Services Marketing Strategies for Coping with Demand/Supply Imbalances

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Demand/supply disequilibrium management refers to the management of fluctuating, but otherwise normal and expected demand (in terms of average demand and supply), a condition that Kotler (1973) referred to as irregular demand.

This article analyzes management response to short-run fluctuations in demand and supply (i.e. fluctuations that occur on a daily, weekly, or seasonal basis). Long-run disequilibrium responses owing to the lack of viability of the product in a dynamic marketplace or owing to macro issues such as the business cycle, strikes, or embargoes are outside the parameters of this discussion. For the sake of brevity, we term the management of supply/demand imbalances associated with irregular demand, disequilibrium management.

The rest of the article is organized in four sections. The next section is a background section that sets the contextual framework for the rest of the article. Then, a short section on direct disequilibrium management strategies is provided. The main body of the article deals with two additional categories of disequilibrium management strategies:

(1) intelligence enhancement strategies that arm service enterprise managers with the information they need to make the marketing and managerial moves necessary to alleviate potential imbalances; and

(2) risk reduction strategies that lessen the exposure to losses resulting from supply/demand imbalances.

Finally, the managerial implications of the article are discussed.

Background

Marketers of physical goods can hold inventories to buffer fluctuations in demand and supply, but services are acts or processes and therefore, difficult or impossible to inventory (Rathmell, 1966; Sasser, 1976). A theater owner cannot take an empty seat from Thursday night and add it to capacity for Friday night's sellout. An insurance agent can inventory her application forms, but not her time. Or, when demand is over-full, loyal customers may be forced to go to another service provider – and they may end up liking

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the second service provider more. What a tragedy for the old service provider.

Thus, an inability to synchronize supply and demand impacts the bottom line through lost opportunity when demand is greater than the firm's capacity to satisfy demand and through high costs when demand is insufficient and fixed capacity is wastefully under-utilized. An unused hospital bed, for instance, represents an irretrievable loss to the hospital. On the other hand, the same hospital may limit admittances during a period of excess demand – resulting in a loss of potential revenues. The same is true for the hospitality industry. A service enterprise may use salaried employees as its key input in rendering the product unto the consumer. When demand is slack – a dearth of customers – the enterprise must nevertheless pay the employees. When demand is over-full – more customers than capacity – the service organization cannot accommodate all of its customers. Revenue loss or worse, *dissatisfied customers*, result. For other service firms, tax accounting for example, demand is extremely seasonal. Help is difficult to find during the "in" season, and profitable alternatives are difficult to find during slow periods. The data from at least one empirical study suggest that service firm managers perceive demand fluctuations as their biggest managerial headache (Zeithaml *et al*., 1985).

Figure 1 depicts a conceptual model of how service enterprises can use disequilibrium management strategies to improve performance. As described above, unattended demand/supply imbalances cause losses that negatively impact performance. Four categories of strategies are shown in Figure 1. Demand management strategies seek to lessen the amount of losses by altering demand to fit supply constraints. Supply management strategies attempt to change supply capacities to fit demand. Intelligence enhancement increases the

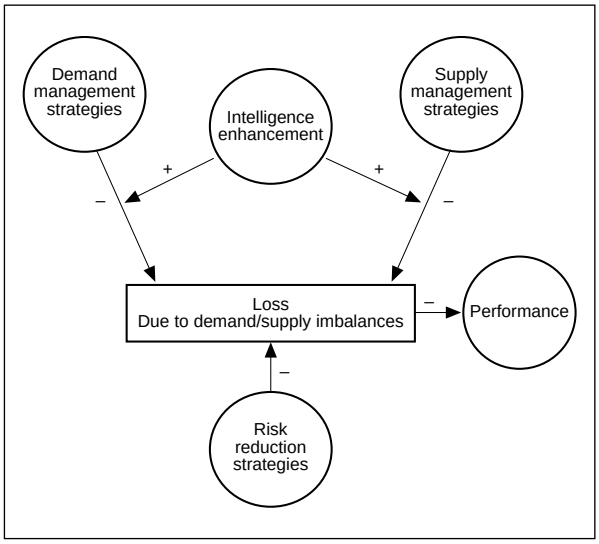

Figure 1.
Conceptual Model

effectiveness of demand and supply management strategies because the more managers know about demand trends, the better their decisions are going to be. Finally, risk reduction strategies diminish exposure to the negative consequences of disequilibrium situations.

