



Article

Factors Influencing Hotel Revenue Management in Times of Crisis: Towards Financial Sustainability

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Abstract: (1) Background: Facing the challenges of a post-pandemic period and the Ukraine War and recognising the gap in scientific research on the application of revenue management (RM) in the Portuguese hotel industry, the main objective of this study is to identify the most effective and least appropriate RM practices for use in periods of low demand and crises, reflecting the financial sustainability perspective. The theoretical framework of this study focuses on the main RM practices, grouping them into price and non-price strategies. (2) Methods: A quantitative methodology was employed, collecting information from Portuguese hotels through an online questionnaire, and statistical analysis using Mann–Whitney and Chi-square tests was conducted. (3) Results: Hotels offered discounts during the pandemic, but room rates were reduced during the recovery period. These findings also revealed that commonly used techniques were the best available rate (BAR) and rate fences, particularly during the pandemic. Quality, brand image, strategic partnerships, and marketing actions are recognised as essential. However, loyalty programs, length of stay (LOS) control, rate parity, and bundled services are not commonly implemented despite their importance during periods of low demand. Larger hotels, five-star hotels, and members of international chains applied more RM practices than smaller four-star independent hotels. (4) Originality: This study provides original and valuable insights into increasing hotel revenues and occupancy rates during future periods of low demand, which benefit financial sustainability.

Keywords: hotel; revenue management; crises; Portugal; financial sustainability



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1. Introduction

The hospitality industry is characterised by high levels of uncertainty and is very susceptible and vulnerable to crises (Brownell 1990). However, the industry and scholars have overlooked the analysis of hotel revenue management (RM) in periods of crisis. With recent health and economic crises, such as 9/11 in 2001, the 2003 severe acute respiratory syndrome (SARS) outbreak, the 2008 global financial crisis, and the last one due to the COVID-19 pandemic, it is useful for the hospitality industry to know what to expect and which actions to take to achieve financial sustainability when crises occur and there is a low demand for hotel rooms. Because growth expectations after the last pandemic have decreased in all nations, as the war in Ukraine leaves European countries more vulnerable because of their dependence on Russian gas, inflation, and supply chain disruption (Khudaykulova et al. 2022; Mbah and Wasum 2022), sustainable development and demand management have become critical in the hospitality industry.

COVID-19 caused governments around the world to impose strict restrictions, such as quarantines, the closure of borders, international flight cancellations, and the shutting down of face-to-face services, to contain the virus. These measures have had a massive impact on the hospitality industry, as this is a person-to-person industry, leading to a 72% drop in international travel in 2020 and resulting in the worst year on record for tourism

(World Tourism Organization 2020). The offensive in Ukraine, the geopolitical tensions in Northeast Asia, and the lower purchasing power and weaker consumer confidence because of higher food and energy prices are expected to have an impact on travel demand in 2023, particularly in terms of spending, as travellers increasingly seek value for money and take shorter trips closer to home (World Tourism Organization 2020). Nevertheless, in 2024, the European economy recovered to 2019 levels (World Tourism Organization 2024).

In addition, the perception of the importance of RM practices is not totally consolidated, especially in independent hotels that are not part of international chains, which leads to less knowledge about these practices (Gehrels and Blamar 2013; Haddad et al. 2008; Ivanov et al. 2021). This is important for hoteliers to adopt strategies and use practices that maximise their revenues and improve the financial sustainability of their hotels (Santos 2024).

Understanding tourism's importance in the national and global economies, this study intends to help hoteliers manage hotel performance to achieve financial sustainability. Therefore, RM becomes crucial, as it is an essential tool for matching supply and demand through capacity management, dynamic pricing, and segmenting customers based on purchase intentions (Haddad et al. 2008; Ivanov and Zhechev 2012).

This article aims to determine the most appropriate RM techniques to counteract low demand in periods of crisis and uncertainty to achieve financial sustainability and to understand how Portuguese hotels make use of RM practices. For these purposes, this study is composed of a literature review on RM practices in periods of crisis and uncertainty and the results of an analysis of RM practices in Portugal through a questionnaire on hotels with four and five stars that opened before 2019, followed by a discussion and conclusions.

2. Literature Review

2.1. Revenue Management and Demand

RM was first developed by the airline industry because of American airline deregulation in the late 1970s (Kimes 1989). It is now applied in a wide variety of industries, such as hospitality, cruise lines, shipping (Zurheide and Fischer 2015), car parking, theme parks (Heo and Lee 2009), apartments (Chen et al. 2014), rental-cars (Oliveira et al. 2017), hospitals, casinos, stadiums, cinemas (Hinterhuber and Viberti 2021; Kimes 2003), golf (S. E. Kimes 2000), food and beverage (Kimes 1999), SPAs (Kimes and Singh 2009), advertising, energy, retail, and telecommunications (Yeoman and McMahon-Beattie 2010).

What these industries have in common is what embodies RM: a fixed capacity, perishable products, fluctuating demand, products that can be sold in advance, the possibility of price segmentation for price-sensitive customers, and product segmentation (Guillet and Mohammed 2015; Kimes 2003; Legoh el et al. 2013).

The goal of RM is to maximise the revenue generated by room sales, which is not achieved by selling all the rooms or selling rooms at the highest price but by selling as many rooms as possible at the highest price the customer is willing to pay—that is, to use information systems and pricing strategies towards allocating the right type of capacity to the right type of customer at the right price and at the right time to maximise the revenue or yield (Kimes 1989; Kimes and Chase 1998; Kimes and Wirtz 2003).

At the core of RM practices are the concepts of demand-based pricing and optimal inventory management, and as RM optimisation is mainly based on demand forecasting, which is less reliable during a crisis (Vinod 2021), this article becomes crucial. Room rates can then be driven by the expected demand for a certain period. Common hotel room demand drivers are customers' income and expectations, room prices, the average daily rate (ADR), competitors' prices, the GDP, consumer confidence (Canina and Carvell 2005), and sociodemographic factors, such as income, age, gender, and occupation (Rao Palakurthi and Parks 2000), hence the importance of market segmentation in RM. In addition, other factors can affect the demand for hotel rooms, such as politics, macroeconomics, diplomatic relations, natural disasters, and conflicts (Wang 2009). It is essential that hoteliers recognise what affects demand to counteract and maximise revenue. Therefore, RM is crucial during periods of low demand.

