that you purchased the 'wrong' item. Such cultural differences must be addressed in tailoring service products to various cultural contexts.

Thus, the intangible, perishable, heterogeneous, simultaneous, transferable, and culturally specific nature of service products deserves special attention from managers in service firms and requires different methods of analysis than those traditionally used in manufacturing settings. We will focus on these characteristics in our discussion of the three segments in which service firms operate.

The External Environment

The external environment encompasses product definition and differentiation, as well as competitive forces. It is closely related to the historic and cultural setting, economic and social trends, and technological developments. Due to lack of space, we will not be focusing on the latter issues. Detailed treatment of these topics can be found in Schein's *Organizational Culture and Leadership*[5] and Johnston and Packer's *Workforce 2000*.[6]

Product Definition

The firm must identify products that are desired by the market segments in which it competes and that will provide customers with enough value added to justify paying a price that will assure a profit.[7] We use the term *product* for both services and manufactured goods. At times the line between the two can be a bit hazy because all manufactured goods include some service, and many services include some tangible product. For instance, retailers sell manufactured goods, but their product is actually the service of selling, not the goods that are sold. What the customer really buys is a core service or manufactured product, plus a set of additional features. In other words, customers buy a bundle of goods and/or services. This concept is illustrated in Figure 2.[8]

Let us illustrate these ideas with an example. When a customer contracts with an overnight delivery service such as Federal Express, the core service is to have the package reach its destination within the promised window of time. However, the customer implicitly expects that the company will be easy to contact, and that the drivers who pick up and deliver packages will be polite and well groomed, have clean hands, and behave professionally. The latter are complementary features to the core service, but customers expect to receive them as part of their purchase. On the other hand, Federal Express may choose to offer even more in its effort to exceed customers' expectations. For example, it expanded its definition of customer service to be all actions for, and interactions with the customer, making their employees aware that the customers are entitled to any sort of inquiry and general information associated with their packages.[9] By defining customer

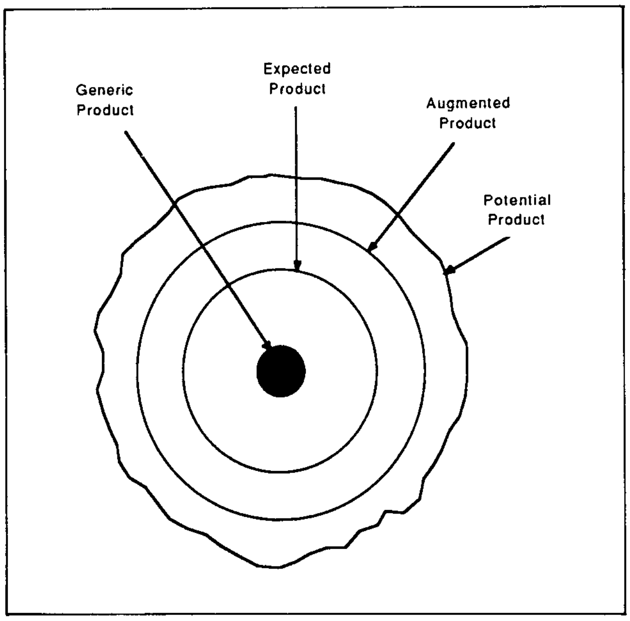

Figure 2 Dynamic Product Cycle

service in this way, the company has enlarged significantly their product service. It is hoped that the company's offerings will exceed those of its competitors.

Dynamic Cycle
The concept of core products and their complements is a dynamic one. Once all competitors offer the same complements, customer expectations are redefined and the complements become part of the core. Hence, companies need to be creative and continue to introduce new features that will differentiate their products and services. Over time, this dynamic cycle can influence the strategic positioning of individual services, and more broadly, the overall business. For example, in the retail industry discount stores initially created a niche in which customers could buy products at a discount, foregoing the additional features offered by department stores and boutiques (fashion brands, pleasant decor, and personal service). However, once this retail segment became saturated and very competitive, several chains found it necessary to attract customers by differentiating themselves from other discounters. They did so by offering better known brands of products, more service, and more appealing facilities. This has changed their nature, creating opportunities for additional retail store concepts.