Strategies for Handling Foreseen Disequilibrium Situations

A disequilibrium situation can be either foreseen or unforeseen. When disequilibrium situations are foreseen, managers can use a wide variety of strategies to alleviate the temporary disparity. As illustrated in Figure 1, these strategies generally fall into two categories:

(1) input scheduling strategies (change supply to fit demand); and

(2) marketing mix strategies (change demand to fit supply).

Disequilibrium situations also consist of two basic types, excess demand/slack supply or slack demand/excess supply. Thus, Tables I and II present a two-by-two matrix of

problem-solving strategies gleaned from a review of the literature and the authors' discussions with managers of service enterprises (see Heskett, 1986; Lee, 1989; Lovelock, 1988, Ch. 4; Mabert, 1986; Maturi 1989; Morrall, 1986; Orsini and Karagozoglu, 1988; Sasser, 1976).

The strategies listed in Tables I and II range from the mundane to the sublime, the costly to the costless, and the functional to the dysfunctional. However, most of these issues have been discussed in the marketing and management literatures, especially in specialized journals such as the *International Journal of Service Industry Management*, the *Journal of Professional Services Marketing*, and the *Journal of Services Marketing*. The primary purpose of the current article is to describe techniques for handling unforeseen disequilibrium situations.

Strategies for Coping with Unforeseen Imbalances

While the strategies presented in Tables I and II depict strategic initiatives which attempt to directly resolve foreseen demand/supply disequilibrium situations, this section illustrates intelligence and risk reduction strategies which attempt to lessen the frequency and the intensity of unforeseen disequilibrium situations. Table III summarizes the strategies for coping with unforeseen demand/supply imbalances.

Overfull demand/slack supply	Slack demand/over supply
1. Hire temporary workers	1. Perform non-vital tasks when demand is slack
2. Rent extra equipment	2. Use slow period for training and practice
3. Build temporary additions	3. Implement differential scheduling
4. Increase staff	4. Layoff employees
5. Keep employees overtime	5. Take on subcontract jobs
6. Turn away customers	6. Rent equipment, warehouse space, or even office space
7. Take care of regular customers only	7. Donate work to charity
8. Subcontract work to other firms	

Table I.
Changing Supply to Match Demand – Input Scheduling Strategies

Overfull demand/slack supply

1. Educate customers to curtail usage during peak periods
2. Charge a premium for use during periods of excess usage
3. Reinforce waiting

Underfull demand/over supply

1. Seek greater market penetration by calling on customers
2. Position service offerings differently during slow periods
3. Offer different services
4. Increase advertising during periods of capacity underutilization
5. Proffer special discounts, good only during slow periods
6. Lower prices during slow times
7. Pursue, *selectively*, segments that are not time constrained
8. Initiate selective marketing programs aimed at groups of consumers, at business and industry, or at government
9. Use temporarily idle employees as walking advertisements
10. Market services under barter arrangements

Table II.
Changing Demand to Fit Supply

Intelligence Enhancement Strategies

To implement effectively the demand and supply management strategies discussed in the previous sections, managers must possess accurate intelligence so as to be forewarned of impending disequilibrium situations. While the situation-specific nature of intelligence gathering precludes universal proclamations, it is possible to make several helpful suggestions.

Intelligence enhancement

1. Inventory demand using a reservation system
2. Analyze historical trends in demand at the micro level
3. Pre-mark the calendar for special situations that have the potential to affect demand and/or supply

Risk reduction

1. Pay workers on piece rate or commission
2. Keep some temporaries or steady extras around on a permanent basis as a buffer
3. Cross-train employees to relieve task-specific bottlenecks
4. Hire some ultra-flexible part-time workers to attenuate disequilibrium situations
5. Use frequent short-term layoffs
6. Let work fall behind (i.e. make customers assume the risk)

Table III.
Strategies for Coping with Unforeseen Demand Fluctuations

First, while service enterprises cannot inventory supply processes, they can inventory demand by creating reservation systems. Moreover, reservation systems provide very specific (hour by hour) intelligence about demand trends. This information can be used to enhance the effectiveness of marketing and managerial decision making. Reservation systems also eliminate some of the uncertainty for consumers, thus reducing stress in their lives.

