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Revenue Management Indicators and Performance Related Measures in the Hotel Industry

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Abstract

Revenue management indicators in the hotel industry, such as occupancy rate and revenue per available room, prove the effectiveness of this managerial method directly related to revenues and customers. The study also considers the hotel activity in terms of operating costs and correlates revenue management indicators to the operating efficiency ratio, evaluating the impact of revenue management on hotel profitability. For this purpose, a case study approach was used based on hotels located in North and Central Italy, and Sardinia. The research shows that there is a good correlation between the growth of operating efficiency ratio and revenue per available room during the period 2006-2009 and highlights that, on average, effective revenue management strategies on revenue per available room have a direct and positive influence on profitability.

Key words: Hotel industry, Revenue management indicators, Operating efficiency ratio, Hotel performance

Introduction

Revenue management (RM) has been widely researched in hospitality literature (Chiang, Chen and Xu 2007). Shoemaker and Gorin (2006) report RM as one of the issues most investigated in the field of hospitality. The method is considered a key tool for advantageously using the resources invested in capacity-constrained firms in the tourism sector (Donaghy, MacMahon and McDowell D. 1995; Godwin, Lieberman and Wilson 2000; Kimes 1989; Phillips 2005). Principally seen in airlines, hotels, cruise lines and car rental firms, the strategic approach bases its strength on consumer behaviour prediction, optimising unit of inventory availability and price, with

the objective of maximising revenues and profitability. A number of case studies demonstrate the relationship between the managerial method and an increase in revenues in the tourism industry (Yeoman and McMahon-Beattie 2004).

The success of a revenue management system is expressed through a set of indicators (Kimes and Singh 2009; Whelan-Ryan 2000). Specifically, the hotel industry observes the effects of appropriate pricing policies applied to opportune market segments in terms of the occupancy rate - OR - and the measure of the revenue per available room - RevPAR.

These RM performance measures are strictly connected to the entity of revenues and customers. There is a need to combine this information with financial measures that consider the cost side of hotel operational activity, and thus the impact of RM on profitability.

The aim of the study is to ascertain the effectiveness of the revenue management system through the fundamental indicators of occupancy rate and revenue per available room, and the related effects on other performance measures adopted in management accounting systems, specifically the operating efficiency ratio - OER. For this purpose, a case study approach was used based on hotels located in Italian destinations well known in the tourism market. Interviews were conducted with hotel entrepreneurs and managers, and a questionnaire for key staff members to complete was delivered. In the case study, the revenue management practices of the hotels were analysed, considering also the effects on occupation and revenues, and on the operating efficiency ratio. As a result, the potential of revenue management in improving occupation, revenues and, consequently, profits in the hotel industry can be evaluated.

The article comprises the following sections. A literature review on RM indicators and hotel performance measures is presented in the next section. The third section provides the objective, the research questions and the methodology of the study. The fourth section is intended to give an overview of the hospitality business in an Italian context. The fifth section is focused on the case study and shows what emerged from the consideration of the impact of the revenue management system on hotel performance measures. Finally, the last section renders the conclusion.

Literature review

Hotel economic performance can be evaluated through different operational ratios. Some of these ratios can be utilized by the hotels which apply the revenue management system as revenue management indicators in order to estimate the impacts of the revenue management strategies on business results. The fundamental ratios for monitoring hotel performance in the revenue management system are the occupancy rate and the Revpar (Shoemaker 2003; Mainzer 2004).

The RevPAR, revenue per available room, is the measure of performance widely utilized in the hotel industry. The RevPAR can be calculated by dividing room revenue by the number of available rooms. It is a ratio that combines the average daily rate - ADR - and occupancy rate and, in fact, can be also calculated by multiplying the occupancy percentage by ADR (Cross et al. 2009).

