Revenue Management's Renaissance: A Rebirth of the Art and Science of Profitable Revenue Generation

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Revenue Management's Renaissance

A Rebirth of the Art and Science of Profitable Revenue Generation

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The era has ended when revenue management can stand alone as a tactical approach to room management. With technological and management support, revenue management must be and is being integrated into all aspects of hotel management marketing and operating strategies. Going beyond its role of managing room inventory, revenue management will consider total revenue contributions, including group business and its ancillary revenues. Because prices are essentially transparent, hotels will need to consider customer price elasticity and not simply match competitors' prices, with a goal of optimizing prices. Beyond that, revenue management can be used to manage all of the hotel's revenue streams, in part by considering the interaction of room sales and food and beverage sales. While revenue per available room (RevPAR) has been a good measure of performance, a revenue generation index, which compares competitors' RevPARs, is even more useful. Even more sophisticated is a revenue opportunity model, which monitors the effectiveness of inventory controls and analyzes the effects of revenue management decisions. Perhaps most promising is a customer-focused approach that tracks customers' purchases and targets promotions based on an understanding of customers' responses to prior offers.

Keywords: revenue management; price optimization; revenue generation index; customer-centric revenue management

In the late 1980s and early 1990s, the lodging industry adapted revenue management from airline yield management as an essential way to offer and control differentially priced, time-sensitive products to diverse market segments and thereby

increase hotel revenue (Hanks, Cross, and Noland 1992). However, after a flurry of initial investment and effort, an industry recession precipitated by the events of September 11, 2001, stalled advances in the discipline of revenue management. In this article, we explain the new momentum in revenue management, which we term a renaissance. To capture the initiatives in revenue management, we interviewed sixteen revenue management leaders, who represent some of the largest hospitality organizations. They have shared their views on the evolution of revenue management in the industry and the emerging issues which they face.

This article combines their insights with some of the foremost research in the field concerning promising innovations that will advance the state of the art in hotel revenue management. By focusing on pricing, group management, and other topics critical to hotels, these new developments evolve beyond classic, airline-based yield management programs. This article will explore the burgeoning revenue management renaissance and assess its potential impact on both hospitality and revenue management. It will profile the leading firms and most significant developments during this evolution of revenue management strategy, tactics, and capabilities. Revenue management's renaissance will see the evolution of a discipline that is more strategically oriented and customer focused, as well as more technologically sophisticated.

Genesis in the Airline Industry

In the early 1970s, airlines began experimenting with deeply discounted fare products that were designed to fill seats that would otherwise fly empty. Although these innovative fare products could generate considerable revenue from unused capacity, they also raised the possibility that high-fare passengers (who were going to fly anyway) would shift to the newly devised discounts (intended to draw additional flyers). To control the risk of revenue dilution, the airlines instituted two innovations with respect to the new fare products. First, these deeply discounted seats typically carried restrictions (such as twenty-one-day advance booking requirements) to limit their availability to travelers who could plan in advance. Second, the airlines also would limit the number of seats available to be sold at a discount.

Effective discount control required the detailed tracking of customer demand patterns and the "protection" of seats to be made available only to high-fare passengers. The systematic process of predicting demand and accurately controlling seat inventory allocation marked the beginning of what came to be called "yield management," since yield was an important airline statistic representing revenue per passenger mile (Cross 1995).

By the mid-1980s, increasing competition from airline deregulation encouraged the expansion of a wider range of discounts to increase market penetration and aircraft utilization. The resulting fare complexity required larger databases, more disciplined processes, and greater technological sophistication to ensure that the appropriate mix of fares was sold on each flight. Despite the increased costs in staff, processes, and technology, these new capabilities led to significant revenue gains. Lower fares filled empty seats and last-minute seats were saved for passengers willing to pay much higher fares than existed before (McGill and van Ryzin 1999).

Robert Crandall, then CEO of American Airlines, was one of the most vocal advocates. He famously said, "Yield management is the single most important technical development in transportation management since we entered the era of airline

deregulation. . . . We estimate that yield management has generated $1.4 billion in incremental revenue in the last three years alone." (Smith, Leimkuhler, and Darrow 1992, 31)

Adoption by the Lodging Industry

Marriott International was one of the pioneers in adapting yield management techniques to the hospitality industry. CEO J. W. "Bill" Marriott's interest was spurred by a chance discussion with American's Crandall in the mid-1980s. Marriott had many of the same issues as airlines did with regard to balancing supply and demand. After talking to various airlines about their practices, Marriott was sure that once significant differences in its businesses were addressed, these advanced concepts would work in the hotel business. The adoption of these yield management techniques enabled Marriott International to add between $150 million and $200 million to its top line (Marriott and Cross 2000). By the late 1980s, yield management began to be a part of the standard operating procedure for many hotels, enabling them to offer a broader range of rates to guests and take the guesswork out of allocating how many rooms should be sold at various rates.

Since airlines and hotels had similar problems managing a relatively fixed capacity of perishable assets generally sold in advance (at modest costs compared to the capital involved), initial hotel systems were patterned after the airline systems. The systems analyzed historical and future reservations, as well as booking patterns by market segment. Most of the hotel yield management systems had algorithms that would recommend overbooking and discount levels for a specific property (Kimes 1989).

However, one of the critical factors facing hotels was not an issue for airlines. Airlines fly published schedules and passengers generally adhere to the specific flight itinerary they purchase (especially with the limitation of nonrefundable tickets). Hotels have no such schedules. Guests independently determine their length of stay. They stay varying lengths of time at a property and may check in early or stay over beyond their scheduled departure date. Beyond that, hotels' room sales are often blocked by group commitments. Moreover, hotels seek considerable ancillary revenue from food and beverage sales (anticipating by several years the airlines' recent foray into ancillary revenue streams).

These nuances add tremendous complexity to the hotel problem. Accepting a guest for the last room on a Wednesday, even at the highest rate, could block a guest wishing to stay multiple nights. Forecasting and controlling inventory by price and length of stay could add another $25 million to $35 million in incremental revenue to a major hotel chain. As hotels and others adopted the discipline, the *yield* term from the airlines was discarded and the discipline came to be known as revenue management (Cross 1997, 140-41).

The adoption of these techniques was undeniably successful throughout the 1990s. Revenue gains above 6 percent had been reported, but typically, hotels attributed a 2 percent to 5 percent increase in revenue from these approaches (Sanket and Bowman 2004). Consequently, revenue management became an indispensable practice for most of the hotels in North America by the year 2000.

The Dark Ages

Revenue management had evolved to be an incredibly efficient process of managing demand at a hotel. Using sophisticated computer support systems and rigorous practices, revenue managers were

able to predict demand and "cherry-pick" the demand providing the best combination of occupancy and rate for any given location at any given time.

Just as the discipline of revenue management for transient guests was maturing as an established practice, its progression was altered by a transformational event. The terrorist attacks of September 11, 2001, had an immediate and devastating impact on travel, with extraordinary consequences on occupancy and rate. Their influence on the practice of revenue management at hotels had both short-term and long-term effects.

Following the initial shock of the tragedy and loss of life, the first response from revenue management was extremely tactical. After airline flights were grounded and travelers were stranded, the immediate aftermath was that millions of plans changed. "All hell broke loose," according to those in hospitality who were charged with facing the immediate challenges of managing the chaos. Jeanne Frensky, vice president of global revenue management at InterContinental Hotels Group (IHG), acknowledged that at the time, the questions to be addressed by revenue management had very short horizons: "How do you handle reservations on the books? To what extent should reservation guarantees and contracts be enforced?"

After the initial flurry of activity surrounding the management of existing reservations, the primary concern at many hotels about revenue management was to ensure that its practice was not inhibiting bookings. "Open everything up. Make sure you are not denying anything," was the initial direction from many general managers to their revenue managers. For some, the environment reinforced the belief that revenue management works only in a time of high occupancy. Since occupancies dropped 15 to 20 percentage points in the aftermath of the terrorist attacks, many general managers believed that there was no need for the discipline.[1]

Revenue management professionals considered those steps to be an overreaction. Nevertheless, the panic precipitated by rapidly declining occupancy even caused some hotels to institute audits to make sure that revenue management did not set rates too high or shut off inventory to transient guests. In some quarters, revenue management was seen not only as unnecessary, but as a possible impediment to recovery.

