

# **Determinants of successful Revenue Management implementation**

Pilar Abad, Concepción De la Fuente-Cabrero, Lydia González-Serrano and  
Pilar Talón-Ballestero

## **Abstract**

### **Purpose**

The aim of this paper is to define which characteristics of a hotel and its staff determine successful RM implementation in Madrilenian hotels.

### **Design/methodology/approach**

Multiple linear regression analysis was used to determine whether the characteristics of the hotel and the staff member in charge of RM are explanatory variables for the degree of RM implementation.

### **Findings**

The findings show that hotel category, chain affiliation and the existence of specifically trained and fully dedicated RM staff, are the determinants for successful RM implementation.

### **Research limitations/implications**

Given that this survey was confined to the region of Madrid, it would be interesting to carry out similar research nation-wide.

### **Practical implications**

This study provides to researchers and professionals guidance for the satisfactory implementation and use of RM tailored to the characteristics of any given establishment.

### **Originality/value**

To the best of the authors' knowledge, this is the first paper to conduct a formal statistical analysis of the relationship between hotel characteristics and the degree of RM implementation. Thus, the reported results provide a significant contribution to the literature.

**Keywords:** hospitality industry, revenue management, human resources, revenue manager, chain affiliation.

## **1. Introduction**

Revenue Management (RM) is a current management philosophy based on information analysis to maximize the benefit and value of the customer relationship through effective price and inventory management. It is mainly applied in service companies with a fixed capacity (e.g. airline, hotel, etc.) and should involve entire organizations (Talón, González and Figueroa, 2014). The RM implies a more analytical view of the management and has been made possible not only by advances in science (statistics, mathematics, marketing) and technology, but also by a radical change to traditional management policy. It is based on: (1) profitability versus occupancy; (2) utilizing exhaustive and strategic information analysis (e.g. covering demand, competition, market segments and their contribution to profits, and more) instead of relying on intuition; and (3) price differentiation in lieu of single pricing (Talón et al., 2012).

Previous studies have addressed the complexity and multi-dimensionality of RM (Okumus, 2004; Ivanov, 2014). Its generalizability and successful application in the hotel, airline, and car rental industry (Anderson and Xie, 2010) among others, has increased the interest of researchers (Guillet and Mohammed, 2015). Like most management practices, the application of RM has become more sophisticated and widespread in the hospitality and tourism industry (Anderson and Xie, 2010; Noone et al. 2011). Several studies (some looking generally at the tourism industry and others specifically examining the hotel industry) have reported on the recommended procedures for correct implementation of RM (Cross, 1997; Jones and Hamilton, 1992; Donaghy and McMahon, 1995; Jones and Kevin, 1997; Yeoman and Watson, 1997; Kimes and McGuire, 2001; Chávez and Ruiz

(2005); Emeksiz et al., 2006; Heo and Lee, 2009; Kimes and Singh, 2009; Talón et al., 2014; Ivanov, 2014). Results from these studies highlight two main issues that need addressing: Firstly, the lack of general consensus in regard to the best approach to RM implementation and secondly, the need to establish which factors determine its successful implementation.

The hotel industry followed the airline industry in the RM adoption (Cross et al. 2009). Therefore, RM practices are more advanced in the airline industry compared to the hospitality industry (Guillet and Mohammed, 2015). However, the lack of an agreed model and methodology to support and guide the implementation of RM has led to a degree of uncertainty, where researchers such as Talon et al. (2014) report that while 96% of hotels in Madrid claimed to apply RM, only 60% actually did.

Several authors have focused on the characteristics (category, size, etc.) of a given hotel in order to analyze their relationship with RM implementation (McMahon and Donaghy, 2000; Figueroa et al. 2009; Abrate et al. 2012; Oliveira et al. 2013; Xiaowen et al. 2013; Talón and González, 2013; Chávez et al. 2014, Domingo, 2015; Abrate and Viglia, 2016; Ivanov and Ayas, 2017; Rodríguez-Algeciras and Talón-Ballester, 2017, among others). Nonetheless, a literature review revealed a shortage of papers reporting on both, the degree of RM implementation and how hotel type and characteristics played a role in cases where high degree of implementation was achieved.

