HOTEL YIELD MANAGEMENT PRACTICES ACROSS MULTIPLE ELECTRONIC DISTRIBUTION CHANNELS

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In the hotel sector, yield management traditionally balances a supply of perishable room nights against demand by manipulating price and time of consumption. While widely accepted, Internet-based distribution channels with different cost structures complicate the process. Hotels must not only manipulate price in response to supply and demand, but must also choose which portfolio of distribution channels to use. This study investigates whether up-market European hotels use three yield management practices: varying room rates with market demand; varying participation in Internet channels with market demand; and differentiating rates on Internet channels in times of high demand. Introducing the concept of a consumer price index for hotel rates, the study found that while one quarter use the first technique, use of the two other practices was considerably lower, suggesting a lack of sophisticated yield management among participants.

Key words: Hotels; Yield management; Multichannel electronic distribution; Intermediaries

Introduction

Frequently used by airlines, hotels, and other service firms with fixed capacity, yield or revenue management matches the supply of a perishable commodity with forecasted demand via strategies that manipulate price and time of consumption (Kimes & Wagner, 2001). Already a complex process, yield management becomes more difficult to implement successfully due to electronic distribution channels (O'Connor & Frew, 2002). The number of available channels has increased dramatically, and each channel has different revenue characteristics, costs, and levels of control (Helsel & Cullen, 2005). Thus, manipulating the channels over which customers can book is an important issue. As Sigala and Buhalis (2002) note, hoteliers that successfully manage electronic distribution add value, develop their brand, and build customer loyalty; those that fail risk losing customers to intermediaries. An appropriate pricing strategy for each channel based on yield management principles is a key element of this process.

Yield management is profitable; companies that successfully implement its principles report revenue increases of 2–5% over prior results (Smith, Leimkuhler, & Darrow, 1992). Similarly, a 2006 study of US hotels by Canina and Enz found a

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strong association between better-than-average profitability and matching rate to occupancy, leading them to speculate that hotels practicing yield management ultimately perform better financially. Yet the increasing complexity of electronic distribution begs the question as to how effectively hotels implement yield management techniques across the rapidly expanding portfolio of available channels. This study examines the pricing of up-market hotels in six major European cities, comparing them to demand trends in the each market to investigate if hotels are using yield management techniques. This article borrows and adapts the economic concept of a market index—in effect, a consumer price index for hotel rooms—to track overall market demand for hotel rooms.

The article opens with an overview of yield management and the inherent complexities of yield management due to the growth in Internet-based distribution channels for hotels. This review leads to three research questions and a methodology for gathering data to address these research questions. After discussing selected study findings, the article closes with academic and managerial implications, and recommendations for future study of evolving distributions channels in the hospitality industry.

Background

The basic principles of yield management are well accepted (S. Choi & Mattila, 2005). Sheryl Kimes (2004), the guru of hospitality yield management, explains it as "the application of information systems and pricing strategies to allocate the right capacity to the right customer at the right place at the right time" (p. 53). The definition of "right" in this case is to maximize revenue for the supplier while simultaneously providing sufficient value to ensure customer satisfaction.

In practical terms, hotels must implement procedures that attempt to maximize room revenue in a changing market environment, systematically and continuously manipulating rates in response to forecasted demand (Jauncey, Mitchell, & Slamet, 1995). In most cases, hotels analyze past performance and current booking patterns, examine market trends, identify extenuating circumstances, and forecast future demand. These forecasts lead to

pricing and capacity allocation decisions that attempt to maximize revenue (Jones, 2000). The process can be manual, but computerized systems can incorporate more factors and perform more sophisticated analyses, which should lead to better forecasts and decisions. Yield management, however, is more than a computerized technique. The process melds "information systems, technology, probability, statistics, organizational theory and business expertise and knowledge" into a programmed approach to increasing revenues and improving customer satisfaction (Lieberman, 1993, p. 36).

Maximizing revenue is important for hotels because of their high fixed costs and their fixed capacity. High levels of investment hinder increasing the supply of hotel rooms in the short run to cope with peaks in demand. Conversely, overall costs decrease minimally in periods of low demand (Kimes, 2000). Furthermore, the marginal cost of selling a room is usually considerably less than the revenue generated from the sale of that room, making selling as many rooms as possible each night particularly important for profitability.