The uncertainty of future business after 9/11 may have had an even greater impact on the group and conference side of the hotel than on transient business. Much of the prior rigor around the group booking process was relaxed. One year after the attack, demand had still not recovered in many markets, and no one really knew how long it would be until travel rebounded. (Some markets recovered more quickly than expected; see Eisendrath et al. 2008.) "We felt like we needed to book everything that's got a pulse. If they were on the phone, we'd book it," one revenue management professional admitted privately, in a comment representative of many.

This behavior was the antithesis of revenue management philosophy. While these desperate tactics may have seemed appropriate in the dark days of 2001 and 2002, the intense competition for groups at any rate left low-priced groups on the books for years to come. "We had more vicious fights over less business," as one revenue management executive put it.

Compounding these issues were distribution concerns. Desperate to reach more potential customers because of the drastic drop in demand after 9/11, hotels sought wider exposure to customers through third party internet sites and "merchant models." Those merchant models allocated

some of the hotel's inventory at significant discounts (often 25 percent to 30 percent) to online merchants, such as Hotels.com and Expedia (Starkov and Price 2005).

Many saw this shift in distribution tactics as a way to keep volume up in a period of weak demand. Greg Cross, senior vice president of revenue management for Hilton Hotels, noted the benefits of the alternative channels. "We maintained very respectable occupancies even though the demand for business travel and business rates were in decline." Though this strategy may have been effective in a crisis situation, Brad Anderson, former corporate director of revenue management for Omni Hotels, commented that it led to confusion in the marketplace when customers could get deeper discounts from third party intermediaries than they could from the hotel itself. The merchant model also led to erosion in the relationship between the hotels and their guests as people began to shop the third party sites first. According to Smith Travel Research, the year after 9/11, industry profits were reduced by $642 million due to the impact of the merchant model on the U.S. hotel industry (Bowers and Freitag 2003).

Despite the near-term, tactical adjustments in the implementation of revenue management processes, some corporate hotel organizations still affirmed a long-term belief in the discipline, and investments in revenue management systems and processes continued. This continued affirmation forms the basis of the renaissance that continues even in the current unpredictable economic environment. For example, at 10:00 AM on September 11, 2001, Chris Elam, then vice president of revenue management for Global Hyatt Corporation, was pitching a million dollar upgrade to the firm's revenue management system to senior management. The meeting broke with the news of the tragedy, but the system upgrade was approved in November of that year, despite the fact that there was no recovery of travel demand in sight.

Many other large chains exhibited the same long-term belief in the value of revenue management to the organization. Mark Shafer, vice president of profit and revenue management at Walt Disney Resorts, commented that in 2001, Disney Resorts had a ten-year capital spending plan in revenue management, and that commitment did not change in spite of the dramatic change to the environment.

Similarly, prior to 9/11, Nell Williams, vice president of global revenue management deployment and systems strategy, and Sharon Hormby, senior director of total yield systems at Marriott International, explained that Marriott had a long-term plan for investing in growing business leaders for the discipline. They had set out to recruit a higher level of revenue managers who were not just technically and analytically capable, but were good communicators with a larger sphere of influence on the way the business would be run. These long-term plans were not derailed.

Revenue Management's Renaissance: From Tactics to Strategy

Though the economy and travel industry recovered, it was not until July 2004 that airline travel surpassed its 2001 peak (U.S. Department of Transportation 2006). During this period, many of the major hotel firms began to reconsider revenue management. With access to extensive databases and the ability to analyze customer behavior, firms recognized that they could do far more than simply manage room inventory.

"The events of 9/11 were a wake-up call for the industry," according to JoAnn

Cordary-Bundock, senior vice president of international revenue management for Marriott International. "We had to look more closely and examine our overall strategy and how revenue management should impact it as well as how we were to execute." Revenue management was entering a new phase that extended beyond simply managing demand. Revenue management should instead play a key role in creating demand.

This enlightened thinking is leading revenue management's renaissance. Traditional revenue management is morphing into a more expansive activity in which the process and analytical tools of revenue management can be used to help fill the pipeline continuously and cost-effectively with high-value business. For Hyatt, this meant a better understanding of the customer. "We need to change what we mean by revenue management," said Chris Elam of Global Hyatt. "It's more than controlling the rooms. It's understanding things like the elasticity of demand for different customer segments and the appropriate channel mix and, most importantly, understanding in a timely manner the needed response."

Carlson saw the opportunity to take the worst catastrophe for the industry in recent times and turn it into a valuable learning experience. Jim Rozell, vice president of revenue management for Carlson Hotels Worldwide, explained, "The experience taught us that we can use revenue management to reach out and get demand." With the broad span of the internet, hotels could create demand with targeted prices in market segments where there may not have been demand before. "So marketing and sales have become a huge piece of revenue management strategy at Carlson."

Similarly, at IHG, focus in revenue management shifted to analyzing the data from revenue systems to understand how to create demand. "The 'light bulb moment' after 9/11 was that it is all about pricing," explained Jeanne Frensky of IHG. "What are the things that help a customer make a decision? Is price at the forefront?" This applies to both transient and group business. Now, says Frensky, "revenue management is really joined with sales."

David Roberts, the current senior vice president of global revenue management for Marriott International, said that revenue management is now inextricably linked with market strategy. "It now means top line revenue strategy, and anything that relates to the top line, whether it is an issue with sales deployment, marketing or account volume. In fact, most of the market leaders have 'market strategy' somewhere in their title . . . but what they are responsible for is revenue management."

What historical perspective reveals about the post-9/11 recession is that it represented a turning point for revenue management. Battered by weak demand, the discipline faced challenges, but emerged with a more expansive, strategic role. Far from the previous reservations and inventory focus, a new role was emerging that encompassed marketing, sales, and channel strategy. These new responsibilities gave rise to two hallmarks of the renaissance: growth in people and influence, and new capabilities focused on pricing, competitive positioning, and understanding customer behavior.

From Strategy to Execution

As a result of its expanding role, revenue management is once again one of the most rapidly growing disciplines in the hospitality industry. A decade ago, most hotel groups had only a handful of individuals dedicated to revenue management. Now leading hotel chains have hundreds of staff members devoted to revenue management strategy, technology, support, and execution.

"In our corporate office, we have fifty people that work in revenue management," stated Greg Cross of Hilton. "That includes regional directors, an analytics team, and an IT [information technology] development team who work on continual enhancement of our database systems. It is standard that we have a director of revenue management in all Hilton, Doubletree, and Conrad Hotels. Many of the Embassy Suites also have a revenue manager on site."

"At Marriott, we used to have to fight to have our voices heard. Now, there is not a significant decision or strategy that goes forward without someone from revenue management at the table," explained Nell Williams. This expanding influence is evident in the breadth of Marriott's organization. "When you look across Marriott, including corporate, regional, and on property, I would say there are approximately four hundred people focused on revenue management," according to Bruce Hoffmeister, former senior vice president of global revenue management at Marriott International.

Some hotels have ramped up quickly. "A few years ago, we formally decided to put revenue managers in all our properties," explained Chris Elam of Global Hyatt. "The regional directors said that we needed support at the individual property. We needed the top level support and between 90 and 120 days, we placed over one hundred revenue managers in hotels. We found some from inside the company. Some were directors of rooms, some were reservations managers, and some came from other organizations that were doing revenue management and perhaps ahead of us on the curve."

Managing Revenue Management's Relationship with Sales

As revenue management has grown more pervasive in hospitality, the challenge has shifted from seeking to have an influence in more decisions to managing an integrated process with revenue management, marketing, and, particularly, sales. When it comes to executing a revenue management strategy, the ability to work in a coordinated manner with the sales force is critical. This is sometimes difficult given the diverging viewpoints and approaches of the two departments. As compared to revenue managers, sales people often are more volume driven than profit driven.

"Ten years ago, the relationship was a bit adversarial," admitted Greg Cross of Hilton. "Since we were a new organization, it was difficult to get a seat at the table when decisions were made. There was no chair for revenue management at the time. We had to earn the respect of the salespeople so that, if we made a recommendation to pass on a piece of business, we knew that there was higher-priced business out there."