RM comprises the application of different tools, which can be dynamic pricing and non-pricing methods or inventory-related and channel management, and these can be applied simultaneously and intertwined (Ivanov and Zhechev 2012). Revenue Management (RM) tools have recently evolved to incorporate sustainability into business practices. Karadjov and Farahmand (2007) stressed that relying solely on revenue management will not ensure a sustainable competitive advantage in the future. However, integrating revenue management into all business processes can yield lasting benefits. Raza et al. (2018) introduced an integrated revenue management framework that integrates environmental considerations, including green initiatives and pricing decisions, to enhance profitability while meeting consumer demands for environmentally friendly products. In line with these authors, Campos et al. (2024) emphasise the importance that hoteliers give to social responsibility in their RM decisions to provide sustainable growth and benefits for communities and the environment. Valentin and Silviu (2014) emphasised the role of eco-business intelligence tools in assisting organisations in implementing and monitoring sustainable practices. Notably, Matambele (2014) does not directly address revenue management or its impact on sustainability.

2.2. Revenue Management Practices on Crisis Periods

A crisis is usually a new situation in an organisation, frequently defined as unexpected, unstructured, and out of the typical operational framework of the organisation. It is a short-term incident with a significant impact, which makes it difficult to implement strategies and quality decision making due to emotional and psychological pressure (Santana 2012). A crisis can be distinguished from a disaster, as the crisis is self-inflicted through inept management or failure to adapt, while a disaster occurs when an organisation is confronted with catastrophic changes over which it has little control (Faulkner 2001).

Most crises are unpredictable and unique; therefore, hoteliers should adopt a flexible approach and implement a crisis management framework (Henderson and Ng 2004). Hence, hotels should implement a tourism crisis management framework composed of six phases: (1) the pre-event, when actions are taken to prevent or mitigate the effects of potential disasters; (2) the prodromal, when a disaster is imminent; (3) emergency, when the effects of the disaster are felt and action is necessary; (4) intermediate, where the main focus of the activity is to restore services and the community to the normal; (5) long-term recovery, a continuation of the previous phase, self-analysis, and healing; (6) and resolution, when a routine is restored, or there is an establishment of a new, improved state (Faulkner 2001).

This was the case of severe acute respiratory syndrome (SARS), a new disease in the fall of 2002, which first occurred in Guangdong Province, China, and spread to twenty-nine countries, with 8422 cases and 916 fatalities (Hon et al. 2003; World Health Organization 2003, 2004). With an unprecedented global public health effort, the epidemic was controlled within 7 months of its original occurrence (World Health Organization 2003). Nevertheless, the SARS outbreak had a destructive effect on the hospitality sector in 2003. For these reasons, Tew et al. (2008) investigated the measures and actions used during this outbreak, recovery strategies implemented after the outbreak, and the extent to which strategic planning systems were formalised. Most hotels had their company send detailed information to managers on how to respond to a crisis and asked employees to take holidays or unpaid leave. Other measures included the redirection of marketing and sales by offering deeply discounted packages, laying off employees, and cutting management salaries. During the recovery stage, the most common strategy was to work actively with hospitality associations and governments. Less common strategies were to offer large discounts, change strategic plans, or even use guest rooms for other purposes, such as renting commercial offices. Strategic planning contained a mission statement, long-term goals, and an action plan, half of which included scenario planning, and more than half included a crisis management plan. Interestingly, hotels that reviewed strategic plans more frequently and with a shorter time frame reported that SARS had less impact on their organisational performance than hotels that reviewed strategic plans infrequently.

Several other authors have investigated practices in times of crisis and have identified what they consider to be the best and worst practices, both pricing and non-pricing related. The worst strategy for dealing with low demand is to implement cost-cutting measures and reduce rates (Alonso-Almeida and Bremser 2013). Price contractions during these periods have proven to result in long-term negative effects and do not reduce the cumulative revenue per available room (RevPAR) loss (Alonso-Almeida and Bremser 2013; Gehrels and Blantar 2013; Kim et al. 2019; Kimes 2009). Instead of reducing room rates, hoteliers should include supplementary offers on room prices, increase occupation and length of stay (Gehrels and Blantar 2013), or invest in alternative marketing strategies such as customised packages and develop new markets (Kim et al. 2019). They should also focus on quality, brand image, increased marketing strategies, and reliance on a loyal customer base (Alonso-Almeida and Bremser 2013).

Hotels should invest in non-pricing RM practices to reveal strategic intentions, compete on quality, create strategic partnerships (Zheng 2014), focus on loyalty programs, and develop additional revenue sources (spa, parking, food and beverage, among others) and market segments. Nonetheless, most of the time, a price war is inevitable, and to respond effectively, camouflaged discounted rates should be used, which can be achieved with RM practices such as bundled services, unbundle pricing, targeted rate cuts, the use of opaque distribution channels (S. Kimes and Anderson 2015; Kimes 2009), and taking advantage of loyalty programs by upselling or cross-selling after bookings (Talón-Ballesteró et al. 2020).

To boost RevPAR, it is also possible to use pricing techniques to generate immediate profit, but the decrease in price should be targeted and differentiated by using rate fences and early bird rates. Thus, it is possible to enhance RevPAR with ADR, and not only with the occupancy rate (Butscher et al. 2009). In addition, during periods of low demand, pricing techniques should shift from demand-based pricing to value-based pricing and adopt a dynamic pricing approach (Guillet and Chu 2021; Hao et al. 2020; Zaki 2022).

Regarding distribution, a dynamic Online Travel Agency (OTA) commission structure, opaque distribution channels, and direct distribution are strongly recommended amid a crisis (Guillet and Chu 2021; Hao et al. 2020).

During COVID-19, RM practices such as not lowering prices, flexibility in booking conditions, the development of other revenue sources, and increasing the value of services were key factors in managing this crisis, as well as the revenue manager's leadership capabilities and proactivity, holistic departmental organisation, and quick adaptation of RM systems (Talón-Ballesteró et al. 2023). In Greece, the most commonly used RM practices during the latest crisis were government and marketing practices, such as low-interest and long-term capital loans, marketing to domestic tourism and hotel safety, the use of technology to reduce contact, and cost-reduction practices; these hotels did not find pricing strategies relevant to periods of crisis (Pavlatos et al. 2021).