Facilitating Services
Facilitating services are a subset of complementary features that facilitate the sale of the core service. Examples include 'drive-through' windows at McDonald's, delivery of pizza, and ticket sales on trains. These features all make it easier for customers to buy the core product. Some facilitating services may be so important that they become independent of the core service they initially facilitated. For example, American Airlines' flight reservation system now earns a significant portion of the company's revenue, although it was originally developed as a facilitating service. Such a development can be a trap, however; the firm may be diverted from its core business, inadvertently losing strategic focus. It is important to be conscious of what the core service is, and what the facilitating service is. For example, a company engaged in selling personal computers decided to offer computer training classes to their customers as an additional incentive for people to buy. But when it became apparent that their classrooms were not fully utilized, the head of training (who was responsible for paying rent on the rooms) decided to offer their courses to non-customers as well. Suddenly the company embarked on a new business, requiring resources, attention, etc., but the decision was not carefully considered. Facilitating services should be monitored and evaluated as to whether they are worthwhile. They should not necessarily be transformed into profit centers. Firms must be very careful to maintain the distinction between core products and facilitating services.

Differentiation

A company should continuously explore the potential enlargement of its offerings *vis-à-vis* its competitors and the customers' expectations. The process of adding features and services is the mechanism through which a firm differentiates its offerings in the marketplace. Everything can be differentiated — even the most mundane commodities. For example, people working on the fifth floor of a building may find it worthwhile to pay sixty cents for a can of Coke at an automatic machine on the same floor, rather than going to the first floor to buy one for fifty-five cents in a small store filled with lunch-hour crowds. In this case, the differentiating factor is how quickly one can get the product.

Other differentiating factors include packaging, availability, delivery, payment terms, and even other customers. For example, selling commodities in small quantities at a premium or in large quantities at a discount are ways of differentiating the same basic product. Making products available either hot or cold (i.e. ready to eat) differentiates them from those sold at room temperature, requiring some preparation prior to consumption. Businesses that make their products available at all hours of the night, or deliver directly to the customer, are further examples of differentiation. Gas stations and department stores that accept credit cards are facilitating the use of their services, thereby differentiating themselves from cash-only businesses. As for differentiation based on other customers, it is quite common for celebrities to appear in advertisements, indicating that they use a certain product and encouraging people who admire them to do so as well. The characteristics of the celebrity thereby help to differentiate the product itself. American Express uses this strategy to attract new members. Similarly, all products, both goods and services, can be differentiated because customers purchase much more than the core product. There are endless ways of differentiating products, limited only by the creativity of firms engaged in providing them.

Market Segmentation

Discovering what customers want and need is difficult because they are so diverse. For this reason, it is of particular importance for companies to clearly define what they offer, to whom, when, where, at what price, etc. As an example, McDonald's makes very clear what product they offer and who their main customer is. They know that by attracting youngsters, they will also attract the parents. Moreover, the standardization of services across their thousands of outlets assures customers that they are not likely to experience any major surprises in the package of goods and services that they purchase. In this way, customers will not be disappointed since their expectations are easily set close to the offerings of the company.

At the other extreme, a hotel may face a very heterogeneous set of customers for their services. For example, the same room can be rented to a business person for a single night, airline crew members on a regular basis, government employees (who usually benefit from discounts), members of tour groups, or a professional attending a conference at the same hotel. All of these constituencies have different needs and are willing to pay different prices. They also represent market segments of particular importance to the hotel at various periods during the year. Hotels attempt to maximize their annual profit by drawing on the various groups according to their marketing strategy.

