Universidad de Sevilla
Facultad de Turismo y Finanzas

Doctoral Thesis

The Impact of Events on Key Performance Indicators in the Hotel Industry: The Case of Lisbon

Carla Isabel Santos de Sousa Bento

Sevilla
2023

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Programa de Doctorado en Turismo (RD 99/2011)

Línea de Investigación: Turismo en el Análisis Económico Regional

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Sevilla, enero 2023

Seville, January 2023

In loving memory of my mother, Ilda.

Abstract

This study aims to understand how Events relate to and impact on hotels' Key Performance Indicators (KPIs) in the city of Lisbon. It also analyses the direct impact of the Web Summit in those hotels' KPIs.

It studies events and hotels' daily data between 2013 to 2019. The period of time is divided in two parts: before the Web Summit, which is from 2013 to 2015; and after the Web Summit, which is after the debut of the event in Lisbon (2016), thus from 2016 to 2019. The Events in both periods are analysed in terms of evolution and days of the week patterns. Simultaneously, the hotels' KPIs are also analysed in both periods. The search was for variances that could support the fact that Web Summit was beneficial to the city of Lisbon, not just during the event itself – which is the scope of the case study – but throughout a longer period of time, which is the scope of the thesis.

Two datasets were used, one provided by STR and the other provided by the ATL (Associação de Turismo de Lisboa) - Turismo de Lisboa - Visitors and Convention Bureau. After combining the datasets into one it was possible to have a daily view of the major hotels' KPIs combined with the events happening in Lisbon.

Events are demand generators in that they attract visitors and tourists to destinations increasing the demand for tourism services such as hotel accommodations.

Hotels' KPIs are influenced by the strategies used by companies when seeking to improve revenues and profits. One of these strategies is called Revenue Management. Revenue Management's objective is to develop policies that result in profitable dynamic pricing strategies. By studying prices throughout these 7 years, it is necessary to investigate if events are demand generators that influence and trigger dynamic pricing policies improving hotels' results.

Measures of central tendency were the basis of this analysis and the support for the results found. These measures enable an analysis of occupancy and price variations without being affected by extreme values resulting in a more precise

examination of occupancy variations and pricing dynamics. The study of occupancy also aids understanding seasonality outcomes caused by events.

Results show that despite the expected growing results in occupancy levels in the city of Lisbon, after the first Web Summit, that growth becomes more accentuated. This evidence is even clearer regarding the Average Daily Rates (ADR) and Revenue per Available Room (RevPAR). Results also show that both ADR and RevPAR have distinctly increased after 2016. Their coefficients of variation are wider resulting from pricing dynamics which overall increase performance.

Limitations come from the samples, that can display some bias regarding the KPIs and the limitation of events' data. Regardless, this is a starting point for further investigation concerning the relationships between demand generators and performance indicators, and comparisons with similar events' impacts in different cities and destinations, and the long run impacts they might have.

Major contributions are both to academics and practitioners. Academics can use this model of research and apply it to similar research or adapt it to studies using continuous data that need an assessment in its variation.

Practitioners, such as hospitality operators, can use this model to assess their internal practices regarding pricing dynamics, compare them to their competition, adjust the model to fit their own needs such as segmentation analysis, other specific periods, and other variables.

Keywords: Revenue Management, Pricing, Events, Demand generators, Hotel KPIs, Web Summit

Resumen

Este estudio tiene como objetivo comprender cómo los eventos se relacionan e impactan en los Indicadores Clave de Rendimiento, *Key Performance Indicators* (KPI,) de los hoteles en la ciudad de Lisboa. También analiza el impacto directo del Web Summit en los KPIs de dichos hoteles.

Estudia datos diarios de eventos y hoteles entre 2013 y 2019. El período de tiempo se divide en dos partes: antes del Web Summit, que es de 2013 a 2015; y después del Web Summit, que es posterior al debut del evento en Lisboa (2016), es decir, de 2016 a 2019. Los Eventos en ambos períodos se analizan en términos de evolución y patrones de días de la semana. Simultáneamente, también se analizan los KPIs de los hoteles en ambos periodos. La búsqueda se centró en variaciones que pudieran respaldar el hecho de que Web Summit fue beneficiosa para la ciudad de Lisboa, no solo durante el evento en sí, que es el alcance del estudio de caso, sino durante un período de tiempo más largo, que es el alcance de la tesis.

Se utilizaron dos conjuntos de datos, uno proporcionado por STR y otro proporcionado por ATL (Associação de Turismo de Lisboa) - Turismo de Lisboa - Oficina de Visitantes y Convenciones. Después de combinar los conjuntos de datos en uno, fue posible tener una vista diaria de los KPI de los principales hoteles combinados con los eventos que ocurren en Lisboa.

Los eventos son generadores de demanda en el sentido de que atraen visitantes y turistas a los destinos aumentando la demanda de servicios turísticos como el alojamiento en hoteles. Los KPI de los hoteles están influenciados por las estrategias utilizadas por las empresas cuando buscan mejorar los ingresos y las ganancias. Una de estas estrategias se llama Revenue Management. El objetivo de la gestión de ingresos es desarrollar políticas que resulten en estrategias rentables de precios dinámicos. Al estudiar los precios a lo largo de estos 7 años, es necesario investigar si los eventos son generadores de demanda que inciden y desencadenan políticas dinámicas de precios que mejoran los resultados de los hoteles.

Las medidas de tendencia central fueron la base de este análisis y el sustento de los resultados encontrados. Estas medidas permiten un análisis de las variaciones de ocupación y precios sin verse afectados por valores extremos, lo que da como resultado un examen más preciso de las variaciones de ocupación y la dinámica de precios. El estudio de la ocupación también ayuda a comprender los resultados de estacionalidad causados por eventos.

Los resultados muestran que, a pesar de los resultados crecientes esperados en los niveles de ocupación en la ciudad de Lisboa, después del primer Web Summit ese crecimiento se vuelve más acentuado. Esta evidencia es aún más clara con respecto a las Tarifas Medias Diarias (ADR) y los Ingresos por Habitación Disponible (RevPAR). Los resultados también muestran que tanto ADR como RevPAR han aumentado claramente después de 2016. Sus coeficientes de variación son más amplios como resultado de la dinámica de precios que, en general, aumenta el rendimiento.

Las limitaciones provienen de las muestras, que pueden mostrar algún sesgo con respecto a los KPI y la limitación de los datos de eventos. Independientemente, este es un punto de partida para una mayor investigación sobre las relaciones entre los generadores de demanda y los indicadores de desempeño, y las comparaciones con los impactos de eventos similares en diferentes ciudades y destinos, y los impactos a largo plazo que podrían tener.

Las principales contribuciones son tanto para académicos como para profesionales. Los académicos pueden usar este modelo de investigación y aplicarlo a investigaciones similares o adaptarlo a estudios que utilizan datos continuos que necesitan una evaluación en su variación.

Los profesionales, como los operadores de hostelería, pueden utilizar este modelo para evaluar sus prácticas internas con respecto a la dinámica de precios, compararlas con la competencia, ajustar el modelo para que se ajuste a sus propias necesidades, como el análisis de segmentación, otros períodos específicos y otras variables.

Palabras clave: Revenue Management, Pricing, Eventos, Generadores de demanda, KPIs hoteleros, Web Summit

Acknowledgments

Gratefulness is the emotion that best describes what I feel after this long and challenging journey.

This is a journey that is made up of many periods of solitary work, but it could never be accomplished without the support and encouragement of other people and institutions.

By other people I mean my professors and friends, and some of whom are both.

My deepest thank you is to both my supervisors, Professor José Luis Jiménez Caballero, and Professor Paulo Almeida. I believe that without their constant support and encouragement I would not have reached this point. To both of them goes my sincere and deep appreciation and gratitude.

I must also express my gratitude to the Universidad de Seville for welcoming me as their student and allowing me to embark on this journey under their wing.

To the Biblioteca de la Universidad de Sevilla I must also express gratitude for giving the students the possibility to accesses information remotely and for always being available to help whenever we have issues. This is precious, specially being a foreign student.

To the Politécnico de Leiria my words are of gratitude as well, for giving me all the necessary conditions to achieve this milestone. To the board of directors and the departments whom I work with, thank you very much.

I must also acknowledge Dra. Alexandra Baltazar, the Convention Bureau Manager, for her availability to prove data that helped pursue this investigation.

What would I do without my friend, Rita Medeiros, and her family? Thank you for being my family in these last difficult years. The world is a better place with you in it.

Raul Ribeiro Ferreira, what can I say? Thank you so much. All our conversations have made me a better person and a better hotelier.

My special friends: Fernanda Oliveira, João Paulo Jorge, Daniela Amorim, Anabela Almeida, Sofia Eurico, Ana Sofia Viana, Sérgio Leandro, Eng.º Vitor Monteiro, Prof. Abílio Hernandez, Alberto Gradim, Elsa Machado, Telma Gonçalves, Mariana Gonçalves. Thank you all for your friendship, kind words and constant encouragement. Many other of my friends also must receive a thank you word.

To my brother Gualter, thank you for being here with me.

To my aunt Celeste and uncle Alberto, thank you for the constant support.

Most importantly, to my beloved mother, whom I started this journey with, but who is no longer with us, please watch over me and I hope I this makes you proud.

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Abbreviations

ADR – Average Daily Rate

ALOS – Average Length of Stay

ATL – *Associação de Turismo de Lisboa*, Lisbon Convention Bureau

CRM – Customer Relationship Management

CRS – Central Reservation Systems

GDS – Global Destination System

GOP – Gross Operating Profit

GOPPAR – Gross Operating Profit per Available Room

ICT – Information and Communication Technology(ies)

INE – *Instituto Nacional de Estatística*

IQR – Interquartile Range

KIPs – Key Performance Indicators

LOS – Length of Stay

MAD – Mean Absolute Deviation

NetRevPAR – Net Revenue Per Available Room

OTA – Online Travel Agencies

PMS – Property Management System

RevPAR – Revenue per Available Rate

RevPOR – Revenue per Occupied Room

RM – Revenue Management

RMs – Revenue Management professionals

RMT – Revenue Management Team

ROI – Return on Investment

TRevPAR – Toral Revenue per Available Room

Part I

Chapter 1 – Introduction

The *hotel* and *hospitality* expressions are very often used interchangeably, as, for example, in the expression of "hotel management" or "hospitality management".

Hospitality refers to various practices of welcoming, inclusion, and sheltering (Lugosi, 2016), so it can be said that a hotel is a place where hospitality is provided. The provision of hospitality is as old as recorded human history (O'Gorman, 2010). Moreover, commercial hospitality is not a new phenomenon as well, as evidence of hostels and inns in Mesopotamia goes back as far as 2000 BC (O'Gorman, 2010). "Commercial hospitality has always been seen as a source of revenue for the state, for individuals and, indeed, businesses. Outstanding establishments within the commercial hospitality context have always been considered as an enhancement to the standing of the city and provided a source of revenue" (O'Gorman, 2009, p. 786).

This confirms that there has always been a concern with earnings or revenues that could come from providing hospitality services.

Planned events of all sorts have also been an integral part of civilization for thousands of years, from political assemblies to sport competitions, feasts, and partying to religious celebrations (Getz, 2007).

Fast-forward to the 21st century the same issues persist. Events continue to take place and influence travels; hospitality has grown and so has the way of generating and managing revenues provided by it. Additionally, events do not take place in the vacuum, and they touch and reflect on many aspects of people's lives, which has increased the interest in both supporting and analysing all

aspects of events' impacts, both positive and negative, with an emphasis on the financial impacts (Bowdin et al., 2012).

Revenue Management is a science that originated in the aviation industry but was soon adopted by the hotel industry as a means of improving performance. It focuses on developing tactics and strategies to improve the firms' revenue results. Revenues that come from sales and sales that originate from demand.

It is the impact that the relationship between hospitality, demand generators, such as events, and the way revenue is managed, that is the main objective of this work.

The purpose of this chapter is to provide an introduction to the theme of the research. It includes the background and rationale, the aim, and objectives of the research, as well as the scope of the study. The structure of the thesis is also described.

i. Background and Rationale

One of the most fundamental components of any hospitality business is its ability to maximize revenues and profits during fluctuating periods of demand (Binesh et al., 2021). The expression "Revenue Management" is usually employed to describe the broad variety of techniques, methods, processes, and technologies involved in making demand-management decisions, which means to understand the characteristics of demand and its estimation, to define prices and capacity controls to manage that same demand (António, 2019). Demand is the amount of a good or service that a purchaser is willing and able to buy for any given price at any given time (Tranter et al., 2009). Demand is, in many cases and

for various reasons, fluctuant. Changes in buyers' needs, variations in the effectiveness of marketing-mix variables, the presence of substitutes, and dynamic environmental factors can all influence demand (Pride & Ferrell, 2020). Demand can also be impacted by several factors, some of which are called *demand generators*. Woods et al., 2013, define demand generators as an "organization, entity, or location that creates a significant need for hotel services. Examples are large businesses, tourist sites, sports stadiums, educational facilities, and manufacturing plants" (Woods et al., 2013, p. 7). Events are therefore important demand generators, especially events with a considerable number of participants.