This paper focuses on the factors that determine RM implementation in hotels. To the best of the authors' knowledge, this is the first paper to conduct a formal statistical analysis of the relationship between hotel characteristics and the degree of RM implementation. Thus, the reported results provide a significant contribution to the literature. Domingo (2015) reports on the relationship between certain hotel characteristics (e.g. size, ownership and software) and the implementation of the model

proposed by Chavez and Ruiz (2005). However, this relationship is limited to demand and capacity management and does not explore the degree of RM implementation.

The Model for Evaluating RM Implementation (MERMI, Talón et al. 2014) is the only published model that establishes a categorization of hotels according to the degree of RM implementation. Our study applies this model and uses a multiple linear regression approach to identify which hotel characteristics play a role in determining the degree of RM implementation.

This study provides researchers and industry professionals with a framework to identify the areas in need of improvement and the limitations of RM that are associated with hotel characteristics. It provides guidance for the satisfactory implementation and use of RM tailored to the characteristics of any given establishment.

The remainder of the paper is organised as follows. Section 2 presents a review of the literature and outlines identified hypotheses informing this study. Section 3 describes data collection and Section 4 the methodology used for model estimation. The findings are discussed in Section 5. Finally, Section 6 reports on the study's conclusions and limitations.

## **2 Theoretical Framework**

The relationship between the degree of RM implementation and hotel characteristics (e.g. category, size, chain membership) has only been briefly discussed in the literature. Although the existence of a relationship between a given hotel characteristic and RM has been noted by many authors (Jarvis, Lindh and Jones 1998, McMahon and Donaghy 2000, Skugge 2004, Figueroa et al. 2009, O'Neill and Carlback, 2011, Ruggero Sainaghi 2011, Abrate et al. 2012, Oliveira et al. 2013, Xiaowen et al. 2013, Talón and González 2013, Chávez et al. 2014, Domingo 2015, Abrate and Viglia, 2016, Ivanov and

Ayas 2017, Rodríguez-Algeciras and Talón-Ballesteros 2017, among others), it has never been statistically tested. Hence, this study aims to test the validity of the variables that are usually considered to be responsible for the degree of RM implementation.

The star-rating system is an enduring and established standard to rate hotels across Europe and worldwide, regardless of the existence of a common law. Many studies have reported on the impact of both the star rating and hotel size on different aspects of RM implementation. McMahon and Donaghy (2000) observed that large hotels showed the highest degree of success at implementing their proposed RM activities. Abrate et al. (2012) and Abrate and Viglia (2016) reported that the location, number of stars and number of rooms had an impact on average price and RM performance. Oliveira et al. (2013) and Xiaowen et al. (2013) also observed that the number of stars (among others) influenced the decision to adopt and how to implement RM. Hotel category (number of stars) and size have both been reported to have an impact on pricing and competitiveness (Enz et al., 2008; Becerra et al., 2013), more specifically on RM penetration (Talón and González, 2013). The size of the hotel plays an important role in that gaining of competitive advantage. The larger the business, the higher the probability of being aware of business opportunities arising from the implementation of revenue management techniques (Di Foggia and Lazzarotti, 2014). More recently, Ivanov and Ayas (2017) stated that high category hotels with a large number of rooms are the ones most likely to adopt RM. Hence, we propose the following first hypothesis:

**H1: The higher the category and size of the hotel, the higher degree of RM implementation.**

Whether or not the hotel is owned by a chain is another factor that impacts RM implementation (Jarvis, Lindh and Jones, 1998). The opportunity to share resources and

systems (economies of scale) favours its implementation in chain-owned hotels (O'Neill and Carlbäck, 2011), which usually tend to have higher occupancy levels, ADR (Average Daily Rate) and RevPar (revenue per available room) (Carlbäck, 2012). Furthermore, chain affiliation is one factors which identified as a pricing determinant in hotel establishments (Enz et al, 2008; Becerra et al., 2013). To date, several studies have reported a higher degree of RM implementation in chain hotels (McMahon and Donahy 2000, Figueroa et al. 2009, Chávez et al. 2014, Talón et al, 2014, Domingo 2015, Ivanov and Ayas 2017 and Rodríguez-Algeciras and Talón-Ballesterro 2017). The adoption of RM is more expensive in independent hotels at unitarian level. In light of this evidence, we propose the following second hypothesis:

**H2: Hotels that belong to a chain will achieve a higher degree of RM implementation.**

The characteristics of staff members and the level of available technology are two aspects that have been thoroughly explored as having an impact on the degree of RM performance. Whilst analyses of the relationship between hotel characteristics and the existence of a revenue manager (or team) can be found in the literature (Zeni, 2003; Skugge, 2004, Algeciras-Rodríguez and Talón-Ballesterro, 2017), there are no studies to date looking at their possible impact on the degree of RM implementation.

Human resources issues are essential in RM system planning and implementation (Jones and Halmilton, 1992; Lieberman, 2003; Zarraga-Oberty and Bonache, 2007; Mohsin, 2008; Selmi and Dornier, 2011; Beck et al., 2011, Algeciras-Rodríguez and Talón-Ballesterro, 2017). There is overall agreement amongst authors that the teams in charge are vital for the success of any RM system (Tranter et al., 2008).

The increase in RM activities within the industry has been accompanied by the creation of the revenue manager role, a position with complex responsibilities. Ferguson and Smith (2014) reported that the revenue manager position was originally created in the early nineteen nineties, coinciding with an increased emphasis on RevPAR as a key metric to assess a hotel performance. The success of RM systems led to growth of revenue managers' status and responsibility, evolving from being mere analysts to becoming core hotel executives. Hence, the potential impact of this position has generated growing interest among industry professionals (Mainzer, 2004). In particular, large hotel chains have acknowledged the importance of RM and have created specific revenue manager positions (Mainzer, 2004) or even regional revenue management teams (Tranter et al., 2008) in order to maximise company revenues. In a US Airways study which measured the value of revenue managers' contributions to an RM system, Zeni (2003) concluded that the input of these analysts raised revenues by up to 3 percentage points. Skugge (2004) observed that effective revenue managers were one reason why certain company revenues were both better managed than others and achieved the best results when applying RM.

In addition, successful companies are those that have understood the value of good training programmes and the importance of measuring performance. As Donahy et al. (1997) state, the effectiveness of an RM system is significantly influenced by the extent to which staff training focuses on developing an understanding of the concept of RM. Implementing RM systems would consequently appear to be much more complex than simply investing in technology (Jones and Hamilton, 1992; Liberman, 1993; Kimes, 2002). El Hadad (2015) reported that, when introduced, RM systems must be clearly explained to employees, for whom their presence must be made tangible. He further noted

that RM systems could impact on the profitability of an establishment. Another important factor to consider is the profile of the staff member responsible for the company's RM (Wang, Yoonjoung Heo, Schwartz, Legohérel and Specklin, 2015).

Similarly, it is important to consider how much of managers' time is dedicated to RM activities. In small, independent hotels, where cost is the primary obstacle to recruiting a full-time revenue manager, the task may be performed by the general, marketing or front office manager. Spanish hotels only recently (in 2000) defined an RM position (Talón and González 2012). To date, the presence of a RM manager is less common in small and medium-sized hotels (Talón and Gonzalez, 2012). This is due to three reasons: 1) RM is less complex in this type of hotel than it is in larger establishment, 2) small hotels have fewer resources and hence less specialised staff, 3) smaller hotel's approach to management is more traditional and family-intensive. In addition, the degree to which staff can dedicate their time and effort to RM activities is likely to play a relevant role.