In order to estimate the RevPAR different information has to be collected. Managers have to define the exact room supply volume. A satisfying indicator is the *number of room nights available*, calculated as the number of hotel bedrooms multiplied by the number of nights in a specific period. Frequently the hotel management, according to the Uniform System of Accounts for the Lodging Industry (American Hotel and Motel Association 2006), tends to exclude from the total stock of available rooms those which are allocated to employees, those which are not available for renting because they are under maintenance or seasonally closed rooms. With regard to seasonal hotels, the practice of excluding from the calculation the nights of the low season or the number of rooms closed in the low period is widespread. The obvious effect of this tendency is an alteration of the RevPAR calculated.

The indicator of the room demand volume is the *room nights sold*, calculated as the number of room nights rented during the period of observation.

The ratio of the number of room nights sold and room nights available, expressed as a percentage is the *room occupancy rate* (American Hotel and Motel Association 2006), which emphasizes the hotel capacity utilization

and the room supply efficiency. It is clear that the misrepresentation of the two components of the ratio influences the validity of the index.

The *average daily* rate is the measure of room demand value and represents the average price of a hotel room, considering all type of rooms; single, double, suite, etc. (Schmigdall 1997). It is calculated as the ratio of the room revenues achieved, net of sales tax, in a specific period and the number of rooms sold in the same period. The greatest problem in defining this measure is the difficulty in separating room revenues from those generated by other services like breakfast and other meals, wellness services, etc. In fact, the room services and the linked revenues are frequently aggregated to the other services which form the hotel packages.

Slattery (2002) provides some principles in order to avoid these obstacles in defining a consistent measure of RevPAR. In order to limit the overestimation of the occupancy rate, it is opportune to consider the total room stock with no reduction of the number of rooms and nights available. In order to avoid a distortion of the average daily rate, it is recommended that the revenue generated by the room nights sold and the criteria for the disaggregation should be explicit. The other incomes should be reported separately.

The RevPAR is a combination of the average daily rate and the occupancy rate. Generally "a hotel may have a high paid occupancy percentage by sacrificing rate or a high ADR by sacrificing occupancy" (Schmidgall 1997: 14). The introduction of revenue management enables an increase in both indices. Revenue management can control the exchange between average rate and occupation (Orkin 1989). Through revenue management, a hotel can select the opportune mixture of the two variables, in order to maximize realized revenues. As Jones demonstrates through the analysis of some case studies, after the introduction of revenue management, hotel profits increase, with this improvement dependent prevalently on the opportune management of the average rate, rather than a significant growth in the occupancy rate (Jones 2000). In no case study does the improvement of one variable, the ADR for example, impact negatively on the other indicator, the occupancy rate.

RevPAR is an important operational indicator, but as it is evident, considers only revenue, totally disregarding issues concerning cost and profit. As Edgar (2000) points out, not all the combinations of occupancy rate and average daily rate produce the same positive effects on profitability. Different combinations of OR and ADR could produce the same RevPAR, but different levels of room servicing costs (Jones and Lockwood 1989). This means that a better utilization of the hotel capacity, highlighted by an improvement in the yearly occupancy rate, could imply additional costs and consequently could hide a remarkable reduction of profits. Managers should select the opportune mix of OR and ADR in order to obtain the maximization of profitability.

The study considers, together with the principal indicators of revenue management, the OR and the RevPAR, an index, and the operating efficiency ratio, which combines the revenues and costs.

The *operating efficiency ratio* - OER is a profitability ratio (Schmidgall and DeFranco 2004) largely used in financial analysis and performance measurement, quantifying the operating performance of a firm expressed as a percentage of sales. The index is developed according to rules introduced by the uniform system of accounts for the lodging industry (American Hotel and Motel Association 2006). Particularly, OER is calculated as the ratio between income before fixed charge and management fees, and revenues (Schmidgall, 1997). The income before fixed charges and management fees is calculated as revenues less operative costs excluding leases and other specific costs (McEvoy 1997; Schmidgall and DeFranco 2004).