The hotel product is also perishable. Unlike in manufacturing, an unsold room on a particular night cannot be stored for future sale. Thus, any empty room represents a lost opportunity and lost revenue. As hotels rarely fill all their rooms at rack rate, they must discount in an attempt to harvest incremental business from price-sensitive guests (Hanks, Cross, & Noland, 1992). Any room rate that exceeds the (low) variable cost of occupying that room theoretically contributes towards covering fixed costs (Hanks et al., 1992). Thus, hotels should strive to sell as many rooms as possible, at practically any price, in order to maximize profitability. Research supports this strategy. For example, a 2006 US study found that a hotel's net operating percentage aligned closely with its occupancy (O'Neill & Mattila, 2006). In simple terms, the more rooms a hotel sells each night, the more likely it is profitable.

However, selling rooms at discounted prices also implies failing to maximize revenues. Thus, a tradeoff develops between selling more rooms at any price versus selling fewer rooms at the highest possible price (T. Choi & Cho, 2000). Discounting only works where both the revenue generated is

greater than the marginal cost of selling the room, and the discounted rooms sold are incremental (i.e., rooms that would otherwise have gone unsold) (Kimes, 1992). To achieve this, appropriate fences and restrictions need to be in place to stop guests from switching to lower priced rooms (S. Choi & Kimes, 2002).

One principle of yield management is to match the offered room rate to demand for the room. Classical economic theory suggests that the rate offered to the customer will be higher in periods when demand is high and lower, in the form of discounted rates, when demand is low (Edgar, 2000). The reality is more complex. According to Schwartz (2006), booking travel products such as hotel rooms differs markedly from the typical consumer purchase decision. Rather than a simple yes/no decision, the process is multifaceted. Consumers consider the rate offered, the optimal booking time, whether the booking is guaranteed, and how long to continue to search for a better deal.

Depending on the perceived savings, online consumers may continue to search for better prices after making a booking, or may give up, opting to save time rather than save money (Suri, Long, & Monroe, 2004). Developments in technology, however, particularly the growth of travel meta-search engines that query hundreds of sites simultaneously, decrease the search cost to almost zero. Coupled with last-minute deals by hotels hoping to off-load distressed inventory, this price transparency is dangerous; consumers quickly learn to wait for better deals (Thompson & Failmezger, 2005). For hotels offering last-minute pricing, "the demand boost will not be large, but the loss of revenue will be painful" (Enz, 2003, p. 5).

Revenue Management Across Multiple Channels

According to Carroll and Siguaw (2003), electronic distribution has changed how people reserve hotel rooms. Bookings that once came through travel agents and call centers now come via online channels, as both individuals and corporate travel buyers take advantage of the convenience of Internet channels. Already over one in four bookings in the US are online, up from one in 12 in 2002 (PhoCusWright, 2006). While online booking lev-

els lag in Europe, given the growth in eCommerce and the suitability of travel for sale online, online sales should quickly follow US trends and increase from their 2005 level of Euro 28 billion to approximately Euro 61 billion in 2006 (PhoCus Wright, 2007).

Internet-based distribution creates opportunities and problems for revenue managers (S. Choi & Kimes 2002). While more channels available increases reach, potentially allowing hotels to sell more rooms, the cost of using such channels varies greatly. Considering only transaction costs, direct Internet channels (e.g., the hotel's website) are cheaper than indirect channels (Helsel & Cullen, 2005). Yet more than half of all online bookings flow through intermediaries, whose transaction costs begin at around 10% (PhoCusWright, 2006). Informal discussions with industry practitioners indicate that several online intermediaries demand (and frequently receive) mark-ups of between 17% and 30%. In addition, other administrative, technical, and organizational costs mean that working with certain online intermediaries can be two to three times more expensive than traditional methods.

As most hotels use a portfolio of channels to reach customers (Buhalis & Laws, 2001), sophisticated yield management must balance each channel's rate against that channel's distribution cost (S. Choi & Kimes, 2002). However, little empirical research on yield management incorporates distribution costs across multiple channels. In a 1999 paper, Noone and Griffin proposed combining *Activity Based Costing* with yield management principles in what they called *Customer Profitability Analysis*, while S. Choi and Kimes (2002) used a simulation to demonstrate applying yield management techniques to multichannel problems. Yet in a 2002 survey, O'Connor (2003) concluded that in practice there seemed to be no relationship between distribution channel costs and rates offered. Few studies provide practical advice for how to implement yield management in such situations. As O'Connor and Frew (2004) point out, "the decision as to which channel to use has become increasingly complex, and hotel managers currently have little guidance to help them determine which best match their needs" (p. 180).