Concerning inventory management, there was no demand during the lockdown (Guillet and Chu 2021); hence, it was not possible to apply this strategy; however, the reservation conditions should change, resulting in a flexibilisation of the booking terms, shorter booking windows, and non-restrictive reservation clauses (Napierała et al. 2020).

Majumdar (2021) indicates that during COVID-19, Indian hotels implemented price discounts on special offers, which goes against the literature (Alonso-Almeida and Bremser 2013; Gehrels and Blantar 2013; Kim et al. 2019; Kimes 2009; Pavlatos et al. 2021; Talón-Ballesteró et al. 2023); further implemented measures were reductions on list prices; cost-cutting measures such as reduction labour costs, energy consumption economisation, a delay of maintenance expenses, and optional expenses; and resource conservation such as the postponement of capital expenditure and increasing shift to localising supply chains. Post-COVID-19 recovery measures, such as restructuring the workforce, attracting domestic tourists, and increasing product diversity, were also implemented (Majumdar 2021).

Much of the literature on RM underestimates the practices that should be utilised in times of crisis, so there is little work on this topic; despite the scarcity of literature, there are some practices that can be adopted in times of low demand (Table 1).

Table 1. Summary of RM practices in periods of low demand.

	RM Practices	Authors
Pricing practices	Bundled services	Kimes (2009); Kimes and Anderson (2015); Gehrels and Blantar (2013)
	Unbundle rooms	Kimes (2009); Kimes and Anderson (2015)
	Opaque distribution channels	Guillet and Chu (2021); S. Kimes and Anderson (2015); Kimes (2009)
	Offering discounts to specific segments	Kimes (2009); Kimes and Anderson (2015)
	Early bird rates	
	Rate differentiation and fencing	Butscher et al. (2009)
Non-pricing practices	Compete on quality and brand image	Alonso-Almeida and Bremser (2013); S. Kimes and Anderson (2015); Kimes (2009)
	Reveal strategic intentions	Kimes (2009); Kimes and Anderson (2015)
	Create strategic partnerships and manage the social capital	Kimes (2009); Kimes and Anderson (2015); Zeng et al. (2005)
	Invest in loyalty programs	Kimes (2009); Kimes and Anderson (2015)
	Develop additional revenue sources	Kimes and Anderson (2015); Kimes (2009); Talón-Ballesteros et al. (2023)
	Develop new market segments	Kimes and Anderson (2015); Kimes (2009)
	Marketing investment	Alonso-Almeida and Bremser (2013); Gehrels and Blantar (2013); Tew et al. (2008)
	(LOS) Length of Stay Control	Gehrels and Blantar (2013)

Note: bold in the left-hand column serves as the main category for the RM practices identified in the second column.

Additionally, it is important to consider managers' experience in crisis management and its psychological aspects (Wang and Ritchie 2012). Communication and collaboration among tourism stakeholders, locals, and tourists also play a significant role in managing the crisis (Cartier and Taylor 2020; Filimonau and de Coteau 2020).

Other authors consider that the implementation of RM practices is highly influenced by various characteristics inherent to hotels, such as size, chain affiliation, location, and category (Kocourek et al. 2023; Ivanov et al. 2021; Ivanov and Ayas 2017). It was found that the behaviour of hoteliers is similar in several countries, such as Bulgaria, Turkey, Italy, and Czechia. They concluded that the application of RM practices is higher in hotels with a larger number of rooms, high category, and chain affiliation, located in cities or near the sea (Kocourek et al. 2023; Ivanov et al. 2021; Ivanov and Ayas 2017). In line with the above, the following hypothesis was formulated: H1: RM practices are more widely adopted in hotels with a large number of rooms; H2: RM practices are more widely adopted in chain-affiliated hotels; H3: RM practices are more widely adopted in hotels with five stars.

2.3. Financial Sustainability

A sustainable firm has a strategic view of the impact of macro forces, and it is sustainable when it ensures that it meets the basic economic and financial objectives of value creation for the stakeholders, society, and ecology (Okumus et al. 2020). In Portugal, the 2027 Tourism Strategy focuses on improving economic sustainability by increasing revenue and the number of overnight stays, encouraging tourists to spend more to overcome seasonality issues, and balancing demand to further accelerate the economy (Turismo de Portugal 2017).

Mucharreira et al. (2019) refer to the hotel's financial performance, which highly depends on the macroeconomic environment in which the hotel is located. Hoteliers should seek metrics to enhance financial sustainability, such as hospitality sustainability indicators (Campos et al. 2024). Lima Santos et al. (2021) provide new indicators based on the liabilities' impact on return on equity to improve the quality of decisions, implying the sustainability of hotel companies, especially in times of crisis. RevPAR is also influenced by sales sustainability (Crespo et al. 2023).

The Portuguese hospitality industry exhibited excellent performance based on profitability metrics and played a pivotal role in the nation's economy. Nevertheless, the COVID-19 pandemic has triggered a downturn in performance, requiring exceptional measures. Benchmarking among hotels and sector averages is urgently needed to facilitate the implementation of additional measures (Lima Santos et al. 2022).

After the COVID-19 pandemic, tourism started to grow again, resurfacing the problem of over-tourism, as people felt the need to travel, related to the revenge travel phenomena (Vogler 2022; Zaman et al. 2021) after being confined for months, and hoteliers felt the need to recover lost revenue (Yamin and Kamal 2023).

Failure of the destination's revenue management strategy can be one of the main reasons for over-tourism, as tourism growth, active marketing, and low prices overstimulate demand that surpasses supply, leading to over-tourism (Seraphin and Ivanov 2020). Instead, hotel managers should maximise the destination's triple bottom line (profits, people, and planet) within the carrying capacity through active RM at the destination and corporate levels with the use of pricing, non-pricing tactics, and combined RM tools so that demand matches supply and there is no over-tourism or under-tourism (Seraphin and Ivanov 2020).

Hotel performance analysis is an important instrument for developing financial sustainability practices, such as the analysis of hotels' economic impact on the destination, the attribution of a salary higher than the industry's average, incentives to employees, and training programs (López-Gamero et al. 2023).