"Initially there were many frustrations between the sales teams and the revenue teams," Bruce Hoffmeister of Marriott elaborated. "Many of the salespeople had been here fifteen or twenty years and had not had to consult anyone before taking an action. It was an evolution. Now we have much more of a dialogue between the two." This dialogue comes from each group appreciating the roles of the other group.

In addition to the requirement for more profitable business, customers' increasing sophistication challenges the coordination between revenue management and sales. "Customers are becoming more analytical," stated Jeanne Frensky of IHG. Relying solely on relationships does not work for either the hotel or the customer. "Today's customer is looking for data, as well. They need us to work with them to meet their objectives. Sales people are morphing into strategic thinkers who are

working with revenue management to meet the customers' objectives."

Finding the Right People

As the discipline of revenue management evolves to include strategy, understanding of customer behavior, and partnering with the sales force, the skill set of the revenue management professional must adapt to meet these needs. Finding the right mix of talents to execute today's more comprehensive vision of revenue management was identified as a critical challenge by most revenue management leaders interviewed. Demand for qualified revenue managers has more than doubled in the past four years (Chase 2007). Today, the revenue management practitioner must be analytical and detail oriented, yet capable of thinking strategically and managing the relationship with sales.

"Initially, many of our revenue managers came from the reservations area. It evolved to become much more analytically focused with people who understood the impact on the business's bottom line," explained Bruce Hoffmeister of Marriott.

John McEwan, director of revenue strategy for Vail Resorts, agreed that revenue management now requires a broader, more strategic skill set. "We look for people with strong educational backgrounds in economics and hospitality. We also look for people who are very good analytically and who have good people skills. The ideal person is a combination of all those pieces—and they're hard to find."

"Finding, hiring, retaining, and challenging the right people is a much bigger issue than I appreciated in the past," added Dave Roberts of Marriott. "Some people, even quantitatively minded people, don't find it interesting. If you don't find it interesting, you are not going to do a good job. However, if you can find the right people, the ones who are really into it, the ones who are thinking 'how can I make more money for the hotel,' then they are going to have an impact. They will capture revenue opportunities that others would miss."

To help identify those who have a passion for the discipline, Omni has developed a mechanism for cultivating managers and development from within. Brad Anderson, formerly of Omni, described the methodology: "We have established a process that makes it easy and attractive to 'test-drive' revenue management for six months. The candidates go through about 150 different tasks, and once they are done, we regroup to evaluate their response. Did they like it or do they want to call it quits?"

Jim Rozell hinted that Carlson has a distinctive perspective on identifying talent.

> It is hard to find people who can mine the data and find the root cause of the problems quickly and efficiently and, at the same time, appreciate the marketing issues. The people who are really good at revenue management have the mathematical and data skills, and they also have a little of the artist in them. They say, 'These two things sound good together, but if I did this, it might sound better.' I've found that the people who are really successful at revenue management are also passionate about music. There seems to be a correlation between musical aptitude and revenue management.

Developing and Supporting Talented Resources

Once the right people are identified, it has become critically important to ramp them up quickly so that they will perform effectively and consistently in a rapidly evolving environment. Moreover, since talent is scarce, hotels must maximize the value of team members by providing robust training and analytical tools.

Developing and supporting talented resources has become a key challenge in the revenue management renaissance.

"We are looking for new and easier ways to train personnel," said Greg Cross of Hilton. "We have pretty high turnover in the hotels, and you cannot take two or three years to teach someone the job. In that amount of time they might be gone. So we provide them with vast and efficient training programs." The training issue is even more difficult in the resort environment. "We don't have the benefit of relatively quick cycle times," said John McEwan of Vail Resorts. "In most hotels, every Wednesday behaves much like any other, so if you get one Wednesday wrong, you can learn something to impact the next three or four Wednesdays. In our environment, if we get a week in March wrong, we don't have the opportunity to correct it for another year."

As organizations look for faster and better ways to train, they are turning to technology. According to JoAnn Cordary-Bundock of Marriott, "It is getting very difficult and very expensive to get everyone together in a classroom environment. So, we set up virtual classrooms on the internet. This doesn't take the place of a two-day classroom session, but it enables us to utilize technology to be more efficient."

In addition to improving the efficiency of training, hotels are constantly looking at using technology to automate many of the functions previously required of the revenue managers. "At Hilton, we are developing automated tools that will do a lot of the thinking and a lot of the work for them to minimize human intervention in the process," according to Greg Cross. The improvement in technology will free revenue managers to think strategically.

As databases grow exponentially, the focus of many in revenue management has turned to filtering the opportunities to avoid information overload. Robert Resurgent, corporate director of revenue management for Sunstone Hotel Investors, explained, "The toughest part of the job is to take all the data we have and turn it into something meaningful for the revenue manager and the GM [general manager]. You see a thousand numbers on the page. We have to find the four that are most relevant. Then we must do that every day."

Revenue Management's Renaissance: Developing New Capabilities

The shift from a tactical focus to a strategic focus creates broader responsibilities for revenue management. As the renaissance unfolds, hotels look to revenue management to help understand how customers respond to offerings in the marketplace. This customer-centric thinking focuses leading firms on the fundamental issues of pricing and customer value.

Attention to these two fundamental issues is a radical departure from previous inventory-focused revenue management, which took pricing and value as assumptions. Revenue managers opened and closed rates, but rarely asked the question: "Is the rate right to begin with?" The weak demand of the post-9/11 recession and the effort to win back customers lost to the internet merchant model focused new revenue management efforts on price. "Understanding demand at specific price points and length of stay has been the greatest advancement in our understanding of our business model," says Daniel Abernathy, vice president of sales and marketing for John Q. Hammons Hotels and Resorts.

The emphasis on price resulted in exploring customer value, especially with regard to group business. To answer the pricing question correctly for groups, spending on function space, catering, and other ancillary revenue streams had to be considered. Enhanced understanding of how customers valued these services and offerings led to the notion that revenue management could provide value beyond just room revenue.

The following sections will explore four new capabilities that have arisen during the renaissance as a result of the shift in focus to pricing and customer value. They are retail price optimization, group price optimization, total hotel revenue management, and advanced performance metrics and measurement. These sections will discuss the genesis of the capabilities, the theory behind them, and the analytics that drive them.

Optimizing Price, Not Just Inventory

The reason that the original revenue management processes that were adapted from airline yield management systems are not appropriate for the hospitality industry is that they were focused primarily on inventory allocation. Unlike hotels, airlines have difficulty differentiating their brands, products, and services from their competitors. Also unlike hotels, price differentiation has traditionally not been a major issue for airlines, which almost invariably match competitors' fares dollar for dollar. The science of airline yield management consisted of forecasting demand at the fare class level and then opening and closing the fares to fill the airplane with the most profitable passengers (Talluri and van Ryzin 2004).

Instead, the hotel industry developed more granular forecasts of demand for the individual rate categories by length of stay. By the late 1990s, a number of the larger hotel firms, led by Marriott, Hilton, InterContinental Hotels, and Starwood, implemented optimization systems to predict transient demand, optimize the rate classes offered, and impose length-of-stay controls. However, "optimization" was still rather narrowly defined, as it was limited to managing predefined rates in preestablished rate categories. The objective function for virtually all hotels remained to "cherry-pick the best blend of rates and lengths of stay" from given demand, according to Brad Anderson, formerly of Omni. As with the airlines, the sophisticated technology and optimization algorithms were focused on selling the right number of rooms at a given rate, not on the rate itself.

After 9/11, there was a greater recognition of the impact of managing the rates themselves, and not just the number of rooms sold at each rate. With soft customer demand, revenue management systems often left all discount rates available, thus raising the question, "How low should we go?" According to Jeanne Frensky of IHG, "The falling demand and the rate transparency resulting from the advent of the internet caused us to focus more on pricing." Added Craig Eister, director of pricing for IHG, "Some hotels thought that they could just drop rates as low as possible to attract people to the hotel." The fear of many in the business was a "race to the bottom." Greg Cross of Hilton put it this way: "You know the old saying, 'We are only as smart as our dumbest competitor.'"

