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Restaurant Revenue Management: Applying Yield Management to the Restaurant Industry

Abstract

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Keywords

restaurant industry, revenue management, yield management, strategies

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Restaurant Revenue Management

Applying Yield Management to the Restaurant Industry

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Philip Y. Lee, and
Elizabeth N. Ngonzi

The crucial element in a strategy for boosting restaurant revenues may be to relate prices to the length of time guests spend at the table. But, as the Witch of the West told Dorothy, the issue is how to do it.

Research in revenue management has heretofore addressed the theoretical and practical problems facing airlines and hotels, among other industries, but has given little consideration to the restaurant industry.¹ The restaurant business is similar enough to hotel and airline operations that restaurants should be able to apply revenue-management principles. Indeed, many restaurants use various revenue-management-type practices, but the application has so far been mostly tactical. We believe that a broad theory of revenue management would permit

restaurant operators to gain the benefits of strategic revenue management that they currently lack.

Our objective in this paper is to develop the framework for such a theory. We discuss the necessary conditions for revenue management, the strategic levers available for revenue management, how they have been applied in traditional revenue-

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¹ For a review of revenue-management literature, see: Sheryl E. Kimes, "Yield Management: A Tool for Capacity-Constrained Service Firms," *Journal of Operations Management*, Vol. 8, No. 4 (1989), pp. 348–363; or Lawrence R. Weatherford and Samuel E. Bodily, "A Taxonomy and Research Overview of Perishable-Asset Revenue Management: Yield Management, Overbooking and Pricing," *Operations Research*, Vol. 40, No. 5 (1992), pp. 831–844.

management settings, and how they, along with some tactical tools, can be applied to restaurants.

Defining Revenue Management

Revenue management is the application of information systems and pricing strategies to allocate the right capacity to the right customer at the right place at the right time.² In practice, revenue management has meant determining prices according to predicted demand levels so that price-sensitive customers who are willing to purchase at off-peak times can do so at favorable prices, while price-insensitive customers who want to purchase at peak times will be able to do so. The application of revenue management has been most effective when it is applied to operations that have the following characteristics: relatively fixed capacity, predictable demand, perishable inventory, appropriate cost and pricing structure, and demand that is variable and uncertain.³ Those attributes are generally found in some form or another in the restaurant industry.

Relatively fixed capacity. Restaurants' capacity can be measured by seating, kitchen size, menu items, and staffing levels. Most restaurant operators' approaches to optimizing revenue primarily involve filling the seats to capacity and turning tables as quickly as possible, but that effort can be limited by the kitchen, by the menu design, or by staff members' capabilities.

Seating capacity is generally fixed over the short-term, although res-

taurants have some flexibility to crowd a table with an additional seat if necessary, and the restaurant's cost of adding additional capacity in the form of tables or seats (say, by reconfiguring the dining room) is lower than that of many businesses that typically use revenue management. Most restaurants have a fixed number of tables, but can vary the number of seats depending on the mix of party sizes. In addition, some restaurants might increase capacity during warm weather by using outdoor dining.

Adjusting kitchen capacity is generally more expensive than adding tables, although kitchen output can often be increased by changing the menu (e.g., by selling only items that can be prepared quickly) or by increasing staffing levels so that more food can be prepared. Still, one can consider the kitchen capacity to be relatively fixed because of the expense of adding equipment.

Although service capacity can be increased by adding staff or by reducing meal duration, the limitations of the kitchen and dining room may make that change fruitless. Thus, although restaurant operators can tweak their capacity, it is essentially fixed.

Predictable demand. Setting aside carry-out activities as a separate business, restaurant demand consists of guests who make reservations and guests who walk in. Both forms of demand can be managed, but different strategies are required. In sum, guests who make reservations and those who walk in constitute an inventory from which managers can select the most profitable mix of customers. To forecast this demand and manage the revenue it generates, a restaurant operator needs to compile information on the percentage of reservations and walk-ins, guests' desired dining times, and likely meal duration. Tracking customer-arrival patterns

requires an effective computerized or manual reservation system.