To deal with the diversity of customers and their needs, it is imperative for the hotel to devise procedures that make it clear to each segment where to go for service and how to get the services that are tailored for them. An illustration is the Headquarters Hotel in Morristown, New Jersey. It has special check-in and check-out procedures for business travelers on the fifteenth floor, where they will also find their rooms and a special lounge in which they can meet with business partners or simply have a drink and appetizers. These special services are not visible to other customers. In this manner, the hotel can use its facilities to service focused market segments without permitting direct comparisons of services and products received. Of course, business travelers pay a premium for what they want and need, and so represent an important segment for the hotel.

Market segmentation enables firms to attract the right customer at the right time for the right price. It serves to focus the positioning of a product, enhance profitability, allocate company resources among customer segments, and is instrumental in evaluating the success of marketing efforts. Hence, in the external environment, proper market segmentation is of central importance.

Competitive Forces

It is not sufficient to focus only on the customer in the external environment. It is equally important to look at competitors' actions, both what they do and what they do not do. The term 'competitors' has a much broader meaning than those firms offering similar products or services. It also encompasses potential new entrants, suppliers, and firms that offer substitutes. Porter's model, depicted in Figure 3 indicates the different market forces to be considered.[10]

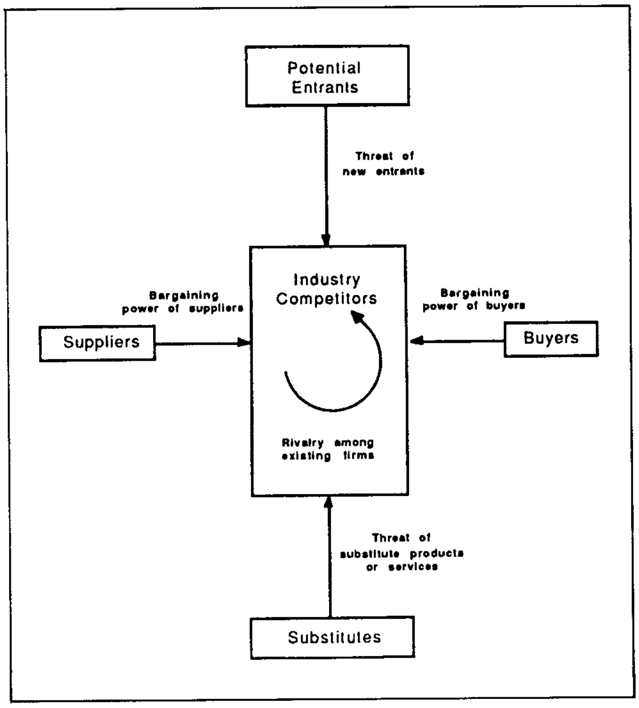

Figure 3 Porter's Model of the Competitive Environment

A dramatic example of new entrants is the recent entry of AT&T into the credit card market. In a very short period of time this organization became a major player in a market segment in which it previously had virtually no presence. AT&T accomplished this by offering a credit card with no fees. Their extensive infrastructure enables them to make money on the related telephone calls, and thereby forego the customary annual fees. Other examples in financial services include General Motors, Sears, and General Electric becoming major lending institutions, although their original businesses were in different sectors.

Barriers to entry, or lack thereof, are especially important in service operations. Because services are not patentable, barriers to entry may depend on economies of scale, service differentiation, or the necessity of having multiple facilities. Although there are no patents, there may nonetheless be proprietary knowledge in the form of trade secrets or specialized knowledge. The critical aspects of a service are not always apparent, even to careful observers. Services of this type are less susceptible to 'reverse engineering' by competitors because experiencing the service does not necessarily give the knowledge to reproduce it. For instance, the garish interior color scheme of Denny's, a large chain of family restaurants, tends to discourage customers from lingering at their tables, thereby increasing throughput. But this fact could easily go unnoticed by imitators who might actually believe that more tasteful colors would give them an advantage.

Introduction of New Services

Evaluating the potential success of new products and services is a critical task in the external environment. With this aim, it is useful to analyze a product's strengths and weaknesses in terms of the value that it adds for customers versus the obstacles customers face in buying and using the new service. Examples of added value include convenience, faster response to inquiries, shorter delivery lead times, greater service coverage, and unique products that are unavailable elsewhere. Obstacles may be in the form of high price, switching costs, education or sophistication necessary to use the product, limited distribution, or vested interests in a competitor's products.