In an ideal situation, managers simply expand capacity to meet demand (Kotler, Philip; Armstrong, Gary; Harris, Lloyd; He, 2019). In hotels, capacity refers to the rooms available to be sold, also referred as inventory. A hotel's capacity is constrained by the number of rooms, this means that hotels cannot easily expand or contract capacity to meet the levels of demand. Sometimes demand exceeds capacity and other times there is a surplus and rooms end up not being sold. This happens because of the nature of the hotel business that has both fixed and perishable capacity, since a room that is not sold in any given date cannot be sold ever again, nor can it be stocked for the future.

Revenue Management is dependent on an accurate demand forecasting of future arrival dates at a granular level as well as a relative understanding of the demand and rate positioning of competitors (Pizam & Holcomb, 2007).

There are many forecasting methods available, and all practitioners have their favourites, but there is little agreement among practitioners or academics as to the best forecasting method (Albright & Winston, 2020). Despite the chosen forecasting methods, it is consensual that to "achieve optimal revenue

performance over time, hotels must forecast total arrivals demand by rate, market segment, length of stay, and distribution channel while positioning the rates within each channel and market segment giving consideration to several factors such as seasonal market demand, city-wide events, competitors' rate positioning, and demand levels" (Pizam & Holcomb, 2007, p. 243).

Events are temporary and purposive gatherings of people (Bladen et al., 2012). Getz (2007) defines an event as an occurrence at a given place and time; a special set of circumstances; a noteworthy occurrence. City-wide events refer to a meeting, convention, tradeshow, or a special event that brings a large number of people into a city requiring the simultaneous usage of many hotels, restaurants and other venues (*City Wide Event*, 2022).

"Events have been a part of human civilizations since ancient times. They have marked changing seasons, heralded the appointment of new leaders, celebrated religious rites and rituals, and also signified births and deaths. In today's societies they continue to serve these functions, but they have become significantly more complex and elaborate and their audiences have grown exponentially" (Ferdinand & Kitchin, 2022, p. 5).

There are many types of events. Definitions and categorisation of different events have been attempted and resulted in some common labels, including mega-events, cultural events, special events, corporate events, and sporting events (Bladen et al., 2012). This conceptualization covers both the theme of an event, as well as the size when referring to mega events. For Bladen et al. (2012) the term 'mega-event' refers to those events that take place for a global media audience and/or that have significant, long-term impacts on economies and societies, and these events can be sports, such as the Olympic Games or the FIFA World Cup, they can be Political summits or World Expos, Festivals, or Corporate events.

Given the complexity and variety of the events industry it is understandable the difficulty encountered in conceptualizing a framework for the definition, scope, and size of events.

Regardless the typology, scope and size, events are energisers of a destination attractiveness and act as key marketing propositions in the promotion of places given the increasingly global competitiveness to attract visitor spending (Getz & Page, 2016).

Event impacts have been studied in recent years, mostly focusing on the impact on host communities, total expenditures, motivation to attend, and the types of events studied are mostly related to leisure (Bowdin et al., 2012; Draper et al., 2018) and mega sporting events, such as the Olympics (Scandizzo & Pierleoni, 2018) or the FIFA World Cup (Barreda et al., 2017).

Business events are an important component for driving revenue in tourism and in hospitality firms, although Draper et al. (2018) mention that most research is leisure/consumer related and only 16.5% are focused on business events.

Judith Mair did a review of business events literature between 2000 to 2009 to conclude that most research revolved around the following themes: Attendees, the Destination, Meeting Planners, Meeting Suppliers, Industry in General and Research Reviews (Mair, 2012). Evaluation of satisfaction, services/destinations was the most popular sub-theme with researchers, conversely relatively few articles covered the topic of economic impacts and/or evaluations (Mair, 2012).

Getz & Page, (2016) refer that the interest in the tourism value of business events, including meetings, conventions, and exhibitions has risen, given that almost all major cities possess convention and exhibition facilities, as well as agencies devoted to selling the space and bidding on events. These authors also mention

that the economic value of business events has been the subject of many studies, mentioning that, fundamental to event impact assessment is a detailed analysis of visitor spending, and that cost and benefit evaluation methods are rarely applied (Getz & Page, 2016).

However, the "fundamental 'facts' are that international convention-goers spend more and are often accompanied by others. The 'yield' of event tourists is generally found to be higher than visitors with more general travel motives"(Getz & Page, 2016).

The asset valuation and profitability of a hotel commonly uses three measures: the occupancy rate, that is how many rooms of a hotel are occupied on any given night or defined period of time; the Average Daily Rate (ADR), the average price charged per paid occupied room in a given time period; and the Revenue per Available Room (RevPAR) which is the revenue calculated by dividing a hotel's total guestroom revenue by the room count and the number of days in the period being measured by a hotel (O'Neill & Mattila, 2006).

Therefore, hotels use these Key Performance Indicators, the Occupancy Rate, the Average Daily Rate and the Revenue per Available Room to weigh sales and marketing, management performance, and Revenue Managements tactic's successes or failures.

Only a few studies focus their attention on the direct impact of events in hospitality prices, such are the cases of Herrmann & Herrmann (2014), or (Maier & Johanson, 2013). These studies show that there are significant impacts on pricing strategies and dynamic pricing policies according to specific type of demand generators like big events and conventions.

It is also noted that most studies focus on specific events and not so much on the impact that the different types of events have throughout a determined period of time on a specific industry, such as the hotel industry. Bowdin et al. (2012) mention as positive tourism and economic impact of events the following: the destination promotion and increased tourist visits, the alongside with higher yield, extended length of stay, alongside higher yield. On the other hand, inflated prices, financial mismanagement, and financial loss are some of the negative impacts (Bowdin et al., 2012).

This reality opens several questions: how do events, specifically corporate events, can impact the Revenue Management strategies and tactics carried out by hotels? Do the different types of events cause different levels of performance in hotels? Are revenues impacted by the scope – national or international – of the events? Do events help overcome the impacts of seasonality?

ii. Research Aim, Questions and Objectives

Considering the research gaps that have been identified in the existing literature, the overall aim of the study is to

Explore the impact that Events have on the Key Performance Indicators in Lisbon hotels.

This is a timely academic question given the importance of special events in tourism planning and development, together with the need to assess accurately their economic impacts and net benefits to destinations, the issues of impact assessment deserve detailed attention (Dwyer et al., 2020). Considering also that events are demand generators and revenue and profit optimization are pivotal in

hotel firms, one key condition is the ability of hospitality operators to be able to anticipate demand levels for every day in the future because that is the basis for any profit optimization strategy and budget planning (Vouk, 2022).

Whatever the circumstances or time horizons involved, forecasting is an important aid to effective and efficient planning. Forecasting is the process of predicting certain future events or conditions by analysing the available information. Forecasting plays an important role in tourism development, marketing, and operations management (Li & Song, 2014). Forecasting is about predicting the future as accurately as possible, given all the information available, including historical data and knowledge of any future events that might impact the forecasts (Hyndman & Athanasopoulos, 2018).

Forecasts are not the aim of this investigation, nonetheless, studying the impact of the events will lead to better forecasts and thus better pricing decisions. When understanding the clear impact one factor has on the other, better decisions will be made.

The word *impact* also means *influence* or *effect*, meaning an outcome, i.e., the result of an action. It is the outcome or effect that Events might have in profitability results that this study aims to critically analyse and confirm.

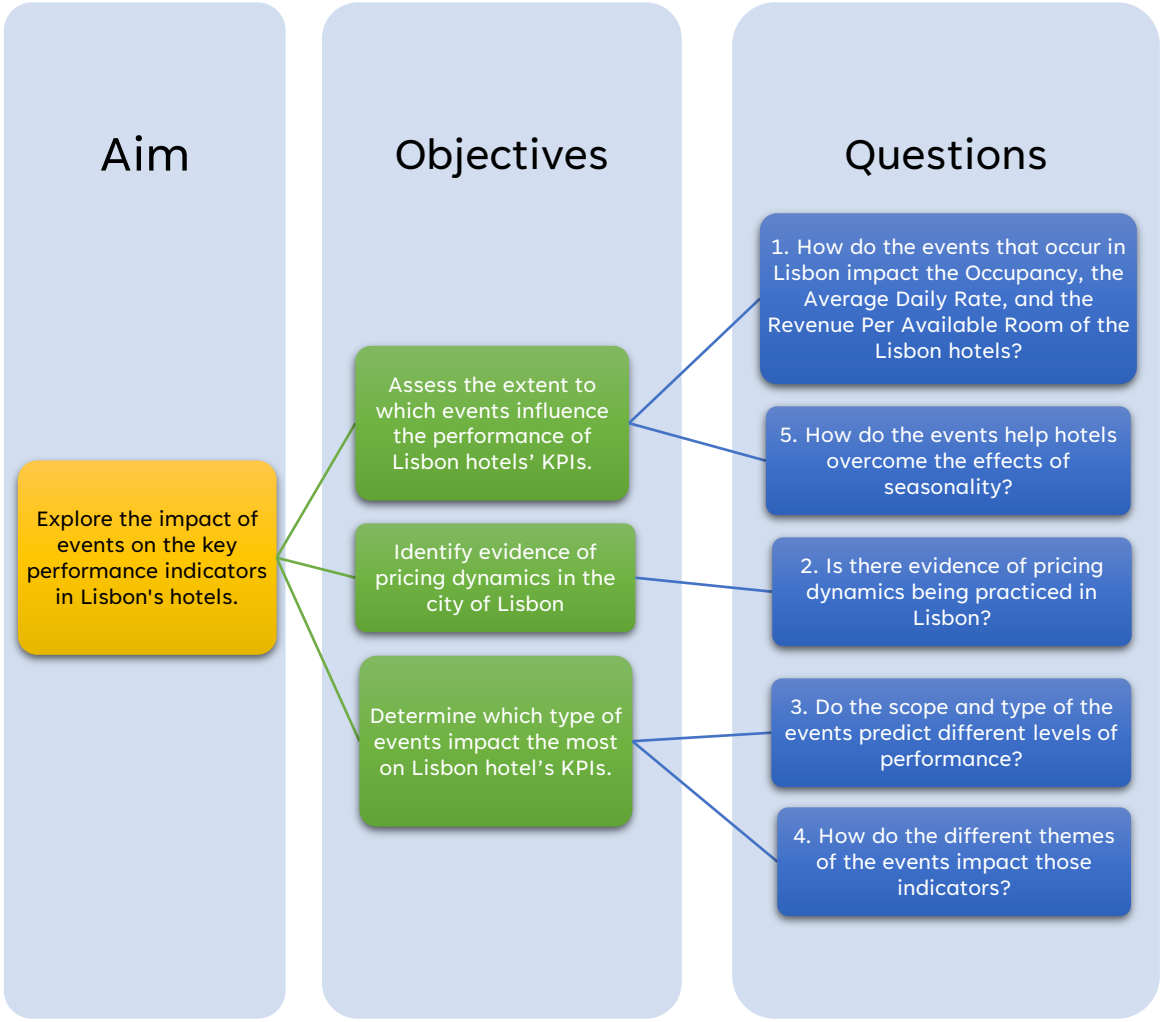
Accordingly, the three specific research objectives for this study are:

- *First objective of this research is to assess the extent to which events influence the performance of Lisbon hotels' key performance indicators.*
- *The second is to identify evidence of pricing dynamics in the city of Lisbon.*
- *The third objective is to determine which type of events impact he most on Lisbon hotel's Key Performance Indicators.*

These objectives have led to the need to answer the following the questions

1. How do the events that occur in Lisbon impact the Occupancy, the Average Daily Rate, and the Revenue Per Available Room of the Lisbon hotels?
2. Is there evidence of pricing dynamics being practiced in Lisbon?
3. Do the scope and type of the events predict different levels of performance?
4. How do the different themes of the events impact those indicators?
5. How do the events help hotels overcome the effects of seasonality?

Figure 1 – Aims, Objectives and Questions



Exploring the impact of Events implies objectives that, despite being stated individually, are interrelated. Events may impact hotels' Key Performance Indicators if those hotels develop Pricing dynamics, otherwise the impact would be only on occupancy levels. Pricing dynamics are strategized based on several factors, of which events of different nature, size and scope may produce diverse outcomes.

iii. Scope

To answer the above questions the Key Performance Indicators of hotels in Lisbon were analysed. Events in the city were introduced as the variable of impact.

Hotel data came from Smith Travel Research, it includes data from 79 hotels, that range from Economy to Luxury Class. The data is daily Occupancy, ADR and RevPAR for a period of seven years, from 2013 to 2019.

The events data set was provided by the Associação de Turismo de Lisboa (ATL), Lisbon Tourism Association. The array of data comprises events in the city of Lisbon recorded by ATL. The events are not identified but were labelled under date – start and finish –, scope, type, number of participants and venue used.

The two data sets were merged into one in order to have a daily entry with the hotels' KPIs and the events occurring in Lisbon on the same date according to their description. This permitted a daily investigation of hotels' KPIs and the days in which events happened thus allowing to look for possible relationships and correlations.

All the details on both data sets and the way they were merged are given in Chapter 6.

iv. Organisation of the Thesis Document

This thesis consists of eight chapters, divided in two major parts. The first part comprises the introductory subjects and the literature review. The second part presents the research methodology, results, and conclusions.

Chapter 1, the **Introduction**, provides an opening insight into the background, aim, objectives and scope of the study, additionally the overall structure of the thesis is outlined.

Chapter 2 reviews the existing literature relating to Revenue Management (RM), the concept evolution, the applicability in different fields and implementation of RM mechanisms.