Murimi et al. (2021b) refer to a limitation regarding the reduced number of studies that relate financial performance to RM practices. However, they proposed that this relationship should be made with more indicators, such as gross operating profit per available room (GOPPAR), occupancy rate, ADR, RevPAR, and total revenue per available room (TRevPAR). Some authors (Murimi et al. 2021a) indicate some RM practices related to financial performance, such as payment policies regarding reservations, policies related to RM, pricing policies, revenue forecasting techniques, price optimisation, social media strategies, accurate demand forecasting, non-mixed pricing, forecasting, RM system user benefit measurement, procedural room revenue maximisation, and enhanced frameworks for the management of demand and optimisation of prices. On the other hand, a study of hotels in Kenya found that some RM practices have an impact on financial success. In-depth RM pricing techniques improve financial performance (Murimi et al. 2021b).

3. Materials and Methods

In this study, a quantitative methodology was utilised, and data were obtained through a questionnaire (Appendix A) with closed answers that was applied to four- and five-star hotels throughout the national territory, as they represent approximately 66% of the accommodation units, are more representative in quantitative terms, and are also the units that qualitatively best characterise Portuguese hospitality (Deloitte 2020). The selected

hotels were in business before 2019 in order to gain an understanding of the RM practices used during three different periods: (1) before the COVID-19 crisis in 2019; (2) during the pandemic; and (3) after the pandemic.

We selected hotels from the National Tourism Registry (686). However, 16 hotels were eliminated from the population because they were permanently closed, downgraded, shifted to local accommodation, or had opened after 2019. The remaining hotels, concerning the population of this study (670), were contacted once via telephone and four times via email to respond to the questionnaire conducted on Google Forms, and data were collected between February and May 2023. Therefore, despite the insistence on increasing the number of responses, a simple random sample of 79 hotels was obtained. Informed verbal consent to participate in the study was obtained.

To understand which practices were implemented during and after the pandemic, the authors defined the period *before COVID-19* as 2019, a period of stability where there was no registry of COVID-19 cases. The period considered *during COVID-19* was 2020, as some hotels closed due to a lack of demand and sanitary issues. The years 2021 and 2022 were defined as *after COVID-19*, as the hospitality sector had to recover from a lack of demand and loss of income and gain guests' trust, and most of the restrictions were gradually lifted starting in 2021 until 2022 (World Health Organization 2023).

Additionally, using IBM SPSS Statistics, version 28, a Chi-square test and a Mann–Whitney test were conducted to find associations among hotel characteristics, such as size, category, and company management status, with the use of certain pricing and non-pricing techniques. The Chi-square test was used to determine whether the nominal variables were independent or dependent to detect any association between the characteristics of the hotel and RM practices used. When the assumptions of Chi-square tests were not upheld, that is, an expected frequency of less than 1 and no more than 20% of the cells had an expected frequency of less than 5 units, the findings of the tests were not considered. The Mann–Whitney test was applied to search for any relationships between the size of the hotel and RM practices. The option for the Mann–Whitney test was to compare quantitative and nominal variables. Moreover, the quantitative variable (hotel size) was not normally distributed (Marôco 2014; Pestana and Gageiro 2008).

The respondents were asked about the category; geographical area; number of beds; management status (Table 2); whether the hotel has an RM department or someone responsible for this area of management and, if not, who is responsible for RM practices; pricing; and non-pricing strategies. Respondents were asked which pricing and non-pricing techniques they practiced before, during, and after COVID-19 regarding RM practices. These practices include discounts, price decreases, price increases, bundled services, room-only rates, rate fences (price differentiation within each segment), establishing conditions of access to different rates, suggesting complementary services to the offer purchased by the customer (cross-selling), upselling, providing the best available rate guarantee, engaging in rate parity, focusing on new market segments, conducting intensive marketing and advertisement actions, focusing on brand quality and image, creating strategic partnerships, focusing on loyalty programs, overbooking, controlling the length of stay, and developing price presentation on the hotel's website.

Table 2. Characterisation of the sample.

	N = 79	No.	%
Categories:			
5-star		20	25.3
4-star		59	74.7
Geographical area:			
North		21	26.6
Centre		19	24.1
Lisbon Metropolitan Area		16	20.3

Table 2. Cont.

	N = 79	No.	%
Alentejo		2	2.5
Algarve		11	3.9
Azores Autonomous Region		5	6.3
Madeira Autonomous Region		5	6.3
Company management status:			
Independent hotel		60	75.9
Member of international chain		19	24.1

4. Results and Discussion

The results demonstrate that, in this sample, 34.2% of the analysed hotels still do not have an RM department or someone responsible only for this area of management. Only one member of an international chain responded that the hotel does not have an RM department, unlike independent hotels, as only 34 of 60 (56.7%) responded that they have an RM office or someone responsible for this area.

Of the 79 respondents, 27 hotels did not have someone responsible for this area of management. The authors asked who is responsible for the pricing and non-pricing techniques, and 53% responded that the hotel director is responsible, 15% responded that it is the sales department, 15% responded that it is the front-office manager, 6% responded that it is the rooms director, 6% responded that it is the e-commerce department, 3% responded that it is the marketing department, and 3% mentioned that it is the reservations department. It is important to highlight that some hotels (2.72%) had two departments responsible for these practices.

Regarding pricing techniques (Figure 1), the most commonly used technique is best available rate (BAR) pricing. Before the pandemic, the BAR guarantee (53) was the most used technique, followed by rate fences (46), rate segmentation (44), discounts (41), suggesting upselling (38), and price increase (37). The least commonly used were price decreases (18), room-only rates (22), rate parity (29), and bundled services (29). During COVID-19, the most used techniques were the BAR (58), discounts (50), price decreases (48), rate fences (46), and the establishment of conditions of access to different rates (43). Price increases (13), room-only rates (26), rate parity (29), and upselling (33) were the least commonly used techniques. The most noticeable technique after the pandemic was price increases (65), followed by the BAR (62), the establishment of conditions of access to different rates (50), upselling (49) or cross-selling (48), and rate fences (46). After the pandemic, the less commonly used pricing techniques were price decreases (19), room-only rates (26), rate parity (29), bundled services (33), and discounts (42).