In situations where demand is inventoried by making customers wait, service enterprises can lessen consumers' perceptions of dissatisfaction by formalizing the queuing system. Major tourist attractions such as Disney World formalize their queuing systems by building large, snakelike structures to handle large lines. Fast food restaurants (Taco Bell and Wendy's) now use variants of this system. Some service providers use a numbering system. Consumers prefer formalized queuing systems for two main reasons:

(1) They can see the line move or the numbers change; thus, they have a good idea when they are going to be served. The wait always seems longer in conditions of uncertainty, the "When am I going to be served?" syndrome (Maister, 1988).

(2) Nobody can cheat. The wait is equitable for everyone.

Another suggested intelligence option is to analyze historical trends in demand and supply. Most managers know that the business they run is busier during some time periods than others. For example, a business may be busier on Saturday than on weekdays, busier in some seasons than others, or busier during the first of the month than the last of the month. Often, however, this knowledge is very general instead of specific. The explosive growth in the efficiency of management information software and systems allows marketing managers to analyze sales and other data much more efficiently than was possible in years past. Also, perpetual inventory systems and scanner data provide a wealth of information about demand trends. The top business schools, moreover, usually require courses in computer operating systems (DOS) and spreadsheet applications (Lotus, Quatro Pro, etc.) as a prerequisite for graduation. The information on demand trends is usually available; somebody just has to make an effort to find it and use it.

For example, a green grocer analyzed daily sales over a six-month period using the same personal computer which controlled his inventory. He found that a large percentage of sales of non-staple items were made during the first three days of each month when his customers received AFDC and social security payments. At the end of the month staples made up a higher percentage of sales (total sales were also off as much as 50 percent at the end of the month). Using this information,

he was able to raise the prices and carry higher stocks of non-staples during the first few days of the month. Later in the month he carried lower stocks of non-staples.

The key points are:

(1) information is readily available at low or no cost; and

(2) better knowledge of demand trends leads to better managerial decision making.

In terms of the conceptual model in Figure 1, demand management strategies and supply management strategies decrease the losses which occur during demand/supply imbalances. Knowledge about demand moderates the effect of demand and supply management strategies on losses due to fluctuating demand. The nature of the moderation is that demand management strategies and supply management strategies are more effective – have a greater ability to reduce losses associated with fluctuations in demand – when managers have more intelligence about demand trends.

Just as the first strategy for obtaining intelligence about demand trends is more a matter of "willingness to do it" rather than how to do it, the second suggested strategy is very simple, but often overlooked. Marketing managers should mark the calendar for important events that affect demand. Though some will look on the following examples as gross negligence, they are in fact, all too common mistakes.

The owner of a restaurant near the major state university where the authors work admitted to us that he forgot about spring break this year even though he employs several students and spouses of students. Since most of the food is sold buffet style and prepared prior to the dinner rush, he ended up giving away a lot of food to his employees on the first Friday night of spring break. The first year owners of a California card club were very successful during the spring and summer, and the owners used their income to make improvements to the club and maintain a high living standard. Northern Californians, however, are possessed by hunting mania every fall. "When hunting season came, *everybody* just went hunting", the owners lamented. After eight weeks of little or no business, the ownership group was unable to make their rent payments, and the landlord dispossessed them.

Many major metropolitan areas, especially in California and Florida, have a lot of immigrants. When marking the calendar for events it is important to remember that different cultures have different holidays. Arab people engage in celebratory blow-outs during holidays such as Aid-El-Athaha (a lunar-based holiday) and Aid-El-Fatir (end of the Ramadan fasting season). Persians celebrate the secular festival of No-Rooze on the first day of spring, and oriental cultures celebrate their lunar new year for 20 days every winter. (In China the actual new year holiday is called the Spring Festival, but it actually occurs in the winter; a second big celebration occurs 15 days later, the Lamp Festival.) Similarly, the fall harvest is a time of celebration for many cultures. Germans celebrate Octoberfest; people in the USA celebrate a secular harvest holiday called Thanksgiving and Chinese people celebrate a holiday best translated as the Mid-Autumn Festival. The point of this discussion is that service enterprises who serve sizable segments with different cultural heritages need to be cognizant of their calendars. Cultural holidays, moreover, serve as marketing opportunities, and not just for the ethnic group in question. Look at how bars and restaurants market St Patrick's day (now it's often St Patrick's weekend).