McEvoy (1997: 60) describes the OER in this way: "The most widely recognized measure of overall operating performance is the operating efficiency ratio, which measures management's effectiveness in generating revenue and controlling operating expenses".

The combination of information on both RM indices and OER could also help to identify the authentic effectiveness of revenue management on the hotel economic results.

Methodology and research questions

The research aims to correlate some revenue management indices and hotel performance in terms of operating costs and revenues. The efficacy of the revenue management system is considered in a more general context embracing the cost side of hotel operations. An improvement in the hotel occupation modifies the cost structure of services offered and needs to be managed in order to benefit profits and performances.

A case study approach was used in the research process. This method permits the study of events in their real context (Yin 2009). In the research the hospitality industry sector in Italy is described and the effectiveness of revenue management practices is explored. These research questions were investigated: 1) Does RM improve prevalently revenues or more effectively profits too? 2) Is there any correlation between the growth of RevPAR and of OER (operating efficiency ratio)?

Different destinations were selected in Italy, considering their importance in the international tourism market. A number of hotels, representative for the investigation (Brymann and Bell 2007; Smith 2003), form the sample of the study. The hotels have been divided into classes related to the amount of annual revenues.

In the effort to answer the above mentioned research questions, a three step approach was followed, gathering both qualitative and quantitative data. In the first step stakeholders and managers of the selected hotels were met with to explain the research project and acquire general information about the hotel's characteristics. In the second step a questionnaire was delivered to hotel key informants to complete regarding general data about the hotel, and statements of income were collected. In the third step semi-structured interviews were conducted with the revenue managers regarding revenue management practices, hotel performance trend, demand data and market data.

4. An overview of the hospitality business in Italy

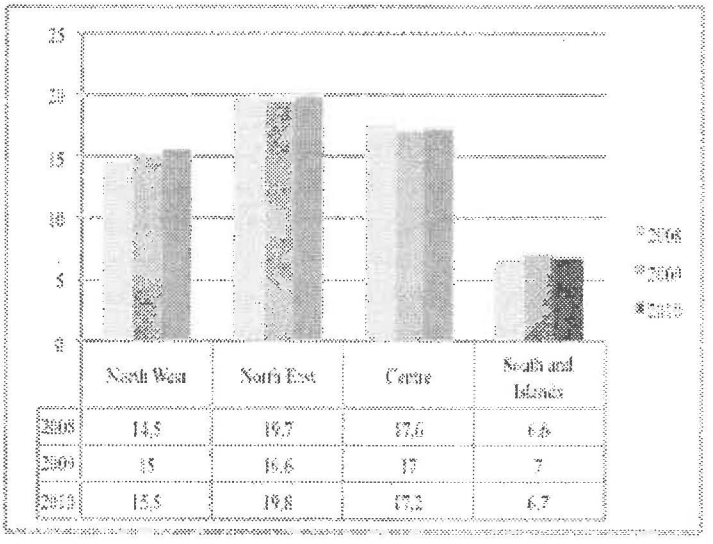
In 2010 about 44 million foreign people visited Italy for tourism and another 14 million for business or other reasons: a comparable result was

reached only in 2007, before the economic crisis, but the characteristics of the demand have strongly changed. Some data can be useful to appreciate the new trend by a RM perspective (Istat 2010; RTBicocca 2010):

- the average daily expenses have reduced from 95.2 euros to 88.6 euros for person;
- European citizens, usually able to spend holidays in Italy, are looking for less expensive destinations, such as Spain and Croatia (in 2010: -6.1% from Germany, -5.7% from UK, -16.9% from The Netherlands, -1.8% from France);
- on the other hand, tourists from emerging countries are increasing (+37.7% Russia; +13.0% Eastern Europe), as well as from North America (+2.8% US; +9.8% Canada) and from Japan (+9.7%), despite the high exchange rates;
- in 2010 only 52% of tourists spent their holidays in a hotel (58% in 2006) with an increase in less expensive solutions, like hostels and camping.

