# Revenue/Yield Management

All hotels practice some kind of revenue or yield management, whether or not they define it as such. The objective of this primer is to recognize that fact and to provide some basic concepts, definitions and terms that can be used as a baseline for the implementation and communication of revenue management in a hotel that does not currently have an automated revenue management system. The primer also addresses changes in the hospitality business and attempts to demystify revenue management as an "uncommon business practice." It describes the various components of revenue management as well as provides guidelines for instilling a revenue management culture in a hotel, discusses the potential benefits that can be gained, and gives some thoughts on choosing a solution, whether manual or automated.

## MYTHS AND REALITIES OF REVENUE MANAGEMENT



Revenue management can be defined as "making the right room available for the right guest and the right price at the right time via the right distribution channel." However, a myriad of other definitions are used to describe the same process with the same desired outcomes. Myths about revenue management can somewhat be attributed to the number of definitions! Let's take a look at a few revenue management myths: •

***Revenue management only works in good times.***

It is certainly true to say that the higher the level of demand, the greater the opportunity to maximize the use of the demand. Maximization of demand can be achieved through the deployment of rate and inventory controls (e.g., the length-of-stay controls); however, revenue management techniques also have a role to play when demand is not so high. Working within a revenue management culture and discipline will allow a business to develop a greater understanding of the

dynamics of the demand that exists. This discipline will put the hotel in a position to be able to take advantage of opportunities that may still exist to deploy rate and inventory restrictions on nights when demand is high. In addition, systematic observation of booking trends will allow more informed decisions to be made with regard to the rates that are offered and the channels of business that are opened for sale.

***Hotels must enjoy high levels of demand and occupancy to achieve benefits.***

Revenue management is not only about controlling the demand that is accepted (as happens on nights when demand is greater than capacity), but also about the pricing strategy that is deployed in the market at any given time. For example, the revenue management team may be able to predict that even if all the demand that existed was taken on a given night, the hotel would not fill; however, this does not necessarily mean that the lowest rates should be open. By understanding the dynamics of the marketplace as a whole, the revenue management team may be able to determine that offering the lower rates to stimulate demand will only, in fact, lead to a drop in revenue and not to an increase in occupancy.

***Revenue management only works in four- and five-star hotels.***

Historically, revenue management solutions (both manual and automated) have been expensive to purchase and to implement, in addition to requiring dedicated and skilled managers to run them. Although training and education are still important, revenue management solution vendors now offer a wide range of solutions that will fit most budgets and labor resource levels. It also could be argued that the less time available to proactively "revenue manage," the more need there is for a system to analyze demand data and deploy restrictions and controls in the reservation systems. High room rates are not a prerequisite for obtaining value from revenue management systems and techniques. If there is an opportunity to deploy length-of-

stay controls that will result in an increase in occupancy on "shoulder" nights (i.e., nights that are next to full or very busy nights), then significant amounts of additional revenue can be generated from these shoulder nights. This can be done while still maintaining, if not increasing, revenues on the busy nights by the deployment of rate controls for those guests who, for example, only want to stay for one night on the highest demand night. •

***Only a select few can afford automated solutions.***

Although historically this may have been true, advances in technology and an increased awareness of the benefits of revenue management as a discipline now mean that vendors are providing a range of solutions to meet different requirements and budgets.

***It is difficult to measure the benefits that deploying a revenue management system (automated or manual) may bring.***

Measuring the benefit/impact and return It is difficult to measure the benefits that deploying a revenue management system (automated or manual) may bring. Measuring the benefit/impact and return on investment of any piece of technology requires a systematic and disciplined approach. Measuring the impact of a revenue management system is no different; in fact, in some cases it may be easier. As an example, if a hotel decided to measure the benefits of installing a new property management system, many factors would have to be considered—for example, greater ease of use, reduced "downtime," more functionality, etc.; however, it can be difficult to turn these benefits into hard currency amounts. A desired impact of deploying a revenue management solution is an increase in revenue attributable to working with the solution—that is, an increase over and above what would have happened because of market forces. Techniques now exist that allow revenue changes that are attributable to working with a system to be isolated from changes that have occurred because of market forces, thus allowing the tangible impact of working with a

revenue management solution to be measured and utilized in return-on-investment calculations.

It is equally important to note that in addition to quantifiable benefits, revenue management system deployment can also bring a significant number of less measurable benefits, such as improved access to data, sharper focus on activities that bring benefit, and reduction in the labor required to deploy restrictions in the PMS, CRS, etc. The intangible benefits that revenue management systems bring to an operation almost always allow the revenue management team to spend less time extracting and manipulating data and more time proactively managing the business and generating additional revenues.

## BUILDING A REVENUE MANAGEMENT CULTURE



Revenue management in some shape or form probably plays a role in many strategies and tactics deployed in most companies; however, these strategies and tactics may not be regarded within the organization as revenue management or linked to a formal revenue management program. For example, strategically deciding that some discounted rates are only available if the stay includes a Saturday night is a revenue management strategy, and then deciding that, based on the forecast of occupancy, the same rate will not be available at all next Saturday night is a revenue management tactic. The relationship between the teams within an organization that set the strategies and the teams that deploy the tactics is extremely important—without a defined link, strategies and tactics may well conflict, leading to neither being successful!

### *Setting Revenue Management goals and Objectives*

The first order of business in establishing a revenue management program is to achieve a consensus among all those who will be affected by the program as to its proper objectives and to ensure that all have a clear understanding of its likely results.

The proper goal of a revenue management program is not to increase average room rates. Neither is it to increase average occupancy rates. Revenue management programs must focus on maximizing theproductofthetwo, the average "revenue per available room night," or RevPAR, which is calculated as follows:

***RevPAR = Average room rate × occupancy rate (%)***

If the hotel consistently pursues this goal and seeks to maximize RevPAR, room revenues will increase over time.

In a more sophisticated model, distribution costs are taken into account, and the revenue management program goal is to maximize net RevPAR (i.e., RevPAR minus distribution costs). That way, not only the revenue but the profitability of each segment is considered. As further discussed, ancillary revenues and other costs may also be included in the rate and room allocation decision-making.

As the revenue management culture grows, initiatives to truly maximize profit from all angles can be considered. For example, if it could be established that the typical profit from ancillary revenue streams (F&B, resort activities, etc.) of demand from a particular company or channel were greater than those from other companies or channels paying similar rates, when demand is high, strategies to ensure that preference is given to the demand that will capture the most profit can be put into place. This may seem to be a very logical step to make; however, putting this systematically into practice requires upfront investment in capturing revenue and profit data by channel/market

segment/demand stream, and then using this in the forecasting and reservation process.

**Organizing the Revenue Management Function**

***Things to Decide***

1. Is the organization ready and prepared to potentially change business practices and commit resources to making the project work?

2. Who in the senior management team will be the "revenue management champion"?

3. Who is going to take on the role of revenue manager?

4. How will the organization find out about the goals, objectives, and deliverables of the revenue management project?

5. How is the revenue management function related to other functions, such as sales, reservations, and marketing? What is the organizational structure?

6. How will the revenue management function integrate with the different distribution channels, such as the GDS, ADS, wholesalers, OTAs, etc.?

7. Is there an incentive plan that ties revenue management to the performance of particular segments and/or departments?

8. Are the sales team incentives linked purely to the production of room nights and revenue or to the overall profitability of a given piece of business?

The revenue management function should not be associated with the performance of any particular segment, but its sole goal should be maximizing overall RevPAR and profit.

**A REVENUE MANAGEMENT CYCLE**

There are many components to implementing a successful revenue management culture and process in a hotel. For the sake of clarity (and expediency in this short primer!), our discussions will focus around four main points:

- *Forecastingdemand*
- *Optimizingdemand*
- *Controllingdemand*
- *Monitoringdemand*



These four components can be put together to form a revenue management cycle


We will examine each of the component parts of the cycle in the following sections to see how they interact and how the cycle can be used to provide revenue management guidelines leading to improved performance.



**FORECASTING DEMAND AND OCCUPANCY**

Good demand forecasting is a key aspect of revenue management. Improvements in the demand forecasts used as inputs to the inventory allocation process translate directly into increased revenue in the form of higher average rates per customer and better utilization of the demand on shoulder nights (nights adjacent to busy nights), without losing a reservation that should have been accepted. In other words, good forecasting facilitates the denial of low rated reservations when one knows that higher rated demand will materialize later, as well as getting longer lengths of stay with lower rates which help the shoulder dates. This is because the more confident you are that high-rate-class customers will materialize, the lower the risk entailed in holding space for the customers in advance of the reservation requests actually being

received. Consequently, the search for improved forecasting techniques continues to attract a considerable and ongoing level of investment, even among airlines with relatively mature revenue management programs.