Risk Reduction Strategies

Everyone has, at one time or another, walked into a service or retail establishment with a

multitude of salespersons or other customer encounter personnel and no other customers besides yourself (slack demand/over supply). Paying idle employees is expensive and wasteful. Similarly, since services are difficult and expensive to store, firms may experience even more severe misfortune during unforeseen over demand/under supply situations: a turned-away customer may consume a competitor's product and like it better. Indeed, Mabert (1986) found that service firms tend to design staffing plans based on peak demand situations, resulting in substantial idle time during slack periods. Disequilibrium situations would never occur in a perfect world with omniscient managers who are devoted supplicants to the marketing concept. Even the best planner, however, cannot always prepare a service organization for unpredictable swings in consumer demand, untimely equipment failures, or a sick call contagion.

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Managers value employees who respond to emergency situations

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Nevertheless, service enterprises can utilize several strategies which aim to decrease the intensity of the injury incurred during unforeseen demand/supply disequilibrium situations. One such strategy is to pay workers on piece rate or commission. The idea is to increase the ratio of marginal to fixed costs where fixed costs are those which the managers cannot avoid in the short term. Hourly employees who are guaranteed 40 hours a week are a fixed cost to managers because the labor costs are the same, whether the firm is busy or not. Paying workers piece rate or commission makes all labor costs marginal costs – even for the short run (Khumwala *et al.*, 1986). Thus, firms shift risks associated with fluctuations in demand to employees. Automobile and boat repair shops usually pay mechanics a percentage of the shop labor charge. Since labor charges for repair projects are billed according to the book rate, mechanics who perform repairs faster than the norm get paid more than their less proficient comrades. The service enterprise benefits in two ways:

(1) the firm ensures that employees have the same goals as the firm by tying wages to productivity; and

(2) some of the losses incurred in disequilibrium situations are transferred to the employees (i.e. no work, no pay).

In an efficient labor market, however, firms must compensate piece rate workers for taking on risks which are normally (for full-time hourly employees) covered by management. Nevertheless, it may be incorrect to assume that the labor market is efficient. In particular, overtime laws and regulations interfere with the efficient workings of the market, especially in services. In an efficient market employees are paid according to their marginal net-revenue product. According to law or union contracts employers must pay hourly workers double-time or time-and-a-half for each hour after 40. Yet, in actuality, these workers' MRP is probably less or certainly no higher during the forty-first hour than during any other hour. Paying piece rate is an effective way to avoid institutional interference in the labor market.

Another stratagem for reducing exposure to losses during unforeseen disequilibrium situations is to keep some temporaries or steady extras around on a permanent basis as a buffer. These employees are often kept either formally or informally on-call. Managers value the employees who respond to emergency situations, which can be

touched off by something as simple as several co-workers calling in sick. They often reward these workers by giving them preference in assignments or leave. Similarly, when hiring workers, managers may place a premium on responsiveness to emergency calls.

A similar strategy is to hire part-time, variable schedule employees to sustain demand/supply congruity. Maximum flexibility can be maintained with these employees, even to the point of dismissing them early on days when demand is slack. This strategy may help to prevent layoffs. When demand is slack for an extended period (several weeks), the hours of part-time employees can be cut across the board.

Yet another strategy is to cross-train employees to relieve task specific bottlenecks (Lovelock, 1988). As consumers, we all know how frustrating it is to hear that the one person who can solve our problem is "not here" or "out". Cross-training not only improves short-term flexibility and lessens exposure to losses associated with demand/supply imbalances, but also heightens employee morale, thus improving service quality.

As noted above, service enterprises may benefit by transferring risks to employees, but marketing managers and CEOs eschew transferring risk to customers (e.g. making customers wait) (Mabert, 1986; Zeithaml *et al.*, 1985). Letting work fall behind makes customers suffer when demand exceeds supply and managers clearly view this as dysfunctional (Mabert, 1986).