Chapter 3 describes the concept of Price, the concept of Pricing and definition of Pricing strategies. It deepens the explanation of dynamic pricing as a pricing strategy. It explains price setting methods and introduces the role of demand on pricing. Because dynamic pricing has several foundations, value-based pricing is explored. Customer knowledge as the basics of segmentation is clarified. Then the issues of seasonality and distribution as impact factors on price setting as justified. Finally, pricing for events and pricing analytics.

Chapter 4 is dedicated to the most important hotel Key Performance Indicators and those used in Revenue Management analysis, why they are used and their purposes.

Chapter 5 expands on the theme of Events as demand generators and as impact factors on hotels' Key Performance Indicators. It also explains in what way Events are important demand generators.

The hotel industry in Portugal, its evolution in the past years and the progress of Occupancy, Revenues and Revenue per Available Room are described on **chapter 6**.

Chapter 7 explains how this study was conducted, the sample, and how the data has been analysed. It presents the findings of the research. It is followed by **Chapter 8**, which is the case study: the Web Summit and how it impacted the Hotel industry in Lisbon.

The **Conclusions** discuss and complete the findings of the whole research, and the research limitations, its contributions and recommendations for future research are outlined.

Chapter 2 – Revenue Management

Revenue Management (RM) is a profitability discipline which started in the aviation industry and has evolved to many other industries, one of the first being the hospitality industry.

The following sections will present the definition of RM, how it has evolved in the last years and other areas where the application of Revenue Management Techniques is also recommended.

A description of the core strategies and tools that can be implemented to achieve RM goals is likewise provided.

2.1. Definition – What is Revenue Management?

Revenue Management started out by being called *Yield management*, and one of the first definitions was given by Sheryl E. Kimes, in 1989. In an article entitled "The Basics of Yield management", this author stated that "yield management is becoming part of the standard operating procedure for many hotels" (Kimes, 1989a). And she describes yield management as "the process of allocating the right type of capacity to the right kind of customer at the right price so as to maximize revenue or yield" (Kimes, 1989a). The term "yield" has two main meanings: to pay, repay, or to produce or generate crops, fruit, etc. (L. Brown, 1993). Possibly the term "yield" was initially used as more related to the production of room nights – occupancy – than to the production of revenues. "Revenue" has to do with income from property, possessions, income, or investment (L. Brown, 1993).

A year before Kimes's definition, in 1988, Eric B. Orkin, draw the attention to this characteristic, with his Yield formula, where he emphasises the importance of combining *Revenue realized* and *Revenue potential* and thus showing that room-night productivity was not enough for the best interest of the hotel (Orkin, 1988). In order to help the hotel to gain an optimum business mix and meet its revenue goals, Orkin presents a basic statistic to measure the effectiveness of the practices and policies applied to generating revenue from room sales (Orkin, 1988), and this statistic is computed by dividing the Revenue realized by the Revenue potential, thus combining occupancy and average rate in a given period (Orkin, 1988). Donaghy, McMahon & McDowell (1995) also defend the principle that the return on investment can be improved through the maximization of profit, which is different from the maximization of capacity, and they emphasise that *[i]t is no longer prudent to aim for the demand/supply equilibrium. The critical factor is the revenue 'yield' which is generated* (Donaghy et al., 1995, p. 139)

With this focus on the Revenue, how well rooms are sold to provide for the best profit starts to gain importance.

The concept evolved from *Yield* to *Revenue Management*, and Robert Cross had an important role in this conceptual and practical evolution with his book *Revenue Management: Hard-Core Tactics for Market Domination* published in 1997, where he defines Revenue Management as "the art and science of predicting real-time customer demand at the micro market level and optimizing the price and availability of products" (Cross, 1997, p. 4) to obtain the best results.

His book, which is considered to be a pivotal work in the field, is still used by both practitioners and academics.

Since then, several other definitions have been presented:

- *Revenue Management is the application of information systems and pricing strategies to allocate the right capacity to the right customer at the right price at the right time* (Kimes & Wirtz, 2003).

- *Revenue Management is about making predictions and decisions-predictions about how much and what type of business to expect, and the subsequent decisions a manager makes to get the most revenue from business* (Kasavana & Brooks, 2005).

- *Revenue Management, also known as yield management, is an essential instrument for matching supply and demand by dividing customers into different segments based on their purchase intentions and allocating capacity to the different segments in a way that maximizes a particular firm's revenues* (El Haddad et al., 2008).

- *The act of skilfully, carefully, and tactfully managing, controlling, and directing capacity and sources of income, given the constraints of supply and demand* (Tranter et al., 2009).

- *Revenue Management: The application of disciplined tactics that predict buyer response to prices, optimize product availability, and yield the greatest income* (Hayes & Miller, 2010, p. 122) .

- *Revenue Management (RM) (once called yield management) refers to the strategy and tactics used by a number of industries—notably the passenger airlines but also including hotels, rental cars, cruise lines, and others—to manage the allocation of their capacity to different fare classes over time in order to maximize revenue* (R. L. Phillips, 2021).

RM originated in and was developed by the airline industry, and this happened after and because of the deregulation process in the 1970s (Ivanov, 2014).

The 1978 Airline Deregulation Act was an important milestone that occurred in the United States of America and that led to the emergence of Yield management, later RM.

Until that time the airline industry was heavily regulated by the American Federal Government, which enforced restrictions regarding available routes and fares. In Europe the airline commerce was also highly regulated, and it was only in 1987 that the European Union introduced legislation intended at dismantling government regulation of the Community's airline industry (Pinkham, 1999).

However, long before any type of deregulation, concerns regarding reservations control strategies to maximise the passengers carried by flights were already being discussed in Europe (Taylor, 1962; Deetman, 1964; Rothstein and Stone, 1967; and Martinez and Sachez, 1970, cited in Littlewood, 1972, p. 111).

In October of 1972, Ken Littlewood presented an article at the 12th AGIFORS Symposium, referring to the British Airways' efforts to maximise yield by flight, accept or reject reservations according to the fare paid, moment of transaction analysis, weekly patterns, cancellations and overbooking guidelines, control of low-yield fares and the benefits of a real-time reservation system (Littlewood, 1972). This already shows efforts to increase occupancy and price as to improve profit.

As stated above, Yield management came into existence on a significant scale a few years after the deregulation of the US airline industry in 1978 (Vinod, 2016). From that date on, airline companies were free to compete for passengers, routes and, most importantly, fares. As a result, new companies emerged responding to

changing market dynamics. The competition for the best prices begun, which led to the development of methods to manage and control revenues (Tranter et al., 2009). In the 1980s almost half of total flights worldwide took place in the United States (Burns & McDonnell, 2011). The 1980s also saw the arrival and development of low-cost carriers, that wanted to compete with the major carriers offering lower fares to alternative destinations.

Between 1976 and 1990 the average fares paid by domestic north American passengers declined 30 per cent (Vinod, 2016). Southwest Airlines is one of the first low-cost carrier operating in a successful business model until today, because of its cautious post deregulation expansion plan (Chowdhury, 2007). Other new carriers offered discounted and deeply discounted fares that brought air travel within reach of a whole new segment of the population that had never flown before (Vinod, 2016), because this segment was used to utilize the car to travel within the United States. However, lowering fares deeply affects the financial health of any firm, due to the operational costs involved. Low fares, combined with the cost of expansion – new routes and new airplanes – began, by the mid-1980s, to damage the financial health of many carriers (Gudmundsson, 1998; Tranter et al., 2009). People Express is an example of this and often regarded as a case study.

People Express Inc. did its debut flight in 1981, offering simple, *no-frills* service and low fares, and only within five years it was the fifth American airline carrier (Griffin, 2010), but it was also, by then, fighting for its life (Gudmundsson, 1998; Prokesch, 1986; Vinod, 2016). The main problem was the business model: constant low fares, inappropriate segmentation, and questionable service level (Prokesch, 1986). When this disruptive airline company started offering the lowest fares in the market, other, more mature companies, did just the same but

more accurately (Tranter et al., 2009). They would not jeopardize the bottom-line profit offering only low rates and competing exclusively on price. The conviction that the lower the fare, the greater the number of passengers, was the basis of People Express's strategy. Although this might have seemed a good plan, it also led to a money loss. "As load increased, and fares decreased, yield stayed flat or decreased. And there were costs involved with higher loads" (Tranter et al., 2009, p. 21). Yield, at this point, refers to the amount of revenue per mile flown by passenger and the load factor refers to the percentage of seats sold in a flight (Tranter et al., 2009). Service was also a problem, passengers, albeit the low fares, were not satisfied with service which proves that low fares on their own are not enough to keep customers pleased.

One of the cautious companies was American Airlines, that was concerned with low fare policies practiced by People Express and which translated into a market share of 70 per cent (Vinod, 2016) by offering rates of US$79 against American's US$250 (Rose, 2016). So, American Airlines responded by creating what is accepted as the first the first Yield management system (Donovan, 2005; Rose, 2016). It was in 1985, when the non-refundable *Ultimate Super Saver* fares were introduced, pricing tickets lower than People Express, but in a controlled manner, matching People Express fares, but offering only a few seats at those basement prices (Vinod, 2016). The system had been improved to explicitly control the availability of the deeply discounted fares (Vinod, 2016), allowing American Airlines to sell capacity at lower fares without losing money from passengers who were able to pay higher fares. Many other airline carriers that used the same model as People Express went bankrupt (Griffin, 2010, p. 326), proving that profitability came from a knowledgeable pricing strategy and not only volume.

In Europe, inventory control had already been implemented, but deregulation came later than it did in the United States, as most airline companies were owned by the states. Nevertheless, concerns regarding inventory allocation and revenue control were the foundation of British Airways' the "RS13 inventory system with 26 selling classes initially, to be enhanced with point-of-sale control and sub classes later, was at the time a leading-edge technology and would still be better than many current inventory systems still in usage today" (Rose, 2016, p. 198) also using overbooking policies with proven positive results (Rose, 2016).

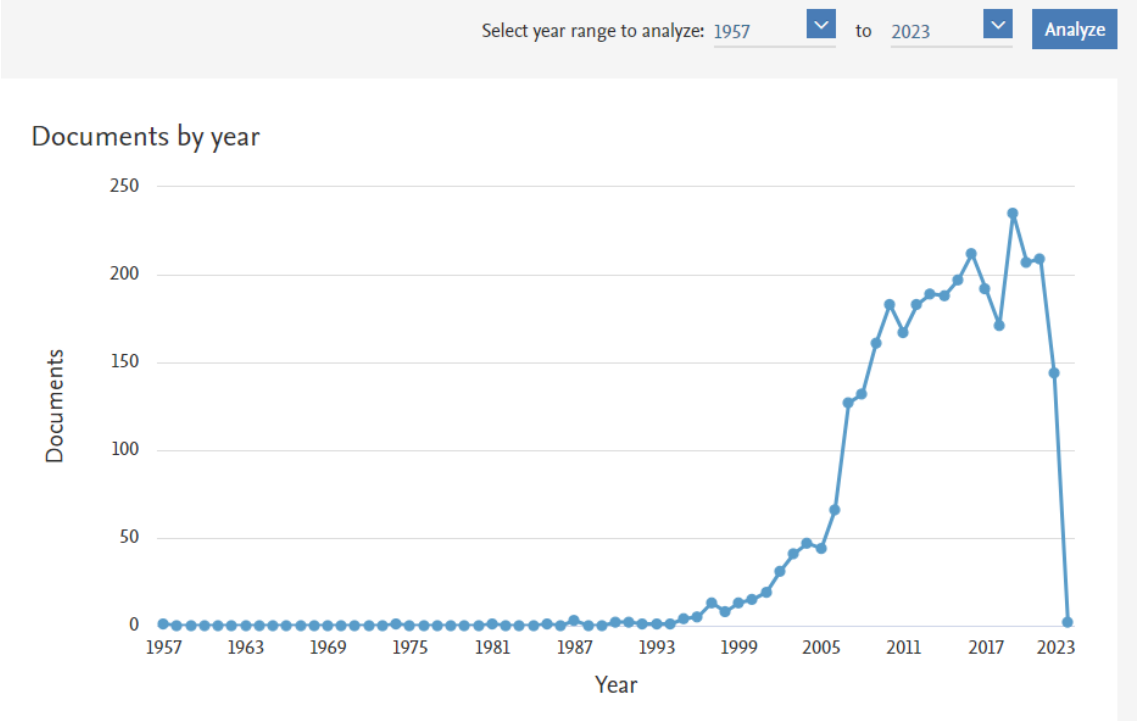
In fact, some sort of yield or Revenue Management had been and has been practiced for a long time, as when hotels established high season and low season rates, also considering high demand dates like New Year's Eve, Easter, Special Events, Summer, or Winter; rates depending on the location, or when the industry lowered prices to improve occupancy, and these were the first Yield management techniques (C. K. Anderson & Xie, 2010).

In a search on Scopus™ for the exact expression "Revenue Management", on the field *Titles*, *Abstracts* and *Key words*, the return is 3,219 documents.

The first reference is found on an article from 1957 at The Journal of The Japanese Forestry Society, referring to the difficulties in the analysis of the revenue on management of forestry. The next reference and the exact expression "Revenue Management" is found in 1974, in a General Medicine Journal entitled CARNETS ENF., the article *Women and national progress in Madagascar* refers that women take on family responsibilities as well as men, including decision making, executive duties and Revenue Management (Randriamamonjy, 1974).