The value added and obstacles associated with a service change over time, and therefore a firm's ability to manage these opposing forces is a critical success factor in succeeding with new services. As illustrated in Figure 4, services can be roughly categorized into 'high' and 'low' on each of the two dimensions, obstacles and value added. The resulting two by two matrix divides products into four groups with varying levels of potential success.[11]

The preferred location on the matrix is in the high value added, low obstacles box labeled 'Perfect-wave'. A company that offers such a product can ride the wave, enjoying the widespread appeal and high demand. An example in this category is telephone service, a relatively low-priced, high-quality product that is attractive to virtually all segments of society. The obstacles to purchasing and using a 'phone service are very low, yet the value added is extremely high.

The second and third most preferred matrix positions are named after characters in the fable 'The Tortoise and the Hare'. Firms offering products in the high value added high obstacles box will have limited demand because of obstacles, but their high value added may make them overconfident, like the Hare. Home banking is an example of this type of product. As personal computers proliferate and user sophistication increases, this product will move into the perfect wave box, but for now its appeal is rather limited. Third in preference is the Tortoise box, in which low value added and low obstacles make growth slow and conservative, but lead to success in the long run. Large chains of low priced

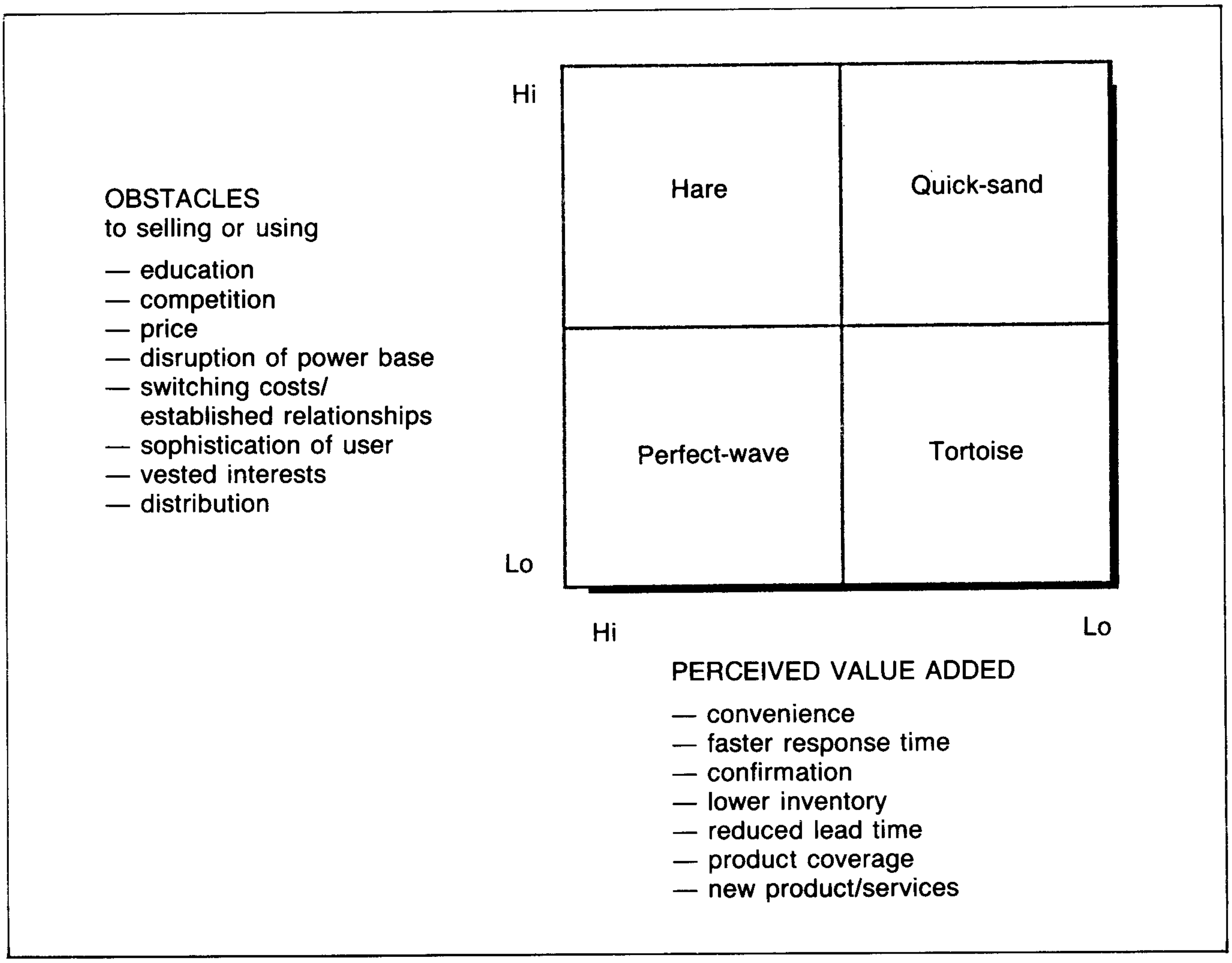

Figure 4 Introduction of New Services

hair salons are an example of this type of product. Although their appeal is rather weak, over time consistent quality and growing name recognition will build a stable customer base, but success will not be sudden or spectacular.

The last box is the least desirable location because products there face high obstacles while offering low value added, and so may founder as if mired in quicksand. New products based on recent technological advances frequently begin in this box, and gradually shift to other locations on the matrix. Automated teller machines are an example of a product that started in this box and then shifted. They were initially motivated by technological developments and supplier enthusiasm, but gradually have been enthusiastically embraced by almost all bank customers.

Generally speaking, the value-added dimension reflects the level of customer enthusiasm about the product and the obstacle dimension reflects the level of sophistication of customers to whom the product must be sold. Both forces jointly determine market size and the product's overall competitive position.