Perishable inventory. One might think of a restaurant's inventory as its supply of raw food, but most of that is not perishable until it is removed from the freezer or sitting on the receiving dock. Instead, restaurant inventory should be thought of as time—or, in this case, the time during which a seat or table is available. If the seat or table is not occupied for a period of time, that part of the restaurateur's inventory perishes. This is the key to our strategic framework, and it is the element we believe has been missing in most approaches to restaurant revenue management. Instead of counting table turns or revenue for a given day part, restaurant operators should measure revenue per available seat hour (REV-PASH). This measure captures the time factor involved in restaurant seating.

Many restaurants evaluate managers and servers based on average sales per customer. This is equivalent to hotels' measuring effectiveness by ADR without paying attention to occupancy. While knowing sales per customer or contribution margins of menu items is valuable, those measures do not provide the information on revenue generation that REV-PASH would give.

Appropriate cost and pricing structure. Like hotels, restaurants have a cost structure that features relatively high fixed costs and fairly low variable costs, although it's true that an item's food-cost percentage is usually higher than the cost of opening a hotel room compared to the revenues from that room. Like hotels, restaurants must generate sufficient revenue to cover variable costs and offset at least some fixed costs. Nevertheless, restaurants' relatively low variable costs allow for some pricing flexibility and give operators the option of reducing prices during low-demand times.

²Barry C. Smith, John F. Leimkuhler, and Ross M. Darrow, "Yield Management at American Airlines," *Interfaces*, Vol. 22, No. 1 (1992), pp. 8-31.

³Kimes, pp. 348-363; and Robert G. Cross, *Revenue Management* (New York: Broadway Books, 1997). See also: Robert G. Cross, "Launching the Revenue Rocket: How Revenue Management Can Work for Your Business," *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 38, No. 2 (April 1997), pp. 32-43.

Exhibit 1 Methods of managing duration

Uncertainty of arrival

Internal measures

- Forecasting
- Overbooking

External measures

- Guaranteed reservations
- Reconfirm reservations
- Service guarantee

Uncertainty of duration

Internal measures

- Menu design
- Process analysis
- Labor scheduling
- Communication systems

External measures

- Pre-bussing
- Check delivery
- Coffee and dessert bar
- Visual signals
- Reduce time between customers
- Process analysis
- Communication systems

Time-variable demand. Customer demand varies by the time of year, by the week, by the day, and by the day part. For restaurants, dinner demand may be higher on week-ends, during summer months, or at particular times during the lunch or dinner periods. Restaurant operators must be able to forecast time-related demand so that they can make effective pricing and table-allocation decisions to manage the shoulder periods around high-demand periods.

A special factor for restaurant operators is that they have to reckon with the length of time a party stays once it is seated. This is analogous to hotels' having to forecast the number of guests who will stay an additional (unscheduled) night, but the hotel still is selling an integral room-night, rather than the sometimes unpredictable period that diners will stay at a table. If restaurant managers can accurately predict meal duration, they can make better reservation decisions and give better estimates of waiting times for walk-in guests.

Managing Demand: Strategic Levers

Restaurants appear to possess the conditions necessary for revenue management, but we see little evidence of restaurants' using a strategic approach for using the demand-management mechanisms at hand. A successful revenue-management strategy is predicated on effective control of customer demand. We have alluded to the two strategic levers that restaurant managers have at hand to manage demand and, thus, revenue. Those are duration management and demand-based pricing.⁴

Duration management. Restaurant operators typically face an

unpredictable duration of customer use, which inhibits their ability to manage revenue. To allow for better revenue-management opportunities, restaurant managers must increase control over the length of time customers are occupying their seats. To do this, they can refine the definition of duration, reduce the uncertainty of arrival, reduce the uncertainty of duration, or reduce the amount of time between customers' meals (see Exhibit 1).

Redefining duration. The length of time that guests use a table is usually measured either by the number of minutes or hours that they actually occupy that table or by the events relating to a meal (e.g., by the course or by the full meal). In either case, the restaurateur must know how long a typical guest will stay at a table for a given day part or meal. When duration is defined as a meal rather than as the time to complete a meal, the operator must be able to forecast meal length so that selling a meal essentially becomes selling a certain length of time in the restaurant.