Favorite destinations are Northern and Central areas of the country, as indicated in Exhibit 1.

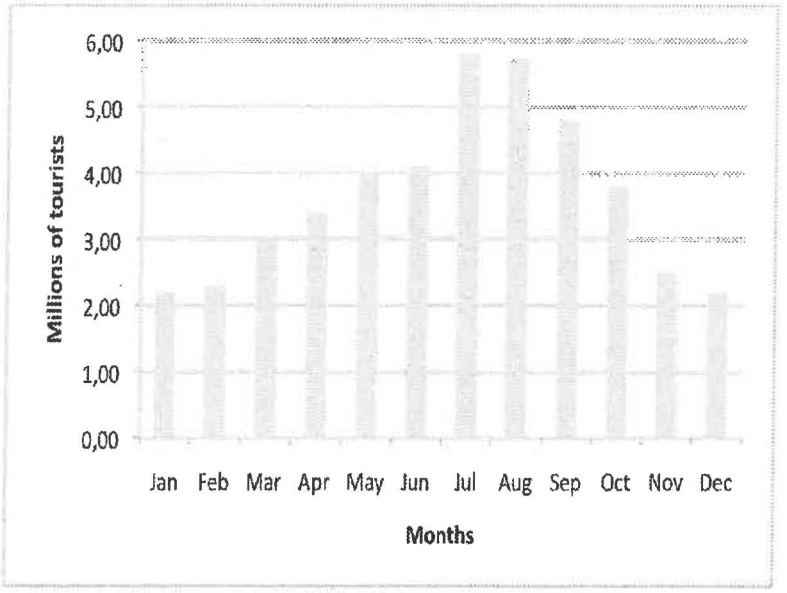
Exhibit 1 - Favorite destination (/millions of people)



Generally, the peak of tourists is between June and October, during spring and summer time (5.7 millions on August 2010), as shown in *Exhibit 2.*

Until 2002/2003 the flow of tourists was more homogeneous among the various months. In part, this is related to the significant reduction of people coming from the North of Europe, who were able to spend their holidays in Italy even during the low season, due to comfortable weather conditions. The opportunity to travel to more exotic destinations at a lower price modified their behavior.

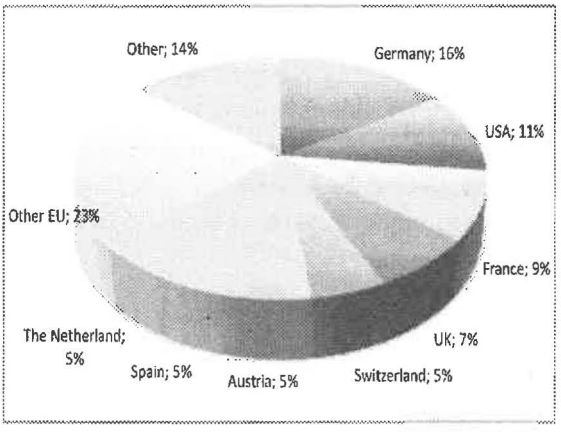
Exhibit 2 - The inflow of tourists during 2010 (/millions of people)



In any case, in Italy tourists spent about 27.4 billion euros: 75% of this was by EU citizens and only 25% by people coming from the US and other countries (Exhibit 3).

In 2010 the expenditure per person was 623.30 euros, an increase of 0.5% from 2009. This figure is the mean of very different values: highest values have been achieved by tourists coming from countries outside Europe (up to the maximum by Japan with more than 1.500 euros per person).

Exhibit 3 - Contribution to total expenses



The average expenditure per tourist highlights a certain degree of variability on the basis of the area, due both to the different average length of stay, and to the different average cost for overnight stays. Considering the length of vacations, the average expenditure per tourist is highest in the south and islands (with the largest value recorded in Sardinia), intermediate in the centre, and lowest in the two areas of the north. In terms of average expenditure per night, values tend to be lower in the south but with the notable exceptions of Sardinia and Campania.