Managerial Implications

In the first part of this article, we noted that service processes are impossible to inventory. An unused airline seat, for example, represents an irretrievable loss of opportunity to the airline. Though not without cost, marketers of physical goods can create inventories to handle high demand, but a theater owner cannot sell more seats than there are in the theater. Thus, unattended disequilibrium situations lead to losses for firms in two ways. First, if demand exceeds, even temporarily, a firm's capacity to serve, then service firms lose potential revenue, and customers are left unhappy. Second, fixed capacity is wastefully underutilized when demand is slack. Thus, managers should be interested in disequilibrium management strategies that reduce losses associated with demand/supply imbalances.

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Keeping employees on overtime is not cost effective

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The first strategy for coping with foreseen disequilibrium situations involves scheduling inputs to fit demand (see Tables I and II). Under conditions of insufficient supply (which may be caused by overfull demand), firms may increase permanent staff, or when the need is short lived, firms may hire temporary workers, often utilizing agencies such as Manpower to provide needed employees. The service establishment saves on advertising, screening, and bookkeeping costs to offset the wage premium paid to the agency. Traditionally, temporary agencies specialized in supplying generic labor inputs such as manual laborers and secretarial help. Recently, however, temporary agencies have reported a demand for people with more specialized skills such as computer programmers. This option may be especially attractive to firms that face seasonal upswings lasting for several months. Skilled temporary workers thus help increase capacity for the "in" season.

Some strategies for managing excess demand/slack supply situations are

dysfunctional, especially when the disequilibrium situation is foreseeable. Keeping employees on overtime is not cost effective and may be viewed as a sign of poor management. Turning away customers or servicing only regular customers is not a viable option. Marketing managers and CEOs prefer almost anything, even overtime to poor treatment of customers (Mabert, 1986; Zeithaml *et al*., 1985). The marketing concept predicts failure for service enterprises that ignore consumers' antipathy for wasting their increasingly scarce free time. Subcontracting work to others is one viable option that is preferable to turning customers away.

When demand is temporarily slack (an oversupply of inputs such as labor), service enterprises may use employees and other inputs to perform non-vital tasks. Managers may use differential scheduling systems to lower staffing levels to match demand. Usually, most day-to-day and week-to-week changes primarily affect the hours worked by part-time employees. Managers and CEOs of service firms prefer cutting hours of part-time employees to the temporary layoff strategy often used by manufacturing firms (Zeithaml *et al*., 1985). Manufacturers usually pay employees enough of a premium above the employees' alternative employment opportunities to dissuade employees from quitting. Service firms may not be able to deter employees from permanent disengagement, thus losing the firm's investments in specific training[1] (Haltiwanger and Maccini, 1988).

Another strategic option may be to take on subcontract work. If the marginal ratio is high (including workers who are paid when they do not work), anything that keeps employees and equipment working may be preferable to inactivity – even subcontract work performed at lower than average total cost.

Several other creative input scheduling strategies are effective when unavoidable costs are going to be incurred anyway (i.e. the marginal cost/fixed cost ratio is very low). A firm may rent equipment, warehouse, office space, or even employees to other firms. Even donating work to charity for the tax deduction and community goodwill can be a profitable and intrinsically pleasing strategy.

The second broad category of disequilibrium management strategies involves manipulating demand to fit supply, either by shifting the demand curve through promotions and marketing or moving customers along the demand curve through creative pricing policies. Sometimes demand for a service is excessive to the point that physical capacities are strained. Examples are water use in drought-stricken California or utility brownouts caused by surges in demand during the 90 minutes before and after rush hour. Restaurants are often overwhelmed during peak times such as immediately after church on Sunday (and little used at other times such as mid-afternoons). In these situations marketers may prefer to change demand to fit available supply. One strategy is to educate customers to curtail usage during peak periods and special situations such as droughts. Special premiums – penalties for use during peak periods and much lower than average rates during off-peak periods – may inspire consumers more than voluntary conservation methods. Long distance phone companies have used this strategy successfully for years. Other service providers such as utility companies are experimenting with differential pricing strategies.

Although economists usually think of a demand function as a downward sloping smooth curve with price on one axis and quantity demanded by customers on the other, most consumers have a parallel internal demand function with slightly different referents for axes – time and quantity demanded. The challenge for a service

enterprise facing excess demand is to make waiting less painful by reinforcing consumers who have to wait. Doctors' offices attempt to make the wait less distressing by providing a nicely furnished waiting area with magazines, television, and toys for kids. Restaurants may provide a free or reduced price drink at the bar. Skilled salesmen often tell customers they cannot help immediately. "I'll be right with you." Similarly, customer encounter people should thank customers who have waited for service.