A potential side benefit of developing a good demand forecasting capability for revenue management is that the resulting room volume forecasts often can be put to good use elsewhere in the hotel as well. Functions such as supply ordering and staffing often can be more optimally planned with access to the detailed room and guest forecasts produced by the revenue management process. Demand forecasting for the revenue management process entails a few unique challenges that must be addressed.

Demand forecasting for the revenue management process entails a few unique challenges that must be addressed for a program to become successful. In the hotel industry, demand for the product exhibits two regular cyclic patterns—day-of-week and season-of-year. It also will exhibit trends (growth in demand due to growth in the economy at large), which can be projected forward to estimate future demand in each market segment. The forecasts that can be produced by analyzing these patterns are seldom precise. The most that one usually can say is that we are 99 percent confident that the demand for rooms on a particular future day will be, for example, 50 rooms plus or minus 25 percent—or that we feel there is an 80 percent probability that the demand will be at least 40 rooms.

It is this uncertainty about the future demand for the inventory that gives revenue management its revenue leverage and makes it a challenge. It is the management of this uncertainty that is the essence of revenue management itself. The uncertainty is managed by the following:

- *Minimizingtheuncertaintybyproducingthebestpossibleforecastof demand and its degree of unpredictable variation.*

- *Acknowledging the uncertainty and reflecting it in the decision analysis process.*

When we make decisions about pricing our rooms as if we could know with certainty that we will be offered a specific level of demand when, in fact, there is only some probability that it may materialize, we make many bad decisions. That, over time, is sure to cost us money.

Forecasting demand and the resulting occupancy therefore can be viewed as the starting point for the revenue management cycle. Numerous approaches can be taken for producing forecast numbers, ranging from "gut feeling or a pad and a pencil" to highly sophisticated algorithms-based systems. Whichever approach is used, one common requirement is access to the right data.



**Forecasting Data**

Typically, the raw data required to produce forecasts will come from the transaction system that "owns" the hotel inventory. In some cases this will be the property management system; in other cases it may be the central reservations system. To make use of these data, the designated revenue manager will need to decide the following: •

- What data need to be extracted from the system in question?

  At a minimum, the number of rooms sold to date, the hotel capacity, and the number of out-of-order rooms for each day in the forecast window (the number of days that the forecast will cover) will be required.

- Historicaldata:
  If available, historical data can be used to form the basis of future forecasts. However, the following points are worth noting when deciding how much historical data to use:

1. Is future performance likely to resemble past performance? As market and business conditions change, so does the validity of using historical data in the forecasting process. That being said, patterns such as distribution of occupancy by day-of-week, seasonality, and booking pace may well still be relevant even if the overall volumes of business have changed.

2. When looking at historical data, it is important to identify and in some cases isolate "special events" that may have influenced performance and patterns. In some cases, special events such as Christmas will repeat again in the future; however, other special events such as weather-related peaks or troughs might not occur in any predictable fashion.

3. Business practices can significantly affect the way that historical data "looks." For example, if in the past "no-show" bookings had been checked into the PMS rather than going through an automated no-show process, the level of achieved occupancy would be inflated. If this business practice has changed, then the implication to the way that the data look needs to be understood. Group booking practices also can significantly affect the way that historical data look. It is important to understand the triggers (e.g., contract sent out, deposit received) that cause a group booking to appear as a "tentative" and then a

"definite" booking in the PMS and how this affects the historical (and future) data.

Even considering the above points, it is still likely that historical data will yield valuable information for the production of future forecasts, especially from the perspective of day-of-week patterns and seasonality. The key to getting more from data is consistency in the application of the business practices that influence it—if these are understood and implemented systematically, understanding the information that the data contain becomes much easier.

- How will the data bee xtracted?

  It needs to be determined whether the data will be accessed through using and manipulating an existing report or by creating a report that contains just the data points required.

- Where will the data be housed and utilized once it has been extracted?

  This may be an Excel or similar spreadsheet that has been designed to take the data extract and then allow for additional inputs to be added, such as the additional number of rooms that are expected to be sold to produce the forecast.

- How often will the task be repeated?

  Depending on the methods of extraction, the data housing, and so forth, the frequency of the exercise will need to be determined. Whatever level of frequency is decided upon, it will be important to maintain the cycle in a consistent fashion.

- What kind of skills exist in the organization to process and utilize the historical data?

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- ***What kind of skills exist in the organization to process and utilize the historical data?***

Before going to the effort of extracting vast amounts of data, it is important to decide who will be looking at the information and what they will need to do to it to make it useful. Depending on the amount and type of data being considered, the level of spreadsheet-type skills and data interpretation skills available should be examined so as not to get into an "analysis paralysis" situation in which nothing useful is actually produced!

**Forecast granularity**

Many of the automated solutions available forecast demand and the resulting occupancy at a fairly granular level, for example, by market segment/ rate band and possibly by length of stay and room type. If a forecast is being produced manually, it is important to recognize that the more granular the forecast becomes, the more time it will take to extract and manipulate the data to produce the final forecast numbers. Consideration also should be given to the fact that splitting the forecast into many small segments will make forecasting accuracy more difficult to achieve. For example, if a specific market segment has been seen to produce anywhere from 0 to 10 rooms, it may be hard to predict future performance. If the same market segment were to be combined with other market segments that are used for similar types of business, analysis may show that the combination of market segments typically produces between 50 and 70 room nights. By creating a forecast that combines similarly behaving segments, a greater level of accuracy will be achieved, as there will be more data available to judge and forecast what is typically likely to occur. The same principle can be applied when looking at data by room type—in many cases, what is really important is looking at the demand at the room class level (e.g., Deluxe as opposed to Deluxe Twin, Deluxe Double, etc.).

The desire for forecast granularity has to be weighed against the likely benefit that it will bring and the time available to complete the task on an ongoing basis.

The need to break down forecasts into different parts is primarily caused by fundamental differences in the types of demand that a hotel enjoys. If the vast majority of business comes from individual transient guests and there is only a small range of rates available, it may be appropriate to produce just one forecast for the whole hotel. If the business can be split between group and transient business and it is clear that the booking patterns are different—for example, with the number of days before arrival that bookings are typically made, or with the no-show rate—then it would be appropriate to break the forecast down into group and transient. The two forecasts then can be combined to form the overall hotel forecast. As a rule of thumb, separating transient and group forecasts is a good idea, as more often than not the patterns that can be identified and the nature of the demand are different.



What follows are some factors that can be examined to help decide the level of granularity for the forecast. The easiest way to examine these patterns is to take some historical hotel occupancy data over the period of, say, a month and to break it up by groups of market segments or channel (or some other equivalent data field available) that you think will probably have the same type of behavior.

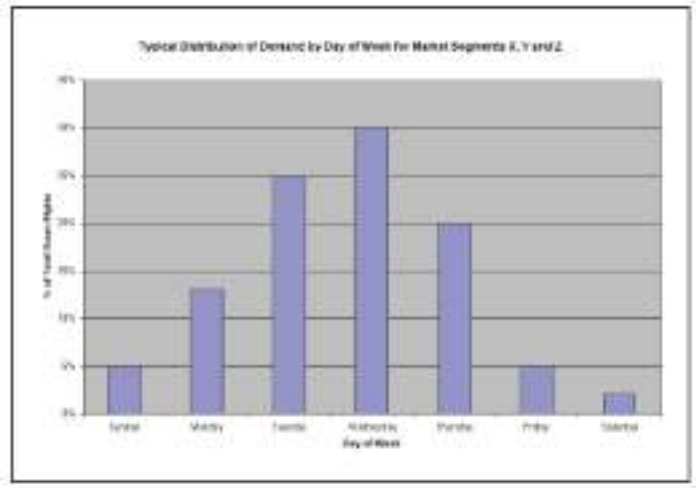
***Day-of-WeekPatterns***

Here you can examine the way that each of the segments or groups of segments performs through the week. The typical percentage of the overall business in the selected segments that stays on each night of the week can be calculated and then used to distribute future anticipated volumes of business by day of week.

