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REVENUE MANAGEMENT IN PORTUGUESE 4- AND 5-STAR HOTELS

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Abstract

This study aims to contribute to the Revenue Management literature, by investigating how it is applied in 4- and 5-star hotels in Portugal. It explores the importance of RM, which practices are most frequently used and regarded as more important, and their impact on hotel efficiency. In addition, it examines AI's expected future role in RM. Following a mixed-method approach, the research highlights RM's importance to hotel performance and key practices like market analysis, dynamic pricing, and KPI analysis. It anticipates AI's significant future role in RM. These results offer valuable insights for revenue professionals in the hospitality sector.

Keywords: Revenue Management; Hotels; Portugal; Practices; Upscale; Efficiency; Artificial Intelligence.

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1. Introduction and Research Questions

1.1. Introduction

The landscape of the hospitality industry has been evolving rapidly, with the practice of Revenue Management (RM) becoming essential in terms of strategic operations. The aim of this study is to have a broad understanding of the way RM is implemented in high-end hotels in Portugal and provide a comprehensive view of how they are implementing RM strategies by identifying the prevalent practices used in 4 and 5-star hotels in Portugal as well as understanding their importance for the hotels' performances.

The focus on 4 and 5-star hotels in Portugal presents a unique opportunity to study RM practices in establishments that are not only leaders in the industry, but also located in Portugal, a country that has shown a big growth in tourism in recent years.

To achieve our objectives, we analyse, firstly, the literature on RM in the hospitality industry in national and international contexts. Secondly, we present and discuss some concepts, practices and tools used in RM. Thirdly, this study develops empirical research in a dual-method approach: exploratory interviews conducted with individuals responsible for RM 4- and 5-star hotels in Portugal, and questionnaires directed at a broader range of hoteliers in the same target group. This combination of quantitative and qualitative data serves to draft a detailed overview of the current state of RM in Portuguese upscale and luxury hotels.

Finally, this study not only seeks to contribute to the existing literature on RM in the hospitality industry, particularly in the context of the Portuguese market, but also aims to offer practical insights for stakeholders in the sector.

1.2. Research Questions

In pursuit of these aims, the following research questions have been formulated to guide the study:

- a) Which RM strategies are more frequently put into practice in 4- and 5-star hotels in Portugal? And which are considered more important?
- b) What is the importance that professionals working in 4- and 5-star hotels attribute to the practices of RM?
- c) What is the influence of the correct application of Revenue Management practices on the efficiency of the hotel? Does the perspective change depending on whether they are implemented on independent or chain hotels? Or depending on whether they have RM software implemented or not?
- d) In 4- and 5-star hotels in Portugal, what is the expected importance that AI will have in the future of RM?

2. Revenue Management: Theoretical Approach and Literature Review

2.1. Revenue Management: definitions and considerations

Firstly, it is important to understand the relationship between Revenue Management (RM) and Yield Management (YM), as they are often used interchangeably in the hospitality and service industries.

On one hand, YM has originated in the 1970s and, at first, it was exclusively applied to the airline industry, before Marriott International taking that practice to the hotel industry, in the 1980s (Cross et al. 2009). It was primarily concerned with maximizing revenue through the control of inventory and pricing, based on supply and demand (Kimes 1989).

On the other hand, RM is a strategic approach through which the manager aims to maximize the revenue of a business, using the tools and strategies available to identify market segments and optimize the product price and availability for each segment (Pimentel 2023). According

to Ivanov and Zhechev (2012), in the context of the hotel industry, RM involves a strategic management of room rates, inventory and distribution channels, which combined with the various practices in the area, is intended to maximize the revenue and profitability of a hotel. In theory, the optimal solution to RM is to sell the right product, at the right time, for the right price, to the right customer, in the right distribution channel (Kimes 1989; Hayes and Miller 2010).

Therefore, RM not only includes the basic principles of YM - such as inventory control and demand-based pricing, as mentioned above - but also extends to include a wider range of factors and encompasses a broader scope. These include, among others, market segmentation, customer relationship management and channel management (Hayes and Miller 2010).

Additionally, in the recent years, the society has been witnessing a considerable technological advancement in many areas, and RM is not an exception. Those advancements have allowed for strategies with a higher emphasis on complex data analysis, such as forecasting, which have significantly enhanced the practice of RM, helping hotels and other businesses to improve their performance (Cross et al. 2009).

Accordingly, RM techniques are particularly relevant to achieve good results and can be applied for all types of business that have some or all of certain characteristics, such as working in micro segmented markets, having volatile demand, availability of advanced reservation, high fixed costs and low variable costs, seasonality, and, more importantly, perishable inventory and restricted capacity, as it happens with hotels. Additionally, in order to be well applied, hotels that have other revenue centres, such as restaurants or SPA services, can use them to leverage the financial outcome by applying the same tools simultaneously (Ivanov and Zhechev 2012; Kimes 2016; Ferreira da Costa 2017).

2.2.Previous Studies on Revenue Management

As stated before, the aim of this study is to analyse the implementation of Revenue Management in 4- and 5-star hotels in Portugal. Therefore, the analysis of Portuguese and international studies should not be disregarded, to connect and relate different aspects of RM applied in the hotel industry.

2.2.1. Portuguese Studies

At a national level, Oliveira et al. (2013), while studying the efficiency performance of Algarve hotels that use RM in their operation, has concluded that companies that own multiple hotels, such as hotel chains, display a higher efficiency in their practices than independent hotels, due to the “synergies gained with economies of scale and economies of scope and by the supply of several differentiated products”.

Furthermore, Rameil (2015) has studied the RM tools applied by Grupo Pestana in Portugal. It has concluded that RM was very important in the improvement of revenue and occupation, with even “more importance given to forecast and planning ahead rather than punctual alterations”. However, the study has identified some limitations to the usage of RM techniques in the organisation, namely the difficulty in measuring the impact of those practices, and the fact there is not “sufficient marketing power to change room rates at will”, especially when it is related to contractual conditions with Online Travel Agencies (OTA).

Finally, Costa (2017) has evaluated the technological tools that can be more important to the RM system, as well as the practices that RM professionals that work in upper scale Portuguese hotels value the most. The author has concluded that the hotels that possess more and better-quality technological systems, also possess more optimized processes, taking advantage of a greater number of RM techniques they have at their disposal to achieve higher revenues. At the time of the study, the author concluded that, regardless of the RM processes throughout all hotel operations still being in an emerging and initial status in Portugal, the

industry professionals attributed a great deal of importance to RM and believed this practice would be preponderant in the success of hotels in the near future.

2.2.2. International Studies

In an international context, Guillet and Rahman (2015) have conducted a comprehensive study on RM practices in European luxury hotels. They highlighted the unique challenges faced in these markets, such as balancing high service standards with revenue optimization strategies.

Additionally, Murimi and Olielo (2021) have built a theoretical framework for the determinants of RM practices and their impacts on the financial performance of Kenyan hotels, that demonstrates and emphasizes the positive effect that the practices of RM have in the financial performance of the hotels, reaching the same conclusions as other studies.

Finally, Aras et al (2018) have surveyed various hotels in the region of Konya, Turkey and concluded that the application of RM strategies has contributed “financially and competitively”.

In conclusion, through the analysis of different studies, it is understandable that the practice of Revenue Management plays a fundamental role in the overall performance of hotels. Thus, it is important to present and discuss the different practices and tools used in RM context.

2.3. Revenue Management Practices and Tools

This section focuses on explaining and providing an overview of which are the main RM practices and tools used to optimize profits and efficiency, as well as how they are used to achieve financial and operational objectives. Some of these strategies can be applied independently while others are complementary, leaving up to each hotel to decide how to

apply them in accordance with its objectives, necessities and possibilities. According to the literature review there are the following practices and tools.

2.3.1. Analysis of Key Performance Indicators (KPIs)

To keep strategies in alignment with their occupancy rates, hotels track KPIs like Average Daily Rate (ADR), Revenue Per Available Room (RevPAR) or Gross Operating Profit (GOP). They use these metrics to assess their financial and operational efficiency and performance which help identifying trends, making more informed pricing decisions, and facilitating the benchmark against competitors, ultimately leading to strategic adjustments to improve profitability (Hayes and Miller 2010; Binesh et al. 2021).

2.3.2. Dynamic Pricing

This strategy helps adjusting prices on a real-time basis taking into consideration various factors such as fluctuating demand and competitor pricing, never disregarding the specific market conditions. Generally, this practice has been found to lead to higher revenue (Abrate et al. 2019). The objective is to always be on par or ahead of the market by capturing the most guests with the most premium price they are willing to pay, enhancing revenue opportunities while remaining competitive (Binesh et al. 2021).