In summary, the service firm must analyze the definition of its core service, differentiate its offerings, segment its markets, and position itself *vis-à-vis* competitors if it is to manage the external environment and prosper. We now turn to the internal environment and consider the key issues associated with it.

The Internal Environment

The internal environment is the organizational context which contains and supports all the activities within the business. It is closely related to the firm's history and life cycle, the founder's style and values, corporate culture, organization design, and resource constraints (both human and capital). The internal environment concerns issues similar to those in traditional management of manufacturing operations. Major decisions in the internal environment concern issues of system design and implementation, such as resource planning, developing control procedures, and matching supply and demand.

System Design

Designing a system for service operations entails planning specifications, performance measures, infrastructure, task capacity, work flow, and division of labor. The foundation for effective operations control is a clear plan with well-defined objectives and performance measures. Responsibility for these objectives and their subtasks should be assigned and communicated, with managers and employees knowing the firm's expectations of them and the basis on which they will be evaluated. Specifications serve not only to increase standardization and efficiency, but also to build a common understanding of the firm's objectives. 'Traceable' procedures and data enable workers to investigate problems and identify the causes so corrective actions can be taken. Banking processes are the epitome of traceable procedures. Every employee involved in every transaction signs off on it, indicating both verification and responsibility.

The selection of both 'hard' and 'soft' technologies is very important in building a flexible infrastructure that can be responsive to changing market conditions. Not only can such an infrastructure give a firm competitive advantage in and of itself, it can also serve as a barrier to potential entrants. It is necessary, even for dominant firms, to be vigilant in evaluating new technologies as they may pose threats or reveal opportunities. Information systems can be the basis for an effective infrastructure that is difficult for competitors to duplicate. For instance, Fidelity Investments caters to individual investors by providing very prompt and reliable execution of customers' 'phoned-in orders. By combining hard and soft technology into a sophisticated interface, Fidelity created a system that enables any customer service representative to quickly access all of the necessary data for customer transactions, thereby outperforming larger, full-service brokerage houses on both cost and quality.