With a BAR guarantee, the challenge is to present the price to the customer. Hotels can present a non-blended rate, on which the price is presented by night, even if the price differs from one night to another, and the blended rate is when the price is presented as an average, even if different nights of the stay have different prices. Most of the respondents (41) displayed the room rates both by price and per night and the total of the stay; before, during, and after COVID-19, 21 presented the price per night, the minority displayed the room rate only with the total of the stay, and 8 presented the total stay (Figure 2). The remaining respondents (9) changed the price display during the analysis period, and most of them changed to display both the price per night during and after the pandemic. This variability of pricing techniques does indeed reflect managers' focus on the financial sustainability of their businesses.

Referring to non-pricing techniques (Figure 3), the most commonly used techniques before COVID-19 were the focus on brand quality and image (43), new market segments (39), the creation of strategic partnerships (37), and length of stay control (33). During the pandemic, the most used techniques focused on brand quality and image (49), new market segments (46), and strategic partnership creation (43). After the pandemic, the focus was on brand quality and image (63), new market segments (53), strategic partnership creation

(51), intensive marketing and publicity actions (50), and length of stay control (42). Some respondents (8) did not match any of the periods.

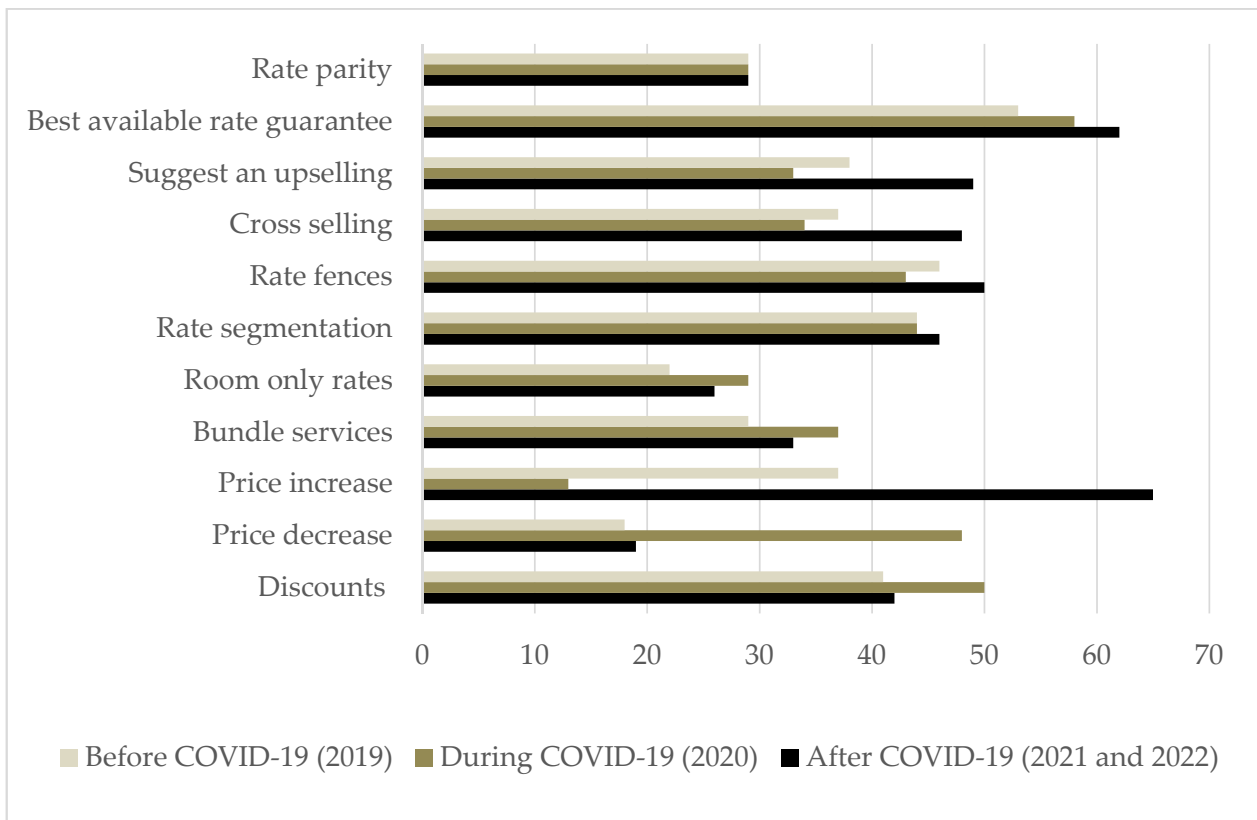


Figure 1. Pricing techniques.

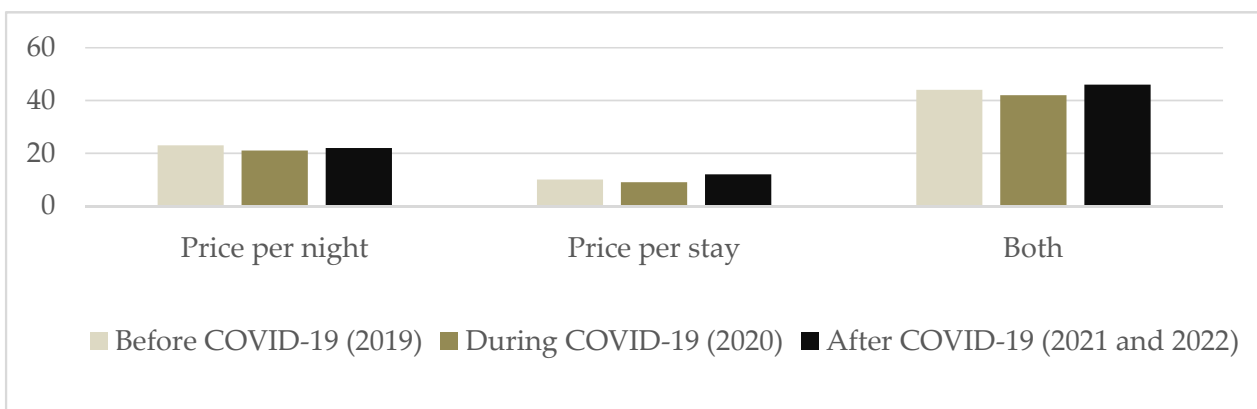


Figure 2. Price presentation on the website.