2.3.3. Special Offers and Packages (Bundling)

By bundling rooms with other services like spa treatments, meals or local attractions, hotels can create value-added packages. This is an effective strategy that is attractive to customers, particularly when they can easily perceive the savings related to that package purchase, or when the package provides a personalized experience based on their preferences (in the case of past customers). Mainly, it not only enhances the guest experience but also encourages bookings by offering cheaper personalized experiences that stand out from standard accommodations (Hayes and Miller 2010; Cross et al. 2009).

2.3.4. Early-Booking and Last-Minute Discounts

Offering discounts to guests who book in advance or close to the arrival date helps manage occupancy levels effectively. Early-booking discounts secure revenue ahead of time, while last-minute deals fill up otherwise unoccupied rooms, optimizing revenue across different booking timelines. However, the latter are usually avoided due to brand recognition issues and the creation of false perspectives for clients, which can lead to customer dissatisfaction and less revenue for the hotel, in the long-term (Jerath et al. 2010; Toh et al. 2011). On the contrary, according to Yeoman and McMahon-Beattie (2011), customers from segments such as leisure and tourism, who are more price sensitive than the business segment, for example, tend to take advantage of early-booking discount. This happens due to customers' preferences not always being based on the product itself, but on the conditions of purchase.

2.3.5. Cross-Selling and Up-Selling

RM can be applied through sales techniques such as cross-selling and up-selling, with the objective of increasing the revenue per guest. This can be done during the time of booking, pre-stay or check-in, online or in person. When in person, it is usually by the staff in the front-office, that must be trained to efficiently apply these and other sales techniques (Ivanov and Zhechev 2012; Ma et al. 2020). Cross-selling is about offering additional services in order to have extra revenue during the guests stay, while up-selling is more related to encouraging an upgrade to the product the guest was already aiming to purchase. These strategies leverage the opportunity to enhance guests' experiences while boosting overall revenue (Net Affinity 2018).

2.3.6. Overbooking

To compensate for no-shows and last-minute cancellations, hotels may intentionally overbook rooms. The challenge is to accurately predict the likelihood of cancellations to minimize the

risk of having to "walk" guests to other hotels, which can incur costs and damage reputation (Maneesophon & Phumchusri 2013).

2.3.7. Length of Stay Control

During peak demand periods, hotels may require a minimum night stay to ensure profitability. Usually, this strategy is aimed at minimum stay requirements, guaranteeing that rooms are booked for a more extended period and therefore maximizing revenue potential during high-demand times (Ivanov and Zhechev 2012).

2.3.8. Distribution Channel Management

An efficient distribution channel management is crucial for the practice of RM (Ivanov and Zhechev 2012). Tendentiously, hotels aim to drive more direct bookings to reduce commission fees paid to third-party channels. However, optimizing the mix of distribution channels (direct bookings, online travel agencies, travel agents) can ensure a broad market reach and effective cost management. Additionally, OTAs can require hotels to practice price parity, which can help maintaining brand integrity and trust with consumers, but also make it less likely that the consumers book directly with the hotel. Even though there are some conflicts that can take place between hotels and OTAs, hotels are generally satisfied with the outcomes of such partnerships (Myung et al. 2009).

2.3.9. Market Analysis

In RM it is almost mandatory to keep a close eye on external factors, such as every kind of event, weather forecasts or even economic conditions, as well as on the competitors' use of many of the practices listed before, such as pricing, promotions, or other tools they embrace successfully. Keeping ahead of the market and benchmarking against competitors is what enables hotels to position themselves strategically. By understanding competitors' actions, hotels can adjust their pricing and marketing strategies to attract guests by offering better

value experiences, while ensuring competitive advantage and maximizing revenue potential (Abrate et al. 2012).

2.3.10. Forecasting

Forecasting is a critical component of revenue management in the hotel industry, helping revenue managers make decisions by accurately predicting demand, supply, and future trends in the hospitality industry. Forecasting is an essential tool for hotels, as effective revenue management relies on accurate demand projections, which then allows other RM tools to be applied accordingly (Coelho 2022). Ivanov and Zhechev (2012) have categorised forecasting methods into historical, advanced booking, and combined. Historical forecasting offers simplicity and minimal data requirements, being able to infer future changes based on past data. Advanced booking forecasts are based on the progression of bookings from a given day to the day of arrival, providing a snapshot of expected room occupancy (Ivanov 2014). Finally, combined forecasting methods integrate additional variables, potentially increasing the accuracy and reliability of predictions by considering a broader set of influencing factors.

2.4. Technology in Revenue Management

As with many other industries, the integration of advanced technologies is reshaping the practices of Revenue Management across the hospitality industry.

Technology in RM has revolutionized the way hotels approach pricing strategies and inventory management. The integration of advanced software systems into the operation has facilitated real-time data analysis, which has allowed for optimized pricing strategies and helped leading to higher revenues (Cross et al. 2009).

These RM systems can facilitate the decision-making for the revenue manager in areas like pricing, inventory control and distribution channel management (Abad et al. 2019). With the set of historical data that RM software have available, these systems are able to automate

processes such as accurately forecasting future demand for specific dates, as well as suggesting an optimal room distribution taking into account the forecast analysis, providing the Revenue Manager with important data to support his/her decisions (Guadix et al. 2010).

Nowadays, some Revenue Management systems already use Artificial Intelligence (AI) to improve its forecasting and processing of vast and complex datasets (Abad et al. 2019).

The main difference that comes with AI enhanced systems is the capability of not only analysing complex data, but also use it to possibly make decisions, by using machine learning. The objective is to minimize human intervention and therefore progressively eliminating the human error.

However, these technological advancements also present some challenges and threats, including the need for substantial investment in technology or the view of AI as a human labour replacement instead of its complement. Even though it has been found that the use of “technology is unlikely to eliminate the role of the human factor in RM” (Schwartz and Cohen 2004), further studies believe that digital transformation, in the long term, “will result in jobs shifting from human to nonhuman employees” (Alrawadieh et al. 2021). In addition, employees seem to share the same idea, by demonstrating a higher turnover intention when robotics and AI are more put into use (Li et al. 2019).

The incorporation of AI and other technological advancements in RM can be a significant step towards more efficient and effective revenue optimization strategies in the hospitality industry, representing a shift from traditional methods to a more data-driven and automated approach that promises higher revenue and improved customer satisfaction, even though that shift should be done careful and thoughtfully.

2.5. Challenges and Limitations of Revenue Management

As it can be understood from the literature, RM has become an indispensable strategy in the hotel industry, revolutionizing the way hotels operate and prepare their plan to attain the maximum profit possible. Although there are plenty of advantages and benefits associated to application of RM in the hospitality industry, there are also various challenges and limitations.

Accurately forecasting demand represents a primary challenge due to the dynamic nature of the hospitality market, which is influenced by seasonality, economic fluctuations and consumer trends. This complexity makes demand prediction difficult, yet it is crucial for RM's effectiveness (Kimes 1989).

As said before, integrating advanced technologies like AI and data analytics into RM practices offers significant benefits but also poses challenges. Added to the threat posed to human RM professionals, these technologies also require substantial investments, staff training and continuous adaptation to new advancements (Cross et al. 2009; Alrawadieh et al. 2021).

Moreover, pricing and inventory allocation strategies must balance maximizing revenue with maintaining fair pricing practices. Revenue managers must not forget that customers perceptions of price fairness play a vital role in their satisfaction and loyalty (Anderson and Xie 2010).

Implementing RM strategies can also face internal resistance. The organisational shift associated with the implementation and development of specific RM skill sets can be challenging for the hotel staff. Kimes (2017) states that “the progress has been slow, as much of the execution takes place at hotel level, and it remains a challenge to change the culture”, meaning the lack of trained personnel in RM also limits its effectiveness. Additionally, in highly competitive markets, the effectiveness of RM strategies can be less noticeable as more entities adopt similar tactics, leading to scepticism from personnel and market saturation. This

imposes continuous innovation in RM practices to remain effective (Guillet and Rahman 2015).