A 2006 study on yield management practices in the travel industry confirmed those fears (Cooper 2006). It showed how a downward spiral in prices can result from a naïve application of the principle that inventory predicted to be empty should be made available at the lowest price (that is, whatever price is needed to fill it). These effects occur when systems do not take into account accurate assumptions about the price responsiveness of customers. When demand is soft, yield management systems recommend opening the lowest rate programs. Many in the industry suspected that there were times when the low rates would neither stimulate nor capture additional demand, but no analytics existed to support those theories.

"Controlling inventory and length of stay is no longer enough. We need to price better and more accurately," said John McEwan of Vail Resorts. For the most part, hotel pricing is still subjective. While central revenue

management and brand strategists will recommend price guidelines to the individual properties, it is often still the province of the individual hotel to make the final call. As revenue management began focusing on strategy and pricing, leading firms realized that new pricing analytics were required to support this decision process.

Framing the Problem

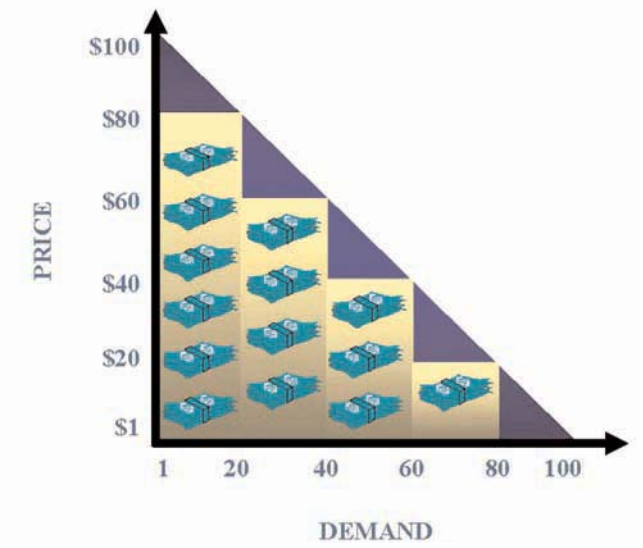
"We need to make pricing more scientific," according to Sharon Hormby of Marriott. "There are branches of pricing science in other industries which we have looked at and applied with some success, but the problem is much more difficult than inventory optimization."

Sidebar–Learning to Price the Tiers, Not Just Tier the Prices

"Optimization" systems for hospitality Revenue Management traditionally have been limited to optimizing the inventory to be sold at a given rate. The objective of the optimizer is to allocate the number of rooms sold at each rate in order to maximize revenue. If the rates at which the rooms are sold accurately match the perception of value for the rooms in the marketplace, then total revenue will be optimized.

In the example below, a downward sloping curve represents the demand for rooms at any given price point. The optimal number of rooms for each rate are allocated so that the captured revenue (area under the curve) is maximized.

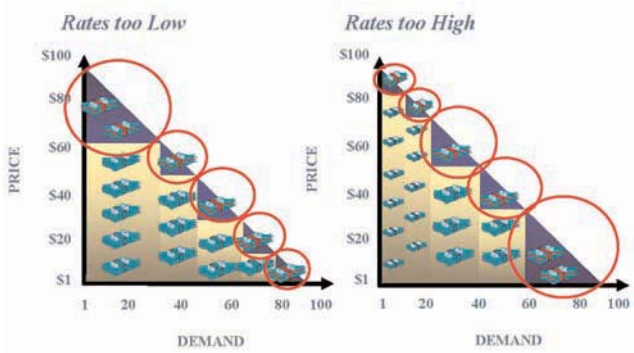
Exhibit 1:
Room Demand at Selected Price Points



Notice, however, that inventory optimization only affects the X axis. The Y axis in this example is price, and price is assumed to be given in most Revenue Management systems. If the price is not optimal, however, the Revenue Management "optimization" system will not capture all the available revenue in the marketplace. If rates are lower than the customers are willing to pay, a "consumer surplus" is generated. If rates are higher than customers are willing to pay, the hotel sells fewer rooms than it could have, despite leaving discount rates open. In other words, the hotel has left money on the table.

Sidebar (continued)

Exhibit 2:
Revenue Effects of Nonoptimal Price Points



Indeed, the pricing problem presents a substantial challenge. The typical hotel must have rates available for at least 365 days in the future. Let us assume that the hotel must set rates for three rate segments and ten room types. Multiply this decision by seven lengths of stay and you have 76,650 potential rate decisions every day! Each decision must account for a multitude of factors, including occupancy levels, price sensitivity of demand, and competitive price positioning. To add to the complexity, each of these factors may vary by season and by day of week.

Aggravating the fact that the decision process is complex is the cost for even a small error in price. The financial damage can be massive. A $1 reduction in average daily rate (ADR) in a five-hundred-room hotel with 70 percent occupancy would decrease annual room revenue by $127,750 (Steed and Gu 2005).

Given the complexity of the problem and its substantial financial impact, it is little surprise that pricing has become a focus. Leading hospitality chains have realized that there is a substantial competitive advantage to be gained by providing their hotels with robust analytics and tools to improve pricing strategy and tactics by which pricing evolves from a highly manual, subjective process into a more automated, precise process. This automation and precision provides insights into customer behavior and frees revenue managers to develop these insights into actionable strategies.

Understanding Customers' Willingness to Pay

The relationship between price and demand is simple to grasp, but elusive to measure. "It is a fact of business that when price goes down, demand goes up," notes Jim Rozell of Carlson. But determining the elasticity of that interaction is a tremendous challenge.

The difficulty in measuring the impact of rate on demand for rooms lies in the many dimensions of booking decisions. First, it is difficult to isolate the nonprice drivers of demand (such as seasonality and day of week) from the effects of price on guest booking behavior. Price responsiveness must be measured at a particular location and at a particular point in time if it is going to be accurate. Adding to the complexity, a guest's willingness to pay varies as the arrival date approaches. Conventional wisdom suggests that customers booking farther out have been shown to be more price

sensitive than those booking at the last minute, and some research supports this view (Schwartz 2000). Beyond that, a customer's sensitivity to price in part will be determined by the alternatives available.

Price sensitivity is often measured by elasticity of demand, defined as the percentage change in demand associated with a particular percentage change in price. IHG began its quest to measure elasticity a few years ago. Jeanne Frensky explained, "There is a relationship between price and demand. We know we needed to drop some rates when demand was soft and all the competitors dropped theirs, but we weren't sure how much. So we tried to understand more about customers' price sensitivity and began doing some tests to analyze customers' sensitivity to price." IHG conducted price elasticity analysis for specific brands and in specific regions. "It took a lot of time to look at the data and sit down with the hotel management and analyze the results and prove them out," she said. "The more sophisticated ones, particularly the upscale properties with a dedicated revenue manager, understood."

Craig Eister of IHG elaborated, "Our initial elasticity studies gave us a good directional measurement: Are we elastic or inelastic? Should we increase rates or lower rates? But the hotels wanted more information. 'You are telling me to raise rates, but how much?' That is when it dawned on us . . . it is possible for us to compute the best rate for them at that point in time. That is the beauty of price optimization."

Managing Market Positioning

Rate transparency has elevated the importance of optimizing price based on customer price elasticity measures and positioning against substitutable alternative rates. The arbitrage opportunities that existed when hotels knew more than consumers did about price alternatives in the marketplace have evaporated. Consumers now have the benefit of knowing all competitive rates when shopping for a room. Consequently, pricing errors are much more visible and customers are quicker to punish misaligned prices by booking away from hotels that have rates too high or pouncing on rates that are below market.

Similarly, prices are more transparent to competitors. Hotels can monitor their competitive position with tools, such as MarketVision, PriceTrack, and RateVIEW, that shop rates and availabilities in their competitive set. However, the "race to the bottom" has not occurred, because hotel products are more differentiated than airline products are, and hotels have been able to use their own web sites to amplify differences in product attributes.