Hence, this study proposes the following third hypothesis and sub-hypothesis:

**H3: Hotels that employ staff that are specialized in RM will achieve a higher degree of RM implementation.**

**H.3.1: The degree of RM implementation will be greater in hotels that employ a *specifically trained* revenue manager or have a specialized RM team.**

**H.3.2: The degree of RM implementation will be greater in hotels that employ a *dedicated* revenue manager or RM team.**



The introduction of RM specific software and its impact on RM implementation is controversial. However, any discussion on this matter must be preceded by defining what is meant by specific software. A wide range of elements such as channels managers, shoppers, benchmarking companies, and Excel spreadsheets have been identified as IT applications or tools used to support RM decisions (Domingo 2015). Our study defines specific RM software or RMS (Revenue Management System) as comprehensive computer applications that draw data from Property Management System (PMS) and Customer Relationship Management (CRM) among others, to formulate forecasts, set prices (based on historic and current demand and information on the industry's environment), establish discounts rates, change prices, calculate displacements, control deviations, and provide reports on price and capacity management.

According to some reports, the use of RM software can raise revenues by 2 % to 5 % (Beloaba and Wilson, 1997; Kimes and Wagner, 2001). However, other studies have analysed the RM system's impact on hotel performance and found no significant effect of these systems on RevPAR (Ortega and Ortega, 2016).

The lack of suitable RM software makes processing large databases impossible (Guadix et al., 2010). Hotels where this software is in place have a strategic advantage over those relying solely on intuitive RM decisions (Emeksiz et. al. 2006). RM software provides revenue managers with support in areas such as pricing, inventory control and channel management, while also influencing their decision-making. On the one hand, such software analyses vast amounts of data and delivers useful, optimisation-model based forecasts. However, on the other hand, as Schwartz and Cohen (2004) argue, the software interface influences the judgement of revenue managers and their tendency to

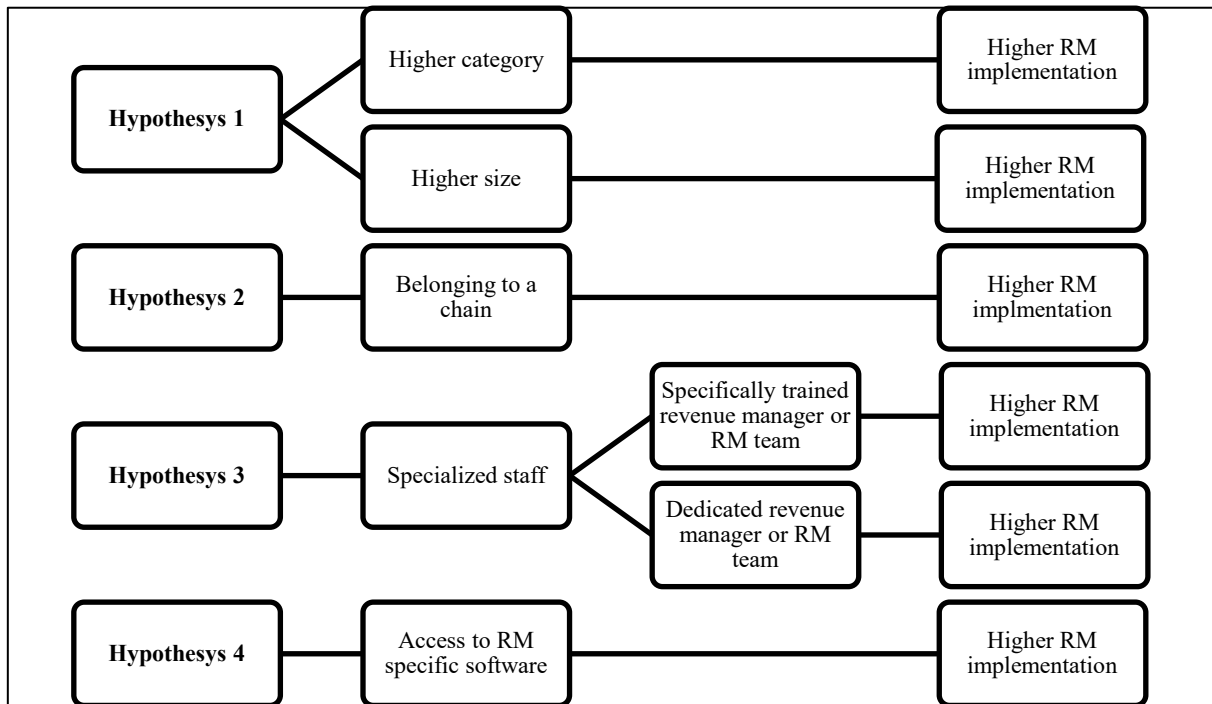
adjust (or not) computer forecasts. Nonetheless, decisions are ultimately left to the revenue manager to make.