3. Revenue Management: Empirical Evidence from 4- and 5-Star Hotels in Portugal

3.1. Research Hypotheses

The principal aim of this study is to provide a perspective of the practices of Revenue Management and its importance for upscale and luxury hotels in Portugal. Therefore, after a thorough and deep analysis of the existing literature in Revenue Management, considering both national and international studies, with the objective of obtaining relevant answers for the initial research questions, the following research hypotheses were constructed:

a) Hypothesis 1 - Importance of RM

According to most literature, it is expected that upscale and luxury hotels in Portugal, aiming to maintain a competitive advantage, place greater importance on the practice of Revenue Management. Therefore, the following statistic hypotheses were formulated:

H0: “Professionals of hotels of 4 and 5 stars in Portugal do not attribute a very high importance to the practices of RM”; H1: “Professionals of hotels of 4 and 5 stars in Portugal attribute a very high importance to the practices of RM”.

b) Hypothesis 2 - Efficiency of RM by Type of Hotel (Independent or Chain)

Considering the findings of Oliveira et al. (2013), it is expected that the efficiency of the application of RM, measured with the impact on RevPAR, depends on whether the hotel is part of a chain or independent. Therefore, the following statistic hypotheses were formulated:

H0: “The impact in the hotel’s RevPAR does not depend on whether the practices of RM are applied in an independent hotel or a chain hotel”; H1: “The impact in the hotel’s RevPAR depends on whether the practices of RM are applied in an independent hotel or a chain hotel”.

c) Hypothesis 3 - Efficiency of RM Related to RM Software Implementation

Although it could not be found evidence in literature regarding this relationship, it is possible that the efficiency of RM in hotels, measured with the impact on RevPAR, can be related to whether RM software is implemented or not, due to the analytical tools and automation features that can come with that implementation. Therefore, the following statistic hypotheses were formulated:

H0: “The impact in the hotel’s RevPAR does not depend on whether RM software is implemented or not”; H1: “The impact in the hotel’s RevPAR depends on whether RM software is implemented or not”.

3.2.Methodology

This thesis followed a mixed methodology approach, integrating both qualitative and quantitative research methods to explore Revenue Management practices in 4- and 5-star hotels in Portugal. This was first delivered through a Literature Review, followed by the conduction of exploratory interviews to professionals in the area. Lastly, hoteliers that work in 4- and 5-star hotels in Portugal and have an understanding of Revenue Management practices were asked to participate in a questionnaire in order to gather important quantitative data. The decision to use a mixed-methods approach was taken to obtain a fully comprehensive understanding of this issue, through the analysis of qualitative and quantitative data.

3.2.1. Data Collection

3.2.1.1.Exploratory Interviews

Firstly, qualitative data collection was conducted through exploratory interviews. These interviews were conducted in Portuguese, and they guaranteed all relevant topics were discussed while providing the flexibility for the participants to express their points of view

regarding their personal experiences in the area. Additionally, they were destined exclusively for professionals who work in 4- and 5-star hotels in Portugal and who are directly involved with the Revenue Management practices in the hotel. In total, five interviews were conducted to two front-office managers, two general managers, and one revenue manager, each of them fulfilling the requirements to participate in this study. Every participant has authorized the usage of the data provided for academic purposes.

3.2.1.2. Questionnaires

After analysing the information gathered through the literature review and the interviews, questionnaires were designed and distributed to a broader range of hoteliers in the same target group to collect quantitative data on relevant questions for this study. The respondents were selected through LinkedIn, by sending them private messages asking for their input for the present study. The questionnaire was formulated through Google Forms and the questions were structured to quantify the prevalence and importance attributed to different Revenue Management practices. The respondents agreed on the use of the provided data for academic purposes. Sixty anonymous responses were collected, representing a response rate of 63,82%.

3.3. Results Analysis

This chapter presents a detailed analysis of the data collected through exploratory interviews and questionnaires. The exploratory interviews, which involved five participants, were designed to gain in-depth insights into the practices of Revenue Management in 4- and 5-star hotels in Portugal. Subsequently, the questionnaires, which gathered 60 responses, quantified these insights, and examined their prevalence across a broader sample.

3.3.1. Qualitative Data Analysis

3.3.1.1. Sample Description

The sample of this study is composed by five professionals who work in 4- or 5-star hotels in Portugal and who are involved with or have knowledge about Revenue Management, that can be seen in detail in **Figure 1 (Appendix C)**.

3.3.1.2.Relevant Interview Findings

a) Importance of Revenue Management

Every participant has stated that they attribute a very high importance to the practice of RM, with **GM 2** stating the inability to imagine what hospitality would be like without Revenue Management and that its application is “completely essential” in order to efficiently manage not only the revenue from the rooms, but also from other revenue streams like F&B or SPA. Additionally, **RM 1** has added that the Revenue Manager could be seen as the GM’s right-hand man, considering that this role is fundamental, because when a project is being managed, it “has to be profitable and sustainable in the long-term”. Furthermore, they all estimate the correct application of RM to an increase in RevPAR, with **GM 2** confirming an increase of 30%, from 2019 to 2023, in **Hotel E**’s RevPAR after continuous improvement and process adaptation in the area of RM. **GM 1** added that, although slightly reducing the occupation rate, they were able to increase the ADR in 20€, which led to an increase in RevPAR after implementing new software provided by the hotel chain in **Hotel B** (until recently, the hotel was independent).

b) Portuguese attitude towards the culture of Revenue Management

The general idea taken from the interviews regarding this theme was that, although its importance has been growing in recent years, Revenue Management still has a long way to go in Portugal. According to **RM 1**, the culture of RM and profit management needs to be more emphasized. **RM 1** also believes there are a lot of professionals in Portugal that “do not have enough training and not recognize this importance”. This complies with **GM 1** belief there is

“plenty of work to be developed”. *GM 1* also said that customers might not understand how RM works and there are even situations where they believe the hotel “is deceiving them” due to price discrimination in different seasons, which means this might have an impact on customer satisfaction and brand recognition. However, *FOM 2* and *GM 1* understand that some hotels, mainly the independent, choose not to use RM due to the costs, as there is the belief a “chain of hotels does not even put this into question”, according to *GM 1*.

c) Most relevant Revenue Management practices

The most important information gathered in the interviews, regarding this thematic, is detailed in the **Figure 2**.

Name	FOM 1	GM 1	FOM 2	GM 2	RM 1
Used Practices	Distribution Channel Management Market Analysis Last-Minute Discounts Up-Selling	Market Analysis Cross-Selling and Up-Selling Distribution Channel Management Early-Booking Discounts Overbooking	Market Analysis Forecasting Distribution Channel Management Last-Minute Discounts Length of Stay Control	Market Analysis Special Offers and Packages (Bundling) Cross-Selling and Up-Selling Distribution Channel Management	Distribution Channel Management Early-Booking Discounts Analysis of KPIs Forecasting Length of Stay Control
Most Important Practices	Market Analysis	Market Analysis Cross-Selling and Up-Selling	Market Analysis Forecasting	Market Analysis	Early-Booking Discounts Analysis of KPIs Forecasting
Not Practiced	Analysis of KPIs Overbooking Length of Stay Control Cross-Selling Special Offers and Packages (Bundling)	Length of Stay Control	Overbooking	Overbooking	Last-Minute Discounts
Notes	Do not practice Length of Stay Control or Overbooking due to location and hotel size	Although practicing Overbooking, only does it as last resource and due to having two hotels with similar location and quality. Not the best practice because it can influence customer satisfaction	Disbelief that one should not reduce prices, and therefore practice of Last-Minute Discounts to ensure higher occupation rate	High emphasis on Market Analysis, especially in comparison with competitors of same type of tourism, due to being a niche market (Wine Hotel)	Sometimes Length of Stay Control may not be good for revenue due to unbooked dates between different bookings
		Do not practice Length of Stay Control due to the average nights spent being only 1,5 or Last-Minute Discounts due to a short window of bookings	Do not practice overbooking due to the demand of having a strong relationship with hotels in the area and a very good cancellation management	Do not practice overbooking due to small number of rooms and unavailability of same type hotels in the proximity	Do not practice Last-Minute Discounts due to the possibility of creating an unwanted relationship with the client.

Figure 2 – Interviewees’ RM Practices

d) Future of Revenue Management with Artificial Intelligence

As most interviewees have said, many of the forecasting tools already in use take advantage of AI technology. Additionally, most believe AI will have a positive and fundamental impact in the future of RM, turning it into an even more efficient tool used to improve revenues and reduce unnecessary workload. However, not every participant shares the same point of view when it comes to the implication these advances will have in terms of human workforce. *FOM 1* believes AI will “completely destroy many positions” and it will eliminate the

Revenue Management position, replacing it completely. On the other side, **RM 1** does not believe AI will eliminate the position completely but reduce the number of human resources needed. **RM 1** says it will enhance the importance of communication between the Revenue Manager and the GM in a hotel, with the Revenue Manager and the AI software working side by side, but AI taking the full responsibility of the mathematical analysis and the Revenue Manager taking the responsibility of putting those analyses into practice. Finally, **GM 1** and **GM 2** think AI will not have a toll in the Revenue Manager position, due to the necessity of a human eye in every decision but will complement it and turn it even more efficient.