The conventional wisdom is that restaurants sell meals, rather than explicitly selling time—although a few restaurants actually do sell blocks of time (e.g., seating parties every two hours, with a reminder to leave when the time is up). Rather than explicitly selling time, however, most restaurant operators will continue to sell time in the form of meals of predictable length. This could be done directly, in theory, by asking customers how long they will need the table when they make a reservation or request a table, but such an approach would require a radical change in thinking for both management and customers. Even though that approach would help change the definition of duration from the meal itself to the time involved in eating the meal, the tactic might put off most

⁴ As explained further in: Sheryl E. Kimes and Richard B. Chase, "The Strategic Levers of Yield Management," *Journal of Service Research*, 1998, in press.

guests—other than those who have a specific date or appointment after the meal.

Instead, most restaurant operators will have to keep track of the length of time that guests occupy a table during given day parts. From those observations the restaurateur could determine an average meal length, while also noting any variation in meal length. That is, the restaurant operator needs to know the average length of a meal, plus how close to the average most diners come. Wide variation of meal lengths (i.e., some very short, but others very long) makes forecasting more difficult and perhaps calls for management efforts to make the duration more consistent.

Uncertainty of arrival. Restaurant managers have always struggled with not knowing whether or how many guests will show up. Some rely solely on walk-in business and depend on queues to manage guest arrival (ensuring a steady flow of guests during busy times). Restaurateurs have long taken reservations to gain a forecast of arrivals, but that does not eliminate uncertainty of arrival, since not all guests honor their reservations and others arrive early or late. In any of those cases the restaurant faces the prospect of unused seat-hours. It is worth noting that in many countries a reservation for a specific time is regarded as a firm commitment, and guests from those cultures would be appalled at U.S. restaurants' sometimes cavalier treatment of reservations.

Restaurants taking reservations can involve their customers in arrival management (external approaches) or not involve customers (internal approaches) to decrease arrival uncertainty. Perhaps the foremost internal approach is overbooking, which most restaurants avoid. The primary external approach is to shift the liability for arrival to the customer by doing

such things as asking for deposits or guaranteeing reservations with credit cards.

Overbooking. Many capacity-constrained service industries use overbooking to protect themselves against no-shows. Restaurants have typically not used overbooking in this way but have instead relied on walk-in business as a buffer—although this strategy works only if enough walk-ins arrive at the right time.

The key to a successful overbooking policy is to obtain accurate information on no-shows, cancellations, and walk-in guests to set levels of overbooking that maintain an acceptable level of customer service. A manager can use simple mathematical models to develop appropriate overbooking policies by time of day, day of week, and time of year. A good overbooking policy balances the cost of unused tables with the cost of inconveniencing or displacing a party—bearing in mind that a guest denied a reserved table may not be especially forgiving. A restaurant that attempts an overbooking approach must develop good internal methods for selecting and handling displaced guests. Many industries base their displacement decision on time of arrival (if customers are late, their reservation is no longer honored), frequency of use (regular customers are never displaced), or perceived importance (important, high-spending customers are never displaced).

Following the approach of airlines, restaurant operators might ask customers who arrive during an overbooked time whether they would voluntarily relinquish a table and move to a different time (with an appropriate incentive). Airline customers seem to have accepted this practice, and some travelers even seek out the opportunity for a free trip when flights are oversold. Some upscale restaurants use a vol-

untary rescheduling system when they believe they will be oversold by asking willing patrons to switch their meal to a slower time. A call far in advance to customers who have reservations at the congested time with the offer of a discounted or free meal for switching to an open period could increase customer goodwill and increase profit. While proposing to displace customers can make them angry, making them wait without warning could well be worse. In the latter situation, many restaurants attempt to compensate for the inconvenience of an unexpected wait by offering guests a discounted meal or free items.