Overbooking was the least commonly used technique before, during, and after the pandemic, with a maximum of 15 respondents. The focus on the loyalty program was also rarely used, as only 34 respondents applied this technique. Non-price techniques also reflect the concern of managers to broaden the potential for revenue and financial sustainability.

To analyse the behaviour of the RM practices, the following hypothesis, “H1: RM practices are more widely adopted in hotels with a large number of rooms”, was tested using the Mann–Whitney test. Next, it was verified if certain RM practices are applied by hotels with more or fewer rooms. Thus, the following Mann–Whitney hypothesis was

formulated—“H0: The two groups represented by the use and non-use of RM practices have the same number of rooms”. In most cases, H0 is not rejected, demonstrating that the use of pricing techniques is not dependent on hotel size. However, H0 was rejected ($p < 0.05$) for the following pricing techniques: price increase (before and during the pandemic), rate fences (before, during, and after), establishing conditions of access to different rates (before and after), and upselling (before, during, and after). The hotels that used these techniques have more rooms, which leads us to interpret that in this sample, the larger the hotel, the more these techniques are used.

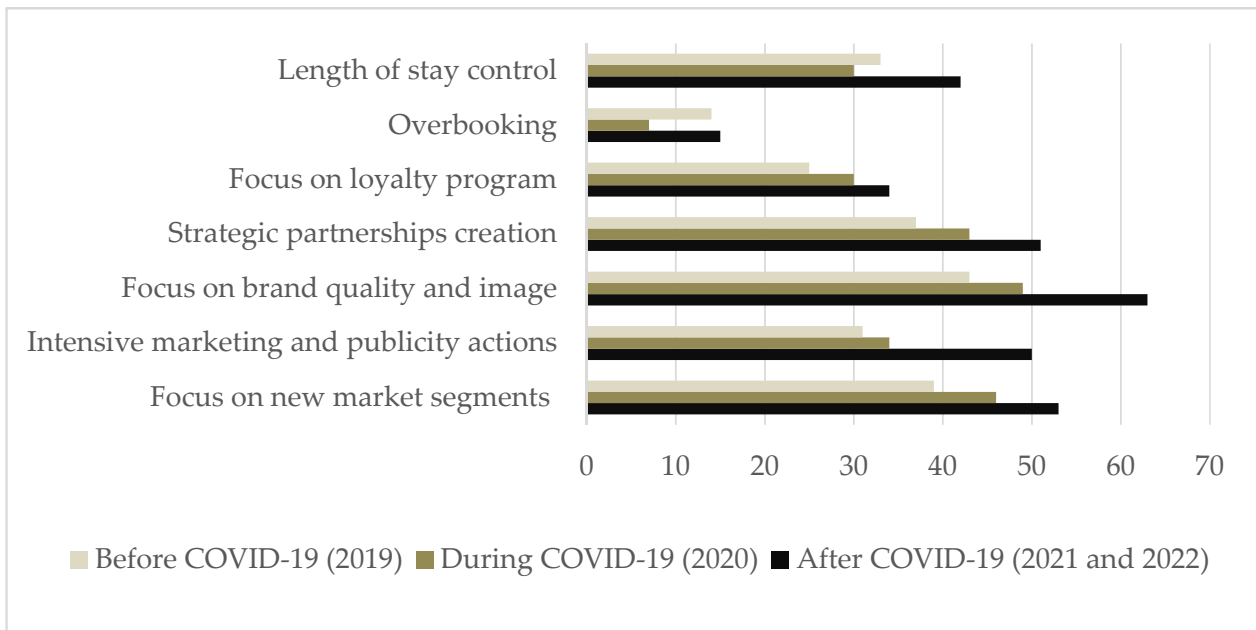


Figure 3. Non-pricing techniques.

The Mann–Whitney test was also applied to the use of non-pricing techniques versus the number of hotel rooms, and in most cases, H0 was not rejected. Nevertheless, H0 was rejected ($p < 0.05$) for the following non-pricing techniques: the use of intensive marketing and marketing actions (before, during, and after), focus on quality and brand image (after), and length of stay control (before). The use of these techniques differs according to the size of the hotel, as measured by room capacity. In this sample, a hotel with more available rooms uses more of these techniques than hotels with lower capacity. Thus, H1 is not rejected.

To test “H2: RM practices are more widely adopted in chain-affiliated hotels”, the Chi-square test for independence was used, and it did not demonstrate any significant relationship between company management status and the use of RM practices. The independence between these variables predominates, except for the length of stay control (before and after). There was a significant difference between independent hotels and chain-affiliated hotels in terms of LOS control ($\chi^2 (1, n = 79) = 4.704, p = 0.03$). A higher number of cases were observed when length of stay control was not chosen for independent hotels ($n = 39; 49\%$). According to the adjusted residuals, the local association between categories can be checked; if the adjusted residual is greater than 1.96, there is evidence of a significant association between the two categories. Subsequently, there is a significant association between independent hotels and no choice of LOS control and chain-affiliated hotels and the option for length of stay control. Thus, H2 is not rejected only for LOS control RM practice.

For “H3: RM practices are more widely adopted in hotels with five stars”, the relationships between the hotel category and the use of RM practices were analysed using the Chi-squared test for independence. The independence between these variables preponder-

ates, except for the practice of bundled services (before). There was a significant association between the hotel category and the use of bundled services ($\chi^2(1, n = 79) = 3.856, p = 0.05$). A higher number of cases was observed in four-star hotels that did not choose bundled services ($n = 41; 52%$). Observing the adjusted residuals, the local association was verified, and there was a significant association between four-star hotels and the no choice of the practice of bundled services and five-star hotels and the practice of bundled services, with an adjusted residual equal to two for both cases, implying that H3 is not rejected only for this practice.

The results of the statistical analysis are summarised in the following table (Table 3), in which “×” indicates that the practice was present in the period listed at the top of the table.

Table 3. Statistical results summary of the relationship between variables.