***Booking-Pace Patterns***

One of the key elements of forecasting is knowing when to expect bookings to materialize. It may be a well-known fact that very little corporate transient business books a year in advance; however, what may not be known is the typical percentage of corporate business that books between 28 and 21 days prior to arrival. This fact alone is important, because appreciating when business actually starts to book will assist in determining how far in advance of the day of arrival restrictions should be placed. Examination of booking-pace data can lead to some surprising results; a general feeling may be that "most" of the transient business books within the last 14 days, and restrictions are applied within this window accordingly. The data may show that although this is true, a significant number of bookings are still taken, say, in the 35- to 15-day window prior to arrival that essentially are not being restricted (when it is appropriate).





Booking paces or booking history curves can be calculated in a number of different ways. By starting to capture data on a daily basis, one can calculate the shape of the curve for a given day; that is, how many reservations were taken 45 days prior to arrival, 21 days prior to arrival, and so on. Alternatively, if historical reservation transaction data is

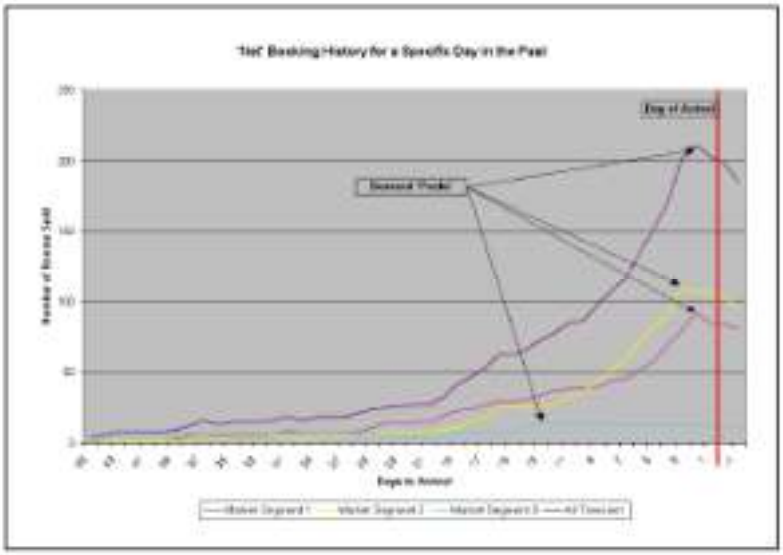
available, the difference in number of days between the date of booking and the date of arrival can be calculated. By going through this exercise for many reservations, one can calculate the booking pace. This is likely to be a timeconsuming task; however, if the skill levels exist to undertake this type of analysis, it does not need to be repeated that often.

Again, granularity can become an issue as it may be felt (and may be true) that the booking pace for a group of market segments varies by day of week, time of year, and even length of stay. The ability and time required to manually analyze at this level should again be considered in relation to the probable difference that having the information will make to the forecasts that are produced.

The important thing to remember is that what you are looking for is data that will help you make better decisions, not data for the sake of data!



The graph below illustrates a booking history curve for a specific day. The curves were calculated by simply counting the number of rooms sold for each of the market segments analyzed at each point in time prior to the day of arrival and plotting them on a graph.



*Points worth noting are as follows:*

- The "demand peaks"—that is, the point in time at which the highest number of reservations was on the books—are at different points prior to the day of arrival for each of the market segments.

- The drop in the curve shown after the day of arrival reflects the number of no-shows.

- Market segment 3 shows no increase in the number of rooms sold after the 13-day prior-to-arrival point. This could have been because the rates in the market segment were being controlled through revenue management activities.

Looking at the patterns for one day is not enough to use for future forecastingor even to be able to draw any conclusions. If this type of data collection is put into place systematically, over time, the revenue management team will be able to consolidate the data to create a picture of the average curve over, for example, a 60-day sample of data. This information then will provide the team with a greater understanding of the way that business actually books, which in turn will help with future forecasting and decision-making.

- *Length-of-Stay Patterns*

  As will be discussed in this primer's optimization section, understanding the typical length-of-stay patterns for different types of guests is key to being able to deploy appropriate restrictions. Again, granularity can become an issue here; however, even knowing the typical length of stay for transient guests as a whole by day of arrival can assist greatly in the forecasting, optimization, and control processes.

- *Cancellations and No-Show Patterns*

  Overbooking is discussed in the optimization section; however, the ability to overbook appropriately will largely depend on the ability to forecast the likely cancellation and no-show patterns from the available data. Collecting no-show data is relatively easy, as the "data point" is always the day of arrival; however, the cancellation patterns are more difficult to extract, as a cancellation can take place at any time between the booking date and the day of arrival. The easiest way to collect this information is to begin looking at the number of bookings taken within, say, the 45-day prior-to-arrival period for a range of dates into the future. If time and resources permit, this can be done by market segment or by groups of market segments; at a minimum, a differentiation should be made between group and transient bookings. See the graph in the earlier "Booking-Pace Patterns" section for further information.



- *Rate Paid*

  In addition to the other patterns mentioned, it is also important to consider the patterns regarding the rate paid. Expanding some of the previously mentioned analysis points to create, for example, a revenue booking history of "rate by length of stay" type analysis can again help the team understand the dynamics of the business.

**Forecast Frequency**

The frequency at which forecasts can be produced will largely depend on the resources available to take, manipulate, and understand the data. There may be a key business requirement to produce, for example, 90-day forecasts once a month, 28-day forecasts once every other week, or 14-day forecasts once a week. Producing accurate forecasts manually

will always be a time-consuming process; however, the greater the understanding of the booking patterns that exist for the hotel, the easier it should be to estimate, or forecast, what is likely to happen in the future.

**Unconstrained Demand**

A commonly used term in the revenue management world is "unconstrained demand." A quick way to think about the unconstrained demand for your hotel is to imagine that you could accept each and every reservation for a busy day in the future without any concern for the number of rooms that you actually have available. If you were able to accept all reservation requests (at rates that you were prepared to sell), how much demand would this represent? Whatever the answer might be, you can think of it as an approximation of the unconstrained demand. In reality, the capacity of the hotel has to influence the number of reservations that you can take and the number that you are finally able to accommodate—this can be regarded as the "constrained demand." On low-demand days, the unconstrained demand may be equal to the constrained demand, as you will take and be able to accommodate all the demand that exists. On busy days and even days in which the hotel does not end up quite filling, you can be pretty sure that the unconstrained demand is greater than the constrained demand, which you will be able to actually measure at the end of the day.

In the past, one way of gauging unconstrained demand for a day in the past was to look at turndown or denial data and to add those data to the number of rooms that were actually sold. Even though this gave some indication of the level of unconstrained demand, care should be taken with this approach, as denial data are often quite misleading. For example, a guest may call to make a reservation but be "denied" because the hotel is full; the same guest may then get a travel agent to

call, but the hotel is still full and so the travel agent call is “denied,” too. The guests may try themselves the next day and again be denied; however, when they call again the day after, the booking is taken. As there is typically no way of linking a “denial” record to a specific guest (if the guest was even identified), adding the denial data together and then adding this information to the total rooms sold will overestimate demand—the guest only wanted one room. Denial information can give you great insight into your demand patterns (e.g., how many reservations were denied because you could not guarantee a no-smoking room), but to rely on it to assess unconstrained demand levels can lead to incorrect assumptions being made.

One relatively easy way to start to look at how demand has been constrained in the past is to measure the number of rooms sold to a group of market segments on days in which the hotel did not come close to filling. On these “nonbusy” days, it is unlikely that any demand would have been denied, and therefore what can be observed is representative of the true level of demand that existed. Ideally, when picking these nonbusy days, select days in which the hotel did not fill the day before or the day after to ensure that bookings would not have been denied because of the length of stay being requested. Once you can determine an estimate of the typical or average level of demand seen for the group of market segments on nonbusy days, this can be compared to the level of demand seen when production is analyzed on busy days. If it can be seen that the typical level of demand seen on busy days is less than on nonbusy days (accounting also for dayof-week patterns), it may be possible to conclude that the demand on the busy days has been constrained. This may be a good thing, if the rate being paid is low; however, if analysis of high-rated business shows that the demand has been constrained, efforts can be made to deploy controls that will “save” space for the higher-rated demand on days when the hotel is expected to fill.

## Uncertainty or Volatility in Demand

In the same way that it is impossible to consistently and accurately predict the price of a stock, it is impossible to consistently and accurately forecast demand and occupancy. That being said, there are things that we can look at to help us forecast demand more accurately.