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The challenge is to make waiting less painful

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When demand exceeds capacity, firms are challenged with the more traditional marketing task of increasing demand. One way to increase demand is to pursue increased market penetration by calling on existing customers. Positioning services differently during slow times is another alternative. An accounting firm that specializes in tax accounting may position itself for speed, quick mass processing of electronic returns, and simple 1040s during February and early March. Later in the tax season the same firm may reposition and market to businesses and self-employed taxpayers. Since most people who file a simple return get a refund, they are eager to file early in the season. Small businesses and self-employed people usually put off the pain and suffering until March and April or later. Similarly, the firm may offer altogether different types of services in the off-season, installing computerized book-keeping systems for small businesses, for example.

Most service enterprises do not increase advertising during extended periods of capacity underutilization, perhaps because advertising expenditures are linked to availability of funds through revenues and profits. Letting accountants determine the level of promotional expenditures, however, may lead to sub-optimal results. When the ratio of marginal to fixed costs is very low and demand is slack, the marginal profit per new customer is very high because additional customers can be serviced at very little extra cost. Thus, the best time for a new promotional effort may often be during periods of slack demand/excess capacity.

Another marketing strategy involves targeting non-traditional market segments, such as groups of consumers, business and industry, or government agencies. When overall demand is slack, a firm with a high ratio of fixed to marginal costs may profit by bidding on large jobs even if the job does not cover average total costs. The key is to market selectively, i.e. to segments that are outside the normal customer base.

Another creative option is available to marketing managers and CEOs of service enterprises; they can put idle inputs to work on barter arrangements. In the USA over 150,000 firms actively trade goods and services on a daily basis (Healy, 1989). Trade networks like the Cleveland Trade Network Inc. assist in the barter process for a fee that averages about 5 percent (Maturi, 1989). The International Reciprocal Trade Association has developed standards for ethical business practices, and the IRS accepts a quid pro quo (Maturi, 1989). The barter income is measured in terms of the services given up, which is usually a wash for tax purposes.

Thus, while the demand and supply management strategies described above lessen the potential losses suffered during demand/supply imbalances, intelligence enhancement strategies impact the bottom line by lessening the frequency of unforeseen disequilibrium situations, and accentuating the effect of other disequilibrium

management strategies. Most managers would probably agree that the worst disequilibrium situations are those which are unforeseen. Managers can only be helped by efforts which lead to fewer unforeseen and more foreseen fluctuations in demand (or supply). There will always be random, unpredictable fluctuations in demand. Yet, the relevant data is more readily available (and cheaper) than ever before; the equipment needed to analyze the data is more readily available (and more powerful) than ever before; and the new generation of business-college graduates are better trained (at least in terms of using spreadsheets and the like) than ever before. One primary purpose of the current article is to explain exactly how intelligence about demand trends can improve the bottom line (by improving disequilibrium management efforts which in turn lessen losses due to demand/supply imbalances).

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Managers must carefully weigh the risks against the rewards

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While intelligence enhancement strategies are designed to lessen the *frequency* of unforeseen demand fluctuations, risk reduction strategies aim to lessen the *intensity* of unforeseen demand fluctuations by cutting firms' exposure to the losses which occur during demand/supply imbalances. However, managers must carefully weigh the risks against the rewards. Paying workers piece-rate is less risky for the firm, but may cost more in the long-run. Cross-training employees may be more expensive than using a specialization approach, though it should pay off in the long run. Shifting risks to customers may result in customer dissatisfaction.

For all of the disequilibrium strategies discussed, how and when managers should choose to apply the suggested strategies is contingent on situational factors. For instructional and reference purposes, we deliberately created separate categories for the different types of strategies. Nevertheless, the various types of disequilibrium management strategies are not static and mutually exclusive, but dynamic and interactive. Service firm managers should evaluate the efficacy of the strategies described in this article in their own contextual circumstance.

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Note

1. Specific training refers to training that is not transferable to another job. In theory, the cost of transferable training is absorbed by the employee, but the cost of specific training is absorbed by the firm. It is thus costly for a firm to lose employees in whom it invested significantly in specific training.

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