3.3.2. Quantitative Data Analysis

For this section, the data collected from the questionnaires was processed using Microsoft Excel for Microsoft 365 MSO and Jamovi 2.3.18.

3.3.2.1. Descriptive Statistics

The sample is composed by 60 respondents who work in 4- or 5-star hotels in Portugal and are involved in or have knowledge of the hotel's revenue management practices. These were the conditions to participate in the study, and the first question of the questionnaire is meant to guarantee that every participant fulfils them. If that ended up not being the case, responses that would be invalid for the study would be dismissed. In this case, 100% of the 60 respondents fulfilled the requirements.

In **Figure 3 (Appendix C)** it can be seen that out of the 60 respondents, 26 have less than 5 years of experience in the area and 20 have between 5 and 10 years, meaning that 76,66% of the sample used for this study are recent professionals in the area, that have been working on it for 10 years or less.

Additionally, the majority of respondents have an academic background in Hospitality Management and Revenue Management, as it can be seen in **Figure 4 (Appendix C)**.

In terms of location of the hotels, 58,3% of the respondents stated they work for hotels in the Metropolitan Area of Lisbon, followed by the Metropolitan Area of Porto with 31,7% and Algarve with 21,7%. In Revenue Management, it is possible to work for more than one hotel, and therefore have various locations. This information can be seen in **Figure 5 (Appendix C)**. Out of the 60 responses collected, 45 stated they were focused in one region only, while 15 said they had hotels spread over more than one.

The hoteliers questioned are responsible or partly responsible for a certain number of rooms, whether in one or more hotels at the same time. When asked about the number of rooms under their responsibility, it was possible to gather 56 valid responses. As seen in **Figure 6 (Appendix C)**, The responses have been separated in 4 groups: <26 rooms, with 7 responses; 26-50 rooms, with 9 responses; 51-164 rooms, with 25 responses; and >165 rooms, with 15. Most respondents (44,64%) manage between 51 and 164 rooms.

Additionally, 17 respondents have said they work in an independent hotel, while 43 work in a hotel chain or group of hotels. In **Figure 7 (Appendix C)** it can be seen professionals from at least 32 different hotel groups have participated in the questionnaire, considering 3 of the respondents were not allowed to disclaim their hotel group.

In terms of RM Software usage, only 41 of the respondents have stated the hotels for which they work have implemented RM software. From those respondents, 37% use Duetto, followed by Climber with 15%, and XLR8 and Ideas with 7% both, as it can be seen in **Figure 8 (Appendix C)**.

Regarding the effect of the practice of RM in the efficiency of a hotel, in **Figure 9 (Appendix C)** it can be seen that 69,5% of the respondents have attributed an increase of RevPAR in their hotels around 10% to 30% due to the correct application of Revenue Management, with no professional stating a null impact on the RevPAR.

In this questionnaire, professionals were asked which are the practices they use to effectively practice Revenue Management. From the **Figure 10 (Appendix C)**, it can be concluded that the most practiced strategies are the market analysis, practiced by 59 out of 60 respondents, followed by dynamic pricing and the analysis of key performance indicators. Overbooking was the less used strategy, with only 38 respondents stating they use it, followed by cross-selling and last-minute discounts.

Besides that, it was possible to collect important information about the relevance attributed to each practice, from 0 to 10. In **Figure 11 (Appendix C)**, it can be seen the most important practices for the professionals are dynamic price, to which have attributed a mean score of 8,617 ($s=2,108$), followed by market analysis with 8,333 ($s=2,199$) and forecasting with 8,300 ($s=2,324$). The practice with the lowest mean score is the application of last-minute discounts, with a mean score of 5,583 ($s=2,670$), followed by overbooking with 5,993 ($s=2,742$) and early-booking discounts with 6,283 ($s=2,344$).

The respondents have attributed a mean score of 8,450 ($s=1,721$) to the relevance they feel AI will have in the future of RM, as seen on **Figure 12 (Appendix C)**.

3.3.2.2. Research Hypotheses Testing

1. Hypothesis 1 - Importance of RM

Most of the respondents have attributed a very high rating (0 being the lowest and 10 the maximum) to the practice of Revenue Management in hotels, with the mean being 9,5 ($s=0,966$) (**Figure 13, appendix C**).

For the first hypothesis it was considered that a score of 9 or above would be considered as “very important”. Therefore, H1: “The average importance attributed to Revenue Management by professionals that work in 4- or 5-star hotels in Portugal is greater than 9 ($\mu > 9$)”. Even though the variable is not normally distributed, the Central Limit Theorem can be

applied due to the number of responses being greater than 30 ($n=60$), and therefore allows the assumption that the distribution of the sample mean is approximately normal. The level of significance chosen for this test was 0,05.

By performing a one sample t-test (**Figure 14, appendix C**), it is possible to reject the null hypothesis, H_0 : “The average importance attributed to Revenue Management is 9 or less ($\mu \leq 9$)”, due to $p\text{-value} < \text{level of significance}$. This means that it can be stated with statistical confidence that professionals of hotels of 4 and 5 stars in Portugal attribute a very high importance to the practices of RM.

2. Hypothesis 2 - Efficiency of RM by Type of Hotel (Independent or Chain)

In this case, it is meant to know whether the impact on RevPAR, which measures the efficiency of RM, is dependent on the fact that the professional works for an independent hotel or a hotel chain. The hypotheses are the following:

H_0 : “The impact in the hotel’s RevPAR does not depend on whether the practices of RM are applied in an independent hotel or a chain hotel”; H_1 : “The impact in the hotel’s RevPAR depends on whether the practices of RM are applied in an independent hotel or a chain hotel”.

Combining a binary variable (Chain or Independent) and a categorical variable (impact on RevPAR divided into 5 groups), this hypothesis would have been tested performing a Chi-Square Test of Independence. However, due to the expected count in some cases being less than 5, the Fischer’s Exact Test was the test chosen. The level of significance chosen for this test was 0,05.

Due to $p\text{-value} > 0,05$, as seen in the **Figure 15 (Appendix C)**, in Fisher's Exact Test, the null hypothesis cannot be rejected. There is not enough evidence to confirm there is a dependence between Impact on RevPAR and the Type of Hotel (Chain or Independent).

3. Hypothesis 3 - Efficiency of RM Related to RM Software Implementation

With this test it is meant to know whether the impact on RevPAR, which measures the efficiency of RM, is dependent on whether the hotel or chain has implemented RM Software into its operation. The hypotheses are the following:

H0: "The impact in the hotel's RevPAR does not depend on whether RM software is implemented or not"; H1: "The impact in the hotel's RevPAR depends on whether RM software is implemented or not".

Combining a binary variable (Yes and No) and a categorical variable (impact on RevPAR divided into 5 groups), this hypothesis would have been tested performing a Chi-Square Test of Independence. However, due to the expected count in some cases being less than 5, the Fischer's Exact Test was the test chosen. The level of significance chosen for this test was 0,05.

As seen in **Figure 16 (Appendix C)**, due to $p\text{-value} > 0,05$, in Fisher's Exact Test, the null hypothesis cannot be rejected. There is not enough evidence to confirm there is a dependence between Impact on RevPAR and the Software Implementation.

4. Discussion of Results

4.1. Results Interpretation and Future Lines of Research

Finally, the research questions initially posed can now be addressed and discussed, taking into account the thorough qualitative and quantitative analysis presented in the previous sections.

Firstly, it can be quantitatively confirmed that the most commonly used practices are market analysis, dynamic pricing, and KPI analysis, with dynamic pricing, market analysis and forecasting being the most important. In this case, given the small number of interviews, the quantitative data is more relevant. Nevertheless, the interviewees clearly indicated a high level of importance attached to market analysis, which supports the quantitative findings. In addition, both analyses show that overbooking is one of the less practiced and important practices for 4- and 5- star hotels in Portugal, mainly due to its impact on customer satisfaction and its difficulty in implementation. These findings can be relevant for professionals dealing with revenue in hotels, as understanding that dynamic pricing, market analysis, and forecasting are prioritized allows hotel revenue managers to focus their efforts on improving these areas to remain competitive. The recognition of overbooking as a less favoured practice due to its negative impact on customer satisfaction provides a useful insight into the priorities of high-end hotels in Portugal, highlighting the importance of maintaining customer satisfaction when implementing revenue management strategies.