The next result dates from 1981, in the Journal of the American Water Resources Association, however it does not mention the exact expression *Revenue Management*.

Figure 2 – Scopus™ analyse search results for Revenue Management
Source: Scopus - Document Search Results, retrieved 12 August, 2022



Note: the search was limited to the Title, Key works and Abstract.

It is only in 1985 that a specific article is found: *Revenue Management. To pay or not to pay*. This article from the "Computers in healthcare" Journal, formerly known as "Computers in hospitals" and continued as "Health management technology", discusses the hospital's control of the "to pay or not to pay" decision in the processing of the claims to the insurance companies when managing their revenues (Devolites, 1985). Next, in 1987, 3 articles are found, two of them on medical Journals and one on a technology Journal.

In 1990 two articles are found on Scopus™ that relate to RM as an optimization method. One, on the Japanese Railway Engineering Journal, concerns the overall Station Revenue Management System regarding ticket selling and relevant revenues received (Nakayama, 1990). The other is about the optimal allocation of airline seats (Curry, 1990) on the "Transportation Science" Journal. In 1993 another article on the "Transportation Science" Journal. It is only after 1995 that a relevant number of articles related to RM in the hospitality industry are found.

In 1997, among the 13 articles, one is a conference paper unrelated to RM as analysed here, another concerns health facilities and another one related to digital libraries. The others refer to several areas where RM is applicable. Mcevoy (1997) points out that "Yield management (YM) tends to emphasize Revenue Management, which is understandable, given the capital-intensive nature of the hotel industry. To evaluate these strategies profitability or return must be assessed, together with management performance or efficiency, in the context of the level of risk to which the investment is subjected" (Mcevoy, 1997, p. 60). Already referring the relationship between the terms yield and revenue, Mcevoy proposes an add-on matrix model for hotel owners and operators to analyse the efficiency of their yield management strategies. Three other publications are dedicated to hotel RM and published by the Cornell Hotel and Restaurant Administration Quarterly. There are four articles dedicated to the transport industry, both passengers' transportation and air cargo. One last article discussed RM in the Car rental industry, referring that, in July 1994, the National Car Rental Systems implemented a state-of-the-art Revenue Management system, that improved its revenues by $56 million in the first year (Geraghty & Johnson, 1997).

In the following year Restaurant RM gains attention, in their article, Kimes et al. (1998), assert that the strategy for boosting restaurant revenues may be to relate prices to the length of time guests spend at the table, the problem being on how to do it (Kimes et al., 1998).

It will be only after 2007 that more than 100 publications a year are found under the reference “Revenue Management”.

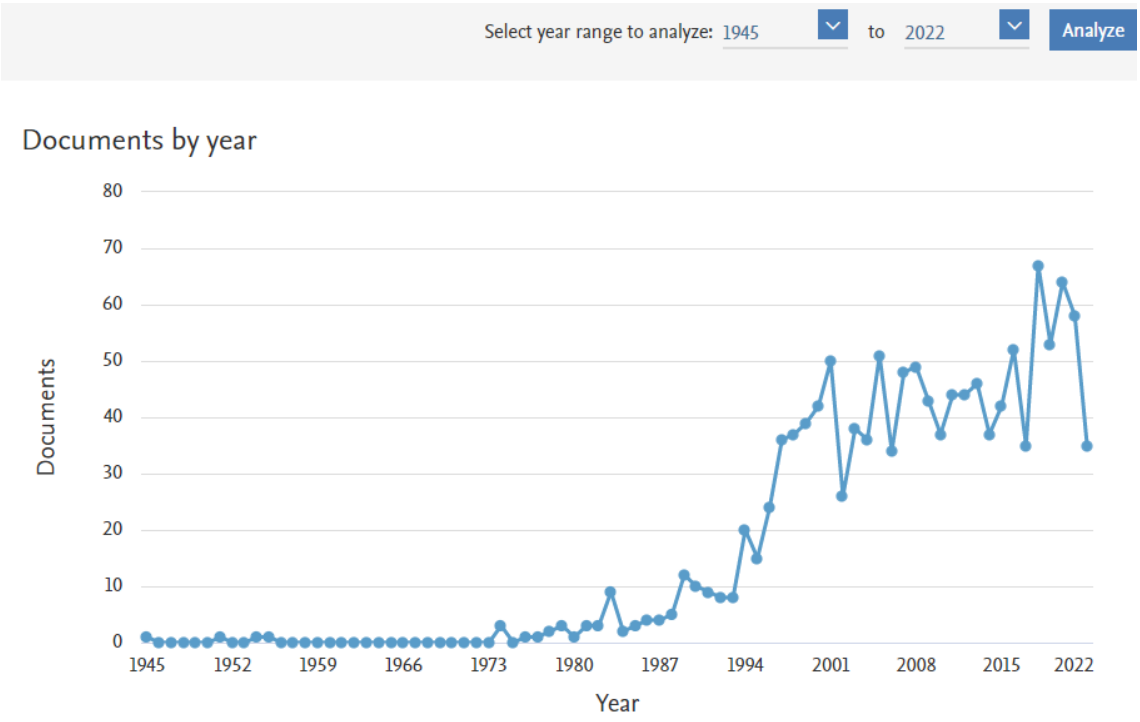
However, and as already detailed, the expression “yield management” was used before the “Revenue Management” expression, thus a similar search was made using this expression.

The results show that, indeed, “yield management” has been in use before “Revenue Management”, as a result is found in 1945, but not with a similar meaning. The search returns 1,297 document results within the same limits of *Title*, *Key words* and *Abstract*.

Until 1988 the expression “yield management” is used in papers related to agriculture, forests, water usage and industrial production.

In 1988, the first article, “Boosting Your Bottom Line with Yield Management” (Orkin, 1988) is a clear reference to the management of rates in the hotel industry. In this article Orkin states that hotels must generate the best revenues from the available space.

Figure 3 – Scopus™ analyse search results for Yield management.
Source: Scopus - Document Search Results, retrieved 12 August 2022.



Note: the search was limited to the Title, Key works and Abstract.

In the following year, 1989, several publications are found under "yield management" (YM) related to the hotel industry (Andersson, 1989; Hott et al., 1989; Kimes, 1989b; Relihan, 1989). An article defending that YM should be included and taught in the Hospitality Curriculum, and one of the most quoted papers on the theme: "The Basics of Yield Management" by Sheryl E. Kimes (Kimes, 1989a).

Whether it is called Yield management or Revenue Management, the fundamental concept is that it represents a set of tools or strategies aiming at improving the revenues of hotels or other industries that share these characteristics: perishable inventory allied to a relatively fixed capacity; predictable and segmented demand, this demand being time variable; a cost

structure in which the fixed costs are higher than the variable costs; and a tailored pricing structure.

2.2. Applicability of Revenue Management

"Initially developed by the airline industry after the deregulation process in the 1970s, Revenue Management has expanded to its current state as a common business practice in a wide range of industries. It is profitably applied by airlines, hotels, restaurants, golf courses, shopping malls, telephone operators, conference centres and other companies" (Ivanov, 2014, p. 7).

Hotels share similar characteristics to the airline companies as do other industries. Like airplanes, hotels have perishable inventory, as rooms not sold in one night cannot be sold the following day or even be stored for future sales. In an airplane revenue is generated by selling seats in flights. Once the airplane takes off it is no longer possible to generate revenue from unsold seats. The same happens in hotels after each night.

According to Phillips (2021) *Revenue Management is applicable when all of the following conditions hold:*

> • *The seller is selling a fixed stock of perishable capacity.*
> • *Customers book capacity prior to departure.*
> • *The seller manages a set of fare classes (also called booking classes), each of which has a fixed price (at least in the short run).*
> • *The seller can change the availability of fare classes over time.* (R. L. Phillips, 2021, p. 230)

Kimes & Wirtz (2015) state that the application of RM is more effective when applied to operations that have the following characteristics:

- Relatively fixed capacity.
- Perishable inventory.
- Inventoried demand.
- Time-variable demand.
- High fixed costs.

- Low variable costs.
- Varying customer price sensitivity.

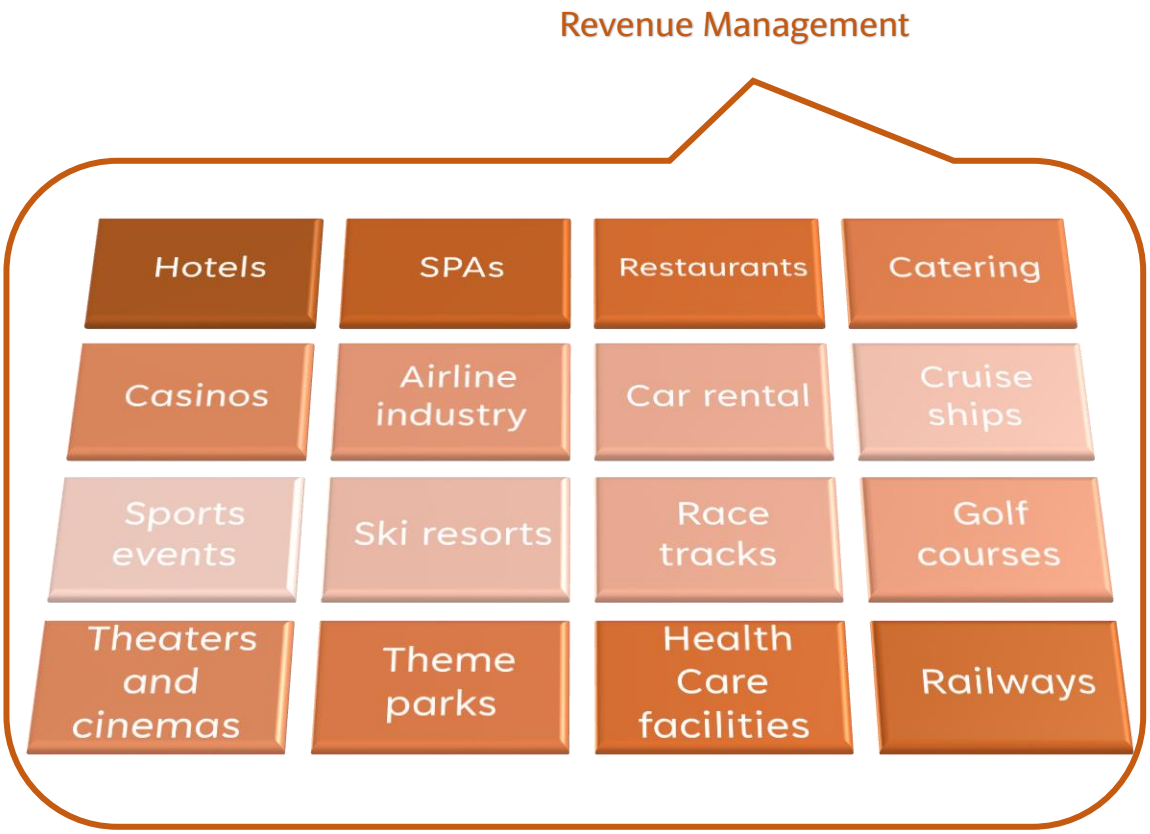
RM deals with customers, reservations or bookings, perishable inventory, limited availability, a pricing structure, information on historical data, and forecasting. There are many industries that share these characteristics and that can benefit from applying RM methodologies and techniques. These industries are not only among the service and tourism industry, but all industries or types of business that share these characteristics. Even hairdressers can benefit from RM as Robert Cross remarks (Cross, 1997). Danilo Zatta, author of *Revenue Management in Manufacturing*, focuses his book on the application of Revenue Management in the manufacturing industry and he confirms that the manufacturing industry also fulfils the prerequisites for the application of Revenue Management (Zatta, 2016).

Also, Spengler et al., (2007) present a Revenue Management-based order acceptance method and validate it with regards to the processing of short-term sales requests in the iron and steel industry.

Revenue Management in fabulous Las Vegas: Combining customer relationship management and Revenue Management to maximise profitability describes how Revenue Management can be combined with customer relationship management (CRM) practices in gaming to maximise the overall property revenue (Hendler & Hendler, 2004).

Here are a few examples of tourism related industries where RM techniques can be applied:

Figure 4 – Possible fields suitable for the application of Revenue Management strategies



Several articles are found of other applications of RM strategies. Kimes, (2000) indicates in her article "Revenue Management on the links: Applying yield management to the golf-course industry", that the golf course's tee times should be regarded as finite perishable commodities and golfers as representing highly variable (yet movable) demand, so RM is applicable. Kimes & McGuire (2001) testify in a study made in Singapore that Hotels' function spaces, which already provide substantial income, could be enhanced by applying revenue-management strategies. Leask et al. (2002) defend that revenue-management practices would enable heritage attractions to make improved use of limited resources and assist in achieving their broader objectives (Leask et al., 2002, p. 265). These are a few examples of the applicability of RM strategies.

2.3. Revenue Management Strategies and Tools

Revenue Management (RM) has grown as an area of investigation among academics and interest among hoteliers, since it is proven that there are visible improved results in revenues that can be between 2 and 5% (C. Anderson & Kimes, 2011), 3 to 6%, or even more (Haley & Inge, 2005) when RM strategies are applied.

The RM system is defined as the set of structural, procedural, and human resource elements dedicated towards the achievement of hotel Revenue Management's objectives (Ivanov, 2014).