This differentiation creates opportunities for hotels to position themselves favorably in relation to competitors' prices. The combined forces of differentiation and transparency create a compelling case to apply price elasticity to optimize positioning in the marketplace, and not just to match competitors' rates. In this new environment of transparency, hotels are realizing that "it's not just about pricing, but market positioning," according to Craig Eister of IHG. For example, one hotel may not have changed its rate, but when its competitors reduce theirs, that hotel's rate has effectively risen.

Robert Resurgent of Sunstone offered the critical view from the hotel management firm perspective: "We need to find a price that works and is good value for the customer. . . . That's all they want. They may not be interested in saving ten or even twenty bucks, but if we are more out of line, we are going to see some erosion."

Rate shopping tools have not only provided hotels with the opportunity to view competitors' future rates, but also supplied

rich, historical data to incorporate competitive rates into their analysis. Knowledgeable hotels are using these data to analyze pricing strategy, price sensitivity, and channel strategy. Leading firms are putting it all together to develop powerful price optimization capabilities.

Incorporating All Factors to Optimize Prices

Emerging price optimization systems are able to set rates for each property and arrival date based on the demand forecast, the elasticity of demand in the market segment, and competitive rates. The systems crunch these data to simulate multiple price–demand scenarios and recommend optimal rates that maximize revenue. After revenue managers review and approve the rates, the systems automatically distribute those rates. Such capabilities are being integrated with the existing architecture of current yield management systems that determine the number of rooms to be sold at each rate and set length of stay and other inventory controls.

While the concept is still in its infancy, many believe price optimization will be the next valuable step in the evolution of revenue management. Price optimization marries an understanding of customer buying habits with market dynamics to predict what the customer is willing to pay in a wide variety of circumstances. Leaders see the new capability as driving bottom line results for hotels and creating more consistency in the way rates change over time. "It's a win-win because the customer will see prices that make sense and change in a way that make sense. And we will maximize our revenue because of that," said Craig Eister of IHG.

Jim Rozell of Carlson added, "The future is in using advanced demand forecasts coupled with elasticity effects and incorporating the competitive landscape. To me, price optimization is the future of revenue management."

Price optimization may be capable of generating the most dramatic increase in revenue productivity since the advent of revenue management. "Price elasticity and pure pricing have the potential for 4 to 6 percent increase in revenue," according to Daniel Abernathy of John Q. Hammons. Initial research provides strong evidence of the potential benefits of price optimization. A Revenue Analytics study of over seven hundred luxury, full service, and limited service hotels including multiple brands and several regions predicted that price optimization would increase transient revenue by 3 percent to 4 percent—over and above the revenue gains from traditional revenue management.

Optimal Group Pricing

Group revenue management, which constitutes as much as 60 percent of revenue for many full-service and luxury hotels, also presents a rigorous opportunity. Yet, in contrast to the tremendous sophistication applied to transient revenue management, many hotels have only limited tools available for group revenue management. Nevertheless, hotel chains are realizing this opportunity and developing robust group capabilities.

In the majority of hotels, the revenue manager's job is to set the parameters around which group business is to be accepted, based on transient demand and profitability requirements. Because hotel managers understand the risk of filling with lower priced group demand long before transient bookings materialize, many hotels execute a group strategy determined by "displacement cost analysis." That is to say, groups are used to fill the house as long as anticipated transient demand is not denied (Choi 2006). A chief role of revenue management in this group analysis is projecting transient demand for future arrivals so that rooms can be pro-

tected for higher price transient customers. Some of the more sophisticated revenue management systems perform a statistical forecast of transient demand and rate to enable an automated displacement cost analysis to aid in the determination of whether to accept a group.

Indeed, some firms realize that even a sophisticated displacement analysis is not sufficient. Tim Wiersma, vice president of Host Marriott Corporation, elaborated on the issues facing hotels: "We are really good at managing short-term demand, but we need a more sophisticated forecast to predict long-term cycles so that we can get the optimal mix. What is the demand situation going to look like? What is the supply situation going to look like? We are accepting groups that may work well in today's or even tomorrow's market, but what about three years down the road?"

Consequently, group analysis will go beyond looking at displaced transient demand to consider displaced revenue, as explained by Daniel Abernathy of John Q. Hammons: "We need to look at the total displaced revenue, but probably the greatest area of insight and growth will be more analysis of what the group expectations were at the time of booking. There may be greater demand for other groups at higher values." Indeed, hotels are developing powerful group statistical forecasts to predict group demand at a room-night level. Although group demand is highly variable by nature, hotels are finding that group statistical forecasts with adaptive learning features outperform traditional methods of predicting group demand. Craig Eister of IHG put it this way: "Group statistical forecasting is essential to understanding the complete revenue management picture. It allows us to determine the demand for this important customer segment with greater precision."

Another breakthrough in the management of groups is group price optimization, a hotel-specific application of a more general business-to-business bid optimization (Phillips 2005). Leaders in group revenue management are adapting the principles of price optimization for transient demand to apply to groups, using a market response model that predicts the group's willingness to pay based on characteristics of a particular group and booking request. This market response model drives a calculation of "win rate" at various price points. Then, a contribution model predicts the group's contributive value at various price points based on room revenue, food and beverage revenue, and ancillary revenue. Contributive value also accounts for the cost of displacing future group or transient business. Multiplying the win rate by the contributive value permits an optimization on expected contribution. "It's great and I think there is huge benefit to it, just explaining that," says Dave Roberts of Marriott. "It's the contribution curve and the win rate curve, and you multiply them together to get the optimal curve."

Group price optimization is another example of the expanding influence of revenue management on sales. This type of capability can recommend an optimal rate with a band of tolerance around it for the sales force to exercise its discretion. "The people that love it are the salespeople," notes Dave Roberts. "They love it because it's intuitive, and it doesn't waste their valuable time."

Like measuring willingness to pay on the transient side, the science behind group price optimization is a straightforward concept, but the analytics behind it are difficult to execute due to complexity of the problem. Nevertheless, leading hospitality firms have recognized that this complexity signals an opportunity to augment group revenue streams of full-service and luxury hotels, including revenue streams from food and beverage and function space. Indeed, it is these ancillary revenue streams where a significant number of the interviewees saw great opportunity for the expansion of revenue management.

Managing the Entire Revenue Stream: Total Hotel Revenue Management

For most hotels, a discussion of the trade-off between transient and group revenue is not complete without consideration of ancillary revenue. For many hotels, guests' ancillary spending could be a significant portion of the total revenue picture, and could provide an even higher portion of profitability. "If you are looking at a resort hotel, it's even more important to consider all those ancillary revenue streams," such as meeting rooms, catering, spas, and golf, according to Jeanne Frensky of IHG. "If you look at Asia Pacific and the Middle East, they can make more profit from food and beverage than they do rooms. You've got to pay attention to those ancillary revenue streams because they are no longer ancillary. . . . They are your primary revenue stream."

Despite the potential for substantial revenue from function space and catering, sophisticated revenue management techniques have not typically been applied to those revenue streams. This is now ending despite the difficulty of predicting the interaction of function space with room sales and food and beverage demand (Kimes and McGuire 2001). "To truly perform revenue management, the sales team must look not only at room pricing, but catering pricing, meeting rooms, and all the other revenue streams," said Daniel Abernathy of John Q. Hammons.

"We are now looking at the whole hotel and how we are going to maximize our profitability by taking into account total revenue and not just room revenue," explained Bruce Hoffmeister of Marriott. "We are willing to give a lower rate on rooms if we get extra business from the food and beverage side. If we take the group, it gives us a base of business that allows us to drive the optimal mix at the property. That is a beautiful thing."

Incorporating ancillary revenue into the group analysis is a first step toward total hotel revenue management. But Bruce Hoffmeister cautions, "It is simple to describe, but when you start peeling back all the layers and the complexity, it becomes a real challenge." Among those challenges are the incremental costs associated with food and beverage sales, for instance, as well as complimentary rooms for meeting organizers—not to mention the opportunity cost of displacing potential future groups and transient room-nights.

In addition to incorporating ancillary revenue streams in evaluating group business, a few hotels are taking a leading role in applying revenue management concepts to these revenue streams. "The hotels need to do a better job of analyzing all potential business and optimizing the entire profitability, but they have a long way to go, especially as it relates to revenue management systems," according to Tim Wiersma of Host Marriott. "We need to be able to forecast the whole so that we can revenue manage the entire box."