Secondly, through the hypothesis testing and the findings taken from the interviews, it can be clearly understood that professionals working in 4- and 5-star hotels in Portugal attribute a very high importance to the practice of RM, which confirms the initial belief.

Furthermore, it can be understood that the professionals consider the correct application of RM practices to have a positive impact on the efficiency of the hotel, with 59 out of 60 respondents attributing an increase in RevPAR due to the application of RM practices. In addition, the interviews confirm the same results. However, there is not enough quantitative evidence to state that the efficiency of the hotel depends on the type of hotel, therefore not making it possible to confirm the findings of Oliveira et al. (2013). The same happens when testing the dependency relationship between the hotel efficiency and the fact that it has or has not implemented RM software. This does not mean these variables are independent, but rather

that, with the data available for this study, it could not be confirmed they are dependent. In fact, some interviewees have established a relationship between these variables, by stating that the efficiency of the hotel in which they work has improved due to the implementation of RM software, which came as an added value from the hotel being part of a hotel chain. As so, even though qualitative data suggest there may be a link between hotel efficiency and its type or the implementation of RM software, further studies in these areas must not neglect a more comprehensive data collection and analysis. Nonetheless, these findings can be relevant to hotel professionals seeking to improve hotel performance through RM. Understanding that the majority of respondents and interviewees recognise the positive impact of RM on RevPAR reinforces its importance.

Finally, for hoteliers in 4- and 5-star hotels in Portugal, it is expected that AI will have an important role in the future of RM. Besides attributing a high score for its expected importance, the interviewees also confirm the fundamental impact they believe AI will have on the future of RM. However, they take different positions when it comes to the impact it will have on the human workforce in RM. Therefore, over the next few years, as AI's influence is expected to grow, future research studies should explore the evolving job roles and skills required for RM professionals and assess how AI will impact the function and the efficiency for the hotel.

Furthermore, in future research studies it could be useful to compare these results with Portugal's competitors, such as 4- and 5-star hotels in Spain or in the European Union. Additionally, it could be equally relevant to verify if the same results are found in other rating categories of hotels in Portugal, in order to introduce efficient management practices. The results of such studies would complement these findings with important information that could help improving the efficiency and competitiveness of the hospitality sector in Portugal.

4.2.Limitations

There are some limitations adjacent to this study that must be taken into consideration when analysing the conclusions. Firstly, the questionnaires and interviews did not ask for concrete financial values that would make it easier to determine the efficiency of the practice of Revenue Management, as the collected data regarding RevPAR was only based on percentage intervals. However, it is known that asking for intervals rather than concrete values is a way of increasing responses. Moreover, most of the participants in the questionnaire were directly contacted, which means they may not represent the entire population accurately. Additionally, the interviews were mainly conducted with small and medium-sized hotels, with no large hotels providing qualitative data. Finally, the qualitative sample of this study is not representative, since the interviews do not cover every location in Portugal. All of these factors must not be disregarded as they may limit the results of this study.

5. Conclusion

In conclusion, this study provides an insightful understanding of how RM is implemented in 4- and 5-star hotels in Portugal, highlighting its importance for hotel efficiency and identifying key practices such as market analysis, dynamic pricing, and KPI analysis. In addition, it anticipates the important role of AI in the future of RM. The mix of qualitative and quantitative data strengthens the reliability of these findings, reinforcing the study's conclusions.

Overall, this study is expected to positively contribute to the existing literature in the field of Revenue Management in Portugal, providing a solid foundation and valuable data-backed results that can help revenue professionals improve their decision-making in the workplace and encourage further research in the area.

6. Bibliography

Abad, Pilar, Concepción De la Fuente-Cabrero, Lydia González-Serrano, and Pilar Talón-Ballester. 2019. "Determinants of Successful Revenue Management." *Tourism Review* Vol. 74, No. 3: 666-678.

Abrate, Graziano, Giovanni Fraquelli, and Giampaolo Viglia. 2012. "Dynamic Pricing Strategies: Evidence from European Hotels." *International Journal of Hospitality Management* Vol. 31: 160-168.

Abrate, Graziano, Juan Luis Nicolau, and Giampaolo Viglia. 2019. "The Impact of Dynamic Price Variability on Revenue Maximization." *Tourism Management* Vol. 74: 224-233.

Alrawadieh, Ziad, Zaid Alrawadieh, and Gurel Cetin. 2021. "Digital Transformation and Revenue Management: Evidence from the Hotel Industry." *Tourism Economics* Vol. 27, No. 2: 328-345.

Anderson, Chris K., and Xiaoqing Xie. 2010. "Improving Hospitality Industry Sales: Twenty-Five Years of Revenue Management." *Cornell Hospitality Quarterly* Vol. 51, No. 1: 53-67.

Aras, Sercan, Ahmet Buyusalvaric, and Halil Akmese. 2018. "Revenue Management Practices in Hospitality Industry: A Research on Hotels in Konya, Turkey." *International Journal of Business and Administrative Studies* Vol. 4, No. 2: 45-52.

Binesh, Fatemeh, Amanda Belarmino, and Carola Raab. 2021. "A Meta-Analysis of Hotel Revenue Management." *Journal of Revenue and Pricing Management* Vol. 20, No. 5: 546-558.

Coelho, Sara Miranda (2020). "Can Customer Relationship Management Help Maximizing Revenue Management?" University of Algarve.

Costa, Miguel Ferreira da. 2017. "Total Hotel Revenue Management em Portugal". Instituto Politécnico do Porto.

Cross, Robert G., Jon A. Higbie, and Dylan Q. Cross. 2009. "Revenue Management's Renaissance: A Rebirth of the Art and Science of Profitable Revenue Generation." *Cornell Hospitality Quarterly* Vol. 50, No. 1: 56-81.

Guadix, José, Pablo Cortés, Luis Onieva, and Jesús Muñuzuri. 2010. "Technology Revenue Management System for Customer Groups in Hotels." *Journal of Business Research* Vol. 63, No. 5: 519-527.

Guillet, Basak Denizci, and Ibrahim Mohammed. 2015. "Revenue Management Research in Hospitality and Tourism: A Critical Review of Current Literature and Suggestions for Future Research." *International Journal of Contemporary Hospitality Management* Vol. 27, No. 4: 526-560.

Hayes, David K., and Allisha A. Miller. 2011. *Revenue Management for the Hospitality Industry*. Hoboken, NJ: John Wiley & Sons.

Ivanov, Stanislav, and Vladimir Zhechev. 2012. "Hotel Revenue Management: A Critical Literature Review." *Tourism Review* Vol. 60, No. 2: 175-197.

Ivanov, S. 2014. *Hotel Revenue Management: From Theory to Practice*. Zangador.

Jerath, Kinshuk, Serguei Netessine, and Senthil K. Veeraraghavan. 2010. "Revenue Management with Strategic Customers: Last-Minute Selling and Opaque Selling." *Management Science* Vol. 56, No. 3: 430-448.

Yan, Ji, L. Hong, and Gu Mingchong. 2013. "Dynamic Pricing Strategy of Hotel Revenue Management." *International Journal on Advances in Information Sciences and Service Sciences* Vol. 5: 473-479.

Kimes, Sheryl E. 1989. "Yield Management: A Tool for Capacity-Constrained Service Firms." *Cornell Hotel and Restaurant Administration Quarterly* Vol. 30, No. 3: 14-19.

Kimes, Sheryl E. 2016. "SHA531: Introduction to Hotel Revenue Management". eCornell.

Kimes, Sheryl E. 2017. "The Future of Hotel Revenue Management." *Cornell Hospitality Report* Vol. 17, No. 1: 1-10.

Li, Jun (Justin), Mark A. Bonn, and Ben Haobin Ye. 2019. "Hotel Employees' Artificial Intelligence and Robotics Awareness and Its Impact on Turnover Intention: The Moderating Roles of Perceived Organizational Support and Competitive Psychological Climate." *Tourism Management* Vol. 73: 172-181.

Ma, Shuang Sara, Chao Zhang, and Yonggui Wang. 2020. "From Service Engagement to Product Purchase: Cross-Buying Behavior in Hospitality Contexts." *International Journal of Contemporary Hospitality Management* Vol. 32, No. 7: 2325-2343.

Maneesophon, Panaratch, and Naragain Phumchusri. 2013. "Overbooking Models for Hotel Revenue Management." In *Proceedings of the 4th International Conference on Engineering, Project, and Production Management (EPPM 2013)*, 829-845. Pathumwan, Bangkok: Faculty of Engineering, Chulalongkorn University.