In a study looking at RM practices in Bulgarian hotels, Ivanov (2014) observed that a specific RM software was not being used, so hotels applied RM tools very conservatively. In Spain, Talón and González (2012) found that the high cost of specific software deterred utilization from all but a few hotels. In fact, the uptake of RM software in Spain has developed slower than it has internationally and until very recently, it was almost exclusively limited to hotel chains (Domingo, Chávez and Escobar 2017). The availability of specific software favours the application of all RM strategies and while not imperative, it fuels RM implementation by reducing substantially the difficulties encountered at the initial stages (Chávez, 2014).

In light of this evidence we propose the following final hypothesis of our study:

**H4: The degree of RM implementation will be greater in hotels that have access to RM specific software.**

Figure 1. Conceptual Framework



### 3. Data

Data for this study was collected via a telephone survey targeting hotel staff responsible for RM. The survey was conducted in June 2009 with the support of Madrid’s hotel association and the association of Spanish hotels (Confederación Española de Hoteles y Alojamientos Turísticos). The three-, four- and five-star hotels population in Madrid city consisted of 180 hotels, including both independent hotels and those that belong to a chain<sup>i,ii</sup> The official hotel guide published by Turespaña (Spain’s highest tourism authority) was used to identify the sample population. The final non-probabilistic sample consisted of 142 respondents (79 % of the population).<sup>iii</sup>

Our sample included 5-star hotels (7%), 4- and 3-star hotels (56% and 37% respectively). 82% of hotels belonged to a chain while 18% were independent hotels. 13% of sampled hotels were large (more than 250 rooms), 44% medium (between 101 and 250

rooms) and 42% were small. The percentages in our sample are a good representation of the percentages of the totality of Madrilenian hotels.

The questionnaire (see Appendix 2) focused on six hotel characteristics: 1) hotel category (three-, four-, five-star); 2) number of rooms; 3) ownership (chain affiliation or otherwise); 4) person responsible for RM at the hotel (general manager, rooming manager, marketing manager, front office manager, reservation manager, receptionist, hotel revenue manager, or other); 5) amount of time spent by the revenue manager (or equivalent) on RM (part-time or full-time); 6) existence of specific RM software.

Finally, data on the degree of RM implementation in our sample of 142 hotels was obtained from the work of Talon et al. (2014)<sup>iv,v</sup>. In their study, they calculated the degree of RM implementation in Madrilenian hotels using a novel model. The MERMI model computes the degree to which RM is implemented based on hotel compliance with a series of items<sup>vi</sup>. In the sample of 142 hotels surveyed, the mean score for RM implementation was 1384 points, although with a very wide scatter (the standard deviation was 162.5, while the highest score was 1610.3 and the lowest 983.1) (see Appendix 1).

#### **4. Methodology**

Multiple linear regression analysis based on ordinary least squares was used to determine whether hotel characteristics and the person in charge of RM are explanatory variables for the degree of RM implementation.

A regression analysis has been made, using the degree of RM implementation (RM, measured using MERMI) as a dependent variable. The explanatory variables carried information on the type of hotel: category (number of stars), size (number of rooms) and hotel ownership (chain affiliation or independent). Other explanatory

variables represented the manner in which RM was implemented, such as the status of the person responsible (where an employee distinguishes whether he/she engaged in the activity full-time) and the existence of specific RM software.

The results of White’s test for heteroscedasticity led to the rejection of the null hypothesis of homoscedasticity. The Breusch-Godfrey tests rejected the null hypothesis of no autocorrelation of second order. Hence, we applied the Newey-West variance and covariance matrix, which is robust to autocorrelation and heteroscedasticity.

A multicollinearity analysis for explanatory variables showed a maximum Variance Inflation Factor (VIF) of 2.35, which is well below recommended thresholds (O'Brien, 2007).