Both the literature and books for hoteliers and practitioners refer several tools and strategies that can help Revenue managers improve the performance of their businesses. It is important to point out that not all hotels have the position of Revenue managers (RMs). The Revenue manager is the person, or it can also be a team of people, that is or are responsible for ensuring that the company's prices match the customer's willingness to pay (Hayes & Miller, 2010). When hotels do not have RMs, they have sales teams, front office managers, hotel managers that somehow have the responsibility of improving performance through sales.

"The Revenue Management process is the set and sequences of actions undertaken by revenue managers on strategic, tactical and operational level in relation to managing the revenues of the hotel" (Ivanov, 2014, p. 34).

Many of these sets of tools have been stated and analysed in the literature. The first articles on this topic mostly recommend processes and actions essential to the implementation of a RM system. "The RM system consists of four *structural elements* (data and information, hotel revenue centres, RM software and RM

tools), the RM *process* and the RM *team*" (Ivanov, 2014, p. 24). Data and information have sources: primary sources, which come from the data the hotels collect from their customers, and secondary sources, which come from identified market trends, national and international associations, travel agencies, or any other source that provides information and data useful to the hotel. The hotel revenue centres are all the hotel departments that generate revenues. The RM softwares are mostly provided by companies that offer automated solutions for the operation of a RM system. Some examples are IDeaS™, Duetto™, RoomPriceGenie™, or Atomize™. Some hotel Property Management Systems (PMS) include modules that help with RM, such as Opera. Regarding the software, the cost is the biggest barrier, as independent hotels or local brands can be challenged by the high prices of a RM software (Alrawadieh et al., 2020). Other RM tools are the *rate shoppers*, used to understand competitors' rates and the demand in the market (Alrawadieh et al., 2020) or tools provided by Trivago™ or Booking.com™ that also help to understand the competitive set. All of these are then organised to develop processes managed by a RMs or a team to improve hotel revenue performance.

As stated above, the first articles proposed a set a tactics, which reflect the tools available at that time.

Kimes (1989a) refers that a yield management plan requires planning and training, and the basics for it to be successful includes guest segmentation, analyses of the demand patterns and the demand by segment, the application of overbooking practices, and a price structure suggesting price changes. Orkin (1988, 1990) proposes a focus on the forecasting of demand, considering both transient and group demand, appropriately this is segmentation. Policies on room rates, procedures, and staff trained for yield maximization to enhance the

hotels' revenues and to take advantage of the forecasts. He also refers the importance of systematic feedback to evaluate the effectiveness of the forecasts, the impact of tactics, and the performance of workers and departments. Price sensitivity and yield statistic – revenue realized versus revenue potential – is also a component of the approach (Orkin, 1988, 1990).

Figure 5 – Opening image of E. Orkin's article Strategies for Managing Transient Rates
Source: (Orkin, 1990, p. 34)

With the growth and development of the hospitality to include more tools, a new landscape distribution, and the natural evolution that experience brings, the focus of the literature and that of the practitioners has also expanded.

The following selected papers echo the evolution of the research concerning several issues that affect RM, nonrelated to pricing.

Table 1 – Research Papers concerning several issues that affect RM, nonrelated to pricing.

Topic	Title	References
Inventory management	*A Taxonomy and Research Overview of Perishable-Asset Revenue Management: Yield Management, Overbooking, and Pricing*	(Weatherford & Bodily, 1992)
	Capacity management for hospitality and tourism: A review of current approaches	(Pullman & Rodgers, 2010)
	The impact of overbooking on hotels' operation management	(Zhechev & Todorov, 2010)
	Overbooking research in the lodging industry: From origins in airlines to what lies ahead	(Krawczyk et al., 2016)
Forecasting	*On Revenue Management and the use of occupancy forecasting error measures*	(Kouprioucha et al., 2014)
	An introduction to helpful forecasting methods for hotel Revenue Management	(Pereira, 2016)
	A comparison of forecasting methods for hotel Revenue Management	(Weatherford & Kimes, 2003)
	Forecasting hotel room demand using search engine data	(Pan et al., 2012)
	Forecasting cancellation rates for services booking Revenue Management using data mining	(Romero Morales & Wang, 2010)
Demand	*Revenue Management with Limited Demand Information*	(Lan et al., 2008)
	Do you really know who your customers are?: A study of US retail hotel demand	(S. Lee et al., 2011)
	Predicting hotel booking cancellations to decrease uncertainty and increase revenue	(Antonio et al., 2017)
	Advance Demand and a Critical Analysis of Revenue Management	(Ng, 2007)
Length of stay control	*The Strategic Levers of Yield Management*	(Kimes & Chase, 1998)
	Unlocking the value of Revenue Management in the hotel industry	(Vinod, 2004)
Human resources	*Developing Revenue Managers for the Lodging Industry*	(Beck et al., 2011)
	Teaching yield management in the hospitality management curriculum	(Deveau, 1989)
Digital transformation	*Digital transformation and Revenue Management: Evidence from the hotel industry*	(Alrawadieh et al., 2020)
Customer relationship management	*Integrating customer relationship management with Revenue Management: A hotel perspective*	(Noone et al., 2003)
Distribution channels	*Comparing Reservation Channels for Hotel Rooms: A Behavioral Perspective*	(Masiero & Law, 2015)

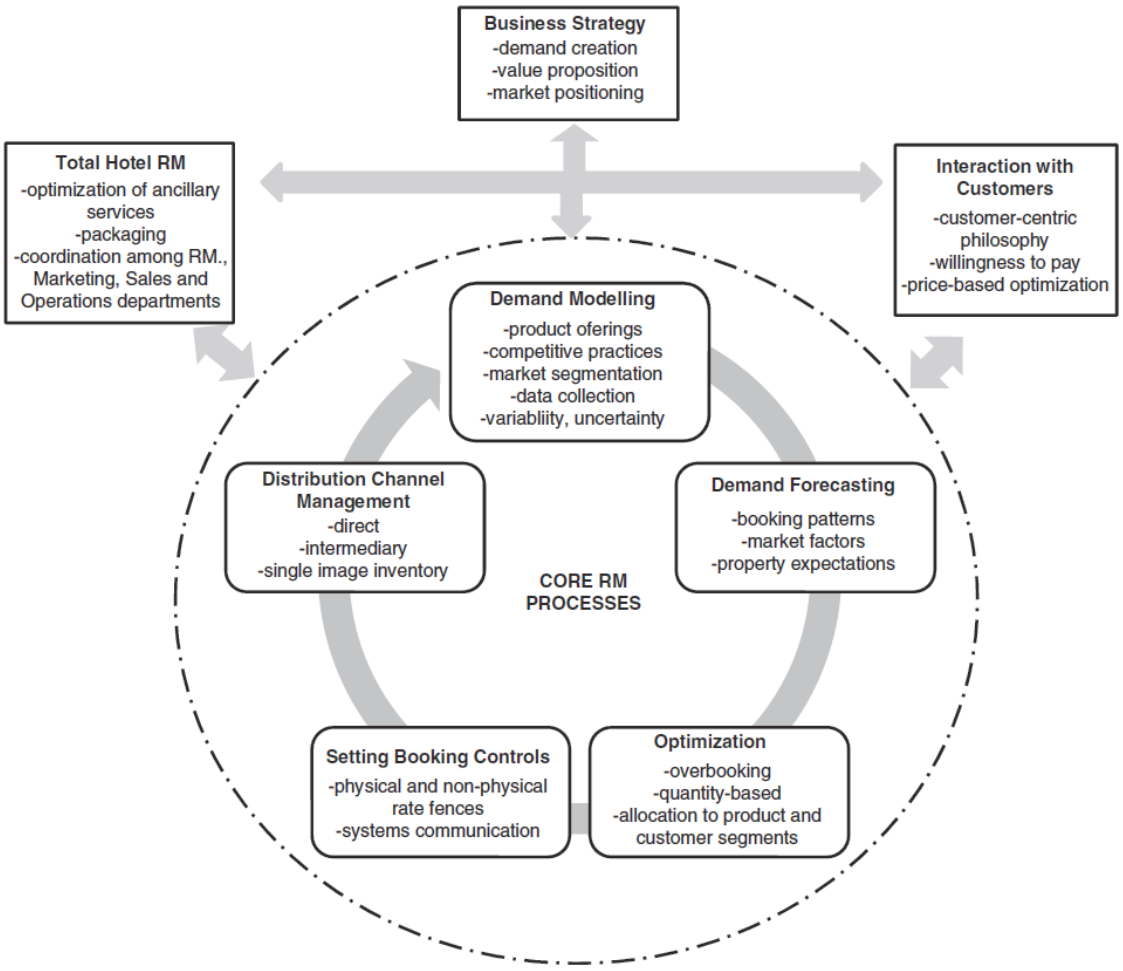
Inventory management is the basic issue in RM, and it is related to all the other aspects of RM. Inventory refers to the goods that a business has for sale at a particular time (Parkinson & Noble, 2005). In Hotels, it refers to food and beverage products, meeting rooms, SPA products and services and in the Rooms division it refers to rooms. Rooms have specific characteristics that imply different classifications with different prices, these characteristics can be the view, the size, the type and/or number of beds or the floor. All of these directed at different segments, distribution channels, with different lengths of stay and booking patterns. Demand, forecasting and length of stay controls are interconnected and refer to the market and potential market, with diverse features, it is planning for the future – short and long term –, and it includes control of the guests' stay duration to improve revenues and guest satisfaction.

"In the hospitality industry, particularly in the lodging sector, the traditional main distribution channels were the call centre and travel agencies. The advent of the Internet leads to profound changes in hospitality distribution. New business models were created, as well as online-based reservations networks, which allowed worldwide exposure to products while avoiding intermediaries such as the global distribution system" (Pizam & Holcomb, 2007). These are fundamental when managing inventory because hotels need to decide which of these channels are the most profitable and attract the segments that the hotel aims.

Although there are sophisticated RM systems, revenue managers must develop and guide the hotel strategy, rather than just implement tactics and "revenue managers are, and will be, more involved in marketing strategy related to segmentation, positioning, customer relationship management, and lifetime customer value" (Beck et al., 2011, p. 193).

Noone et al. (2011) refer the evolution in RM from a tactical standpoint to a more strategical one that comprehends marketing, sales, and channel strategy. By means of this evolution came a broader set of responsibilities across several domains including pricing, management of the entire revenue stream (total hotel Revenue Management), and a customer-centric approach to developing demand (Noone et al., 2011). These authors propose a framework in which they illustrate the augmentation of core RM processes (Figure 6).

Figure 6 - Evolving scope of RM activities.
Source: Noone et al. (2011)



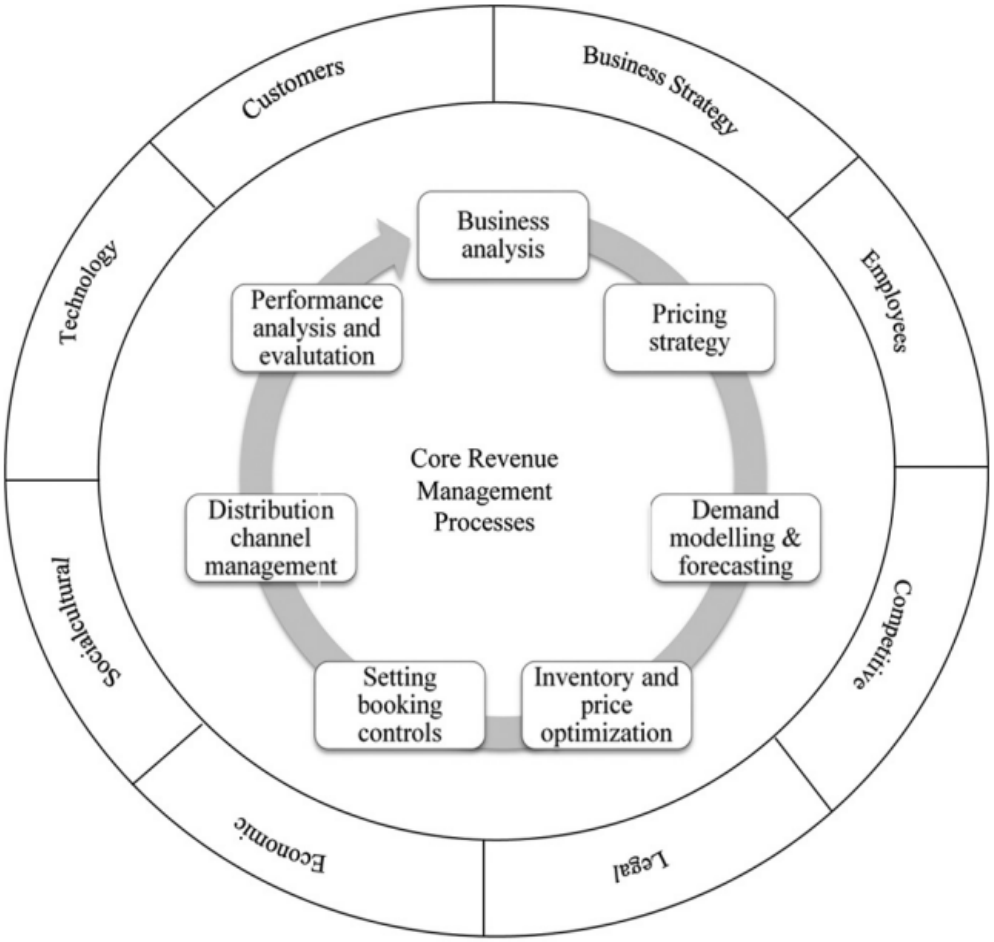
It is visible here the new concerns regarding the improvement of RM performance. Total Revenue Management implies an optimization of ancillary

services in the hotel, many times through packaging, involving the Marketing, Sales, and Operations departments. Packaging is a common way in hotels to bring traffic to departments, such as the SPA as an example, creating value for the customers. This creation of value is a part of the RM strategy as it allows the creation of demand, via personalized offers, is also allows to work on the hotel's value proposition and market positioning. More interaction with customers became important allowing to work on customer-centric activities, understand the different segments' willingness to pay allowing a price-based optimization.