Murimi, Michael, Billy Wadongo, and Tom Olielo. 2021. "Determinants of Revenue Management Practices and Their Impacts on the Financial Performance of Hotels in Kenya: A Proposed Theoretical Framework." *Future Business Journal* Vol. 7, No. 1: 2.

Myung, Eunha, Lan Li, and Billy Bai. 2009. "Managing the Distribution Channel Relationship With E-Wholesalers: Hotel Operators' Perspective." *Journal of Hospitality Marketing & Management* Vol. 18, No. 8: 811–828.

Net Affinity. 2021. "The Secret to Hotel Upselling and Cross-Selling." Net Affinity Blog.

Oliveira, Ricardo, Maria Isabel Pedro, and Rui Cunha Marques. 2013. "Efficiency Performance of the Algarve Hotels Using a Revenue Function." *International Journal of Hospitality Management* Vol. 35: 59-67.

Pimentel, D. 2023. Revenue Management 1 [PowerPoint slides]. Presented in Revenue Management Class, Nova School of Business and Economics.

Rameil, Sylvie. 2015. "Internship in Revenue Management at Pestana". University of Algarve.

Salazar, Carolina Guilherme. 2020. "Future of Revenue Management and Marketing in Portuguese Hospitality Industry". ISCTE.

Schwartz, Zvi, and Eli Cohen. 2004. "Hotel Revenue-Management Forecasting: Evidence of Expert-Judgment Bias." *Cornell Hotel and Restaurant Administration Quarterly* Vol. 45, No. 1: 85-98.

Talluri, Kalyan T., and van Ryzin, Garrett J. 2005. "The Theory and Practice of Revenue Management." Springer.

Toh, Rex S., Peter Raven, and Frederick DeKay. 2011. "Selling Rooms: Hotels vs. Third-Party Websites." *Cornell Hospitality Quarterly* Vol. 52, No. 2: 181-189.

Vaeztehrani, Amirhossein, Mohammad Modarres, and Samin Aref. 2015. "Developing an Integrated Revenue Management and Customer Relationship Management Approach in the Hotel Industry." *Journal of Revenue and Pricing Management* 14: 1-23.

Yeoman, Ian, and McMahon-Beattie, Una. 2011. "Revenue Management: A Practical Pricing Perspective." Palgrave Macmillan.

Zulkarnain, Arif, Anita Swantari, and Haryo Wicaksono. 2017. "Hotel Revenue Management Implementation in Hotel." In Proceedings of the 1st International Conference on Tourism Gastronomy and Tourist Destination (ICTGTD 2016), Advances in Economics, Business and Management Research, Vol. 28, 227-230. Atlantis Press.

7. Appendix

7.1. Appendix A – Table of Contents

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7.2. Appendix B – List of Abbreviations

ADR – Average Daily Rate

AI – Artificial Intelligence

FOM – Front Office Manager

GM – General Manager

GOP – Gross Operative Profit

KPI – Key Performance Indicator

OTA – Online Travel Agency

RevPAR – Revenue Per Available Room

RM – Revenue Management

YM – Yield Management

7.3. Appendix C - Figures

Name	Role	Years of Experience	Hotel	Location	Number of Rooms	Star Rating	Group or Chain	RM Software
FOM 1	Front-Office Manager	10	Hotel A	Centre Region	22	4	No	No
GM 1	Cluster General Manager	30	Hotel B and Hotel C	Centre Region	122 100	4	Yes	Yes
FOM 2	Front-Office Manager	16	Hotel D	Centre Region	55	5	Yes	No
GM 2	General Manager	5	Hotel E	Alentejo	19	5	No	Yes
RM 1	Revenue Manager	9	Hotel F	Metropolitan Area of Porto	62	4	Yes	No