Shifting to the customer the consequences of not arriving is a practice that has gained currency in many service industries, although restaurants have been slow to adopt it. Hotels and airlines have used guaranteed reservations for many years and have thereby been able to reduce the number of no-shows. The American Express No-Show Initiative is attempting to accomplish the same thing for restaurants. Under this program, patrons are asked to give their credit-card number with a reservation and are warned that they will be charged if they do not come. If guests fail to honor their reservation (and give no notice), they are charged a fee (typically, \$15 to \$25 per guest).⁵ This program, in conjunction with educational advertising on the impact of restaurant no-shows, has helped increase customer awareness of the need to cancel unwanted reservations. Program managers report that only a small percentage of the guaranteed reservations have turned into no-shows that incurred a penalty—an indication that the program has succeeded.

⁵ Brian Breuhaus, "Handling No-shows: Operators React to Reservation Plan," *Restaurant Business*, Vol. 16, No. 1 (1998), p. 13.

A dessert and coffee bar, where guests can move to chat after a meal, provides a customer-friendly way to free dinner tables for the next dining parties.

Restaurants have long required a deposit for special meals (e.g., Mother's Day, New Year's Eve), although the practice may meet with customer resistance during times of low demand. Again, a deposit helps to ensure that customers will honor their reservation and also protects restaurants against last-minute cancellations.

Rather than require deposits in any form, some restaurants use a less obtrusive, more service-oriented method of reducing no-shows. These operators call their customers during the day to reconfirm their reservations. The call reminds the customer of the reservation and gives the customer a chance to cancel on the spot, if need be. The calls also create a reasonably solid forecast of the number of parties who intend to honor their reservations. For this approach to be successful, the incremental personnel cost associated with calling customers should be offset by the increased revenue associated with a reduction in no-shows.

Quid pro quo. To encourage customers to arrive on time, restaurants could offer a service guarantee. This is another practice that is not widespread in the restaurant industry, but has gained strength in other businesses. Some golf courses, for instance, offer free or discounted play to patrons who must wait more than ten minutes after their scheduled tee time. Restaurateurs could adapt the idea by offering discounted or free items to diners who are not seated within a specified length of time of their reservation.

Uncertainty of Duration

A restaurant operator who has dealt with the arrival-time issue must still be able to forecast meal length accurately, because this variable is the one that controls the number of tables available. With this information, operators of reservation-based restaurants can decide which reser-

vation requests to accept, and restaurants with a large walk-in trade will be better able to provide accurate estimates of waiting time for guests in the queue. As with arrival time, restaurant operators can exert control over meal duration. Internal approaches in this case revolve around making the meal length more consistent, while the external approaches involve encouraging guests to give up their table even if they choose to linger elsewhere in the restaurant.

By reducing time variability, managers will be better able to give accurate estimates of waiting time and determine whether and for what time reservations should be accepted. A restaurateur can work toward consistency of duration through menu design, process design, labor scheduling, and communication tools. Some restaurants have redesigned or established their menus according to the preparation and consumption time for each menu item. Menu items that exceed the established target for preparation or consumption are either reconfigured or eliminated from the menu. Likewise, menu items that cause customers to linger can be eliminated if they do not contribute to an increase in revenue per available seat-hour (particularly if the restaurant cannot encourage guests to move to another area of the restaurant for after-dinner drinks or munchies). Some chain restaurants have used the same approach to reconfigure or eliminate food-preparation and service processes to reduce the variability in service time.

The redesign of the menu and processes, in conjunction with improved forecasts of customer arrivals, should improve labor scheduling, which is a key element in controlling meal duration. Restaurateurs' common desire to minimize labor costs may backfire if reduced staffing leads to slower table turnovers and

longer meal times. The increased revenue resulting from faster table changeovers made possible by extra bussers or servers may more than compensate for the increased personnel costs. A revenue-management strategy would help a restaurant operator determine appropriate staffing levels.