Statistical validity was analysed using R-squared (which gives the proportion of total variability explained by the regression) and overall model significance was tested with the F statistic. The t-test was deployed to find the individual significance of each of the explanatory variables.

## 5. Determinants of the degree of RM implementation: results and discussion

The multiple linear regression results for the degree of RM implementation in Madrilenian hotels are shown in Table 1. The value for variable  $R^2$  0.33 means that 33 % of the total variance was explained by the model. The p-value for the F statistic stands as proof of the statistical significance of the model.

**Table 1. The degree of RM implementation determinants**

	Coefficient	p-value
Constant	1308.17*	(0.000)
4-star	-35.19	(0.182)
5-star	95.56*	(0.096)
Independent	-88.02*	(0.077)
Rooms	0.16	(0.117)
Hotel receptionist	-120.82*	(0.003)
Specialised RM staff	-25.38	(0.703)
RM full-time	145.35*	(0.022)
Software	10.37	(0.819)

R <sup>2</sup>	0.33	
F-statistic	7.71*	(0.000)
White test	3.11*	(0.000)
B-G test (1)	1.15	(0.285)
B-G test (2)	3.43*	(0.035)
B-G test (3)	2.46	(0.066)

*Notes: Dependent variable is the degree of RM. Four- (five-) star is a dummy variable that adopts a value of 1 when the category is four (five) and 0 otherwise. Independent is a dummy variable that adopts a value of 1 when the hotel pertains to no chain and 0 otherwise. Rooms is the number of rooms in a hotel. Hotel receptionist is a dummy variable that adopts a value of 1 when RM is performed by the hotel receptionist and 0 otherwise. Specialised RM staff is a dummy variable that adopts a value of 1 when RM is performed by a staff member responsible for this task and 0 otherwise. RM full-time is a dummy variable that adopts a value of 1 when the member of staff is exclusively dedicated to this task and 0 otherwise. Software is a dummy variable that adopts a value of 1 when the hotel has specific RM software and 0 otherwise. An asterisk indicates significance at 10 %. The p-value (in parentheses) is based on standard error estimates obtained from the Newey-West's covariance matrix.*

Source: formulated by the authors

Our results show that hotel category is an explanatory variable. In line with our first hypothesis, the 5-star hotels exhibited a degree of implementation 96 points higher than both three- and four-star establishments.<sup>vii</sup> A similar divide between five- and three/four-star hotels was reported in a study measuring the degree of implementation of ICTs (information and communication technologies) (Ruiz-Molina et al., 2010). This divide was attributed to the greater availability of resources in higher category hotels and to three-star hotels' strong bid in trying to equal four-star establishments in terms of implementation of new technologies (Ruiz-Molina et al., 2010). A number of studies have also reported on the importance of category (number of stars) in regards to hotel pricing and competitiveness (Becerra et al., 2013) as well as its specific impact on RM penetration (Abrate et al., 2012; Oliveira et al., 2013; Xiaowen et al., 2013; Talón and González, 2013).

Our findings show that chain affiliation is a determining factor in RM implementation. The degree of RM implementation in independent (i.e., non-chain) hotels was, on average, 88 points lower than in chain hotels (see Table 1). These results support hypothesis 2 and are in line with what other authors have previously reported (Jarvis, Lindh and Jones, 1998; McMahon and Donahy 2000; O'Neill and Carlbäck, 2011; Becerra et al. 2013; Figueroa et al. 2009; Chávez et al. 2014; Talón, González y Figueroa, 2014; Domingo 2015; Ivanov and Ayas 2017 and Rodríguez-Algeciras and Talón-Ballesteros 2017) when discussing the relationship between a higher degree of RM implementation and hotels that belong to a chain