As mentioned earlier, grouping similarly behaving segments of business together for forecasting purposes makes forecasting a little easier. When doing this, you then can start to analyze the differences in volume of rooms produced on, for example, similar days of the week to gauge how predictable the demand is. If sometimes 50 rooms are booked for the selected groupings, other times 10, and other times 100, then you could conclude that this type of demand is volatile. (Ideally, when doing this analysis, you should look at nonbusy nights to ensure that low production numbers were not caused by a lack of availability.) In the same way, analysis of another grouping of segments may show that on nonbusy days, the typical number of rooms sold is between 20 and 25, meaning that the demand is more stable and therefore more predictable. Several references to the uncertainty or volatility of demand are made throughout this primer, as understanding and dealing with uncertainty is one of the keys to good revenue management.

### *Things to Decide*

1. What kinds of tools are going to be used to assist in the forecasting process, and does the revenue manager have the necessary skills to use them?

2. How granular does the forecast need to be?

3. How much time is available to dedicate to forecasting each week?

4. Where is the data for the forecast going to come from—are the tools and processes needed to extract the data available?

5. How far into the future will the forecast be run for?

6. How often will the forecast be updated?

7. How frequently will the underlying demand patterns be reanalyzed?

8. How will the information gathered from the analysis be used to produce the final occupancy forecasts?



**Optimizing Demand**

Once you have a forecast, you can determine on which days it is likely that you will have to turn down demand. If you are able to do some basic "unconstraining" using the techniques already discussed, you then can decide which elements of the demand you should accept to maximize occupancy and rate. Filling the hotel on busy nights is obviously important; however, if you make optimal use of the demand that you are forecasting, you also should be able to affect the occupancy on the shoulder nights by deciding to tactically deploy length-of-stay controls.

The optimization of demand is the brain of any revenue management system, automated or manual. This is the place where all of the

information is assimilated and analyzed in order to decide which bookings to accept and which bookings to reject. All of the following issues need to be addressed in the design of any system. Some of the issues are more important than others. Not all of the issues will be relevant to every hotel.

## Optimizing Rate Mix

### *Basic Principles*

The first objective of revenue management is to allocate rooms among rate classes to maximize total expected revenue or profits in the face of uncertain levels of demand for your rooms.

If we reserve a hotel room for the exclusive use of a potential customer who has a 70 percent probability of wanting it and is in a rate class with a price of $100 per room, then the expected revenue for that room is $70 ($100 × 70 percent). Faced with this situation 10 times, we would expect that the customer would appear seven times (70 percent probability of the demand materializing) and pay us $100 for each stay. On three of the 10 occasions, the demand would fail to materialize and we would get nothing as the room reserved in anticipation of the demand materializing would go empty. We would collect a total of $700 for the 10 rooms or an average of $70 per room.

Suppose another customer appeared and offered us $60 for the room, in cash, on the spot. Should we accept his offer? No; because as long as we are able to keep a long-term perspective, we know that a 100 percent probability of getting $60 (as the guest is in front of us now with the money) gives us an expected revenue of only $60. Over 10 occurrences we would only get $600 versus the $700 that we would make if we held out for the $100 guest. To use a common term, this is the difference between the “bird in the hand” ($60 guest) and the “bird in the bush” ($100 guest).

Now what if, instead, the guest in front of us was offering $80 cash for the room—is that offer acceptable to us? Yes; because the expected revenue (100 percent × $80 = $80) is greater than that of the potential from the $100 customer "in the bush." Over 10 occurrences we would get $800 in this situation versus the $700 that we would get by saying no and holding out for the $100 guest.

If the guest in front of us offers exactly $70 cash, we would be indifferent about selling the room to that person because the expected revenue is equal to that of the potential customer (100 percent × $70 = 70 percent × $100 = $70). The bottom line is that $70 is the lowest price that we should accept from a customer standing in front of us. If someone offers us more than $70, we sell, otherwise we don't. This is one of the key concepts of revenue management.

***We should never sell a room for less than we expect to receive for it from another customer, but if we can get more for it; the extra revenue goes right to the bottom line.***

What would have happened in this case if we had incorrectly assumed that we "knew" with certainty that the potential $100 customer would show up? (After all, he usually does!) We would have turned away the guest who was willing to pay us $80 and at the end of 10 occurrences we would have $700 instead of $800.

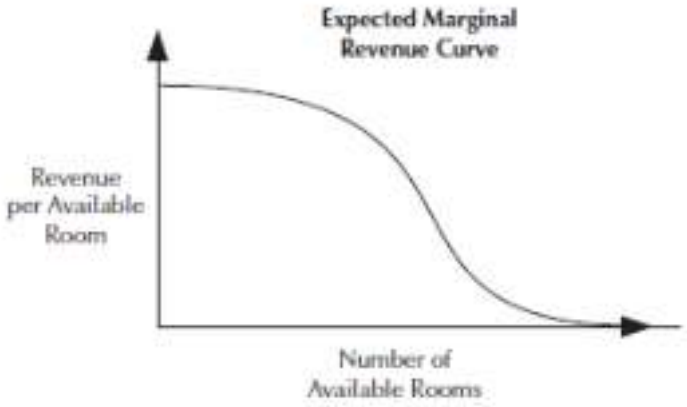
Thus, we can see that either by ignoring uncertainty and assuming that what usually happens will always happen, or by always taking "the bird in the hand" because we are afraid to acknowledge and manage everyday risk and uncertainty as a normal part of doing business, we give up potential revenue. Obviously, applying this principle in reality is significantly more complicated than the example above—if nothing

else, consideration needs to be given as to when we expect the customer to make the reservation.

***Estimating Expected Revenue***

Obviously the key to effective revenue management is the accurate estimation of the expected revenue of each room in the hotel. After all, neither occupancy nor average rate alone can create a strong and healthy business—the focus has to be on RevPAR and, thus, revenue. How is this number calculated?

One of the key principles of revenue management is that as the level of available capacity increases, the marginal expected revenue from each additional room declines. If you offer only one room for sale, the probability of selling it is very high and it is very unlikely that you will have to offer a discount to sell it. Thus the expected revenue estimate for that first room will be quite high. However, with each additional room that you offer for sale, the probability that it will be sold goes down a little (and the pressure to discount it goes up), until you reach the point where you are offering so much capacity that the probability of selling the last additional room is close to zero, even if you practically give it away! At this point, the expected revenue estimate for that room is close to zero ($0 × 0 percent = $0). Economists call this phenomenon the Expected Marginal Revenue (EMR) curve, which looks approximately like this:




The exact shape of the curve is determined from the probabilities of achieving each level of demand (which is estimated in the forecasting process) and the rate structure.

Note that EMR values also can be interpreted as the "opportunity costs" of the marginal rooms. They represent the alternative revenue opportunities that are foregone when we sell the marginal room. It may be useful to think of the EMR value in these terms as you read the next sections.

***Applying the EMR Principle to Optimize Rate Mix***

Once the EMR curve has been calculated for all of the available rooms offered for sale, the information stored in the curve can be used in one of two different ways to control the mix of guests by rate class.

The first way is to use the curve to ration rooms between market segments/ rate classes. In this method, which has historically been used in the travel industry, the EMR curve is employed as follows.

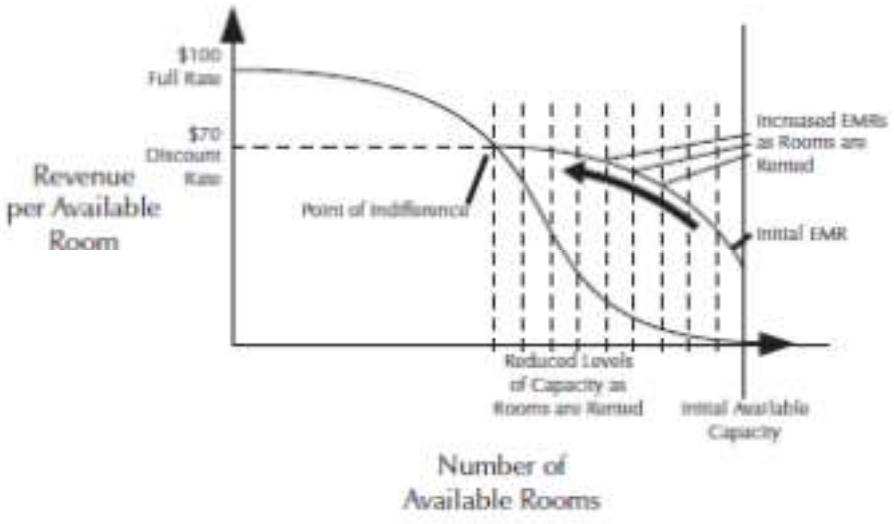
Rooms are reserved incrementally for customers in the highest rate class, one at a time, until the EMR for the next room, if reserved for a

customer in this rate category, is equal to or less than the next lower rate. Going back to our earlier example, if the full rate is $100 and our discount rate is $70, we would continue to reserve rooms for the exclusive use of customers in the $100 rate class until the probability of selling one more room to such customers dropped to 70 percent. If that point was reached after reserving 10 rooms for the exclusive use of customers in the $100 rate class, we would say that the "protection level" for the first-rate class was 10 rooms. The remaining rooms could be sold to customers in either rate class on a first-come, first-served basis. In essence, with this approach you start on the left end of the EMR curve and move down to the right, reserving rooms until you reach the point of indifference.