Some restaurants have improved communication systems among employees and have increased control over duration by tracking the connection between food preparation and food delivery. By setting up appropriate communication mechanisms, kitchens can notify servers that a course is ready for pick up and servers can notify bussers that a table is ready to clear, thereby speeding the meal service (usually to the guests' delight) and making it possible to improve revenue per seat-hour. To assist with employee communication, restaurants have available to them information technology, such as table-management systems.

Selling time. People generally do not think of restaurants as selling a time-related product, except perhaps during lunch. Hotel guests who stay over expect to be charged for the additional night, but restaurant customers do not expect to pay extra if they stay at a table after the meal is over. Indeed, in many parts of the world once the guest is seated that table is hers for as long as she chooses. That guest, however, usually pays an explicit cover charge, something that is uncommon in the United States. This discussion applies to the American-style approach of selling a meal with a table, rather than the European attitude of selling a table with a meal.

Part of duration management involves finding ways to signal to guests that it is time for them to relinquish their table. Customers who unexpectedly linger after their meal is completed may prevent the manager from seating the next party.

A restaurant can use both implicit and explicit signaling devices to remind guests and servers that the meal is over. Many restaurants use subtle implicit approaches such as bussing the table, dropping off the check, or offering valet service. In a few restaurants, customers are asked to specify how long they plan to stay, but that is rare. Instead, the restaurant manager must rely on the timing of the courses and other implicit signals to remind the customer that the meal has ended.

Explicit approaches risk customer ire. The manager obviously cannot ask customers directly to leave, but the restaurant could attempt other, less offensive methods of turning the table. Some restaurants in the theater district of New York City, for instance, place an hourglass on each party's table. When the sand in the hourglass is gone, patrons have a visual cue to finish dinner and leave so that they will not be late to the theater.

Some restaurants provide a dessert and coffee bar where guests can move to chat. This provides a customer-friendly way to hasten guest departure and free the dinner table for the next party.

Reducing changeover time. Reducing the amount of time between customers (changeover time), increases capacity and revenue. This tactic will not offend a departing customer and should please the customers who are waiting to be seated. Reducing changeover time has become a common strategy for airlines. Southwest Airlines and the Shuttle by United both boast 20-minute aircraft turnarounds and have thereby been able to increase plane use.⁶ Some restaurants have instituted table-management systems that track tables in use, the progress of the meal, and when the bill is paid. Bussers check the table-

⁶ Sheryl E. Kimes and Franklin Young, "The Shuttle by United," *Interfaces*, Vol. 27, No. 3 (1997), pp. 1-13.

management system to find out when a party is leaving, so that they can clear and reset the table, thereby increasing the revenue per available seat-hour.⁷ A similar result may be obtained by developing a good communication system among servers and bussers so that employees know when tables are ready to be cleared and reset. It goes without saying that management could analyze and streamline the process of clearing and resetting tables to minimize changeover time.

Price Management

People commonly connect revenue management with offering discounts, but discounting is only part of the revenue-management story. When price is used as a tool of revenue management, managers must think beyond happy hours and two-for-one specials and develop methods for offering differential prices that make sense for the demand level at a given time. Hotels and airlines use various rules, sometimes known as price fences, to offer discounts on inventory that might otherwise not be sold at all to customers who might otherwise not purchase—while at the same time preventing customers who were going to buy anyway from taking advantage of a discount that they did not actively seek.⁸ Thus, coach passengers flying from Chicago to Los Angeles may pay nothing (for those using frequent flyer vouchers) or over \$1,500 for the same seat. The fares vary according to the time of the reservation, the days that the individual is flying, and group or company affiliations that the flyer might have. The fences can com-

⁷ Alan Liddle, "New Computerized Table Management Reduces Guests' Waits, Empty Seats," *Nation's Restaurant News*, August 5, 1996, p. 22.

⁸ See: Richard D. Hanks, Robert G. Cross, and R. Paul Noland, "Discounting in the Hotel Industry: A New Approach," *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 33, No. 3 (June 1992), pp. 40-45.