Hilton now invites sales, catering, and convention services representatives to its revenue management conferences. Greg Cross of Hilton explained, "We've implemented an upgrade of our forecast technology that allows a complete forecast of catering as well as availability of public space. So we have a common need to consistently handle and process leads. It is a joint decision between sales and revenue management, so it is important to cement the relationships so that we are all working together rather than in individual silos."

Disney Resorts has been, perhaps, the most aggressive in broadening and exporting revenue management to all aspects of its business. "When we begin to look at other lines of business, the variable costs often become significant, and you have to focus on the profit side, because revenue optimization and profit optimization are not one and the same. In fact, the actual name of our department is revenue

and profit management," observed Mark Shafer. "We are doing revenue management for the food and beverage at our restaurants. We don't have fixed capacity in our restaurants, since turn times affect available capacity. So we have forecasts which enable us to predict available capacity and optimize our inventory."

Another aspect of total hotel revenue management is optimizing promotions, which have traditionally been a pure marketing function. Mark Shafer believes there is significant opportunity from improving promotions and integrating them into revenue management systems. "At Disney, we are extremely data rich and it gives us great insight into our guests needs," he said. "We take these learnings and feed them into our revenue management systems."

Advances in Performance Measurement

Another expanding role for corporate revenue management is overseeing the execution of revenue management strategy. Leading firms are developing rigorous processes and sophisticated analytics to measure the performance of revenue managers in their pricing and inventory control decisions. Hotels are following the old adage, "When performance is measured, performance improves. When performance is measured and reported back, the rate of improvement accelerates" (Monson 1985).

Many hotels are devoting considerable resources to this effort. "We interact with every one of our hotel directors of revenue management and give them an annual review of the implementation of pricing strategies and the execution of our revenue management programs. The property director receives a numerical grade after an audit," said Greg Cross of Hilton. "In addition, our analytics group is constantly monitoring pricing and availability in the distribution channels to make sure that they are not undercutting themselves."

"A revenue management organization can have a tremendous impact on the success of a company," acknowledged Bruce Hoffmeister of Marriott. Accordingly, many revenue management organizations are beginning not only to oversee the process, but also to measure the effectiveness of decisions on pricing and inventory controls with regard to the bottom line. This expanding role, coupled with robust performance measurement analytics, is leading to increasingly sophisticated metrics to measure revenue performance.

The scrutiny of management and investors on financial performance is accelerating the need for sophisticated measurements of revenue performance that are easily understood and directly correlated to the activity being evaluated. Additionally, a good performance metric should lead to relevant action being taken to improve the particular process addressed. For practitioners of revenue management, these measurement objectives are not always easily attained. To begin with, the initial assessment of performance comes from comparing actual results to budget estimates, which, more often than not, are based on optimistic predictions of the future. While comparisons with budget are valuable for financial planning purposes, they are not particularly helpful in evaluating revenue management performance.

Dave Roberts of Marriott explains, "Naturally, we must look at total sales versus budget, but the budget is often set well in advance and to a large degree, the hotels that beat their budget by a great margin have done so in part because the market took off. For those that miss their budget, it can be because the market is weaker than anticipated. This just means that revenue performance needs to be evaluated in the context of business conditions."

Occupancy and ADR are correlated to revenue management effectiveness, but revenue per available room (RevPAR) is a far better measure because it includes both occupancy and ADR. "Initially, we were very focused on the basics: occupancy percentage and ADR. We evolved to revenue per available room," said Craig Eister of IHG. For most hotels, RevPAR has emerged as the bellwether metric (Ismail, Dalbor, and Mills 2002).

Despite their usefulness, RevPAR comparisons can be deceiving, particularly when average RevPAR across brands is distorted by extreme values at either end of the distribution. For example, brands that have a disproportionate mix of major market locations or luxury properties would have a deceptively high average RevPAR (Enz, Canina, and Walsh 2001). Still, average RevPAR can be a valuable indicator of revenue efficiency when one is comparing an individual hotel's performance over time or to a well-defined competitive set.

Craig Eister explains, "We've evolved our analysis to RevPAR versus our competitive set. If my RevPAR is up $5 in a year, but my competitors are up $10, that isn't very good." For this purpose, hotels have evolved a metric known as the revenue generation index (RGI), which is a ratio of the hotel's RevPAR divided by the RevPAR of the competitive set. The RGI comparison is a more accurate assessment of revenue productivity for a particular property, especially when considering the economic environment in which the hotel is operating.

Because many factors can drive RevPAR and RGI, such as brand positioning, quality of service, and sales effectiveness, a few leading hotels have sought to develop methodologies that isolate revenue management efforts from other demand influences. New metrics far beyond traditional measurements of market share, RevPAR, and RGI include simulation models specifically to measure the effectiveness of revenue management decisions. The importance of these new metrics is tied to the ability to make informed decisions from them. According to Bruce Hoffmeister of Marriott, "Any time you look at a post audit, you have to guess how much value a decision brings, and you have to determine what you would have done had you not taken that path."

Marriott pioneered the development of a revenue opportunity model (ROM) to measure the effectiveness of inventory controls. The same concept can be applied to measure pricing performance. A ROM evaluates the impact of revenue management decisions by comparing the actual decision to two scenarios. The first scenario compares the actual revenue achieved to what would have been attained in a "no control" scenario (without the benefit of intervention by revenue managers), and the second scenario is (in hindsight) the optimal revenue that could have been achieved (Davenport and Harris 2007, 43). Dividing actual revenue by optimal revenue produces a "revenue opportunity index" (typically stated as a percentage) that can be tracked over time and utilized to identify problems and opportunities. "It's Monday morning quarterbacking," Bruce Hoffmeister pointed out. "We look at how well we did versus how well we would have done without those decisions."

Sharon Hormby of Marriott explained, "While there has never been one single metric, one of the most useful metrics which we employ on a day-in and day-out basis is the revenue opportunity model." Nell Williams of Marriott added, "It employs a lot of metrics within one statistic." Hormby elaborated further: "When we incorporated the revenue opportunity model into our One Yield system, the user was able to drill down and click on what they wanted to see. The user will ask, 'What decisions could we have made differently? Are there patterns? Should we change strategies?'"

Omni has a developed a similar performance measurement report using simulation

modeling to analyze revenue management decisions. "The system tells you what you did during this period of time and compares it to a set of controls as if all the reservations had been taken on a first-come, first-served basis," said Brad Anderson, formerly of Omni. Then the performance report compares actual revenue to the optimal revenue possible, given perfect information after the event. "If I knew then what I know now, what decisions would I have made differently? So if you achieved $500,000 during the week, but the system says 'you could have achieved $550,000,' we have left a lot of money on the table. That is the cornerstone. How do we know if we are doing well or not? What do we need to do to get closer to that $550,000 mark?"

However, even these sophisticated metrics have their limits. RevPAR, RGI, and ROM typically look only at transient room revenue generation and do not take into consideration revenue that could be generated from groups, public space, catering, and other sources. More important, those metrics may not take into account the quality of the revenue, since some revenues are more profitable than others. In revenue management's renaissance, a number of additional measurement techniques are evolving to measure financial performance.

Bruce Hoffmeister described Marriott's relentless pursuit of more rigorous analysis to focus on the effect of revenue management on the bottom line: "We are looking at different metrics than we did before. One of the newer things in the revenue management field is a focus on profit as opposed to a focus solely on revenue. As we look more at the total revenue stream from the hotel, we must also analyze all the business in terms of its cost to us." Jeanne Frensky of IHG agreed. "RevPAR is an adequate metric for most of the hotels in North America since 80 percent of our profit comes from rooms," she said. "But if you look at gross operating profit per available room, (GOPPAR) you are really getting down to how well you are managing the entire business."

As hotels expand revenue management to influence a greater portion of the hotel's revenue streams, more robust metrics must be devised. "As we get deeper into the catering and public space side of things, we are looking at the metric of revenue per square foot per hour," said Greg Cross of Hilton. This measurement gives Hilton a more accurate view of revenue efficiency for functions that can have alternative uses during a day. "So far, it has been a very successful statistic for us," he elaborated.