One potential strategy—to charge high prices on channels with high distribution costs (O'Con-

nor & Piccoli, 2003)—has two possible implica-
tions: to equalize the net contribution from indi-
rect bookings, or to drive customers towards
cheaper direct channels. All other things being
equal, the high rate would either compensate for
the high distribution cost or bring other branding
and customer loyalty benefits associated with di-
rect customer contact (Helsel & Cullen, 2005).
Characteristics of Internet distribution, however,
make this strategy problematic. For example, hav-
ing high prices on online intermediary channels
can be difficult; hotels often do not control the
retail price on such points-of-sale.

In the classic *merchant model* of many online
intermediaries and wholesalers, the hotel provides
a net rate free of commission, which the interme-
diary then marks up (Carroll & O'Connor, 2005).
Thus, the intermediary sets the retail price and can
display a lower price than the one available on
direct channels simply by accepting a low markup.
Furthermore, many online intermediaries give
Best Rate Guarantees to their customers—in ef-
fect promising to undercut or match the price from
buying hotel direct.

Furthermore, the Internet's transparency makes
it easy for customers to compare prices across
multiple channels. If prices vary illogically, per-
ceived unfairness can lead customers to defect,
spread negative information, and initiate other ac-
tions that damage the seller (Xia, Monroe, & Cox,
2004). Unaware and unconcerned about the logis-
tics of working with online intermediaries, cus-
tomers simply see a lower price on indirect rather
than direct channels. Consistent pricing across all
channels addresses this issue, but similar chal-
lenges to those discussed above exist in success-
fully implementing this strategy across multiple
distribution channels.

A second strategy dictates closing channels
with high distribution costs in periods of high de-
mand, assuming this is possible under the terms of
the intermediary contract. When demand is high,
rooms are theoretically easier to sell. Thus, it is
better to sell rooms through direct channels with
lower transactions costs rather than through the
more expensive intermediaries (Wong & Law,
2005). A hotel behaving logically and actively
managing its channels of distribution should close
third-party channels when demand is high.

Study Overview and Methodology

The objectives of this study are to assess the
extent that hotels are using three yield manage-
ment techniques: varying price in response to
changes in market demand; opening/closing elec-
tronic channels of distribution in response to changes
in market demand; and differentiating prices on
third-party channels based on changes in demand.

Based on the previous discussion, effective
yield management should lead to a positive rela-
tionship between market demand and room prices.
In periods of high demand, prices should rise as
managers raise prices in an attempt to maximize
sales from limited room inventory. Conversely, in
periods of low demand, prices should fall as man-
agers attempt to attract more price-sensitive guests
through discounting. Thus, the first research ques-
tion:

RQ₁: As the booking date approaches, do room
rates vary in response to marketplace demand?

As demand increases, managers should close
indirect channels, hoping to sell remaining rooms
through less costly direct channels. Conversely, in
periods of low demand, the hotel should remain
open for sale on intermediary channels as yield
managers attempt to maximize the possibility of
selling rooms irrespective of distribution cost.
Thus, the number of channels used by the hotel
should decrease in periods of high demand, and
increase in periods of low demand. Therefore:

RQ₂: Does the number of electronic channels
used to distribute the product vary inversely
with demand?

Finally, an alternative strategy is possible. In
periods of high demand, hotels could increase
prices on indirect channels to compensate for high
distribution costs. In such cases, the hotel would
remain open on all points of sale, but prices on
intermediary channels would increase by a greater
amount than prices on direct channels. Thus, the
third research question:

RQ₃: As demand increases, do room rates on in-
direct channels increase at a faster rate than
room rates on direct channels?

Sampling and Data Gathering

A common limitation of research on the use of new technologies is relying upon stated behavior rather than measuring actual behavior (Rogers, 2003). Thus, rather than survey hotel managers on their stated yield management practices, this study uses prices on hotel and intermediary websites in order to measure actual behavior. The analysis included four- and five-star hotels in six major European cities, as research suggests many economy and midscale hotels offer just a single price based on season or day of the week (Canina & Enz, 2006; Murphy, Schegg, & Qiu, 2006). Such practices, however, are less a deliberate strategy and more a reflection that such properties prefer the simplicity of a single price irrespective of demand, point of sale, and other external factors (Varini, Engelmann, Claessen, & Schleusener, 2003). Excluding economy and midscale hotels from this study reduces their stabilizing effect on macro-level pricing and helps clarify changing demand's effect on price. The conclusions about yield management practices discussed at the end of this study, however, do not generalize to the entire industry. With the methodology established, subsequent studies could consider the behavior of other types of hotel or the entire hospitality industry.