Exhibit 2

Types of price fences

Physical price fences

- Table location
- Party size
- Menu type
- Absence or presence of certain amenities

Intangible price fences

- Group membership or affiliation
- Time of day or week
- Duration of use
- When reservation booked
- Walk-in versus reservation
- Type of reservation (guaranteed or not)

prise almost any set of rules as long as they somehow make sense to the customer. In contrast, most restaurants offer the same menu prices regardless of the customer's demand characteristics. Perhaps the question for restaurateurs is whether they could implement some kind of pricing differential for busy times (e.g., Saturday night) and slack times. Early bird specials are a step in this direction, as are special prices for affinity groups and frequent-diner clubs. The next step is to create an overall demand-management program based in part on time-sensitive pricing.

Charging price premiums is generally not acceptable, as revealed by the work of Kahneman, Knetsch, and Thaler.⁹ Although it is possible to charge a higher price solely based on high demand, customers may resent being charged different prices for essentially the same menu item, unless they perceive a "fair" reason for the price differential. The Kahneman group suggests that consumers consider it more fair to set a "full" price during high times and then offer discounts during slack or

other unfavorable times rather than levy surcharges in the face of strong demand. However, they noted that most customers expect restaurants to charge relatively modest prices that allow the restaurant to fill to overflowing, with the resulting excess demand managed by queues. That strategy was once used by airlines, but more than a decade of airline revenue management has changed that approach, and the stand-by passenger is nearly extinct. The Kahneman group concluded that the timing of the sale (i.e., busy night versus slow night) is not viewed as a "fair" reason to change prices. In determining who pays which price, managers must develop logical selection methods that make sense to customers without offending their sense of fairness, because, as the Kahneman group discovered, customers will go out of their way to punish a business that has acted unfairly.

Fences. Restaurant operators might take into account the following attributes in developing price fences (see Exhibit 2). Physical attributes include table location, party size, menu type, and amenities, while intangible rate fences include group membership or affiliation, time of day or week, meal duration, presence or timing of the reservation (e.g., whether the party is a walk-in), and whether the reservation is guaranteed.

Restaurateurs may wince at the notion of charging higher prices for customers seated at more desirable tables (perhaps those with a view), but an informal differential pricing system already exists in some restaurants in the form of gratuities given to the *maitre d'* or host to ensure a preferred table. Some restaurants effectively charge by party size by including a mandatory service charge for large parties. Parties ordering from a reduced menu of items that are quickly prepared and consumed can be offered a lower price than parties ordering similar

but more involved items from a full menu. The restaurant could also charge extra for customers who desire a visit from the chef, under the rubric of a "meet the chef" night, or for those who prefer a particular server.

The purpose of intangible rate fences is to shift demand from busy times to slow periods, to reward regular and reliable customers, and to schedule the highest-margin business at the busiest times.

The supply of restaurant seats exceeds the demand in most markets, and managers frequently offer discounted prices in an attempt to fill empty tables. The point of revenue management is that the discounts should fit the restaurant's overall strategy. As long as the variable costs of the meal are covered, managers should consider offering discounts and other benefits for dining during off-peak times.

Broad-scale discounting is dangerous because price is one of the methods that customers use to determine the perceived value of a service—making fences important. Most quick-service restaurants face a problem of perceived value. Having once "told" the public that its burgers (and seven other items) are worth just 88 cents, McDonald's is thereafter hard-pressed to raise prices—at least on those items. One tactic to offset this difficulty is to offer early bird specials or two-for-one offers on a separate menu. This approach builds demand for slow periods, but does not diminish the customer's perception of the regular menu. Beyond early bird specials and the like, some restaurants offer specialty meals, wine-tastings, or live music during slow periods to attract business. Restaurants with meeting facilities solicit group and corporate business for slow times. Other restaurants have developed frequent-eater clubs that offer bonus points for customers who dine during off-peak periods.

⁹D. Kahneman, J. Knetsch, and R. Thaler, "Fairness as a Constraint on Profit Seeking: Entitlements in the Market," *American Economic Review*, Vol. 76, No. 4 (1986), pp. 728-741. For a summary of this work, see: Glenn Withiam, "What's Fair (and What Ain't Fair)," *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 27, No. 3 (November 1986), p. 7.