Capacity planning involves identifying the location and capacity of facilities, taking into account the density of the customer population, the targeted level of service coverage, peak demands and demand patterns, forecasted growth potential, and competition. In designing individual facilities, an analysis of the flow of work and customers should be performed to ensure that efficiency will be built into the system from the very beginning. This analysis includes examining possible bottlenecks, planning individual station capacities, sequencing distinct tasks, and simplifying operations to reduce the costs of personnel, inventory, and facilities. Customer contact should receive special attention, as reducing unnecessary direct customer contact can improve efficiency and yield economies of scale. McDonald's is a good example of such planning. Their restaurant systems are carefully designed and implemented down to the last detail, ensuring quality and consistency across thousands of locations worldwide.

Required skill levels and possible career paths must be considered in task design because training, motivating, rewarding, and retaining employees is critical in service firms. Soft technologies are particularly relevant in planning labor. Total Quality Management (TQM) is an example of a soft technology that has had a major impact in the manufacturing sector and will be of growing importance in service operations. By empowering employees to improve procedures, TQM taps into a rich source of innovation.

Matching Supply and Demand

The perishability of services makes it imperative to match supply and demand. For example, firms cannot store haircuts or airplane trips. If they are not consumed immediately, the barber will be idle or the seat on the plane will be empty, and there is no way to recover the cost of that unused capacity. In manufacturing, inventory can be used to accomplish this. If there is seasonal demand for a product but the plant cannot accommodate that schedule, it can produce at a constant pace and build up inventory so that it is not necessary to deploy capacity for the peak demand. Service industries do not have that luxury because their output is perishable. Therefore, smoothing supply and demand in service operations is the most critical task faced by operations managers.[12]

Adjusting Supply

There are various methods for adjusting the supply of services, the key being the scheduling of human and physical resources. Exploring employment options beyond permanent full-time work can be very useful when demand is highly variable. Temporary workers can ease transitions between periods of seasonal demand. Amusement parks are a good example. They hire college students on summer break, perfectly coinciding with their peak demand. Similarly, Federal Express employs students during the Christmas break to help deliver innumerable holiday packages. Floating staff and cross-training should be instituted in firms where the demand for various distinct services is variable. For instance, bank workers who are trained in setting up new accounts as well as basic teller duties can move between stations as demand shifts between these services.

Part-time workers are an excellent option for handling demand that varies over the course of the day or week. They can put in short shifts during the busiest hours, or work only on weekends. This is frequently done at restaurants and grocery stores. Special segments of the population are especially suited to this type of work. Mothers who do not want full-time jobs that will take them away from their families often appreciate the opportunity to work a reduced schedule. Some banks have sought out handicapped people who are willing to work from computer terminals in their homes to process transactions over night. McDonald's has recently run advertisements designed to attract elderly people who have left the full-time work force, but miss the stimulation of belonging to a work group. These groups of workers enable firms to better tailor their labor supply to their individual demand cycles.

Although the cost of equipment and facilities is generally considered a fixed overhead, they can also be scheduled to accommodate varying demand. Scheduling preventive maintenance and test runs during off-peak periods is an obvious place to start. Cross-training and floating staff have a parallel on the physical side of operations in the form of multipurpose machines. Flexibility can also be built into equipment and facilities by designing modular units. This facilitates scaling capacity up and down to meet growing and shrinking demand. Sharing capacity between functions that have inversely correlated demand patterns is another method of increasing utilization rates. When limited space is available and workers need not be present to perform their functions, work-at-home arrangements can be implemented. Computer programmers often enjoy this option. Hotels can adjust their supply of rooms by downgrading the nicer rooms to meet heavy demand for low-priced accommodation.

Extending business hours is an excellent way of meeting growing demand without expanding facilities. Access is a very interesting issue because many businesses are open when it is convenient for them, but not for their customers. Before automated teller machines, for example, customers could visit the bank only during its rigidly set hours of 10am to 3pm. This type of schedule made customers wonder for whom the banks were in business. It is extremely common for companies to be in business during the wrong hours, but the convenience of the customer is key.