In 2014, Guillet & Mohammed (2015) looked to identify emergent issues/topics and suggest directions for future research regarding RM research. They confirm the evolution of RM from a tactical perspective to a wider hotel strategy including all departments of the hotel.

Based on the above framework by Noone et al. (2011), Guillet & Mohammed (2015) suggest an even more inclusive framework of all that comprises a business analysis followed by a pricing strategy related to the demand modelling and forecasting, which in turn will allow the optimization of the inventory and price. The booking controls alongside with the management of the distribution channels, and the final analysis and evaluation of the performance, leading to an eventual adjustment or redefinition of the business strategy. All these core RM processes are influenced by other factors like the competition, legal factors, or technology.

Figure 7 - Extended framework for hospitality Revenue Management.
Source: *Guillet & Mohammed (2015)*



Kimes (2011) also concluded that "the future was going to be much more strategic in nature and will be more strongly driven by technology". Another pertinent conclusion drawn by the research made by Guillet & Mohammed (2015), is that hospitality RM researchers appear to be increasingly more interested in topics relating to pricing, customers' reaction to RM practices and distribution channel management, with a clear predominance of pricing studies (Guillet & Mohammed, 2015).

In the literature aimed at practitioners this evolution is also noted. In one of the first books totally dedicated to RM, suggestively titled *Revenue Management: hard-*

core tactics for market domination (Cross, 1997) clarifies 9 steps to success, although clarifying that there is no single "RM way". The 9 steps are:

1. *Evaluate your market needs.*
2. *Evaluate your organization and processes.*
3. *Quantity the benefits.*
4. *Enlist technology.*
5. *Implement forecasting.*
6. *Apply optimization.*
7. *Create teams.*
8. *Execute, execute, execute.*
9. *Evaluate success* (Cross, 1997, pp. 163–164).

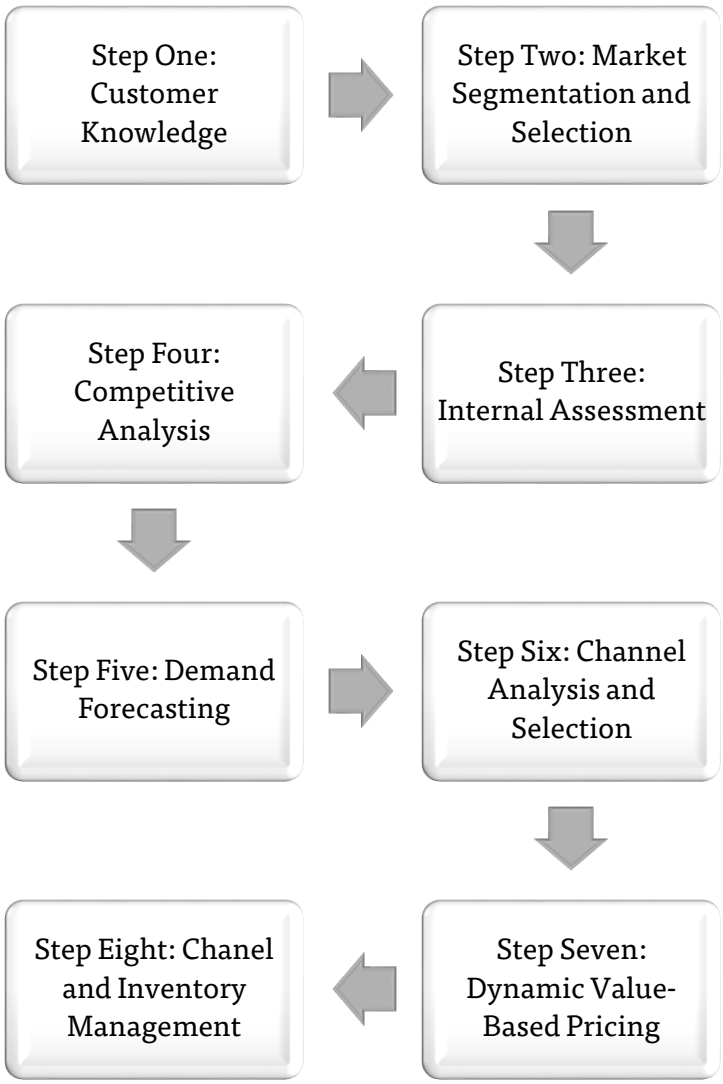
Although pricing is not listed above, the author, when stating "The Seven Core Concepts of Revenue Management", refers pricing as of strong importance. The concepts Cross suggests are:

1. *Focus on price rather than costs when balancing supply and demand.*
2. *Replace cost-based pricing with market-based pricing.*
3. *Sell to segmented micro markets, not to mass markets.*
4. *Save your products for your most valuable customers.*
5. *Make decisions based on knowledge, not supposition.*
6. *Exploit each product's value cycle.*
7. *Continually re-evaluate your revenue opportunities* (Cross, 1997, p. 61).

This is a book that is still very much read by practitioners because of the valuable experiences and recommendations that the author shares with his readers, and the analogies made with uncommon businesses such as the one-chair barbershop (Cross, 1997, p. 52), when referring to the RM attitude to approach the classic problem of supply and demand management.

Another extensive book directed at practitioners, *An Introduction to Revenue Management for the Hospitality Industry: Principles and Practices for the Real World*, proposes an eight-step Revenue Management process that they call "RevMAP" (Tranter et al., 2009, p. 190).

Figure 8 – RevMAP: The Critical Path Leading to Strategic Revenue Management Planning.
Source: Tranter et al., 2009, p. 191.



For all these steps the authors provide tools, tactics, and some resources to help practitioners.

This is a conceptual framework that allows RMs to have a broad vision of their business and what surrounds it, and only after that understanding is it possible to develop a pricing strategy that they call *Dynamic Value-Based Pricing*. This expression has two significant concepts within itself: not only *dynamic* pricing, implying a response to the traditional supply and demand management, but also *value-based*, which implies a profound knowledge of the market, of the hotel's strengths and weaknesses and the competition in order to convey the best value to the right customers in the correct distribution channels.

Besides this detailed path, the book also refers the application of these strategies and tools to other fields as sports, entertainment, events, SPAs, and cruises.

Another work, by David K. Hayes and Allisha Miller, *Revenue Management for the hospitality industry*, has a different approach to RM. The first chapter is dedicated to the purpose of business – hospitality – and the purpose of Revenue Management. This first chapter is immediately followed by the "Strategic Pricing" chapter. In this second chapter the authors discuss the concept of price from the perspective of the seller and the buyer and perform a detailed assessment of why RMs who consider only supply and demand or costs when determining their prices will inevitably make poor pricing choices (Hayes & Miller, 2010). This shows the tendency to place strategic pricing as the core of a RM strategy. An added concept is that of value. On the third chapter, Hayes & Miller (2010) discuss the role of value in pricing, the relationship between quality and price and between service and price, as well as the link between quality, service, and price. This chapter also examines the art and science of strategic pricing. After these two chapters, comes *Differential Pricing*, with these themes: ten principles of managing revenue, differential pricing, limits to differential pricing, and applying differential pricing (Hayes & Miller, 2010). This book's

focus on pricing as the core paradigm behind RM denotes a growing tendency, also seen in academic research, to see pricing as the key to a successful RM strategy.

Patrick Legohérel, Elisabeth Poutier and Alan Fyall, are the editors of *Revenue Management for Hospitality and Tourism*, published in 2013. This is a work for academics, which practitioners may also find helpful. It contemplates concepts and techniques with a chapter on how to set up a RM system, and a more practical approach. The Part II of this book "provides several examples of the application of Revenue Management systems in various sectors and types of companies across the wider hospitality and tourism industry" (Legohérel et al., 2013, p. x) covering transport, accommodation, tour operations and car rentals. Interestingly there is a specific chapter dedicated to price: "Revenue Management for Fixing Quotas and Prices of Perishable Commodities under Uncertainty" (Legohérel et al., 2013), which validates the increasing importance of pricing within the several mechanisms decision making in RM.

However, Stanislav Ivanov, in 2014 on his book, *Hotel Revenue Management, From Theory to Practice*, does not give pricing the same importance, although the book has chapters on Value creation, Pricing and Non-pricing hotel Revenue Management tools. Nevertheless, this is a book for academics as much as it can be for practitioners, so that is probably the reason that all subjects are more balanced.

Ronald J. Huefner published *Revenue Management: A Path to Increased Profits,* in 2011 and a *Second Edition* in 2015. On this book the author is very clear about his view on RM. He maintains in the Preface that "Revenue Management is a set of techniques to influence customer demand for the products and services of an

organization. Differential pricing is a primary Revenue Management tool" (Huefner, 2015, p. xi).

From the first books mentioned to the last ones there is a strong move towards Pricing as a critical technique in RM.

The most recent book about RM already addresses the influence of the pandemic of Covid-19. *Hotel Revenue Management, The Post-Pandemic Evolution to Revenue Strategy* by Dave Roberts (2022) has two chapters that address this question: one is specifically about Revenue Management in a downturn, and another is dedicated to Revenue Management in a recovery. The main idea behind this work is that RM will evolve into revenue strategy (Roberts, 2022). This will happen because the tactical decision-making elements of Revenue Management will increasingly be done by technology, leaving the strategy work to humans (Roberts, 2022).

Chapter 3 – The Price

Before discussing dynamic pricing, it is necessary to understand the concept of price. The role of price is present on all areas of the society and the economy, influencing daily decisions made by people, families, communities, businesses – big or small –, non-profit organizations (Rekettye & Liu, 2018), governments, schools, institutions, almost every type of organization. Yet, and despite this importance, many times managers seem to know very little about either prices or pricing methods (Rekettye & Liu, 2018)

3.1. The Concept of Price

What is price? It is interesting to verify that in many of the publications about pricing it is not usual to find a single definition of price, even when searching the index, the term found are usually: price actions, price band, price bucket, price bundling, price customization, price discounting, price discrimination, price elasticity, price leadership, price sensitivity (Rekettye & Liu, 2018; Wirtz & Lovelock, 2016). Even when searching for price definition on Scopus™ the results return some sort of context. This alone shows the complexity of the notion of price and thus pricing.

In the Oxford Business English Dictionary, Price is defined as "the amount of money that you must pay for something" (noun), and "to fix the price of something at a particular level" (verb) (Parkinson & Noble, 2005).

"The *price* is the number of monetary units which a buyer must hand over for one unit of a product" (Simon & Fassnacht, 2019, p. 5).

This quite simple definition implies two sides: the buyer and the product owner or manufacturer.

Humans have always assigned value to items, especially to those in their possession. In the Stone Age, one fur pelt may have commanded ten fish in trade, or one fish would be worth two coconuts (Tranter et al., 2009).

Indeed "[e]very product and service sold since the beginning of time has had a price assigned to it. Setting that price is among the most crucial, most profit-sensitive decisions that companies make" (Baker et al., 2010, p. 3).

Barter was the first method of trade, and it means the exchange of goods or services between two people. The conditions of the exchange are explained by Tranter et al., (2009, p. 15):

> *The terms of the trade were established based upon an item's worth. Worth was typically determined either by an item's scarcity or by its perceived value in labour. If few salmon could be found in local waters, then the value of salmon would rise. If it took a craftsman two weeks to fashion a spear, its value would be reflected in the price of the item accepted in trade. The traded item had to be equivalent to the cost of the raw material and two weeks of labour.*

Setting prices for goods and services is one of the most fundamental and unavoidable management disciplines (Baker et al., 2010) and this is because price is the most effective profit driver (Simon et al., 2019).

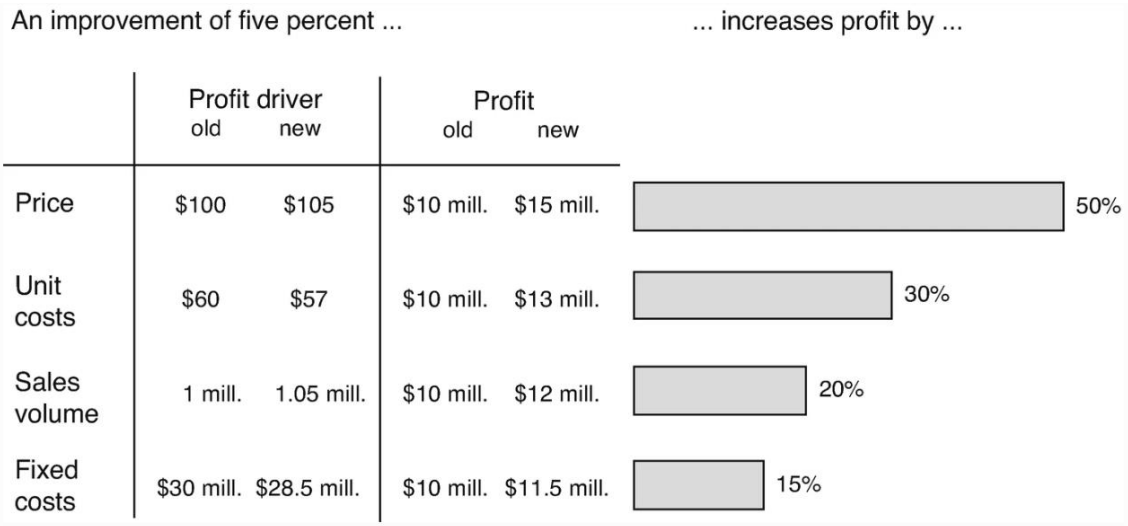
Even for non-profit institutions, decisions about prices affect the resources of the organization and its ability to serve its constituents. For everyone involved, the costs of pricing errors are hefty, whether the price is too high or too low, pricing errors can destroy profits (Smith, 2012) and the enterprises' ability to survive.