	Before COVID-19	During COVID-19	After COVID-19	
Hotel size				
Price increase	×	×		Large hotels
Rate differentiation	×	×	×	Large hotels
Establishing conditions of access to different rates	×		×	Large hotels
Upselling	×	×	×	Large hotels
Intensive marketing and publicity actions	×	×	×	Large hotels
Length of stay control			×	Large hotels
Hotel category				
Bundled services	×			5-star hotels
Company management status				
Length of stay control	×		×	International chain member hotels

The fact that 34.2% of the respondents did not have an RM department or someone responsible for this management demonstrates that Portugal is still in the embryonic or growing stage of RM. In addition, having an RM office is more likely when the hotel is a member of an international chain, as 95% of international chain hotels responded that they have an RM office, and only 56.7% of independent hotels have an RM office. Hence, we assume that having an RM office is more likely when the hotel is a member of an international chain.

Hotels that do not have an RM department or someone responsible only for this area of management mostly retain the hotel director or the front-office manager as responsible for the pricing and non-pricing strategies, which is not advised because, in times of crisis, it is important to have the capabilities of experienced managers and revenue managers (Talón-Ballestero et al. 2023; Wang and Ritchie 2012).

Concerning pricing and non-pricing techniques, the most commonly used were pricing techniques, such as the BAR guarantee before and during COVID-19, but after the pandemic, the most commonly used pricing tools were price increases, rate fencing, and price differentiation, which are good practices in times of crisis (Butscher et al. 2009). However, during the pandemic, discounts and price decreases were used, which contradicts most of the literature (Alonso-Almeida and Bremser 2013; Gehrels and Blantar 2013; Kim et al. 2019; Kimes 2009; Pavlatos et al. 2021; Talón-Ballestero et al. 2023), although Indian hotels also implemented discounts and special offers (Majumdar 2021).

The sample in the analysis gave not only importance to the focus on quality and brand image and the creation of strategic partnerships during and after the pandemic but also to the focus on new market segments and intensive marketing and advertising actions, which corroborates the literature (Alonso-Almeida and Bremser 2013; Gehrels and Blantar 2013; S. Kimes and Anderson 2015; S. E. Kimes 2009; Tew et al. 2008; Zeng et al. 2005).

The hotels in the analysis paid little attention to non-pricing strategies such as investment in loyalty programs (Kimes and Anderson 2015; Kimes 2009) and length of stay controls (Gehrels and Blantar 2013), which are common practices in periods of low demand. However, pricing strategies such as price parity, bundled services, and unbundled rooms are also uncommon among this sample, and these are all important in periods of crisis (Gehrels and Blantar 2013; Kimes and Anderson 2015; Kimes 2009).

Regarding price presentation, most hotels prefer to display nonblended rates and display the rate price per night with the total stay, as customers view them as fairer and more acceptable. However, some guests make reservations based solely on the total price (Rohlfis and Kimes 2007).

After the pandemic, the respondents used more RM practices than before the pandemic; however, the respondents gave more importance to pricing techniques. In general, all the RM tools were implemented more after the pandemic than during and before, meaning that RM is more relevant for Portuguese hoteliers in periods of low demand.

With the statistical analysis, it was possible to confirm that large hotels, five-star hotels, and chain-affiliated hotels tend to make more use of pricing and non-pricing techniques; specifically, price increases before and during the pandemic, price differentiation before, during, and after; establishing conditions of access to different rates before and after; upselling before, during, and after; using intensive marketing and publicity actions before, during, and after COVID-19; focusing on quality and brand image after; length of stay control before and after; and bundled services before COVID-19, corroborating with the conclusions of Kocourek et al. (2023), Ivanov et al. (2021), and Ivanov and Ayas (2017).

5. Conclusions

This study highlights the importance of RM practices in the hospitality industry, particularly during periods of crisis or low demand. The COVID-19 pandemic and other crises have had a significant impact on the industry, resulting in a drastic drop in international travel and tourism. This study emphasises the need for hoteliers to understand and implement effective RM strategies to achieve sustainability.

The purpose of this study is to help hoteliers use RM practices to counteract low demand in periods of crisis and uncertainty to achieve financial sustainability and to understand how Portuguese hotels make use of RM practices. For this purpose, RM practices were analysed in periods of crisis and uncertainty, and the results of a questionnaire about RM practices in 79 four- and five-star Portuguese hotels that had opened before 2019 were obtained.

This paper discusses the importance of flexible approaches and crisis management frameworks for hotels during periods of crisis through a literature review and highlights that simply reducing prices and implementing cost-cutting measures may not lead to long-term revenue recovery (Alonso-Almeida and Bremser 2013; Gehrels and Blantar 2013; Kim et al. 2019; Kimes 2009). Instead, hotels should focus on supplementary offers, alternative marketing strategies, quality improvements, and brand image to attract customers and increase occupancy (Alonso-Almeida and Bremser 2013; Gehrels and Blantar 2013; Kim et al. 2019; Talón-Ballesteros et al. 2023; Zheng 2014). RM pricing tools such as dynamic pricing, value-based pricing, bundled services, unbundled rooms, rate fencing, rate differentiation, and effective distribution strategies are recommended to optimise revenue during periods of low demand (Butscher et al. 2009; Guillet and Chu 2021; Hao et al. 2020; Kimes and Anderson 2015; Kimes 2009; Napierała et al. 2020; Zaki 2022).

This study also emphasises the need to adapt RM practices to specific crises. For example, during the COVID-19 pandemic, hotels have focused on maintaining prices, increasing the value of services, and implementing flexible booking conditions (Napierała et al. 2020; Talón-Ballesteros et al. 2023). Managers' experience and psychological aspects, as well as effective communication and collaboration among stakeholders, are considered crucial in crisis management (Talón-Ballesteros et al. 2023; Wang and Ritchie 2012).

Economic sustainability in the Portuguese hospitality industry is discussed, with the 2027 Tourism Strategy in Portugal aiming to improve revenues, overnight stays, and tourist spending, thereby reducing seasonality issues to stimulate the economy ([Turismo de Portugal 2017](#)). As Portugal is experiencing significant growth in tourism, this study finds that while some hotels have adopted RM practices, a significant proportion still lacks dedicated RM departments or personnel, and international chain hotels are more likely to have an RM office than independent hotels, indicating the influence of chain affiliation on RM implementation.