Smoothing Demand

Demand for services often presents itself in spikes or clumps (the 'peak') and then slackens for long periods of time ('off-peak'). The manager of the service firm has several options available to 'smooth out' these highly variable patterns, including pricing strategies, fostering off-peak demand, and appointment and reservation systems.

Consider the implications of variable demand for telecommunications companies. They have telephone lines spread over entire regions. During the day demand is very high and therefore valuable, but at night the system is not fully utilized. What can a telecommunications manager do when the plant and equipment are sitting idle? One response is to try increasing the night time demand by adjusting prices. Pricing strategies are extremely common not only in telecommunications but also in public utilities, hotels, and airlines.

Managers can use a variety of techniques to foster off-peak demand, thereby increasing overall capacity utilization. Advertising, for example, can stimulate demand in off-peak seasons. Although general advertising will not help firms that face daily peaks and troughs in demand, targeted advertisements can be used to attract customer segments likely to demand service during off-peak hours. For example, some subway systems use billboards suggesting that commuters use their services to attend sports or entertainment events that take place on weekends. Sales and promotions can also boost demand when revenue slumps. After Christmas, when many consumers are tired of shopping and short on cash, year-end sales keep malls bustling with activity. Similarly, catalog sales operations can control their demand by adjusting the timing and quantity of their catalog mailings.

Special services can also be offered to attract off-peak customers. For instance, some shopping malls attempt to attract non-working mothers by providing babysitting services for shoppers during the working day. Complementary features with wider appeal can be included with services during off-peak hours only, such as free popcorn during weekday movie matinees, or free parking at stores on weekends and evenings. Volume discounts are an additional means of attracting off-peak clients. Groups of school children fill museums during work days, and hoards of high school seniors fill Disneyland from midnight to dawn during the weeks prior to graduation.

Simply informing customers of demand patterns can help to smooth demand. When utilization of their customer service 'phone system reaches its limit, the Fidelity Investments brokerage firm eases their customers through the capacity expansion period by providing them with a distribution of calls received throughout the day. This enables customers to adjust their calling times accordingly, thereby smoothing demand for the system. Furthermore, those customers who do call during peak hours will be prepared for a possible delay, and so will feel less annoyance than if their waiting time was unexpected.

Another way of smoothing demand is through prearranged schedules of service provision. Examples include reservations for restaurants and hotels, and appointments for doctors and hairdressers. These normally use a first-come-first-served rule in allocating time slots, but also enable higher priority customers to be served more quickly. For instance, doctors must leave some room open in their schedules for patients with unforeseen emergencies. One university health clinic increased patient throughput and physician utilization by scheduling more patient appointments during periods of low walk-in demand, thereby smoothing overall daily arrivals.[13]

The primary issues in managing a service firm's internal environment concern efficiency, flexibility, and matching supply and demand. Managers must address these needs with careful planning and attention to changing conditions. Service quality is another issue that could be addressed in the context of the internal environment, because it is closely related to system design. However, because quality plays such a crucial part in the service encounter itself, we will include it in our discussion of the customer interface.

The Interface

The customer interface is the most critical environment, representing the service firm's 'moment of truth'. As mentioned above, the sequel to this paper will address the customer interface in detail, and present a framework for analyzing the service encounter. For now let us say simply that it involves contact with the customer, encompassing interactions that take place face-to-face, via mail, telephone, fax, or computer, or some combination of these. It is at this point that a firm can jeopardize millions of dollars of investment in creating its offerings. If its representatives are not well trained in understanding the products, as well as on how to interact with customers, they can lose business and destroy a firm's image.

Conclusion

In the first part of this paper, we present a framework that facilitates analysis of service operations by addressing the major decisions and challenges that managers face in three distinct environments. Many concepts were extracted from the literature and more detailed presentations are referenced in the notes.

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