A Typology of Revenue-Management

Different industries are subject to different combinations of duration control and variable pricing (see accompanying table). Industries traditionally associated with revenue management (hotels, airlines, car-rental firms, and cruise lines) are able to apply variable pricing for a product that has a specified or predictable duration (Quadrant 2). Movie theaters, arenas, performing-arts centers, and convention centers charge a fixed price for a product of predictable duration (Quadrant 1), while restaurants, golf courses, and most

internet service providers charge a fixed price but face a relatively unpredictable duration of customer use (Quadrant 3). Many health-care businesses charge variable prices (e.g., Medicare versus private pay), but do not know the duration of patient use, even though some may try to control that duration (Quadrant 4). The lines dividing the quadrants are broken because in reality no fixed demarcation point exists between quadrants. Thus, an industry (such as restaurants) may have attributes from more than one quadrant.

Successful revenue-management applications are generally found in Quadrant-2 industries, because they can manage both capacity and price. Restaurants can shift to Quadrant-2 strategies by manipulating duration and price.

Although many restaurants use some of the tools described in the accompanying article, a strategic framework with which to evaluate and position such efforts has not yet been developed.—S.E.K., R.B.C., S.C., P.Y.L., and E.N.N.

		Price	
		Fixed	Variable
Duration	Predictable	Quadrant 1 Movies Stadiums and arenas Convention centers	Quadrant 2 Hotels Airlines Rental cars Cruise lines
	Unpredictable	Quadrant 3 Restaurants Golf courses Internet service providers	Quadrant 4 Continuing care Hospitals

Customers and groups who provide a substantial amount of business should be rewarded with benefits and discounts. Some restaurants offer discounts to customers who are associated with particular groups (e.g., AARP) or who are employees of certain corporations. Regular customers are sometimes guaranteed desirable tables and times, and restaurants can offer discounts to customers who make guaranteed reservations by a specified advance time.

A final consideration about pricing is that restaurateurs have traditionally used a cost-plus approach to pricing, typically setting prices so that the menu's average food cost is capped at some predetermined percentage (say, 30 percent). Individual items deviate from this average, of course, giving rise to the analysis

embodied by menu engineering. Menu engineering does consider the demand for a menu item, so it has an element of demand pricing, but an item's contribution margin (in some form) is also a strong factor.¹⁰ Perhaps adding a time-based factor to the analysis would make menu engineering an effective tactic for revenue management.

Unified Approach

Few of the ideas connected with revenue management that we have presented here are novel or untried. In fact, our examples are drawn from actual restaurants' activities. What is needed is a unified framework for developing and imple-

¹⁰ For example, see: Michael Kasavana and Don Smith, *Menu Engineering* (Lansing, Michigan: Hospitality Publishers, 1982).

menting strategic differential pricing. The accompanying box summarizes the strategic revenue-management positions of several industries by comparing their ability to control duration and to vary price.

Restaurants can adapt the principles of revenue management to increase revenue per available seat-hour (RevPASH) by emulating certain attributes of the industries that use revenue management successfully (i.e., those in Quadrant 2 of the box). The key elements are being able to predict the duration of a customer's visit and to establish variable prices based on a customer's demand characteristics. Restaurant operators can make duration more predictable by reducing the uncertainty of when (or whether) customers will arrive and by reducing the variability of the length of the meal. Operators can apply differential pricing and logical rate fences to build demand during off-peak periods and to establish appropriate prices for busy periods.

Many restaurants practice some of the revenue management approaches described in this paper, but do not yet have a strategic framework by which to coordinate these practices. The intent of this paper was to explain the elements of such a strategy. The strategies themselves will be as divergent as the many types of restaurant. Thus, researchers are challenged to use this framework to assist restaurant managers in identifying revenue-management opportunities and to develop appropriate duration-management and differential-pricing approaches. In the long run, achieving the full potential from revenue management lies in management's ability to market and manage every available moment of the restaurant as a unique product. This in turn requires that restaurateurs treat the time and length of the meal as a variable that should be as carefully managed as the service process itself. **CQ**