Figure 1 – Interviews sample

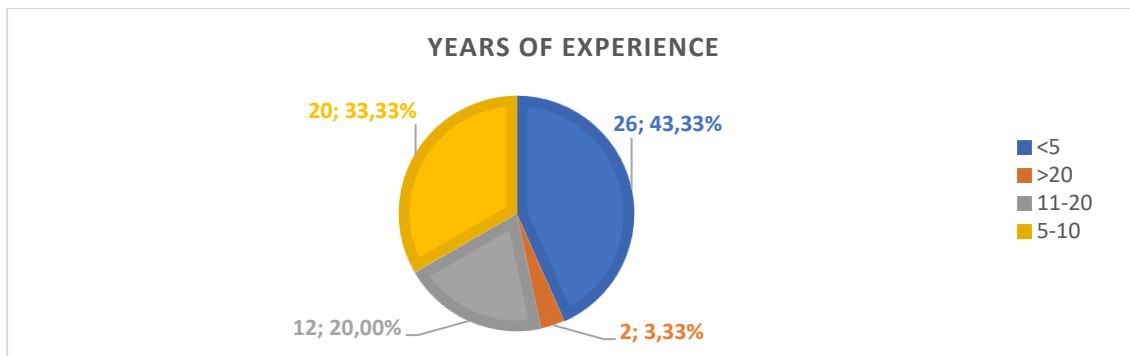


Figure 3 – Years of experience

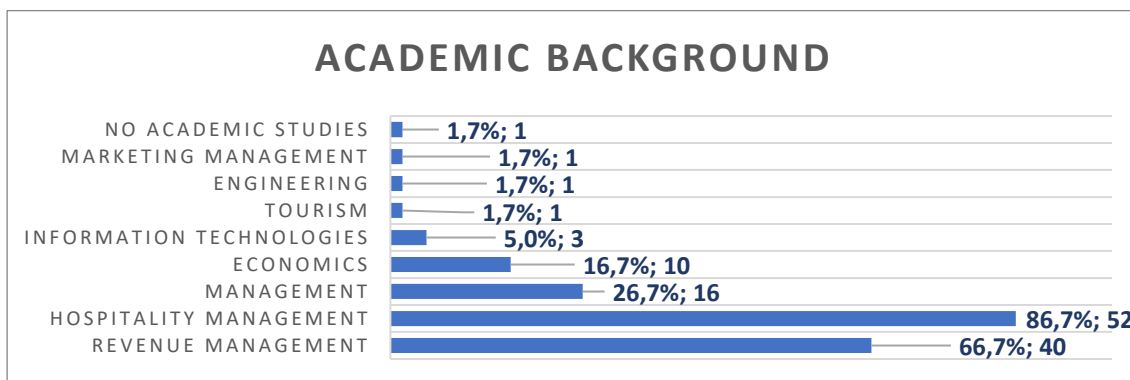


Figure 4 – Academic background

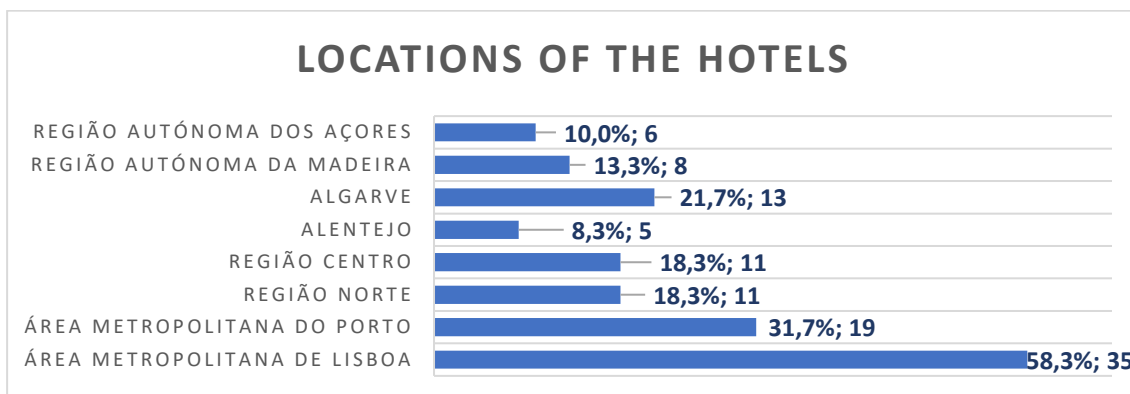


Figure 5 – Locations of the hotels

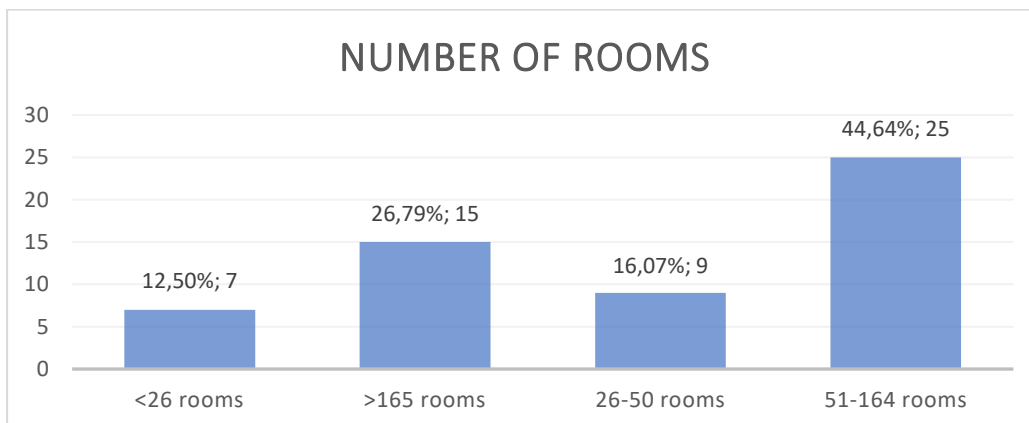


Figure 6 – Number of rooms under the responsibility of the respondents

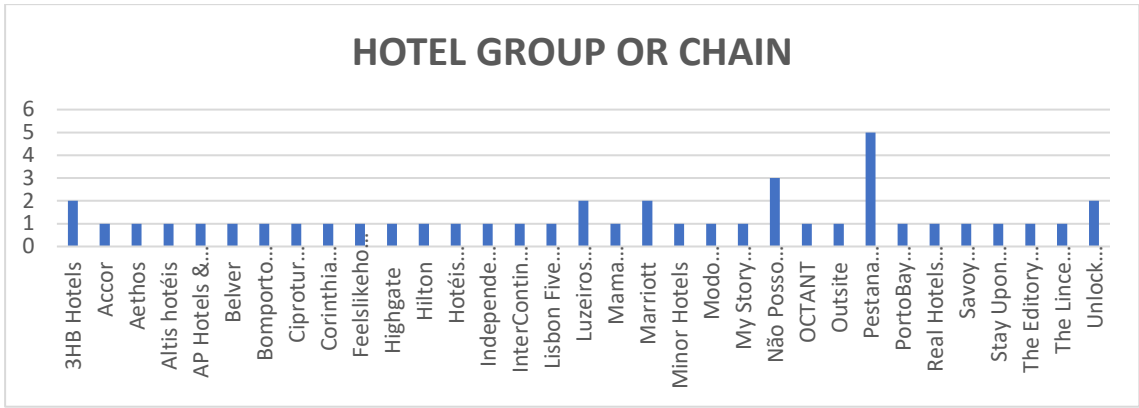


Figure 7 – Brands of respondents' hotel groups or chains

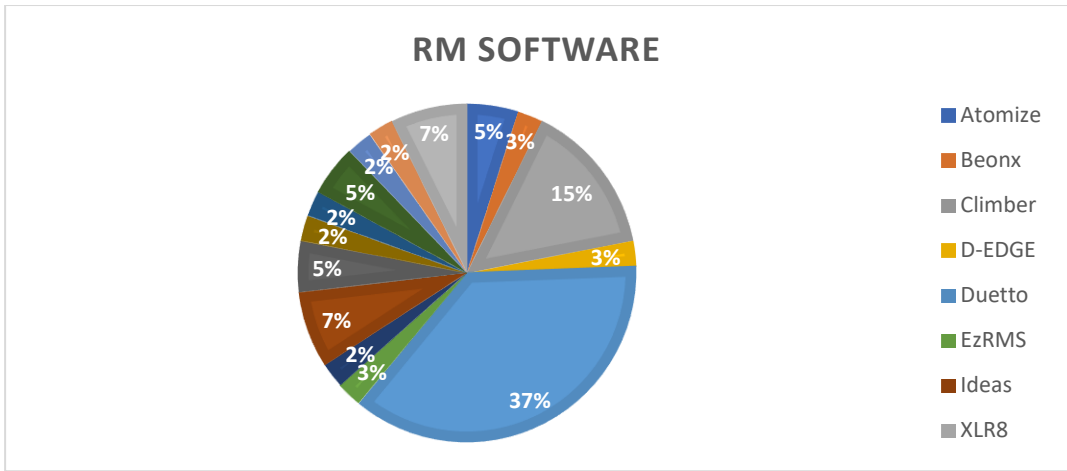


Figure 8 – Respondents' RM software implemented

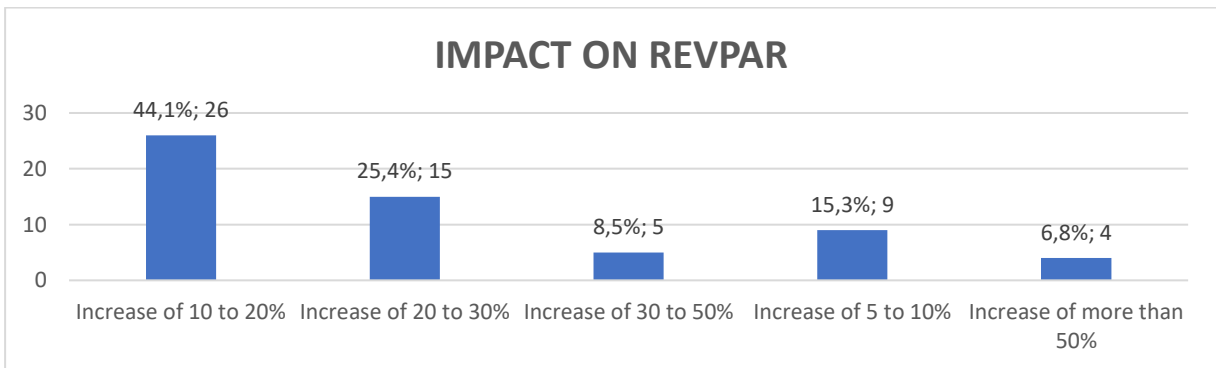


Figure 9 – Impact on RevPAR due to the practice of RM

Do you practice...	Yes	No
Analysis of Key Performance Indicators (KPIs)	57	3
Dynamic Pricing	58	2
Special Offers and Packages (Bundling)	56	4
Early-Booking Discounts	49	11
Last-Minute Discounts	43	17
Cross-selling	42	18
Up-selling	47	13
Overbooking	38	22
Length of Stay Control	53	7
Distribution Channel Management	51	9
Forecasting	55	5
Market Analysis	59	1

Figure 10 – RM Practices applied by respondents

From 0 to 10, what is the importance you attribute to...	Mean	Standard Error	Median	Mode	Standard Deviation	Sample Variance	Minimum	Maximum	Count
Analysis of Key Performance Indicators (KPIs)	8,167	0,312	9	10	2,416	5,836	2	10	60
Dynamic Pricing	8,617	0,272	10	10	2,108	4,444	3	10	60
Special Offers and Packages (Bundling)	6,483	0,294	7	8	2,281	5,203	2	10	60
Early-Booking Discounts	6,283	0,303	6	6	2,344	5,495	2	10	60
Last-Minute Discounts	5,583	0,345	6	6	2,670	7,129	1	10	60
Cross-selling	6,650	0,332	7	10	2,570	6,604	1	10	60
Up-selling	7,200	0,337	8	10	2,609	6,807	1	10	60
Overbooking	5,933	0,354	6,5	8	2,742	7,521	1	10	60
Length of Stay Control	6,850	0,329	7	6	2,550	6,503	1	10	60
Distribution Channel Management	8,100	0,303	9	10	2,348	5,515	2	10	60
Forecasting	8,300	0,300	9	10	2,324	5,400	2	10	60
Market Analysis	8,333	0,284	9	10	2,199	4,836	3	10	60

Figure 11 – Descriptive statistics of the importance attributed to RM practices

(0=irrelevant;10=extremely relevant)	Mean	Standard Error	Median	Mode	Standard Deviation	Sample Variance	Minimum	Maximum	Count
How relevant do you think Artificial Intelligence could be for the future of Revenue Management?	8,450	0,222	8	8	1,721	2,964	1	10	60

Figure 12 - Descriptive statistics of relevance attributed to AI in the future of RM

	Mean	Standard Error	Median	Mode	Standard Deviation	Sample Variance	Minimum	Maximum	Count
Importance attributed to the practice of Revenue Management (from 0 to 10)	9,5	0,125	10	10	0,966	0,932	5	10	60

Figure 13 - Descriptive statistics of importance attributed to the practice of RM

One Sample T-Test			
One Sample T-Test			
	Statistic	df	p
Importance of Revenue Management Practices	Student's t	4,01	59,0
			< .001
Note. $H_0: \mu > 9$			
Normality Test (Shapiro-Wilk)			
	W	p	
Importance of Revenue Management Practices	0,584	< .001	