To select 10 properties each in Amsterdam, Barcelona, Berlin, London, Paris, and Rome, the population was all hotels listed in the 2005 edition of the *ABC Hotel Guide*. A random number generator selected properties. The characteristics of the sample are shown in Table 1.

In addition to the hotel's direct website, the analysis included the five largest producers of online hotel reservations in Europe: Expedia.com, Lastminute.com, Octopustravel.com, Priceline.co.uk,

Table 1
Breakdown of Hotel Properties in the Study

City	Overall	4-Star	5-Star	Unbranded	Branded
Amsterdam	10	4	6	1	9
Barcelona	10	8	2	9	1
Berlin	10	4	6	2	8
London	10	5	5	3	7
Paris	10	9	1	6	4
Rome	10	3	7	5	5
Total	60	33	27	26	34

and Travelocity.com (Carroll & O'Connor, 2005). During February 2006, two trained researchers simultaneously attempted to reserve a double room for a specific date (March 1, 2006) in each property via each online channel. To test how prices varied, the booking window was:

D-21—Long advanced booking (21 days in advance)
D-14—Moderate advanced booking (14 days in advance)
D-7—Short advanced booking (7 days in advance)
D-1—Very short advanced booking (1 day in advance)

The lowest publicly available rate (i.e., no corporate or association rates), including all taxes, service charges, and booking fees was recorded. After a website displayed the rate and availability, the researchers recorded the data; in no case did the researcher complete the reservation.

Room Price Index

A challenge for the analysis was identifying a suitable metric to measure overall market demand. The ideal situation would be actual and forecasted bookings for the arrival date in question for each hotel at each of the four data points. Yet getting cooperation from 60 randomly selected properties rendered this approach impractical. Other possible approaches included Average Daily Rate (ADR) and occupancy data such as that collected by Smith Travel Research in the US, or consulting companies such as Horwath International in other regions. At the time of the study, such data were unavailable for European cities, and in any case would have been unsuitable; it was historic data reflecting what happened on a particular day in the past rather than recording the actual bookings or ADR at a future date. Other macroindicators, such as tourism arrivals, were rejected for a similar reason.

Given no suitable metrics, this study borrowed from economics and adapted techniques behind consumer price indexes to create a room price index that measured changes in price levels as the booking date approached. Consumer price indexes, or more accurately, cost of goods indexes, mea-

sure changes in prices in the retail sector resulting from economic pressures (Fenwick, 2006). Assuming that hotels react to demand in a logical manner (i.e., increase prices when they are busy and decrease prices when they are quiet), their combined prices over time should reflect market trends. For each city, the average of the 60 possible rates (6 channels times 10 hotels) for the D-21 date served as the base index for that city. Subsequent calculations used the average prices for each date (D-14, D-7, and D-1) and divided that date's average price by the base rate (D-21) to calculate a market index. Thus, a figure greater than 1 meant that the average rate on the date in question was higher than the base D-21 rate, and vice versa. The results for each of the six cities, shown in Figure 1, suggest several trends.

The average rate for Barcelona hotels dropped consistently and considerably as the booking date approached, suggesting Barcelona's room supply exceeds demand and hotels were dropping prices to stimulate demand. In Amsterdam and Paris, average rates initially fell but subsequently climbed

strongly, suggesting strong demand and hotels increased prices to help ensure that each room sold for as high a price as possible. The converse was true in London and Rome; average rate initially rose but then fell dramatically, possibly as forecasted demand failed to materialize and hotels discounted to fill rooms by attracting price-sensitive guests.