Additionally, the findings confirm that large hotels, five-star hotels, and chain-affiliated hotels tend to make more use of certain pricing and generally non-pricing techniques (such as price increase, price differentiation, establishing conditions of access to different rates, upselling, intensive marketing and promotional actions, focusing on quality and brand image, and length of stay control). The conclusions drawn from this study in Portugal are in line with those obtained in other studies from Bulgaria, Turkey, Italy, and Czechia. These conclusions reinforce the fact that larger hotels, international chain hotels, and higher-rated hotels use more in-depth RM practices.

Commonly used pricing techniques among the respondents include BAR guarantees and rate fencing, especially during the pandemic. However, some hotels deviated from the literature recommendations by implementing discounts and price decreases during the crisis. The surveyed hotels recognised quality, brand image, strategic partnerships, and marketing actions as important. However, non-pricing strategies, such as loyalty programs and length of stay control, received less attention, and pricing strategies, such as price parity and bundled services, were not commonly implemented despite their significance during periods of low demand.

Overall, in conclusion, RM practices were implemented more after the pandemic than before, suggesting their increased relevance in times of low demand for Portuguese hotel managers. This emphasises the need for experienced revenue managers and the use of a comprehensive range of RM tools to counteract low demand and achieve financial sustainability, as hotel managers must maximise their destination on a three-way basis (profits, people, and planet) instead of seeking to maximise only the number of visitor arrivals, which requires the use of RM pricing and non-pricing strategies ([Seraphin and Ivanov 2020](#)).

In summary, the findings highlight the importance of effective RM practices in managing hotel performance, particularly during crises, and provide valuable insights for hoteliers in Portugal to enhance their revenue management strategies and thereby pursue financial sustainability.

5.1. Theoretical Implications

To the best of the authors' knowledge, this article is relevant for being one of the few to examine RM practices in periods of crises and to examine these practices in Portugal. This study contributes to the advancement of RM theory, as it contributes to the theoretical development of RM by expanding the understanding of the principles, strategies, and practices involved. This study also enhances the interdisciplinary understanding of RM and provides a more comprehensive view of its implications for the hospitality industry. Additionally, RM research helps to uncover the contextual factors that influence the implementation and effectiveness of RM practices. By examining different countries, regions, and types of hotels, researchers can identify variations in RM strategies and outcomes, leading to a better understanding of how contextual factors shape RM practices.

5.2. Practical Implications

The negative impact of crises on the hospitality industry is undeniable; hence, this study contributes to enhanced revenue optimisation, as it provides practical insights and recommendations for hotel managers to optimise their revenues, highlighting the importance of employing dynamic pricing, value-based pricing, and effective distribution

strategies to maximise revenue during periods of low demand. RM research findings can guide hotel managers in developing effective crisis RM strategies. By emphasising the need for flexibility, supplementary offers, alternative marketing strategies, and quality improvement, this research provides practical guidance to hotels in navigating through crises and recovering from them. Moreover, during and after periods of crisis, it is crucial that all types of hotels use RM practices, pricing, and non-pricing. BAR is an RM practice that should be used in any economic situation. Yet, discounting is an RM practice that should be used during a period of crisis, while price increases should be used after the crisis period.

This study also promotes the integration of sustainability principles and responsible practices into RM strategies by highlighting the importance of considering financial sustainability, environmental impact, and social responsibility in RM decision making, enabling hoteliers to pursue sustainable growth and contribute positively to their communities and the environment.

RM research assists hotel managers in making informed strategic decisions related to pricing, branding, partnerships, and marketing. Furthermore, by understanding and implementing effective RM strategies, hotels can differentiate themselves from competitors, optimise their pricing, and offer value-added services to attract and retain customers.

5.3. Future Research and Limitations

This study provides valuable insights into RM practices during crises and in the Portuguese hospitality industry and conclusions that are qualitative in nature and are bound by the sample presented and the variables analysed. Due to the unwillingness of hotel managers to collaborate in scientific studies and the lack of knowledge of RM, it is difficult to carry out studies with a large sample and with in-depth questions about RM practices. Therefore, this subject should be studied more deeply either by collecting and quantifying financial data or through multiple study cases to comprehensively analyse the impact of practices on financial sustainability with all the variables available in micro and macro terms.

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Institutional Review Board Statement: In Portugal, when the research has not been conducted on human beings or material of human origin, such as tissues, specimens, and cognitive phenomena, and the survey does not have questions about personal or socio-demographic data, there is no requirement for prior ethical approval before contacting participants. Moreover, the participants are kept anonymous.

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Appendix A

Questionnaire

1. Indicate the category of the Hotel:

- (a) 4 stars
 - (b) 5 stars
2. What is the location of the Hotel (NUTS II)?
 - (a) North
 - (b) Center
 - (c) Lisbon Metropolitan Area
 - (d) Alentejo
 - (e) Algarve
 - (f) Autonomous Region of the Azores
 - (g) Madeira Autonomous Region
 3. What is the company management status?
 - (a) Independent hotel
 - (b) Member of international chain
 4. What is the capacity of your hotel?
 5. Does the hotel have a Revenue Management office or someone responsible only for this area?
 - (a) Yes
 - (b) No
 6. If there is no one responsible for the Revenue Management area, who is responsible for pricing and non-pricing strategies?
 7. Check the Revenue Management pricing practices that you practiced before, during and after the COVID-19 pandemic crisis, if you did not practice, leave the column blank:

Pricing Techniques	Before (2019)	During (2020)	After (2021 and 2022)
Discounts			
Price decrease			
Price increase			
Offer of two or more services at one price (packages)			
Rates without Breakfast (sell accommodation only)			
Price differentiation within each segment			
Establish conditions of access to different tariffs			
Suggest a complementary service to the offer purchased by the customer			
Suggest an upgrade (sell more expensive services)			
Best available price guarantee (direct sales)			
Equal price on all sales channels			

8. How do you display prices on the hotel’s website?

	Before (2019)	During (2020)	After (2021 and 2022)
Total price per stay			
Price per night			
Both			

9. Check the Revenue Management practices of non-pricing that you practiced before, during and after the COVID-19 pandemic crisis, if you did not practice, leave the column blank:

Non-Pricing Techniques	Before (2019)	During (2020)	After (2021 and 2022)
Focus on new market segments			
Intensive marketing and advertising actions			
Focus on quality and brand image			
Creation of strategic partnerships			
Focus on loyalty program			
Overbooking			
Length of stay control			

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