The shortcoming of all these measurements is that they assess only the demand observed, not the total market potential. While market share alone is not a reliable indicator of revenue management efficiency, it could be incorporated into a metric that measures the proportion of potential revenue obtainable. Greg Cross clarified, "Ultimately, you should have the ability to link all the revenue streams together so that you could start to measure revenue per available customer or revenue per available customer stream and see the potential for different customer segments."

This growing focus on the external marketplace of potential demand rather than the internal analysis of captured demand will be one of the hallmarks of the next phase of revenue management's renaissance. Many of the new capabilities focus on the customer, particularly, the customer's willingness to pay. This understanding of customer behavior can be applied to optimize retail rates, as well as group rates. Further, it provides a foundation for understanding customer decisions in other areas, such as food and beverage, function space, restaurants, and responding to promotional offers (Orkin 2003). As hotels make these critical decisions, they are using sophisticated metrics and analytics to measure the impact and continually improve decisions.

The Future of Revenue Management

The ability to understand and predict customer behavior is giving rise to a vision of customer-centric revenue management to replace the long-standing inventory-centric approach. Hospitality firms are realizing that their loyalty program databases contain rich data that can be used to make decisions based on customer value, whether that means just one stay or over the customer's lifetime. Just as sales and marketing organizations looked to revenue management to provide greater insight into customer behavior, hospitality firms are beginning to realize that the demand-forecasting capabilities of revenue management can be applied to create an integrated demand planning cycle.

Customer-centric Revenue Management

Balancing short-term revenue maximization versus long-term customer development is one of the most critical issues facing those who practice revenue management. In revenue management's future, sophisticated analytical capabilities will be used not just as an internal tool to predict and optimize the impact of transactions on the hotel, but as an external device to grow and develop customers and customer segments. This concept is known as customer-centric revenue management (Cross and Dixit 2005).

Most hotels' loyalty programs track individual customers' purchase patterns in great detail. Some firms also are implementing customer relationship management (CRM) systems that capture, store, and analyze additional information about each customer, including demographic profiles, booking source profiles, sales data, requests, complaints, and survey responses. However, for the majority of hotels, these rich data sources are not tightly linked to revenue management systems, and in fact they may not be regularly accessible to revenue managers (Noone, Kimes, and Renaghan 2003).

Daniel Abernathy of John Q. Hammons explains that the transformation to customer-centric revenue management is beginning to take place. "We are looking at the ability to gather data focused on customer buying behavior and understanding how the preferred customers buy—by price point and geography—as well as understanding length of stay and shopping habits. We are turning that information into revenue management insights that we did not have before."

In the future, these auxiliary data sources will be tapped to understand who the most valuable customers are and to examine customer profitability and lifetime value. Additionally, these data could be used to identify potential "holes in the basket." This concept has evolved from retailers who analyze customer purchase patterns to identify certain customers who may, for example, buy baby food at their store, but not diapers. Identifying "holes in the basket" for hotels might mean that hotel companies can systematically identify where they have a large percentage of a customer's business travel, but not his or her leisure travel, or where the hotel has a great portion of a customer's room revenue, but not the ancillary spending. The objective, of course, is to capture a greater share of the customer's wallet.

For the purpose of generating future demand, customer-centric revenue management will mean reaching out to past customers in a personalized way with targeted packages that optimize their response. This capability could include promotions to fill off-peak periods or advertising campaigns with a more targeted message to narrow customer sets with known behavioral responses. Based on an understanding of customers' responses to those offers, hotels will target and optimize promotions. Moreover, they will integrate promotions into their revenue management systems. New insights about customer behavioral patterns can be used not

only to grow and develop the customer base, but also to accord loyal customers differential treatment using revenue management processes.

Operationally, customer-centric revenue management would identify loyal customers seeking rooms or services to provide them with favorable treatment. This does not, however, necessarily mean manipulating rates or relaxing the restrictions for a discount rate. Instead, it means identifying the most important customer needs and satisfying them. For example, customer-centric revenue management could mean that during peak periods, inventory is set aside as a part of the forecasting and optimization process to accommodate certain loyal customer segments through preferential overbooking policies or room upgrades. It also may mean that restrictions are placed on availability posted with intermediaries during peak periods to accommodate loyal customers who are booking through more tightly controlled distribution channels. (Anderson and Carroll 2007).

Casinos have been leaders in using loyalty data in their revenue management programs to offer differential treatment to their most loyal customers. Even though room revenue represents only a small portion of a casino's total revenue, managing room inventory is critical because that is a casino's greatest constraint. This phenomenon makes it essential that the right guests have access to the rooms. For a casino, the "right guest" is less likely to be the one who will pay the most for the room as the one who will put the most gaming dollars in play. Tight integration of total customer value from loyalty databases with the core revenue management room optimization systems is required (Kuyumcu 2002). The integration process involves assembling data from the CRM systems, nonroom point-of-sale systems, and player-tracking card systems. The combined effect of this integrated data set is to coordinate revenue management, promotions, and marketing processes. Casinos that have taken this integrated approach have in some cases seen a 15 percent increase in total contribution (Hendler and Hendler 2004; Metters et al. 2008). While this would not be a typical result for a noncasino property due to the extraordinary nature of casino gaming revenue, the results do give an indication of the power of combining customer data with traditional revenue management data to provide a foundation for better decisions across the enterprise.

Enterprise Demand Planning

Despite the advances in near-term transient forecasting, for most planning purposes, hotel forecasts are not particularly refined. According to Tim Wiersma of Host Marriott, "We are pretty good at forecasting in the thirty- to ninety-day window. But we don't want to wait until we get in the thirty-day window to realize that there is a lot of recovery to do. We are working on ways to get a more accurate picture in the long term." This is especially true when it comes to annual demand planning and tracking according to plan. According to Daniel Abernathy of John Q. Hammons, "One of the problems that the industry has is that most forecasts are built on budgets, and that's a fallacy."

Human bias distorts budget planning because budgets are too often built on hopes and expectations rather than objective assessments of the marketplace. To Abernathy, "The budget cannot be the best resource to guide our business because it is built on expectations. The volatility of the marketplace creates misalignment with certain performance objectives since they are not indicative of what is really happening. So working toward an annual budget creates a bad forecasting environment." Jim Rozell believes Carlson is taking a step to

Sidebar–Group Optimization

Group Revenue Management is evolving rapidly. Revenue managers typically set guidelines for size and rate objectives based upon projected demand for higher-valued transient demand. These criteria are reviewed and revised regularly. However, if a group request falls outside the pre-set parameters, revenue managers often evaluate the request.

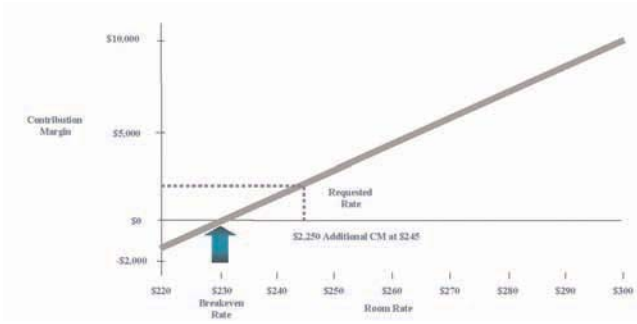
This evaluation typically consists of a displacement cost analysis to see if the hotel would be more profitable with the group than without. This displacement analysis includes projecting the remaining demand, ADR, and ancillary spend to understand the "displaced" business, as well as projecting the sales and catering revenue that would accompany the group under consideration. Upon comparing the two scenarios associated with accepting or rejecting the group, the revenue manager would determine whether to take the group at the requested rate, and if not, recommend the rate at which the business would be acceptable.

As an example of displacement analysis, consider a request for a group of 50 for three days at a 200 room hotel, to arrive 90 days in the future. The group request is for a $245 rate. We anticipate we will make an additional $4,500 in contribution margin from function space and catering. We observe these additional facts:

Other than the group being considered, our hotel has only transient demand for these three days. We currently have 45 rooms booked each day at an average rate of $249. The forecasted demand for that 3 day period shows that we will pick up 145 transient rooms each day at an average rate of $325, which would give us a 95% occupancy.