Results

To investigate the first research question—whether room rates vary directly with overall demand—individual changes in rate over time were correlated with the market index for each city. As explained earlier, if a hotel applies basic yield management principles, its rates should vary with marketplace trends. Thus, if the market is busy—a market index greater than 1—the hotels' prices should be higher and vice versa. Such a situation would result in prices correlating positively with the market index in the city in question. Figure 2 illustrates the concept, whereby Hotel A tends to
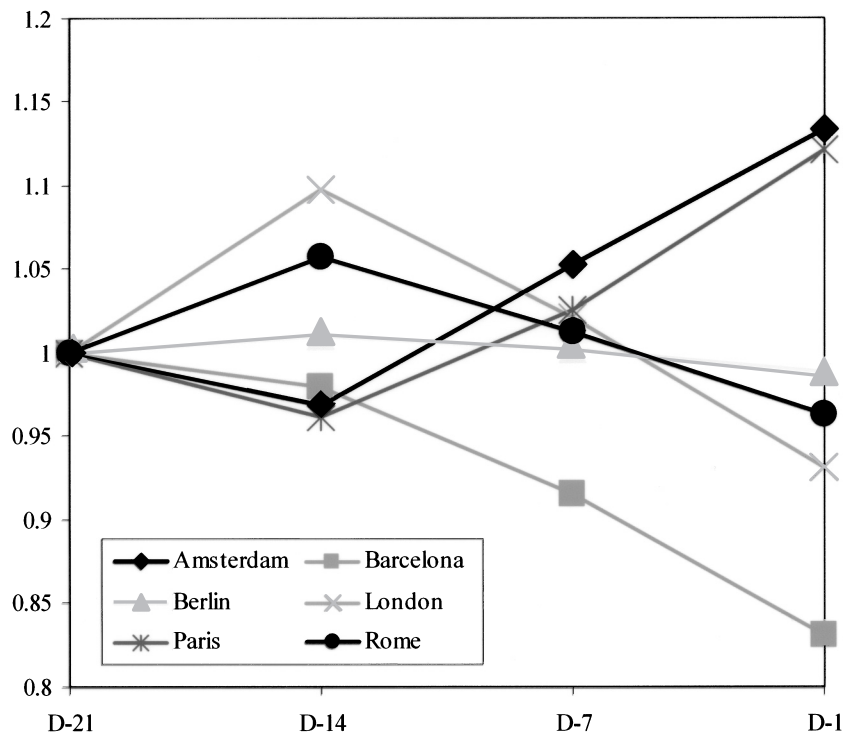
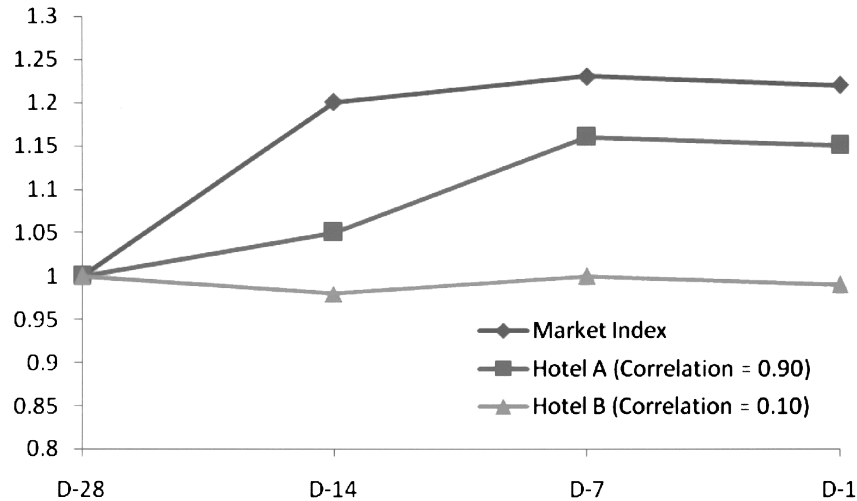

Figure 1. Market indexes by city.

Figure 2. Illustration of correlation between hotel rates and the market index.

vary its rates to in response to market demand, reflected in a high positive correlation coefficient (0.9). Hotel B does not vary its prices in response to demand, reflected in a low correlation coefficient (0.1).

Table 2 presents the correlation between average room rate and the market indexes, which varied greatly depending on city. Based on four data points and a one-tailed test, a correlation coefficient of greater than ± 0.9 is significant at $p < 0.05$ (Aczel & Sounderpandian, 2002). Across the entire sample, just under one quarter of the hotels (23%) showed a significant positive correlation between their rates and the market trend. Use of this technique was particularly high in Amsterdam and Barcelona with four hotels each, twice in London and Paris, once in Rome, and nonexistent in Berlin. Similar analyses using the hotels' number of rooms, star rating, and brand membership found no significant relationships, suggesting that hotel size, category, and chain affiliation had no relationship with varying prices with market trends.