5. Results

The scope of the analysis is to verify if there is some correlation between OER and RevPAR during the period 2006-2009.

The sample is based on hotels located in different Italian areas, especially in the northern and central parts of Italy and in Sardinia, and includes four and five star hotels that have been implementing RM before or, at least, since 2006. Data used for the analysis are based both on the statements of income, in order to calculate the operating efficiency ratio, and on the set of measures developed for the RM system.

In some cases the statements of income do not exclusively concern the hospitality business, but also other kind of activities (such as spa, golf

course, restaurant and so on). In these cases, the analysis is based on segmental reports, in order to consider revenues and costs just related to the core business.

For each year and for each hotel, we also acquired information about the RM system, such as a) the average occupancy rate, and b) the average revenues per room.

Since the hotels of the sample present an amount of revenues (REV) between 500K euros and 9,000K euros, the analysis is developed on the basis of the following classes:

C1: REV(min) = 500K€; REV(max) = 1,000K€;

C2: REV(min) = 1,000K€; REV(max) = 2,000K€;

C3: REV(min) = 2,000K€; REV(max) = 3,000K€;

C4: REV(min) = 3,000K€; REV(max) = 6,000K€;

C5: REV(min) = 6,000K€; REV(max) = 9,000K€;

In Exhibit 4 the most relevant key figures related to the period 2006-2009 are shown.

Exhibit 4 - Key figures

Key Figures	Classes				
	C1	C2	C3	C4	C5
REV(min)	500K€	1,000K€	2,000K€	3,000K€	6,000K€
REV(max)	1,000K€	2,000K€	3,000K€	6,000K€	9,000K€
ANR	22	25	42	94	207
AOR	0.7955	0.8400	0.7857	0.8032	0.7888
σ^2 (AOR)	0.0587	0.0503	0.0357	0.0266	0.0367
RevPAR	138.19	159.09	173.20	189.15	111.30
σ^2 (RevPAR)	8.5797	10.4608	6.4613	17.9194	26.1312
OER	0.1363	0.1180	0.1288	0.1058	0.2197
σ^2 (OER)	0.0249	0.0256	0.0245	0.0107	0.0420

ANR (average number of rooms) indicates the median of the number of available rooms for each class. Referring to the hotels included in the sample, during the period 2006-2009, we did not record any change in terms of numbers of rooms. In fact, many managers declared that after the

international economic crisis they are more interested in investing money in maintaining the structure rather than in increasing its size.

AOR (average occupancy rate) represents the median of rooms occupied during the period 2006-2009. The results indicate that the RM system allowed the hotels to maintain an occupancy rate higher then the Italian mean, especially considering that the tourism pattern has partially changed over recent years. Details for each class are indicated in Exhibit 5.

Exhibit 5 - Average occupancy rate for each class

Class	2006	Δ 06/07	2007	Δ 07/08	2008	Δ 08/09	2009
C1	0.7273	+ 0.0625	0.7727	+0.0588	0.8182	+0.0556	0.8636
C2	0.8000	+ 0.0566	0.8453	-0.0020	0.8346	+0.0964	0.9249
C3	0.7619	+ 0.0625	0.8095	-0.0588	0.7619	+0.0938	0.8333
C4	0.7766	+0.0411	0.8085	-0.0132	0.7979	+0.0533	0.8404
C5	0.7275	+0.0756	0.7825	+0.0383	0.8125	-0.0215	0.7950