Price and profit are unequivocally connected. Oftentimes managers focus on other aspects of their management duties to control the success or unsuccess of their firms, as for example cutting costs, changing suppliers, or decreasing services and not as much reflecting on the price or making pricing decisions. For Simon et al., (2019), Baker et al., (2010) and Smith, (2012) it is the price that has the biggest impact on profit.

Simon et al., (2019) explain that there are three main profit drivers: price, volume, and costs. Costs can be fixed, variable or semi-fixed and semi-variable costs (costs that cannot be finely split into their fixed or variable components) (Chibili, 2017).

Simon et al., (2019) provide a simple but clear example of how price has the biggest impact on profits:

Figure 9 – Effect on profit from improvements in profit drivers.
Source: Simon et al., 2019, p. 2



The figure above shows the scenario of a company that sold 1 million units at $100 per unit, with a unit cost of $60 and the fixed costs were $30 million. The result in sales revenues is of $100 million with a profit of $10 million. With other conditions remaining the same, a 5% improvement in each of the profit factors –

price, costs, and volume – would generate different results with the most beneficial being the improvement in price. A 5% increase in price means the price would be $105, and the revenue would increase to $105 million. The profit would rise from $10 to $15 million, an improvement of 50%. For the other profit drivers, a 5% improvement in the respective factor (again, all other factors being equal) is 30%, 20%, and 15%, for variable costs, volume, and fixed costs respectively (Simon et al., 2019).

This improvement in price is a better option than reducing costs when the company is looking for improved results. However, this is a hypothetical scenario and an increase in the price must be accepted by the market.

On the other hand, sometimes companies look for different ways to improve their results.

Again, Simon et al., (2019) provide this scenario of the inverted situation.

Figure 10 – Effect on profit from declines in profit drivers
Source: Simon et al., 2019, p. 3

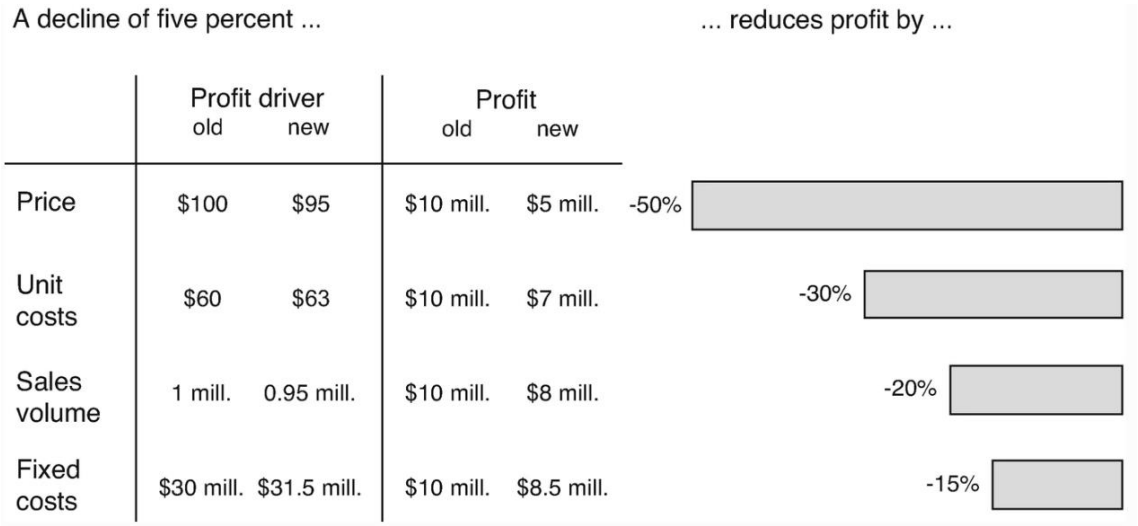


Figure 10 shows the impact that a reduction in 5% in price has on the total profit. Once more the biggest impact comes from the price change. An increase of 5%

in the unit costs, for example, to improve the good or service reduces the profit by 30%, which is significant, meaning that, to pay off, either price or volume would have to increase to compensate that investment.

Rekettye & Liu, (2018), Smith, (2012) and (Baker et al., 2010) also deliver similar examples showing that, in comparison to any other variable under management, price has a larger and more immediate impact on profit than all other levers, and refer research made to prove this hypothetical picture (Smith, 2012).

Nagle & Müller (2018) make an interesting point when talking about price related to the 4 Ps of the traditional marketing mix (Product, Place, Price, and Promotion), they refer to price as the harvest resulting from the other Ps:

> *Marketing consists of four key elements: The product, its promotion, its placement or distribution, and its price. The first three elements—product, promotion, and placement—comprise a firm's effort to create value in the marketplace. The last element—pricing—differs essentially from the other three: It represents the firm's attempt to capture some of the value in the profit it earns. If effective product development, promotion, and placement sow the seeds of business success, effective pricing is the harvest* (Nagle & Müller, 2018).

This analogy with the harvest, the culmination of all efforts that a company does on a daily basis, is a very critical one, conversely it lacks an important factor.

Price as a noun means "a measure of the value given up (exchanged) by a buyer and a seller in a business transaction. As a verb it means to establish the value to be given up (exchanged) by a buyer and a seller in a business transaction" (Hayes & Miller, 2010).

The seller makes all the decisions so they can collect the "harvest", but they are dependent on the buyer. Both the seller and the buyer are a part of the equation of price. The buyer must accept the price to make the "exchange".

Reflecting on the "barter" system, it presented a difficulty: "stemming from its very directness, namely the double coincidence of wants required to complete an exchange of goods or services" (Davies, 2016). This means the possible absence of a double coincidence of the wants or needs on both sides. Another obvious and important shortcoming of the barter system is that concerned with the absence of a generalized or common standard of value (Davies, 2016). How valuable is what one has, that makes the other give them what they want and what they feel is right? How much does one need something and what can they give in return to satisfy that need? Does one have enough resources to make the exchange?

This raises the question of *value* and *need* on the buyer's side of the price equation. Value means the amount of perceived benefit gained minus the price paid (Hayes & Miller, 2010). Buyers seek benefits when making purchases. "So, from the start, prices have been set based upon availability, perceived value, and ability and willingness to pay" (Tranter et al., 2009).

Price must consider both the seller and the buyer, there must exist an encounter of interests for the exchange or transaction to occur thus bringing benefits to both.

"As price has such a significant impact on profits, and because it directly influences customer behaviour, it deserves all if not more of the executive attention that it receives" (Smith, 2012, p. 6).

3.2. The Principles of Pricing

The Oxford Business English Dictionary considers *pricing* as an important word, and it defines it as "the prices that a company charges for its products or services; the act of deciding what they should be" (Parkinson & Noble, 2005, p. 423).

"Pricing is defined as the method companies use to set the selling prices for their products and services, and it is a very important aspect of the decision-making process within hospitality operations" (Chibili, 2017, p. 195). Similarly, "the term 'pricing' usually refers to the problem of defining optimal prices" (Yeoman & McMahon-Beattie, 2011, p. 9). Pricing is a critical force for raising performance (Meehan et al., 2015), as it is about setting and adjusting prices to maximize profitability (R. L. Phillips, 2021).

"In setting prices, the company must also consider competitors' prices. No matter what price it charges – high, low, or in-between – the company must be certain to give customers superior value for that price" (Kotler, Philip; Armstrong, Gary; Harris, Lloyd; He, 2019, p. 303).

Accordingly, pricing is the activity of, based on data – historical, competition, customer behaviour, forecasting, and tendencies – defining a price structure to achieve maximum revenue and profitability.

Pricing, as a standalone word, usually means setting prices, as stated above. However, oftentimes pricing is associated with *strategy*, or *tactics*. In strategic pricing, the goal is to establish a general price position in a market, it is concerned with how a product should in general be priced relative to the market (R. L. Phillips, 2021). It is not a daily activity; it is a long-term commitment. "Pricing and revenue optimization is a tactical function" (R. L. Phillips, 2021, p. 12).

Hotels need to establish processes and capabilities needed to ensure that they have the right prices in place for all their products, for all their customers, through all their channels, all the time (R. L. Phillips, 2021), and this is a daily activity that follows the pricing strategies previously established.

Another point of view about pricing is that it is a quantitative field with a direct impact on profitability (Smith, 2012), this referring to the tactical side of pricing. Pricing is equally a qualitative field as negotiation experiments reveal (negotiations with customers on a business-to-business approach, for example), and where the actions of the firm affect the price that they can achieve (Smith, 2012), and this is a more strategic ground. Smith (2012) continues to distinguish between the art and the science of pricing, where the science "refers to the act of gathering information, conducting quantitative analysis, and revealing an accurate understanding of the range of prices likely to yield positive results. Pricing data, like any other set of information that influences executive decisions, is rarely perfectly clear" (Smith, 2012, p. 8). The art, which is always a more subjective field, to this author:

> *(...) refers to the ability to influence consumer price acceptance, adapt pricing structures to shift the competitive playing field, and align pricing strategy to the competitive strategy, marketing strategy, and industrial policy. It requires an understanding of consumer behaviour and the influence of features embedded within the product, the perception of value, the expectations of customers, and the price structure itself. It also requires that pricing strategy support the firm's marketing strategy in light of the overall competitive and industrial environment of the market* (Smith, 2012, p. 8).

To pursue these views RMs and/or Pricing professionals must have a set of skills that will allow a successful outcome. Some Revenue Management Team (RMT)

members will provide marketing or competitive intelligence, others will be instrumental in developing, executing, and evaluating strategies and tactics for the future (Tranter et al., 2009). “Pricing professionals often come from a finance, marketing, economics, or from a mathematical science background. Functionally, they typically report to either marketing or finance, depending on the nature of the pricing challenges they must address daily” (Smith, 2012). Coming from all those different backgrounds, these professionals must also possess an ample set of skills in order to overcome obstacles, work with business goals, deal will co-workers, customers, management, and other organizations. Thus, by “nature and need, pricing professionals mix hard quantitative analytical skills with softer qualitative skills to inform pricing decisions meaningfully and enable action” (Smith, 2012).

These skills will allow RMs and Pricing professionals to work at a tactical as well as a strategic level of RM.

In 2010, Sheryl Kimes made a study about the future of RM (Kimes, 2011), where the author conducted an online survey of nearly 500 RM professionals and interviewed twenty top RM practitioners to understand what they thought the upcoming of this practice would be. The most common response (28.2% of all comments) was that RM would become more strategic and that it would cover all revenue streams within the hotel (Kimes, 2011). A relevant response of one respondent stated: “The era has ended when Revenue Management can stand alone as a tactical approach to room management. Revenue Management must be and is being integrated into all aspects of hotel management including marketing, finance, and operating strategies (Kimes, 2011).” The next four more common responses were: Increased Technology, Increased Competition, Forecasting/Analysis, and Consumer Behaviour. Respondents from the same

study refer that pricing would become much more analytical and detailed as time goes on, and that pricing practices would require the use of analytical pricing tools, which will enable hotels to price by smaller segments, distribution channels, or even individual customers (Kimes, 2011).

Later, in 2016, Kimes revisited the topic in the article "The evolution of hotel Revenue Management" to conclude that RM will be even more strategic in nature and that the use of marketing analytics will greatly increase (Kimes, 2016). This means that the predictions from the previous study confirmed. "The focus on total hotel RM has further transformed the role of a revenue manager from a tactical focus to a much more strategic focus that entails not only being able to navigate political differences among disparate departments, but also to manage the change process" (Kimes, 2016, p. 250), confirming the need for softer skills to inform pricing decisions meaningfully and enable action within all revenue streams in the hotel (Kimes, 2011; Smith, 2012).

So far, the notions of Price, and of Pricing have been depicted as well as some of the characteristics necessary from RMs and Pricing professionals to successfully work with both concepts to achieve a premium Revenue performance. The next section will address some of the Pricing strategies available.

3.3. Pricing Strategies

Pricing is the activity of defining a price structure to achieve maximum revenue and profitability. Strategy is about making one think ahead regarding key issues affecting organizations (Evans, 2019). Professor Chandler of the Harvard

Business School provided, in 1962, a widely quoted and adapted definition of strategy:

> *(...) strategy is the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals* (Chandler, 1962 in Evans, 2019, p. 14).

As a result, Pricing strategies can be characterised as the definition of objectives and long-term goals, the adoption of procedures and processes and the allocation of resources to establish the right price in each point in time to attract the most profitable customers and to produce the best revenues and profits.