To test the second research question—whether hotels reduce intermediary channels in periods of high demand—the number of third-party channels used by hotels on each date was calculated. As explained earlier, when demand is high, hotels should close third-party channels to drive business towards their lower cost direct channels and maximize contribution margin. At a macrolevel, the findings (Table 3) suggest that hotels used this technique. In both Amsterdam and Paris, where as

Table 2

Correlation Between Changes in Average Room Rate and Market Index

	Amsterdan	Barcelona	Berlin	London	Paris	Rome
Hotel A	0.59	0.90	−0.71	0.70	0.19	0.49
Hotel B	−0.40	0.84	0.66	−0.20	0.89	0.41
Hotel C	0.98	0.86	0.72	0.92	0.98	0.55
Hotel D	0.31	1.00	0.29	0.71	0.71	0.26
Hotel E	0.95	1.00	0.00	0.81	−0.32	0.06
Hotel F	0.99	0.90	−0.58	0.71	0.95	0.75
Hotel G	0.99	0.98	0.09	0.90	0.07	0.82
Hotel H	0.30	−0.44	0.74	0.93	0.81	0.95
Hotel I	−0.79	0.93	−0.21	−0.03	0.77	0.24
Hotel J	0.83	−0.02	0.15	0.77	−0.06	0.23
Significant positive correlation	40%	50%	0%	20%	20%	10%

Table 3

Average Number of Third-Party Channels in Use

City	D-21	D-14	D-7	D-1
Amsterdam	2.50	2.70	1.90	1.90
Barcelona	3.90	3.70	4.00	4.00
Berlin	2.80	2.90	2.60	2.60
London	3.00	2.60	1.90	1.90
Paris	2.50	3.10	2.30	2.30
Rome	3.00	3.30	3.00	3.00

previously discussed, the market index indicated demand grew as the booking date approached, the average number of channels used dropped dramatically. Similarly, in Barcelona, changes in the market index indicated that demand fell and the average number of channels used by Barcelona hotels increased as the booking date approached. However, the behavior of the London hotels seems to go against the logical strategy. While the market index indicated weak demand (0.93 on D-1), the average number of third-party channels decreased as the booking date approached.

To examine the second research question, however, necessitated analyzing the behavior of the individual hotel, not hotels as a set. Thus, the number of third-party channels used by each hotel on each date (irrespective of rate) was calculated and correlated against the market index. If hotels close third-party channels in periods of high demand, there should be a negative relationship between the market trend and number of open channels. However, as Table 4 shows, there was no evidence of the hotels using this technique. While several negative correlations existed, all fell short of statistical significance at $p < 0.05$ and thus suggest no association between market demand and number of channels used. Furthermore, three Barcelona hotels, one hotel in Amsterdam, London, and Rome showed a significant positive correlation between the number of channels and the market index. As demand grew, these six hotels increased the number of channels.

Table 4

Correlation Between Number of Third-Party Intermediaries Open and Market Index

	Amsterdam	Barcelona	Berlin	London	Paris	Rome
Hotel A	−0.32	−0.81	−0.76	−0.25	−0.29	−0.51
Hotel B	0.57	0.67	0.51	−0.16	−0.20	0.55
Hotel C	−0.86	0.26	−0.10	0.92	−0.83	0.31
Hotel D	−0.29	0.90	0.52	0.71	0.79	0.73
Hotel D	−0.75	0.86	0.58	0.62	−0.57	−0.27
Hotel F	0.22	0.92	−0.58	0.21	0.08	0.80
Hotel G	−0.56	0.92	0.17	0.87	−0.55	−0.19
Hotel H	0.91	−0.24	0.63	0.00	0.82	0.86
Hotel I	0.62	0.95	0.00	−0.76	−0.68	−0.83
Hotel J	0.98	0.87	−0.52	−0.62	−0.21	0.94
Significant positive correlation	20%	30%	0%	10%	0%	10%

Table 5

Correlation Between Use of Online Intermediary Channels and Market Index

	Amsterdam	Barcelona	Berlin	London	Paris	Rome
Expedia	0.36	−0.85	0.03	−0.12	0.26	0.14
Priceline	0.00	0.06	−0.61	0.27	−0.73	0.14
Octopus	0.20	0.03	0.61	0.17	0.67	0.76
Lastminute	0.36	−0.40	0.61	−0.17	0.26	−0.49
Travelocity	−0.87	−0.83	−0.74	−0.17	−0.26	−0.14