Figure 14 – Hypothesis 1 T-Test

Contingency Tables

Impact on RevPAR	Type of Hotel (Chain or Independent)		Total
	Chain	Independent	
Aumento de 10 a 20%	19	7	26
Aumento de 5 a 10%	8	1	9
Aumento de 20 a 30%	9	6	15
Aumento superior a 50%	3	1	4
Aumento de 30 a 50%	3	2	5
Total	42	17	59

χ^2 Tests

	Value	p
Fisher's exact test		0.622
N	59	

Figure 15 – Hypothesis 2 Fischer's Exact Test

Contingency Tables

Impact on RevPAR	Software Implementation		Total
	Yes	No	
Aumento de 10 a 20%	15	11	26
Aumento de 5 a 10%	5	4	9
Aumento de 20 a 30%	12	3	15
Aumento superior a 50%	3	1	4
Aumento de 30 a 50%	5	0	5
Total	40	19	59

χ^2 Tests

	Value	p
Fisher's exact test		0.275
N	59	

Figure 16 – Hypothesis 3 Fischer's Exact Test

7.4. Appendix D – Interview Template

Entrevista

Esta entrevista será feita no âmbito da tese de mestrado "Revenue Management in Portuguese 4- and 5-Star Hotels" realizada por mim, Miguel Carvalho, estudante do Mestrado em Gestão na Nova School of Business and Economics, sob a orientação do Professor Duarte Pimentel. O estudo visa compreender a aplicação das práticas de Revenue Management em hotéis de 4 e 5 estrelas em Portugal.

Quem deve participar: Esta entrevista destina-se exclusivamente a profissionais que trabalhem em hotéis de 4 e 5 estrelas em Portugal e que estejam envolvidos ou tenham conhecimento sobre as práticas de Revenue Management.

Confidencialidade e Proteção de Dados: Todas as informações fornecidas durante esta entrevista serão tratadas de forma estritamente confidencial. Os dados recolhidos serão usados exclusivamente para fins académicos e de pesquisa, e estarão em conformidade com as regulamentações de proteção de dados em vigor.

Duração da Entrevista: Espera-se que esta entrevista leve aproximadamente de 10 a 15 minutos para ser concluída.

1. Trabalha num hotel de 4 ou 5 estrelas em Portugal e está envolvido ou tem conhecimento sobre as práticas de Revenue Management do hotel?
2. Para que hotel trabalha?
3. Quantos quartos tem a sua unidade hoteleira?
4. A sua unidade hoteleira faz parte de alguma cadeia ou grupo de hotéis?
5. Quantos anos de trabalho tem na área?

6. Na sua unidade tem um departamento ou pessoa focada em Revenue Management? Ou é outro departamento que acaba por incluir também as tarefas de RM (front-office, reservas, direção, etc)? Inclui-se nesse departamento?
7. As pessoas responsáveis pela área de Revenue Management têm formação académica em alguma área?
8. Na sua unidade hoteleira, utiliza algum software de Revenue Management?
9. Qual é a importância que atribui à prática de Revenue Management?
10. Estima que a correta aplicação das práticas de RM poderá trazer uma melhoria substancial para a receita do hotel e, mais concretamente, para o aumento do RevPAR?
11. Qual acha que é a perspetiva que o mundo hoteleiro em Portugal tem em relação à aplicação de RM?
12. Quais são as práticas de RM que considera mais importantes e porquê? (Análise de KPIs, Up e Cross Selling, Forecasting, Overbooking, etc.)
13. Qual é a importância que, na sua opinião, a Inteligência Artificial poderá representar para o futuro do Revenue Management?

7.5. Appendix E – Questionnaire Template

Práticas de Revenue Management em Hotéis de 4 e 5 Estrelas em Portugal

Este inquérito está inserido no âmbito da tese de mestrado intitulada "Revenue Management Practices in Hotels – the case of Portuguese hotels with 4 and 5 stars" da autoria de Miguel Carvalho, estudante do Mestrado em Gestão da Nova School of Business and Economics, sob orientação do Professor Duarte Pimentel. O estudo tem por objetivo a compreensão da aplicação das práticas de Revenue Management em hotéis de 4 e 5 estrelas em Portugal.

Quem Deve Participar: Este inquérito destina-se exclusivamente a profissionais que trabalham em hotéis de 4 e 5 estrelas em Portugal e que estejam envolvidos ou tenham conhecimento sobre as práticas de Revenue Management.

Confidencialidade e Proteção de Dados: Todas as informações fornecidas neste inquérito serão tratadas de forma estritamente confidencial. Os dados recolhidos serão utilizados unicamente para fins académicos e de pesquisa, e serão tratados de acordo com as regulamentações de proteção de dados em vigor.

Duração do Inquérito: Espera-se que este inquérito demore entre 3 a 5 minutos a ser concluído. As suas respostas serão muito apreciadas e valiosas para o sucesso deste estudo! Obrigado pelo seu tempo :)

* Indica uma pergunta obrigatória

Trabalha num hotel de 4 ou 5 estrelas em Portugal e está envolvido ou tem conhecimento sobre as práticas de Revenue Management do hotel? *

Sim

Não

Se respondeu que sim à questão anterior, qual a marca sob a qual o seu hotel opera? *

Respondi que a minha unidade hoteleira não fazia parte de nenhuma cadeia ou grupo hoteleiro.

Outra:

Na sua unidade tem um departamento ou pessoa focada em Revenue Management? *

Sim

Não

Caso não tenha um departamento ou pessoa focada em Revenue Management no seu hotel, trabalha com algum especialista externo ou consultora dessa área? *

Tenho um departamento ou pessoa focada em Revenue Management.

Sim

As pessoas responsáveis pela área de Revenue Management têm formação académica em alguma das seguintes áreas? Seleccione todas as aplicáveis. *

Revenue Management

Gestão Hoteleira

Gestão de Empresas

Economia

Tecnologias de Informação

Outra:

Quantos anos de trabalho tem na área? *

- < 5 anos de experiência
- 5 - 10 anos de experiência
- 10 - 20 anos de experiência
- > 20 anos de experiência

Qual a localização da(s) sua(s) unidade(s) hoteleira(s)? *

- Área Metropolitana de Lisboa
- Área Metropolitana do Porto
- Região Norte
- Região Centro
- Alentejo
- Algarve
- Região Autónoma da Madeira
- Região Autónoma dos Açores

Quantos quartos tem sob a sua responsabilidade? *

A sua resposta

A sua unidade ou unidades hoteleiras fazem parte de alguma cadeia ou grupo de hotéis? *

- Sim
- Não

Na sua unidade hoteleira, utiliza algum software de Revenue Management? *

- Sim
- Não

Se respondeu que sim à pergunta anterior, especifique o software que utiliza. *

- Respondi que não utilizo nenhum software de Revenue Management
- Outra:

Qual estima ser o impacto das práticas corretas de Revenue Management no REVPAR do hotel? *

- Nenhum
- Aumento de 5 a 10%
- Aumento de 10 a 20%
- Aumento de 20 a 30%
- Aumento de 30 a 50%
- Aumento superior a 50%

De 0 a 10, classifique a importância que atribui à prática de Revenue Management. *

0 1 2 3 4 5 6 7 8 9 10

Menos Importância Mais Importância

Utiliza alguma das seguintes práticas de Revenue Management? Selecione todas as que se aplicarem. *

- Cálculo e análise de KPIs como REVPAR, TREVPAR...
- Tarifas dinâmicas (ajuste do preço conforme a procura)
- Pacotes e ofertas especiais
- Descontos Early-Booking
- Descontos Last-Minute
- Cross-selling
- Up-selling
- Overbooking
- Estadia mínima
- Distribution Channel Management
- Forecasting
- Análise da Concorrência

De 0 a 10, qual a importância que atribui a cada uma das seguintes práticas de Revenue Management? (Sendo 0 irrelevante e 10 extremamente importante) *

	1	2	3	4	5	6	7	8	9	10
Cálculo e análise de KPIs como REVPAR, TREVPAR...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tarifas dinâmicas (ajuste do preço conforme a procura)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pacotes e ofertas especiais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Descontos Early-Booking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Descontos Last-Minute	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cross-selling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Up-selling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overbooking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Estadia mínima	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Distribution Channel Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Forecasting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Análise da Concorrência	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

De 0 a 10, qual é a importância que, na sua opinião, a Inteligência Artificial poderá representar para o futuro do Revenue Management? *

1 2 3 4 5 6 7 8 9 10

Menos Importância Mais Importância