Given these factors, we can plot a line that shows incremental contribution at any given price point.

Exhibit 3:
Displacement Analysis



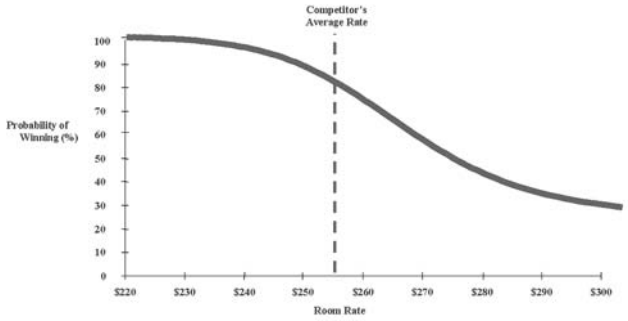
From this analysis, we can see that we would break even with the group at a $230 rate, and that we would generate an incremental contribution of $2,250 at the requested rate of $245.

This approach answers the question "Is it a good business decision to take the group at the requested rate?" However, it does not answer the question of "What is the best rate for this group?"

Among the major advances in Revenue Management technology is the incorporation of demand price-responsiveness for any property, at any time period and for any market segment, including group. Hotels are learning to construct group price-response curves that predict the probability of winning business at a particular price point. These curves are derived from historical group booking requests, competitive information and other available data sources. In this example, assume that we are looking at a corporate group, booking three months in advance where the average competitor price is $256.

Sidebar (continued)

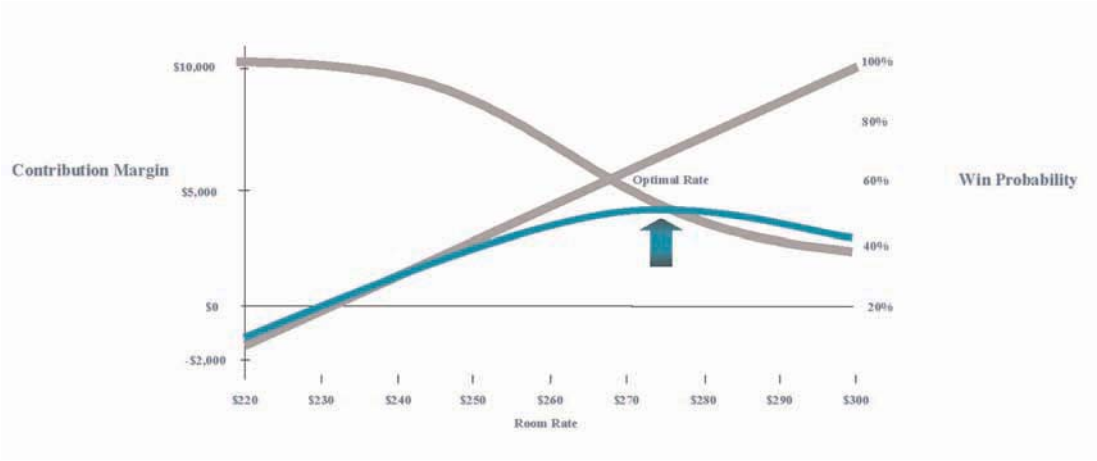
Exhibit 4:
Analysis of Group Price Responsiveness



At a $200 rate, we would have a 98% chance of winning the business (and a 100% chance of losing money!) At $300, we would only have a 28% chance of winning the group. These win probabilities provide greater insight, but still don't answer the question of what is the best rate for the group.

Once we understand the contribution at each rate, as well as the win probability for any given rate, calculating the optimal rate is relatively straightforward. Multiplying the win probability at each rate by the contribution at that rate provides the expected contribution. The optimal rate for the group is the rate that maximizes the expected contribution.

Exhibit 5:
Determining Optimal Group Rate



The optimal rate for the group, based on attaining the highest expected contribution, would be $276. The win probability is lower than at the $245 requested rate, but the contribution margin is over three times greater ($6,900 vs. $2,250 at $245). The expected contribution for a room rate of $276 is $3,727, compared to an expected contribution of only $1,877 at the requested room rate of $245. So, a hotel utilizing only a displacement analysis would have avoided a *bad* decision, but it would not have made the *best* decision. Money would have been left on the table.

Sidebar (continued)

In practice, this mathematical optimal rate of $276 is not necessarily the final answer, but it does provide a guideline for the group decision. A dialogue with sales would explore other factors relevant to the pricing of the group such as:

- Do we have a known history with the group?
- What will be the materialization rate for the group?
- Is this a regular event we wish to capture?
- Are there other ancillary revenues available?

By combining scientific analysis with human judgment, hotels can optimize the group side of the revenue equation and move towards a total hotel approach to revenue management.

ameliorate this issue. "Corporately, we have really focused on building an infrastructure. We have centralized strategy, information, tools, and controls. We run forecasts every day for our hotels and send them that information. Then they can focus on the actionable portion of revenue management." By managing the detailed forecasting process at the corporate level, hotels will be better positioned to coordinate corporate planning, including marketing, with tactical revenue management programs (Weatherford and Kimes 2003).

As revenue management's influence continues to expand, forecasts for the hotel will become increasingly sophisticated and statistically based. They will look farther out and incorporate a prediction of demand for all revenue streams. One of the first forecast elements to become more sophisticated and accurate will be the group forecast (Kimes 1999). Transient forecasts are typically based on a probabilistic determination of demand calculated from an analysis of historical data and future bookings. On the other hand, detailed group forecasts are generally limited to estimating the materialization rate of group blocks. Opportunities for bias exist due to the long lead times associated with groups and the fact that materialization rate is often based on the subjective estimate of the salesperson booking the group.

According to Brad Anderson, formerly of Omni, "Group targets are usually mapped out a year at a time. We typically have 30 to 40 percent of the house dedicated to groups, and the rest is sold to transient guests. Revenue management is involved with the director of sales and marketing in mapping out the annual number, as well as updating monthly." However, tracking the targets and improving the accuracy of group forecasts is much more difficult than transient forecasting for a variety of reasons. Many of the group management systems are not tightly linked to the reservations or revenue management systems. From the perspective of Robert Resurgent of Sunstone, "The sales and catering system drives the entire process because all the data from the group side comes from there. . . . It has been challenging to extract the data to make it usable in the same format by booking window, segment, and meeting room occupancy."

The revenue managers we interviewed see the value of integrating data and systems to create enterprise forecasts. "We need to predict all our revenue streams, all of our distribution channels, the costs associated with each of them, and the price sensitivities associated with them," explained Jeanne Frensky of IHG. As revenue management develops the ability to create better, longer term forecasts, these forecasts can improve decisions across the enterprise, including brand expansion strategies and weekend staffing decisions. Jim Rozell of Carlson explains, "One of

the things that I preach the most to everybody in our company and to the hotelier is that because we are doing sound forecasting and really measuring the future demand, we can drive efficiencies through everything else." According to Rozell, this means that revenue management forecasts at Carlson drive all sales promotions activity, as well as some purchasing activity.

Enterprise demand planning will help optimize decisions throughout the organization. For most hotels, forecasting is a fragmented process. Revenue management systems generate a room occupancy forecast and recommend actions based on that forecast. Revenue managers create budgets and drive toward that forecast. On top of that, individual hotels, management firms, and the brands each create their own forecasts and objectives. These forecasts may be different for sales, marketing, and finance. Integrated demand planning will help hotels to align these potentially disparate forecasts and, consequently, optimize decisions. The impact will be substantial: improved pricing decisions, timely promotions, cost savings through efficient staffing and purchasing, and targeted expansion strategies that identify key markets and locations.

Concepts such as customer-centric revenue management and enterprise demand planning are based, in part, on the idea that the future of revenue management is to add long-term perspective to a discipline that has so far focused on the short term. This idea may reflect the expanding strategic role that revenue management is playing, one that will continue to lead to new frontiers for the discipline.

Note

1. This insight came from our structured interviews of sixteen revenue management executives, conducted in June and July 2007.

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