Subsequent discussions with industry practitioners revealed that contractual issues with the third-party intermediaries may cause this result. Online intermediaries vary greatly in the flexibility they give to hotels to add or (particularly) take away inventory (Anderson, 2003). Some permit total flexibility, while others tie properties into fixed allocations that are difficult to change. A post hoc analysis investigated differences in hotel behavior with each intermediary. Table 5 correlates the number of times inventory was available on each intermediary against the market index for the relevant city. As in the last analysis, a negative figure suggests yield management by closing channels when demand is high and vice versa. Once again, while several high correlations existed, none were statistically significant.

Table 5 also shows that channel use varied by city. Certain channels (e.g., Travelocity.com) seemed more flexible than other channels (e.g., Octopus Travel). Although the results fail to suggest the cause of this flexibility, follow-up discussions revealed that Octopus Travel works on the merchant model. Hotels can increase allocations in slow periods, but allocations are difficult to reduce when business is good, which helps explain the trends in this study. In contrast, "supplier friendly" intermediaries permit allocation changes in both directions, helping explain their greater use to manage yield.

In order to test the third research question—in periods of high demand, room rates on intermediary channels should be higher than those available on the hotel's direct website—the difference between the rate on the brand site and the average rate on third-party intermediaries at each data point was calculated. Subtracting the former from the latter meant that when the rate charged by the

intermediary was higher, a positive figure would result. If the proposed research question is correct, the magnitude of this figure should vary in line with demand and thus was correlated with the market index for each city (Table 6). A positive correlation coefficient would indicate use of this technique.

As Table 6 shows, only seven of the hotels surveyed set their prices higher on third-party channels when demand was high. Just three hotels in Barcelona, two hotels in Amsterdam, and one hotel each in London and Rome used this technique.

Conclusions

This study extends prior research by examining how up-market European hotels apply three yield management techniques: varying room rates in response to market demand, opening/closing intermediary channels based on market demand, and charging higher prices on intermediary channel based on market demand.

Less than one quarter of those surveyed used the most basic technique—vary price in response to market demand. This was considerably higher in Amsterdam and Barcelona, perhaps indicating more professional management of pricing than in the other cities surveyed. Brand membership, the hotel's size, or star rating failed to explain these findings, as subsequent analysis showed no significant differences in behavior across these variables.

Table 6
Correlation Between Direct/Indirect Price Difference and Market Index

	Amsterdam	Barcelona	Berlin	London	Paris	Rome
Hotel A	−0.32	−0.81	−0.76	−0.25	−0.29	−0.51
Hotel B	0.57	0.67	0.51	−0.16	−0.20	0.55
Hotel C	−0.86	0.26	−0.10	0.92	−0.83	0.31
Hotel D	−0.29	0.90	0.52	0.71	0.79	0.73
Hotel E	−0.75	0.86	0.58	0.62	−0.57	−0.27
Hotel F	0.22	0.92	−0.58	0.21	0.08	0.80
Hotel G	−0.56	0.92	0.17	0.87	−0.55	−0.19
Hotel H	0.91	−0.24	0.63	0.00	0.82	0.86
Hotel I	0.62	0.95	0.00	−0.76	−0.68	−0.83
Hotel J	0.98	0.87	−0.52	−0.62	−0.21	0.94
Significant positive correlation	20%	30%	0%	10%	0%	10%

The results showed no support for the second technique—closing third-party intermediaries in periods of high demand. No hotels used this tactic at a significant level and six hotels contradicted this tactic, significantly so. This unexpected result may be due, in part, to contractual arrangements with the online intermediaries rather than hotels' lack of awareness or unwillingness to reduce online channels when demand is high. Use of the third technique—differentiating prices on third-party channels to compensate for the higher cost of distribution and equalize net contribution—was also low, used by just seven of the 60 hotels.

Thus, the use of yield management techniques across multiple online distribution channels by the surveyed hotels seems unsophisticated. Only one quarter used the most basic technique, and use of more advanced options was considerably lower or in the opposite direction. These findings suggest that up-market hotels in Europe might benefit from a more consistent application of such techniques. In simple terms, they could make more money by more closely monitoring the external marketplace and adjusting their pricing and inventory allocation accordingly.