In 2008 the international economic crisis produced some effects on hotels included in C2, C3 and C4 classes, particularly in the case of hotels with more than 40 rooms. However, in 2009, the loss of occupancy was offset by positive performances that, according to many managers, were due to the RM system. In fact, during 2009, in order to face the crisis, many hotels applied RM strategies that increased both AOR and RevPAR in a few months. They made it possible not only to develop new pricing policies compatible with the crisis, but also to cut redundancy costs not related with high-value services for customers. It explains why, although the RevPAR increased, the profitability (OER) increased at a higher rate (Exhibit 6):

Class	Measures	2006	Δ 06/07	2007	Δ 07/08	2008	Δ 08/09	2009
C1	OER	0.0980	+0.3469	0.1320	+0.0659	0.1407	+0.1158	0.1570
	RevPar	124.29	+0.0919	135.71	+0.0382	140.90	+0.0215	143.90
C2	OER	0.0702	+0.0598	0.1130	+0.0885	0.1230	+0.0138	0.1247
	RevPar	147.80	+0.0408	153.83	+0.0692	164.47	+0.0408	171.18
C3	OER	0.0912	+0.3147	0.1199	+0.1485	0.1377	+0.0530	0.1450
	RevPar	163.32	+0.0494	171.39	+0.0206	174.92	+0.0189	178.21
C4	OER	0.0927	+0.0684	0.0990	+0.1605	0.1149	-0.0198	0.1127
	RevPar	165.22	+0.0812	178.64	+0.1187	199.85	+0.0145	202.75
C5	OER	0.1386	+0.0584	0.2195	+0.0011	0.2198	+0.0337	0.2272
	RevPar	91.27	+0.1231	102.51	+0.1716	120.10	+0.2589	151.19

On one hand, many hotels, focusing on RM policies, could increase the occupation rate and partially the RevPAR without reducing prices. It is possible even because, as confirmed by RM managers, the hotels of the

sample have a target of clients who are not particularly price-sensitive, but who are more interested in the quality of the service received. On the other hand, the yield is increased at a higher rate than revenues due to cost cutting policies that did not involve high-quality services.

Furthermore, as shown in Exhibit 7, there is a good correlation between the growth of OER and RevPar during the period 2006-2009. This means that, on average, effective RM strategies on RevPAR have a direct and positive influence on profitability.

Exhibit 7 - R index between RevPAR and OER (2006-2009)

Class	Measures	2006	2007	2008	2009	σ^2	R	Cov
C1	OER	0.0980	0.1320	0.1407	0.1570	0.0249	0.911	2.3128
	RevPar	124.29	135.71	140.90	143.90	8.6371		
C2	OER	0.0702	0.1130	0.1230	0.1247	0.0255	0.8502	2.0936
	RevPar	147.80	153.83	164.47	171.18	10.4886		
C3	OER	0.0912	0.1199	0.1377	0.1450	0.0239	0.9955	2.7274
	RevPar	163.32	171.39	174.92	178.21	6.3987		
C4	OER	0.0927	0.0990	0.1149	0.1127	0.0107	0.9861	2.6536
	RevPar	165.22	178.64	199.85	202.75	17.9194		
C5	OER	0.1386	0.2195	0.2198	0.2272	0.0420	0.6969	2.7559
	RevPar	91.27	102.51	120.10	151.19	26.1312		

Therefore, when management introduces strategies and policies on prices, occupancy rate and demand pattern, they must consider not only the impact on RevPAR (revenue management), but also on the cost structure and on profitability (yield management).

6. Conclusion

The results obtained allow a positive answer to both the research questions that were investigated. First of all the implementation of an RM system successfully improves not only revenues, but also profitability, because, according to an RM perspective, managers have to consider also the effects of strategies on cost structure. Moreover, an analysis of the statements of income and on RM performance measured on a sample of Italian hotels, demonstrates that there is a good correlation between the growth RevPAR and OER (operating efficiency ratio) during the period 2006-2009.

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The present paper, although the result of a common research, has been developed as follows: Patrizia Modica § 1 and 3; Marco Fazzini § 4, 5 and 6; Elisa Scanu § 2.

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