The second way to apply the EMR principle to revenue management—and the more direct and preferable method—is referred to as the "opportunity cost" approach. In this approach, the EMR value of the last (marginal) room is applied directly to define the lowest acceptable price (the opportunity cost) for the next room to be sold. As long as the rate requested is above the EMR opportunity cost, the sale is permitted. Each time a room is sold, the number of available rooms shrinks by one and the EMR increases. In essence, you start at the right end of the EMR curve and move up and to the left, selling rooms at discount and shrinking the amount of capacity remaining available until the EMR for

the remaining rooms reaches the point of indifference. At that point you would stop selling rooms at the discount rate.




In our simple example, the result would be the same under either the rationing approach or the opportunity cost approach. You will end up selling the same number of full-rate and discount-rate rooms under either approach, and the resulting revenue will be identical. The opportunity cost approach is preferable because the complexities of real-life revenue management situations can be much more simply, directly and intuitively incorporated into practical revenue management systems under the opportunity cost approach.

***Optimization Challenges***

The examples used to introduce the EMR principle in earlier sections were oversimplified to illustrate a single principle—that the expected revenue of the marginal room declines as the number of available rooms is increased. The formula suggested in that discussion would only be valid in the very limited case in which there are only two rate classes and all discount bookings come first and in a single transaction. In the real world there are usually multiple rate classes to be evaluated, and bookings in each rate class are tendered gradually over time.

***Frequency of Revision***

Consequently, there are frequent opportunities to re-forecast demand and recalculate EMR values. At each such revision point, what is forecast is the remaining bookings to come, and the relevant inventory for which EMR values are recalculated is the inventory that remains available for sale (or is expected to become available for sale as the result of cancellations). Exist- ing bookings and rooms that have already been removed from inventory are irrelevant.

The frequency with which revisions are made can have a bearing on the hotel's revenue. In all cases, more frequent revisions will result in greater revenue (though there is a point of diminishing returns). Some revenue management strategies are more "forgiving" of infrequent revisions than others. Differences in the amount of revenue produced by different revenue management strategies often are narrowed by very frequent revisions.



**Length-of-Stay Effects**

If all hotel customers stayed only one night, the basic revenue management equation would be as it is described in the preceding section. However, in real life, hotel customers may stay one night or they may stay several weeks; this fact adds a whole new level of complexity to the problem. To maximize your revenue, you must now ask yourself questions such as, "Am I better off renting this room for one night at the full rack rate or renting it for three nights at a 50 percent discount?"

Let us take a simple example to illustrate this aspect of the revenue management equation. Consider a typical hotel catering to business travelers in a major city. As is common for such a hotel, it's down to its

last two rooms for this coming Monday and Tuesday, but there are plenty of rooms available
the rest of the week.

Four customers arrive at the front desk simultaneously to request a booking. Customer A needs a room for Monday night and would pay the full rate of $100 per night. Customer B needs a room for Tuesday night and also would pay the full rate. Customer C wants a room both Monday and Tuesday and qualifies for a two-day promotional rate of $75 per night. Customer D would stay all week and pay the weekly rate of $350 ($50 per night). Which combination of bookings should be accepted to produce the highest revenue? The answer: Customers A, B and D, which would produce a total revenue of $550. Can you find a better combination? Can you figure out a rule that could be used to find the right combination? Can you imagine trying to find the correct solution for a typical real-world situation in which there are seven possible nights of arrival, seven (or more) possible lengths of stay and 10 (or more) possible rate classes, for a total of about 500 date/length-of-stay/rate-class combinations to evaluate? Believe it or not, there are rules and it is possible to solve this problem. To help, here are a couple of simple rules:

- To the extent that you can sell an equal number of single-night, full-rate rooms each night for several nights in a row, you should generally do so unless the cost of processing one night stay bookings (e.g., housekeeping, administration, etc.) is extremely high.

- To the extent that the demand for single-night, full-rate rooms is unbalanced across such a period, you are generally better off making discounted multi-night room sales instead.

These rules assume that the multi-night room rate is greater than the single night room rate in absolute terms, but less in rate-per-room-night terms.

The mathematics involved in finding multi-night revenue management solutions are extremely challenging and in reality are better undertaken by an automated revenue management solution than a team of statisticians with calculators!

In our earlier hotel example, the multi-night EMR value for the last rooms on both Monday and Tuesday would be $100. It would be close to zero on the other days that never fill up. These "opportunity costs" would cause you to accept each of the single-day Customers A and B because their $100 rate is equal to the $100 opportunity cost; reject Customer C because his $150 two-day rate is less than the combination of Monday and Tuesday's opportunity costs ($100 + $100 = $200); and accept Customer D because his $350 weekly rate exceeds the sum of the week's opportunity costs ($100 + $100 + $0 + $0 … = $200). As we saw earlier, this is the correct choice of bookings to accept. It turns out that for every hotel, no matter how many rooms or rate classes, there is a unique set of EMR values that, if applied as opportunity costs, will cause you to accept the unique set of customers that will yield you the most revenue.

**Multiple Room Categories**

Hotels may offer several different classes of rooms to their customers at different prices. For example, there may be concierge floors and standard floors, single rooms and double rooms, or rooms with a view and without a view. Although demand should be forecast and inventory allocations produced for each class of room, in some circumstances it may be necessary to substitute one room class for another by

"upgrading" the customer from an inferior room to a superior one at no extra charge.

Sometimes the forecast demand for the superior room category may be so low that the EMR value for the marginal rooms in the category will fall to a level below the EMR value for the marginal rooms in an inferior room category with high forecast demand.

For example, there may only be a 25 percent probability that anyone will book the last concierge room for $100 per day (EMR = $25), whereas there is a 75 percent probability that someone will want the last standard room at $60 per day (EMR = $45). When this is the case, rooms in the superior category should be artificially transferred to the inferior category (i.e., pretend that concierge rooms are standard rooms) until the EMR value of the last room to be transferred is the same whether it is sold as a concierge room or a standard room. Customers are unlikely to mind if the standard room they reserved turns out to be a concierge room.



If the firm is willing to accept the associated customer ill will, it can apply the same concept in reverse and occasionally downgrade customers against their will. If this practice is to be pursued, the expected "cost" of generating the ill will should be factored into the equation.

The astute reader will have observed that, in this case, the revenue management system is providing important feedback to the hotel manager. If the system consistently turns concierge rooms into standard rooms (figuratively), it is telling the manager that he or she should consider allocating fewer rooms to concierge service.

**Multiple Room Bookings/Groups**

Not all booking requests are for single rooms, that is, one room at a time. In the travel industry, booking requests may be tendered for individuals, families, small groups of businesspeople or entire busloads of tourists or convention attendees. To evaluate an order for multiple rooms, you should calculate and sum the EMRs for the next *"N"* marginal rooms, where *N* is the number of rooms requested. If the sum of the revenue you would receive from the booking request exceeds this amount, you should accept the booking.

In the opportunity cost control approach, this is exactly what you would do. To evaluate booking requests for several rooms, you would either (a) precalculate and store the next several EMR values in the reservation system for future use, or (b) precalculate a simple formula that would allow you to closely estimate the next several EMR values on demand.

In the inventory rationing approach, your rate-class booking limits are precalculated. However, a problem comes in when, for example, your room allocation is three rooms and the next booking request is for four rooms. The finite booking limit may be precluding you from accepting a booking that, on closer analysis, you find you should take.

The process for evaluating large-group booking requests is essentially the same from an economic perspective.