The person responsible for RM tasks is another determining factor in the degree of RM implementation. More precisely, our results show that when RM tasks are performed by the hotel's front office manager (with no specific training) the degree of RM implementation declines, on average, by 121 points.<sup>viii</sup> Therefore, the reported outcomes provide further evidence of the vital impact that revenue managers and the RM team have on RM implementation (Zeni, 2003; Skugge, 2004; Tranter et al., 2008). Furthermore, in hotels which employ specifically trained RM staff dedicated to RM activities full-time, the expected degree of RM implementation rose by 145 points. However, the existence of a revenue manager had no effect on the degree of RM implementation. These results, whilst supporting hypothesis 3, support the idea that the degree of implementation rose only when the revenue manager engaged exclusively in that task. This new evidence should give the industry food for thought since it shows that creating a revenue manager position alone is not enough: the desired impact on RM implementation will only be ensured if the designated staff member is expected to work full-time on RM tasks. In addition, the reported findings may also challenge the proposal

put forward by Ferguson and Smith (2014), which suggests the possibility of several smaller establishments successfully sharing a revenue manager. According to our findings, whilst salary and technology costs are shared with this approach, RM implementation would be more effective in hotels that employ a dedicated full-time revenue manager. Nonetheless, the authors are of the opinion that in the case of small hotels unable to afford the expense, hiring a shared revenue manager is better than not having one at all and consequently delegating RM duties to untrained staff.

Finally, the availability of specific RM software proved to have no effect on the degree of RM implementation. This result does not support our hypothesis 4 but is in line with what previous studies have reported (Donaghy et al. 1997, Ivanov 2014, Talón and González 2013, Rodriguez-Algeciras and Talón-Ballester 2017). Due to its high cost, only a low number of the hotels in our sample had purchased RM software, even though this technology is often considered essential in providing access to more and higher quality information. Nonetheless, in most cases, complex IT systems are not cases, imperative and the existence of a computerised RM system will primarily depend on the volume of information that a hotel needs to process.

The results here reported show that RM implementation is highest in top category chain hotels that employ specialised staff devoted full-time to RM. Revenue manager training and full-time dedication were identified as the key factors that influence successful RM implementation in the hotel industry.

## **6. Conclusions**

The reported results show that creating a company revenue manager position is not enough in order to increase the degree of RM implementation. Rather, the key to success is having a trained member of staff devoted full-time to the task, an option which traditionally has not been taken into consideration. Revenue managers' task assignments



must be revisited if the hotel industry plans on implementing RM fully and effectively. Hotel chains are found to be at an advantage in this regard. This should serve as an incentive for independent hotels to modify their RM implementation strategy and ensure they are competitive, which will ultimately improve their future prospects. Our findings conclude that it is advisable for hotels to create a full-time revenue manager position and to provide specialized training in order to achieve an adequate degree of RM implementation.

Furthermore, despite the apparent similarity among 3-, 4- and 5-star hotels, the highest category (5-star) establishments continue to apply RM more effectively than the other two. This is possibly because 5-star hotels allocate more resources to its implementation. It is worth noting that, whilst the hotel's category is a key factor, our findings suggest that size does not appear to be relevant.

While the use of specific software may improve RM application, the reported findings do not show that it is related to more comprehensive RM implementation. One factor that should be considered is that although market prices have been observed to decline with the rise in the number of suppliers, there is still a high cost involved in purchasing this software. That said, the advantages that these tools bring in terms of managing large databases and forecast processing, among others, are indisputable.

In recent times, there has been a significant change in the approaches that inform hotel management. Many hotels, particularly those with RM staff devoted to the task full-time, have departed from traditional volume-based management to a profit-gearred strategic and analytical management. This study shows that this is a key factor for good RM implementation, no longer questioning the importance of RM in contemporary hotel management. Chain affiliation, category (five-star), and the existence of trained staff

engaging full-time in RM tasks, are the fundamental factors to be considered for an effective RM implementation, which will in turn improve business outcomes.

Our findings show that implementing RM in itself is not enough. Such implementation must come hand in hand with the creation of a revenue manager position. This article's main contribution to the hospitality literature consists in shedding empirical light on the factors that determine successful RM implementation.

This study could be expanded in a number of directions to improve the understanding of RM implementation. Firstly, given that this survey was confined to the region of Madrid, it would be interesting to carry out similar research nation-wide. Secondly, there is a need for further studies exploring which hotel characteristics determine both the existence of a staff member devoted full-time to RM and the availability of specific software. Data collection was the main challenge faced by the research team given the reluctance of hotels to provide information on back-office management strategies.