The findings echo earlier studies (see, e.g., Luciani, 1999) and suggest slow progress in the implementation of professional yield management by European hoteliers. While barriers, particularly technological and organizational, undoubtedly exist, the rewards are compelling. Increased revenue of between 2% and 5% over prior results should in itself act as sufficient motivation for implementation (Jones, 2000; Smith et al., 1992).

In addition, by refocusing yield management techniques away from the traditional maximization of sales approach towards maximizing contribution margin and profitability, additional benefits are possible. One strategy for doing this is actively managing the hotel's portfolio of electronic distribution channels. This article proposes two tactics for doing so: in periods of high demand, closing out third-party channels or having higher prices on third-party channels. The first tactic would have minimum effect on sales but would yield higher profits because of the direct channel's lower cost of distribution. The second tactic would increase both sales and profits, as the higher selling prices compensate for the higher distribution costs of

third-party channels. Successful and consistent implementation of either technique has the potential to add substantially to the hotels' bottom lines.

Academic Implications and Future Research

Research on the effects of evolving electronic distribution channels in the hospitality industry is at an early stage (O'Connor & Murphy, 2004). Literature last century noted the challenges and opportunities that hotels face (Hanks et al., 1992; Jauncey et al., 1995; Kimes, 1992) and later studies gave insights into better yield management techniques (Kimes, 2000; Meeksiz, Gursoy, & Icoz, 2006; Schwartz, 2006; Shoemaker, 2003). Few studies, however, examined an integral part of channel management, distribution channel costs (S. Choi & Kimes, 2002; Noone & Griffin, 2002; O'Connor, 2002). By proposing the concept of a market index as a metric of market demand, this article increases knowledge and understanding of the current practices of European up-market hotels. Thus, this article adds to the literature on the complex dynamics of yield management, distribution costs and distribution channels.

The article has several limitations, which future research could address. Firstly, the use of the market index as a metric for demand needs validation. As already discussed, the challenge lies in identifying how to achieve this, as existing secondary data sources are insufficient. Primary research is needed, but is problematic as collecting or sharing data about future occupancy on a market level is regarded as anticompetitive (see, for example, the high profile case of Paris luxury hotels prosecuted for sharing data of this type; Crampton, 2005). The index in this article is basic, and needs further development. An initial suggestion would be to weight the prices of the channels assessed in the calculation of the index based on their contribution to booking volumes in each city.

The study also has limited generalizability. As it explores the extension of a price index to a new domain, it was kept simple to help observe cause and effect. Only six markets and a sample of hotels were examined. Furthermore, the study was limited to a single, randomly selected, date. Surveying more hotels and multiple dates—perhaps in different regions and using some form of automation—would increase the reliability of the findings. A further limitation is surveying only five online travel intermediaries, and different results might be found with an expanded or a different set of intermediaries. Yet as these five intermediaries represent over 80% of online hotel rooms booked indirectly in Europe (Carroll & O'Connor, 2005), alternative channels should have little effect on the findings.

Lastly, many hotel companies use restrictions or rate fences (e.g., based on customer, transaction, or consumption characteristics such as minimum number of nights stay, whether the reservation is changeable and/or cancelable) to prevent customers from trading down to discounted rates (Kimes, 2002). Although a widely used tool, this study did not consider such restrictions, simply recording the lowest publicly available rate irrespective of any fences. As the objective was to establish if companies were engaging in yield management practices, not the sophistication of these practices, this seemed acceptable, although the issue merits further consideration. This study ignored restrictions, which could influence a customer's decision to book on a particular channel. Are hoteliers applying restrictions effectively and logically to drive business to selected channels? Consumer-based research to establish the effect of both higher prices on intermediary channels and rate fences would help industry identify appropriate strategies to maximize both revenues and profitability.

Biographical Notes

Peter O'Connor is Professor of Information Systems at Essec Business School France and serves as Academic Director of Institute de Management Hotelier International (IMHI), its specialized MBA program in hospitality management. His primary research, teaching, and consulting interests focus on the use of information technology in the hospitality sector. Previously he held a visiting position at the Cornell School of Hotel Administration and worked in a variety of international positions in hospitality management in sectors ranging from luxury hotels to contract food services.

Jamie Murphy's, Associate Professor, background includes complementary industry and academic experience. In addition to owning/managing hospitality businesses, he served as the European Marketing Manager for US sports companies. Dr. Murphy's research focus is effective use of the Internet for citizens, businesses, and governments.

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