If you have a request from a group organizer for a block of 40 rooms and the organizer's track record suggests that you should expect 75 percent of those rooms to actually be used (30 customers), you would compare the sum of the expected revenues for the last 40 rooms at the property, as calculated by the EMR model, to the revenue you would get from 30 group customers at the requested rate level. If the revenue from 30 group customers exceeds the sum of the expected revenues for the last 40 rooms at the property, then you accept the group.

If the group organizer was willing to pay a substantial deposit to guarantee usage of all of the requested rooms, you might redo the analysis based on an assumption of 40 customers. In addition, if the organizer was willing to reduce the size of the room block to 30, you would redo the analysis using the sum of the expected marginal revenues of the last 30 rooms.

Alternately, the output of the EMR model could be used to tell you the following:

- *The minimum price at which you would be willing to accept the group.*
  Take the sum of the expected revenues for the last 40 rooms and divide that figure by 30 (rooms) to get the minimum acceptable rate per room.

- *The maximum number of rooms you would be willing to block at a maximum price acceptable to the group organizer.*
  Calculate the number of rooms at which the sum of the expected revenues equals the group revenue.

- *The optimal number of group rooms to block at the rate acceptable to the organizer.*
  Check the expected marginal room revenue for the last rooms at the property—one at a time, until you reach that room where the expected revenue is high enough to equal the group rate times the probability that a group customer will actually use the room if it is blocked.

If at present these questions are being answered through painstaking manual analysis that includes a heavy dose of subjective input and "guesstimation," automation of the functionality would help.

## Ancillary Revenue Considerations

Sometimes the opposite is true, that is to say, sometimes the acceptance of a customer booking a room may result in additional revenues being indirectly generated to the hotel, such as from the sale of meals and drinks. The expected *profit* per customer (price of product − cost of product × probability of purchase) from ancillary services should be added to the net revenue per customer used as the rate-level input to the inventory valuation process. Sometimes the level of expected ancillary revenue varies by customer market segment. For example, people attending a meeting at the hotel may be more likely to take their meals there than independent vacation travelers. It is only important to address this issue if you have some reason to believe that there is some identifiable pattern that can be used to identify classes of guests that are likely to spend significantly more or less than the average guest on ancillary services. If there are data to suggest, for example, that rack-rate customers usually spend much more money on ancillary services than economy-rate customers, then it may be worthwhile to factor this information into the equation. If there are no data, or the data suggest that there is no way to predict which customers are more likely to purchase ancillary services, then factoring this issue into the equation will not change the answers produced by the optimization. The use of Customer Relationship Management systems, which track behavior at an individual level, and Revenue Management software have allowed the combination data mining and revenue optimization tools to allocate rooms effectively, based on the potential profitability of each customer and the opportunity cost of the room.

## Revenue Management via Multiple Distribution Channels

A distribution channel is the vehicle utilized to make a product or service available to the consumer. In hospitality, a successful revenue

management strategy requires an efficient channel management strategy, which consists of mantaining rate parity and selling inventory at the highest possible rates, while pushing reservations through the lowest cost channels. Those are challenging tasks that require an understanding of the wide array of distribution options available, their sales models, and how they interact.

The Internet distribution environment, in particular, is very dynamic. The business models often change and there is a substantial amount of mergers and acquisitions among the major players. These companies interact with the customer in different ways, forming dynamic distribution arrangements and a complex network that make tracking the utilization of some channelscostly and labor intensive. Sometimes there are so many intermediaries that the company loses the ability to track the source of the reservations.

The hotel companies still face many challenges managing and controlling Internet channels, mostly due to the IT infrastructure currently available. In many instances, there is not a real-time two-way interface between the CRS and the electronic channels, making the process of updating rates and inventory availability very labor-intensive, time consuming, and subject to problems with data accuracy. Furthermore, most channels are unable to support blended rates, which differ for different lengths of stay for the same arrival dates, but are not necessarily an average of the rates for those lengths of stay. All the reasons above present challenges to implementing a revenue management program that is consistent across channels.

**Goodwill/Reflecting Subjective Value**

A revenue management system (manual or automated) should have some mechanism that allows the yield manager to explicitly evaluate subjective or “difficult-to-quantify” considerations in an informed

manner in reaching decisions about when to sell or not sell a room. Suppose the system is flashing a "don't sell" signal but the manager knows that this is an important client whose continued goodwill is worth a considerable amount of money down the road? To account for these cases, the system should be designed to quantify the immediate negative revenue implications of accepting the sale so that it can be balanced against future revenue considerations. For example, if the system can tell the revenue manager that accepting this sale will cause an expected revenue loss of $100 (the price requested is $100 although the EMR for the requested room is $200), the manager is now in a much better position to make an informed decision. (Is this customer's goodwill worth at least $100 in future sales?)

**Sell-Up Potential**

There is usually *some* probability that a customer, when denied a lower rate, will agree to buy at a higher rate. For example, if the "ultra-saver" rate of $45 is "sold out," the customer may be willing to buy the $60 "supersaver" rate. This possibility also needs to be factored into the EMR formula. To do this, one needs merely to reflect the fact that the expected revenue from a turned-away potential "ultra-saver" guest isn't zero, it's the $60 "super-saver" rate times the probability that the customer will opt to pay that higher rate.

To see how this affects the inventory allocation process, let us take the example of a hypothetical night with very low demand such that the EMR value for the marginal room on this night is near zero. The only decision facing the yield manager for this night is "should we go for the $47 'bird in the hand' from this guest or should we try for the $60 'bird in the bush.'" The decision the revenue manager makes will depend on his or her perception of the probability that the guest will accept the $60 rate instead of booking with another hotel. To go for the $60 "bird in the bush," the revenue manager would have to believe that there is

at least an 80 percent probability that the customer will accept the higher rate, because $60 × 80 percent = $48, which is higher than the $47 rate. Because the actual probability of successful "sell-up" is unlikely to be anywhere near 80 percent for a discount-rate shopper, the best course of action for the revenue manager in this case will be to accept the guest at the lower $47 rate.

In the above example, the application of sell-up rates is simple and straightforward. Let us consider a slightly more complicated case in which the sell-up potential tips the balance in a marginal situation. In this example, one unit of inventory remains available for sale. There is a 40 percent probability that a $100 full-rate customer will ultimately book this last unit. A customer is standing in front of you who is willing to buy it right now for $50; however, there is also a 25 percent probability that he will pay the full $100 rate if you tell him that he can't buy it for $50. Should you sell him the unit for $50? If you do, you will get an expected revenue of $50 (100 percent × $50 = $50). If you do not, your expected revenue will be $65 (40 percent × $100 = $40 from the potential future customer, plus 25 percent × $100 = $25 from the guest standing in front of you), so you should *not* sell the unit for $50.

In the early years of revenue management, it was widely misperceived that the primary revenue benefit from the application of revenue management strategies and disciplines would come from mining "sell-up" potential through "bait-and-switch" sales tactics. Bait-and-switch tactics involved enticing a guest to call by publishing a low rate but then offering only higher rates when the call actually happens. However, early attempts to practice this strategy were such dismal financial failures that the consideration of sell-up potential was quickly put into its proper perspective. Suppose that in the first example the actual probability of successful sell-up was a more realistic 40 percent (half the "break-even" rate). If this were the case, the hotel would lose an

average of $24 per prospective guest each time it held out for the higher rate, because $60 × 40 percent = $24, while $48 × 100 percent = $48.

The overoptimistic assessment of sell-up potential is one of the greatest potential dangers in a revenue management program. The overzealous application of bait-and-switch strategies can result in a revenue management program that *loses* money for the firm. In a properly designed revenue management program, the appropriate reflection of sell-up potential in the system has a relatively minor impact on inventory allocations and bottom-line revenue.

Most people are surprised to learn that the proper application of revenue management practices often results in significantly higher sales and revenue per unit of capacity, but *lower* revenue per customer.

You would follow up on this decision by tracking the customer's future purchases. Ideally, you would want to capture the EMR value associated with each sale and compare it to the revenue actually received from the sale. The higher the cumulative "profit" (actual revenue less the EMR value of the room occupied), the more valuable the customer. In this manner, you may find that you have lower-volume customers who pay high prices for low-value rooms who are adding much more to your bottom line than are other high-volume customers who always pay low prices for high-value rooms.

**Contract/Promotion Evaluation**

The EMR values produced by the revenue management system are an essential ingredient in the proper evaluation of corporate contracts and other marketing promotions. If you know something about the stay patterns of a company's employees from the analysis of historical booking data on this or other similar customers, you can estimate a minimum acceptable contract price: It's the weighted average EMR

value of the room nights that you expect the company's employees to occupy.