As a final conclusion, it is important to highlight the role of the revenue manager as a key factor in the implementation process of this new philosophy, for this reason, it is essential to put in value this position and to study and clarify its role within the hotel organizations.

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## **Appendix 1**

### **RM implementation levels**

<b>Levels</b>	<b>Score Range</b>	<b>Valid percentage</b>
Excelent	1610,30 - 1580,70	5,1%
Very High	1579,60 - 1532,50	21,2%

High	1521,10 - 1420,0	34,3%
Medium	1405,50 - 1271,40	14,6%
Low	1243,40 - 983,10	24,8%

Source: Formulated by the authors

## Appendix 2. Questionnaire

<b>P1: Which is the star rating of the hotel?</b>						
Three star	<input type="checkbox"/>	Four stars	<input type="checkbox"/>	Five starts	<input type="checkbox"/>	
<b>P2: Size of hotel</b>						
Number of rooms:	<input type="text"/>	Number of places:	<input type="text"/>			
<b>P3: Which management model does the hotel follow?</b>						
Ownership	<input type="checkbox"/>	Lease	<input type="checkbox"/>	Franchise	<input type="checkbox"/>	Management
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<b>P4: Is the hotel independent or does it belong to a chain?</b>						
Independent	<input type="checkbox"/>	Belongs to a chain		<input type="checkbox"/>		
	<input type="checkbox"/>			<input type="checkbox"/>		
<b>P5: Who carries out RM?</b>						
100% the hotel chain	<input type="checkbox"/>	100% the hotel	<input type="checkbox"/>	Both	<input type="checkbox"/>	
<b>P6: Who is the person responsible for RM in the hotel?</b>						
Director	<input type="checkbox"/>	Accomodation Manager	<input type="checkbox"/>	Comercial Director	<input type="checkbox"/>	Reception or Booking Manager
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	Receptionist
					<input type="checkbox"/>	Hotel Revenue Manager
						<input type="checkbox"/>
						Other
						<input type="checkbox"/>
<b>P7: If the hotel has a person responsible for RM, is this member of staff exclusively dedicated to this task?</b>						



Yes <input type="checkbox"/>	No <input type="checkbox"/>
<b>P8: Does the hotel have/use specific RM software?</b>	
Yes <input type="checkbox"/>	No <input type="checkbox"/>

### Notes

<sup>i</sup> Lower categories of hotels were omitted in light of evidence of their negligible implementation of RM.

<sup>ii</sup> The survey was confined to Madrid, where the dense concentration of higher category hotels renders RM a basic component of business strategy. Moreover, city hotels are more prone to implement this management approach because they cater to a wide range of market segments. In contrast, segment differentiation is essentially absent in resort hotels, whose major accounts are tour operators. However, this pattern is beginning to change because of the introduction of online distribution channels.

<sup>iii</sup> At a 95 % confidence level (two sigmas), in the least favourable case ( $p = q = 50\%$ ), the margin of error for the sample as a whole was  $\pm 4.38$ , assuming simple random sampling.

<sup>iv</sup> Talon et al. (2014) carried out a telephone survey targeting 3-, 4-, and 5-star hotels in Madrid from March to May 2009. In this survey, members of staff responsible for RM answered questions regarding which RM activities they carried out.

<sup>v</sup> We appreciate their help in providing the database.

<sup>vi</sup> The model has 9 categories comprising 77 activities. The degree of a hotel's RM implementation is calculated using an additive model. This model adds the weighted activities, where the weights are the result from the multiplication of the weight of the activity and the weight of the category in which it is included. The weighing of the categories is done based on a ranking defined by experts in terms of its relevance within the ideal pattern of development of the RM. The weight of the activities is informed by the results from a questionnaire in which experts rated (using a Likert scale) each activity.

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<sup>vii</sup> Note that a 96-point rise constitutes a substantial change: over half the standard deviation for the degree of RM implementation.

<sup>viii</sup> Note that this is a significant reduction, in as much as mean RM implementation (calculated using MERMI) was 1384 points with a standard deviation of 162.5.