Of course, the promises that prospective customers make concerning guest volumes and stay patterns do not always match their performance. You will want to track the actual results of the contract to see if it turns out to be as profitable as promised. The same holds with other marketing promotions—you'll want to see if they're working as expected. To do this, each time a room is sold pursuant to a corporate contract or other marketing promotion, record both the EMR value of the room that was sold and the actual revenue received from the sale. The difference represents the "economic profit" derived from the sale—the difference between the opportunity cost of the room and the actual revenue received. If you then sum these "profits" (or losses) for all of the sales made pursuant to a particular contract (or program), you'll know at the end whether or not the contract or program generated more revenue than it displaced from other existing sources of business. If it did not, then clearly the contract or program cannot have been profitable, even if one assumes that in the absence of the contract, *all* of that customer's business would be lost to a competitor.

A second key question that needs to be answered to judge the success of a contract or program is this: Did the contract or program generate enough new customers at the reduced rate to more than offset the discount offered and result in more total net revenue than before, considering the additional cost of conducting the program and servicing the extra customers? The answer to this question is usually found by statistical analysis or customer surveys.

This information also is needed to estimate the "baseline" EMR value. Because traffic and revenue changes caused by the program itself will affect the "actual" observed EMR value, an adjustment must be made to estimate what the EMR value would have been without the program.

As long as this generation/diversion information is available, it can be fed to the inventory optimization to estimate the necessary adjustment.

A contract or program cannot be judged a success unless both of these questions have a positive answer.

Sometimes competitive pressures will force you to enter into a contract in which the customer is guaranteed access to any available rooms regardless of discount availability. Although these "last-room availability" agreements erode the effectiveness of a revenue management program and should be avoided if at all possible, there is a way to minimize their damage if you're stuck with them. You should forecast the demand for rooms pursuant to these contracts and remove an equivalent amount of available rooms from inventory before valuing the remaining capacity and establishing allocations or opportunity costs. In essence, you remove this class of demand from the equation and optimize the remainder. Contracts with a last-room availability clause are much less likely to turn an economic profit than "capacity controlled" contracts. This is even more true if the contract provides "guaranteed availability" at the contracted rate.

**Overbooking**

The hotel industry is plagued by the problem of "no-shows" — people who book rooms but do not show up to use them and then often refuse to pay for them. The spread of "guaranteed reservations" programs in the hotel industry is an attempt to mitigate this problem; it has met with significant success.

To compensate for no-shows and cancellations, hotels "overbook" their capacity, trading off the possibility of empty rooms if they don't overbook enough against the ill will and out-of-pocket compensation to customers that occurs when customers are "walked" or "booked out

This trade-off should be considered in the following manner. First, the probabilities of incurring various no-show rates must be forecasted in much the same manner that demand is forecasted. In the hotel industry, no-show rates often vary by rate class/market segment, day of week, season and booking pace (the number of days prior to arrival that the reservation is made). The "cost" of failing to honor a customer's booking—including both out-of-pocket costs such as cash compensation to "walked" hotel customers and a consideration of the potential loss of future revenue from the disgruntled customers—also must be calculated.

With this information, the expected oversale cost (the probable number of oversales times the total cost per oversale) can be calculated for any level of overbooking above the actual number of rooms available for sale.

The "correct" level of overbooking is where the expected cost of an oversale for the next room to be sold is equal to the EMR value for the next room to be sold. As long as the EMR value is higher than the marginal expected cost of an oversale, it will pay to allow another room to be sold for at least the EMR value.

Hotels also suffer the related problem of "understays" and "overstays." An understay is a customer who checks out one or more days earlier than expected. Understays should be forecasted and handled in essentially the same manner as no-shows. If a hotel has implemented length-of-stay revenue management controls, some customers may attempt to evade them by intentionally booking for more days than they intend to actually stay. If this becomes a problem, it may be necessary to devise a rate structure with cancellation penalties, prepayment requirements or higher daily rates applied retroactively to understays. Before you spend too much time creating this type of "rule," it is always worth monitoring the frequency at which the problems arise. If the

frequency is only, say, 1 in a 100, it may well be decided that "protecting" the hotel against this type of occurrence is more expensive and time-consuming than bearing the cost once in a while.

Overstays—people who stay longer than originally booked—can be forecasted and handled like "walk-ups" unless local law prohibits their eviction.

The "cost" of an oversale may vary depending on whether or not there are rooms available at other nearby hotels where a walked guest can be conveniently accommodated. Some hotels are known to make check calls to ascertain the availability of backup rooms at nearby properties and they adjust the aggressiveness of their overbooking accordingly. In essence, if there are plentiful backup rooms available, the "cost" of an oversale is lower than on nights when the destination is busy.



Another cost that may vary relates to the guests that are relocated:

1. Who are these guests? What are their ancillary expenses?

2. What rate did they pay? Did the relocated guests pay the lowest rates? (Otherwise, the hotel will lose the difference between the relocated guest rate and the lowest rate someone that was not relocated pay.)

3. Are they repeat guests? If they are, the long-term costs of relocation might be higher if the guest never returns due to the relocation.

If there is insufficient information to estimate the "cost" of a walked guest, overbooking can be addressed more simply by setting statistical target limits for the probability of oversales. Booking limits can be set so as to limit the probability of having oversales to no

more than *"x"* percent. This is the traditional way of setting overbooking levels in the travel industry.

Something always worth remember in this area is that on nights when it looks likely that you are too heavily overbooked and will have to relocate some guests, you don't just have to do it based on guests arriving that day. Depending on the nature of your business you may find that opportunities exist to relocate guests who are already in house and actually generate good will in the process (e.g., if you know that a guest has a very early morning departure the day after your overbooking problem, offer to relocate them to an airport hotel and buy them dinner!)

**Pricing**

When rate structures are flexible, the EMR values produced by the revenue management model itself can provide invaluable feedback to the rate-setting process.

When EMR values are consistently higher than your published rates, it's a clear sign that your rates are too low and they should be raised to at least the EMR value. The implementation of your revenue management program should prevent the sale of rooms at these uneconomic rates anyway, but why risk alienating your customers by posting a price that is never available?

Changes in EMR values following changes in rates or rate "fences" are a reliable early indication of the effectiveness of the change. If EMR values rise following implementation of the change, it means that your marginal rooms are producing more revenue and the change was a good one. If EMR values fall, it means that the rate change is failing to meet its objectives and should be rescinded, if possible.

As long as discount pricing can be successfully limited to truly price-sensitive market segments, price reductions that move a rate downward toward a low EMR will result in increased revenue. When high price sensitivity can be combined with the flexibility to pursue involved peak/off-peak pricing strategies with numerous variations in prices by time period, revenues will be maximized by setting prices right at the level of the EMR.In the most extreme case where prices can be set on the spot rather than being preset in a rate schedule, the EMR value would tell your firm's negotiator what the lowest acceptable price would be for a particular room.

**Best Available Rate/Rate of the Day Programs**

Gone are the days when hotels could operate with a Rack Rate, corporate negotiated rates and some promotional offers—the visibility into hotel availability and pricing strategies offered by the Internet means that the consumer is often very well informed on the best rate that can be purchased in the location that they are looking for and therefore hotels have to price in order to capture the demand that they need.

Best Available Rate type programs have been utilized for some time in order to capture demand by working with a range of rates which can be deployed by day and/or length of stay based on demand. Initially, this type of rate program was designed to be used by the "unqualified" demand (i.e., guests who had no entitlement to buy at a negotiated contract rate, did not qualify for a promotional rate for the arrival date and length of stay requested, etc.). However, many hotels have experienced times when corporate or "qualified" clients who have negotiated rates complain that the "15 percent discount given in our contract does not mean anything as you never sell at the full rate anyway—sometimes your Best Available Rate is the same as my

contracted rate!" This has led to some contracts being structured around a discount off the Best Available Rate as opposed to a fixed amount. Not all corporate clients want this type of contract however, when the rate that you put in place for the *unqualified* demand will also impact the rate that you get from the *qualified* demand the decision as to which unqualified rate to put in place becomes more complicated as the impact of the decision can have a significant revenue impact. The same principle also applies to many Internet distribution channels (i.e., the rate available on roomsinyourcity.com may be pegged off the Best Available Rate that you are offering).

Ultimately what Best Available Rate type programs are setting out to do is to ensure that you maximize the revenue from the unqualified demand (and demand that is linked to it). To do this, you have to ensure that you don't offer rates to the unqualified demand that will prevent you from capturing that amount of demand from this segment that you need whilst not offering rates that "cannibalize" your business (i.e., you sell more rooms at $100 than $150, however, the revenue that you get is still the same). Generally speaking, the lower the rate, the more demand you will be able to capture. However, it is imperative that (a) the impact of the Best Available Rate on other rates is considered and (b) you are not diluting revenue unnecessarily.

In the same way that we looked at demand forecasting on busy and nonbusy nights, it is worthwhile looking at the amount of unqualified demand that you are able to get on non-busy nights and the rates at which you got it. Examination of the data may reveal that some lower price points do not generate significantly greater demand than the next price point up the scale and/or that very high rates offered in the lead up to the day of arrival generate little demand leading you to lower the rate when in fact the opportunity to capture the demand may already have passed.

Many automated revenue management systems come with a Best Available Rate module and there are numerous manual approaches to pricing the unqualified the demand (e.g., identifying “hot”, “warm” and “cold” days and pricing accordingly). Ultimately, the way that the hotel is priced not just for the unqualified demand but also for the qualified and group demand has a huge impact on revenues and profits and care should be taken to ensure that pricing policies are realistic, tuned to the market and can be successfully implemented.

## Controlling Demand

Historically you may be able to determine that the demand that you have accepted has only really been controlled by the capacity of the hotel, that is, reservations have only been denied when a night was full. Alternatively, you may know that in some cases, length-of-stay and rate controls were put in place to control the amount and type of demand that you accepted.



This section discusses the various ways in which demand can be controlled to make use of the efforts that have been put into the forecasting and optimization processes already discussed.

## Transient Business

### *Strategic and Tactical Restriction Controls*

Transient reservation controls can be broken down into two types: strategic controls and tactical controls.

Strategic controls can be defined as “rules” or “criteria” that are put in place to govern the conditions and availability of a rate regardless of the specific date of arrival. Some examples of strategic controls are as follows:

- Stay must include a Saturday night
- Rate only available for two guests
- Can only be booked more than 21 days prior to arrival (21-day advance purchase)
- Can only be booked within 14 days of arrival
- Full, non-refundable prepayment required at time of booking

Strategic controls are sometimes referred to as “fences,” that is, they are put in place to target the rate to a specific type of client and to prevent other clients, who may be likely to pay more, from booking. For example, if a discounted rate was fenced with a 21-day advance purchase and a full prepayment policy, corporate clients willing to pay more may be unwilling or unable to meet the criteria set.



Tactical controls can be defined as restrictions that are applied to rates based on specific dates of arrival. Tactically deployed controls would be at work in addition to any strategic controls set on a rate. Some examples of tactical controls are as follows:

- Closed to arrival
- Minimum length of stay
- Minimum stay-through
- Maximum length of stay

Tactical controls are used to change the availability of rates based on the conditions that exist on and around certain dates. For example, if a specific Wednesday was forecasted to be very busy, a minimum length-of-stay requirement of two nights could be put in place for all discounted rates or possibly for all rates except if the client requested a suite.

The way that tactical controls can be applied depends on two things:

1. The type of controls available in the transaction systems used

2. The amount of time available to deploy and update the controls in each of the systems that are used to take reservations

***Restriction Functionality***

Most transaction systems have provided some form of tactical restriction functionality to allow the user to prevent certain types of reservations from being taken for specific dates. Listed below are a few of the most common:

- Closed to arrival
- Minimum length of stay
- Minimum stay-through
- Maximum length of stay
- Full-pattern length of stay

Some or all of the above may be available to apply at the total hotel level or by business segment or specific rate plan.

In addition to using tactical controls such as the ones above, you also may be able to place strategic controls on rates that are configured in the system, for example, “must include Saturday night.”

***Deploying Restrictions***

When you are putting together an overall revenue management strategy, it is important to remember that manually applying restrictions in the various transaction systems being used is a fairly time-consuming task. If a restriction has been put in place, it is important that its relevance be regularly reviewed to ensure that demand that should be accepted is not rejected.

How many days prior to arrival are the majority of transient bookings made? This will provide a guideline as to how far into the future you need to regularly deploy and review reservation restrictions.



A couple of common pitfalls are as follows:

1. Not deploying restrictions early enough in the booking cycle—don’t wait until the last 7 days if 40 percent of your bookings materialize between 8 and 28 days prior to arrival

2. Deploying too many restrictions resulting in demand being denied which in fact should have been accepted.

3. Not auditing the restrictions that have been put in place—regularly check what is restricted in the PMS, CRS, GDS, etc., to make sure that they are still valid.

**Special Events**

If considered necessary, strategic and tactical controls and pricing strategies for special events should be placed as far in advance of the event as possible. As the date draws closer, the effectiveness and applicability of the controls and rates should be checked and verified in comparison to the revised forecasts and potentially to the action being taken by the competition.

***Things to Decide***

1. Which strategic control features in the transaction systems will be used?

2. Which tactical control features in the transaction systems will be used?

3. How far in advance will the tactical controls be applied?

4. How often will the tactical controls be updated?

5. Will the tactical controls be deployed by rate, by room type or by both?

6. Can the same controls be deployed in all the systems that bookings originate from or are the controls available in the PMS different from those in the CRS—if so, what impact does potentially different availability have on the client experience?

7. What impact do controls placed in one system have on other channels (e.g., is your website controlled from the PMS availability)?

**Monitor ing Demand**

This stage of the process is when you look at what is happening and compare it to what you expected to happen based on your forecasts.

**Monitoring Granularity**

As with the production of the forecasts themselves, the level of granularity at which you can monitor will depend on the time available; however, it is important to check the performance of your forecasts to ensure that what you expected to happen is, in fact, happening. If it is not, you will need to revisit the optimization decisions that you made and the booking controls that were subsequently applied.

If you have been able to calculate booking paces or curves, you can begin to compare those curves to what is actually happening. If you expected 20 bookings to have been taken for a group of market segments 14 days prior to arrival and you have, in fact, only taken five bookings, it is time to examine the forecast and optimization assumptions that you put in place for the day.



The monitoring process should be regarded as an extension of the forecasting process—if possible, the level at which you forecast is the level at which you monitor. Regular and systematic monitoring of demand and the accuracy of forecasts will lead to a greater understanding of the overall dynamics of the demand itself. This proactive activity will help to ensure that as trends and business patterns change, they are identified at a point in time when advantage can be taken of the change as opposed to noticing a change when it is too late and only reactive strategies and tactics can be deployed.

**Forecast Accuracy**

Part of the monitoring process may be for you to assess how accurate your forecast was at given points in time prior to the day of arrival (e.g.,

the forecast for a given day was 80 rooms 28 days prior to arrival and the final sold was 120—the forecast accuracy at this point in time was therefore 80/120, 66 percent (there are other ways to measure this too)). Assessing the level of accuracy is important; however, there are some points which you should bear in mind:

- It is generally easier to accurately forecast busy nights than quiet nights. You may always fill on Wednesday nights; therefore, you have enough data to be very accurate. Forecasting the occupancy on Sunday nights when sometimes you close at 50 percent and other times you close at 75 percent is much more difficult. If you measure your overall or average forecast accuracy, you may get one picture; however, you may find it interesting to break this down by "accuracy on nights where final occupancy was greater than 90 percent" and "accuracy on nights where final occupancy was less than 90 percent." This will help you really illustrate where improvements are necessary or where the level of uncertainty in the demand is by its nature going to make accurate forecasts difficult.

- 100 percent forecast accuracy should not be your goal! If you forecasted 60 percent occupancy on a given night in the future 28 days out, 14 days out, etc. would you be happier and better off if this was what was actually achieved OR if you put tactics in place to drive more demand and ended up with 70 percent occupancy? The latter is almost certainly the case. As with the first example, forecasting accuracy on non-busy nights may well be much "worse" than on busy nights as the forecast produce may lead you to take action to "prove yourself wrong."

**Glossary of Terms**

***RevPAR*—**Revenue per available room

***RevPAC*—**Revenue per available customer (including ancillary revenues)

***Yield*—**Alternative description for RevPAR

***Transient*—**Individual, non-group reservations

***Transaction data*—**Data at the level of the individual booking/cancellation/ no-show

***Unconstrained demand*—**The total level of demand that exists without the constraint of the capacity available to accommodate it

***EMR*—**Expected marginal revenue