Simply stated, Strategic pricing is the application of data and insight to effectively match prices charged with buyer's perceptions of value (Hayes & Miller, 2010). Also, "a strategy is a statement of the key actions that will be taken by the business" (Paczkowski, 2018, p. 4).

3.3.1. Applying Pricing Strategies and Tactics

Pricing can be tactical *or* strategic. Pricing can also be tactical *and* strategic. Unquestionably, tactics without a strategy behind them can translate into random approaches to pricing without a long-term objective, which ultimately may cause more damage than good to the firm. Strategies are goals, objectives, aims that guide the tactics, if there are no tactics, strategies become void.

"A strategy is defined as how the organization plans to achieve a goal or objective. Tactics are defined as skilful methods used to achieve desired results (Tranter et al., 2009, p. 185).

Pricing strategies come in many forms. Many of the following strategies and tactics are the most usual and that can be called traditional.

One of the most common forms was the Season – High, Low, and sometimes the Shoulder season. For example, in the northern hemisphere summer was typically considered from July to September, which coincided with school vacation. This would be the High season with higher prices in a hope to capitalize from the summer and families' vacations.

Segmentation has always been practiced, it can be said. Segmentation is a broad term, here it refers to negotiated rates with organizations and institutions that could generate revenue throughout the year, and many of them could contribute to the overall revenue with events. The traditional Travel Agencies would be included here. With price negotiations would come with other conditions, such as *allotments*, or *free sale* or *sell and report* terms.

Another typical pricing tactic would concern the stay duration. When a potential guest contacted the hotel for an extended stay, sometimes the price could be negotiated because it was going to the "bottom line", which means it was secured revenue during a period of time.

Groups would purchase a large number of rooms and normally meals. Some were series, which meant several groups with the same characteristics for a period of time, others were *ad-hoc* groups also usually with meals and other services. These negotiated prices were based on the number of purchased rooms.

The creation of specific packages and promotions according to season and aimed at specific segments is also a tactic. Promotions are not necessarily heavy room discounts that can jeopardize pricing perception and price position on the metasearch websites such as Trivago™. The aim is to increase direct bookings

and attract underperforming or more price sensitive segments. Packages can boot sales and bring traffic to other departments such as the SPA. These packages can also be developed using local experiences included in the package.

Oftentimes hotels also decided to discount their rates to the walk ins depending on the level of occupancy and the need to enhance revenues.

Strategies as the definition of the Seasons and demand peaks, segments, a price structure, the analysis of the historical data and the competition will allow the implantation of tactics as competitive pricing, length of stay restrictions, group pricing, negotiated rates, promotions and packages based on demand.

The next sections will focus the on the dynamic pricing created by the definition and application of these strategies and tactics, as well as other factors affecting prices and pricing.

3.4. Dynamic Pricing

"Throughout most of history, prices were set by negotiation between buyers and sellers" (Kotler, Philip; Armstrong, Gary; Harris, Lloyd; He, 2019, p. 332). Most of the transactions between sellers and buyers have involved some form of bargaining. In some Middle East cultures, bargaining became such a social phenomenon that not being open to negotiation was often taken as a great offense (Bodea & Ferguson, 2014).

A fixed-price policy – setting one price for all buyers – is a relatively modern idea that arose with the development of large-scale retailing at the end of the nineteenth century. Today, most prices are set this way (Kotler, Philip; Armstrong, Gary; Harris, Lloyd; He, 2019). "Throughout the 20th century, with

the development of the modern retailing in the Western societies, the focus of pricing has shifted from variable to static pricing. The diversity of the product assortment and the variety and size of the customer base made it difficult for retailers to sustain any viable variable pricing initiatives" (Bodea & Ferguson, 2014, p. 168).

However, many companies are now reversing that fixed-pricing trend. Companies are using dynamic pricing – adjusting prices continually to meet the characteristics and needs of individual customers and situations (Kotler, Philip; Armstrong, Gary; Harris, Lloyd; He, 2019, p. 332).

Accordingly, prices started out by being dynamic, then moved to a more static price setting due to growth of commerce. Again, the evolution of the commerce landscape has allowed the return of this pricing practice. In particular, the hospitality industry has seen major changes: Online Travel Agencies (OTAs), price transparency, social media, mobile, search, review sites, last-minute booking apps, and flash sales have created a market that is more dynamic and generates more data than before, and consumers have easy access to price and value information about the hotels in a market, which means more pressure on hotels to understand and account for competitive dynamics (McGuire, 2015).

Dynamic pricing is one of the strategies used by RMs to maximize profit under the uncertainty of market conditions, such as fluctuating demand, competition, and other factors (Viglia et al., 2016). There is a high interest in dynamic pricing in the hospitality field in literature, but not many definitions of what dynamic pricing really is, probably because there are many definitions for the same principle, and these can be price customization, price segmentation or flexible pricing all referring to price discrimination (Rekettye & Liu, 2018).

The initial concept was referred as *price discrimination*, which means "corporate price policy decisions allowing sellers to set different prices on the same product with or without making small changes on it, or when the same product is sold under different conditions but at different prices – even though these price differences are not justified by differences in costs" (Rekettye & Liu, 2018, p. 153).

Another notion found is *price customization*, that is, charging different customers different prices for what is actually the same product (Wirtz & Lovelock, 2016).

Yet another definition is *price segmentation*, which means adjusting the prices to different customer groups or customer segments (Baker et al., 2010).

Price optimization is hitherto another concept. It refers to a "mathematical calculation of an optimal price derived from the price sensitivity of demand. Price sensitivity of demand can be calculated at room type and market segment level, to provide a very detailed set of optimal prices, depending on how price can be deployed in the selling systems" (McGuire, 2015, p. 29).

In the core of all these concepts is the use of different prices under several circumstances. Rekettye & Liu (2018, p. 154) refer that to "speak about the use of different prices new terms were coined in literature like dynamic pricing or flexible pricing".

Essentially, dynamic pricing means that sellers can set different prices on the same products or when the same products are sold under different conditions but at different prices (Rekettye & Liu, 2018).

It is proved that companies develop adjustment strategies in their price structure to account for various customer differences and changing situations (Kotler,

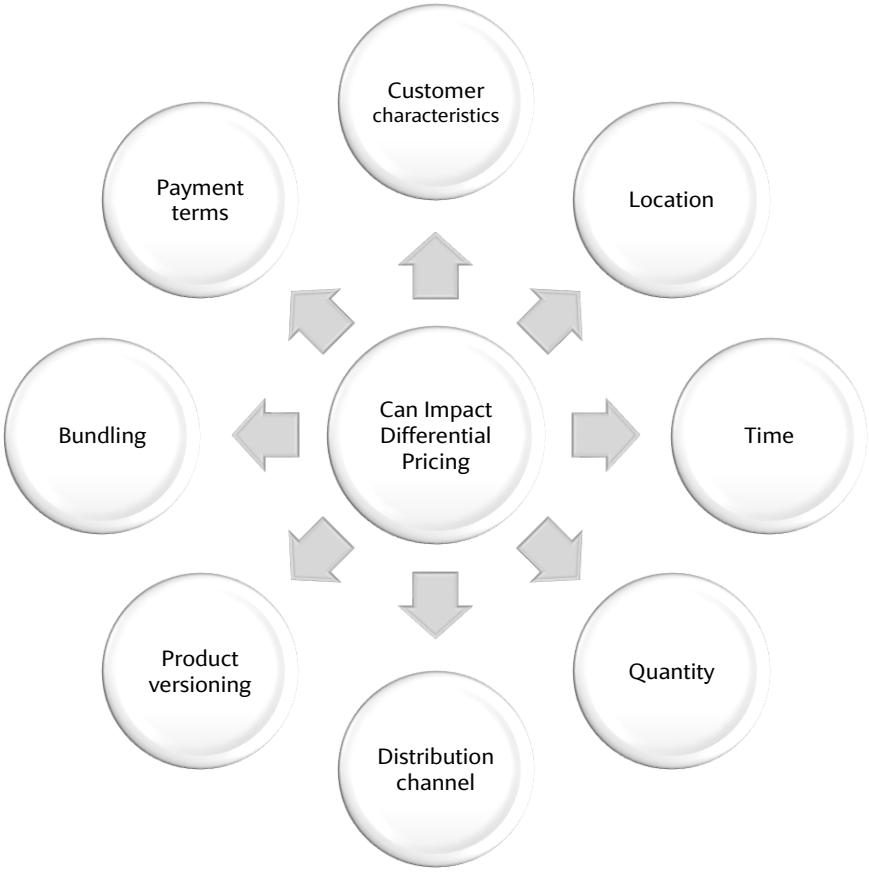
Philip; Armstrong, Gary; Harris, Lloyd; He, 2019). These authors resume those price adjustments in the following table:

Figure 11 – Price adjustments
Source: Kotler, Philip; Armstrong, Gary; Harris, Lloyd; He, 2019, p. 328.

Strategy	Description
Discount and allowance pricing	Reducing prices to reward customer responses such as volume purchases, paying early or promoting the product
Segmented pricing	Adjusting prices to allow for differences in customers, products or locations
Psychological pricing	Adjusting prices for psychological effect
Promotional pricing	Temporarily reducing prices to spur short-run sales
Geographical pricing	Adjusting prices to account for the geographic location of customers
Dynamic pricing	Adjusting prices continually to meet the characteristics and needs of individual customers and situations
International pricing	Adjusting prices for international markets

The hospitality industry makes use of most of the above strategies: discount and allowance pricing, when negotiating group and contract rates. In segmented pricing, within almost all segments, there is some type of negotiated adjustment. Promotional pricing mostly in downturn dates. Geographical pricing and international pricing, again adjusting prices according to geographic location of the markets.

Figure 12 – Factors impacting on pricing policies
Source: Hayes & Miller, (2010)



And dynamic pricing, which is in sum the consequence of the application of all the other strategies since it depends on the characteristics of the customers, time of year, demand generators, geographical sources and type of product, characteristics, promotions, and all other features hat can allow the application of dynamic ricing.

There are more factors that can have impact on pricing policies. Hayes & Miller, (2010) have grouped eight broad categories that can impact differential pricing as shown on Figure 12.

Nonetheless, and as previously referred, prices are designed for profit. And before profit there are costs to be accounted for. These costs also make the base for price setting and only after the costs are covered, dynamic pricing strategies and tactics can be designed and applied.

3.5. Price setting

There are many different approaches to pricing used within the hospitality industry as well as in other industries, the focus of this subchapter is the hospitality industry.

Marketeers talk about three major dimensions on which prices can be based, and those are costs, demand, and competition. When using cost-based pricing, firms determine the price by adding an amount of cash or a determined percentage to the cost of the product. Two common cost-based pricing methods are cost-plus and markup pricing (Pride & Ferrell, 2020).

In the hospitality industry cost approaches are common: "the rule of a thousand" approach, and the bottom-up approach, also known as the Hubbart formula or "required rate of return" (Chibili, 2017).

> Regarding the basic rule of thumb approach, the price of a hotel room is set at one thousandth (1/1000) of the investment costs incurred in the development of the room. Assume that the total cost of building a 75-room hotel is €12,500,000.00 and that 30% of this investment relates to other non-rooms related hotel activities. Then the price of one room will be assessed as such:
>
> i. Total rooms investment = €12,500,000.00 × 70% = €8,750,000.00
> ii. Cost of one room = €116,666.67 (i.e., €8,750,000.00 / 75 rooms)
> iii. Room selling price = €116.67

> Using this method, the hotel will sell its rooms at an average rate of €116.67 (Chibili, 2017, p. 203).

This is a very simple method, and it fails to address issues such as seasonality, segment, and all the other services that the guest might pay for within the hotel. As well, it does not consider the time at which the investment was made in the hotel, and what the competition does at that moment (Chibili, 2017).

The Hubbart formula receives its name from Roy Hubbart and it was developed in the 1950s (Tyrrell, 2017).

As Bardi (2011) explains, the Hubbart formula considers factors such as: operating expenses, desired return on investment, and income from various departments in the hotel to establish room rates. This method relies on the front office to produce income to cover operating expenses and overheads and return on investment for the hotel operation. The following example applies these factors:

> *A hotel with $4,017,236 of operating expenses (departmental operating expenses and overhead), a desired return on investment of $1,500,000, and additional income of $150,000 from other sources (food and beverage, rentals, telephone), with projected room sales of 47,680 room-nights, would set its room rate at $113* (Bardi, 2011, p. 209).

$$\frac{(Operating\ Expenses + Desired\ ROI) - Other\ Income}{Projected\ Room\ Nights} = Room\ Rate$$

$$\frac{(\$4{,}017{,}236 + \$1{,}500{,}000) - \$150{,}000}{47{,}680} = \$113$$

“The Hubbart formula is also a guideline only. Room rates must be constantly monitored in light of market conditions of supply and demand” (Bardi, 2011, p. 209).

Rather than constructing the price of a product on its cost, companies sometimes use a pricing method based on the level of demand for the product: *demand-based pricing* (Pride et al., 2013).

Demand-based pricing is created considering the level of demand for the product. To use this method, a marketer must be able to estimate the amount of a product buyers will demand at different prices and at different times. Demand-based pricing results in a high price when demand for a product is strong and a low price when demand is weak. In the case of competition-based pricing, costs and revenues are secondary to competitors’ prices (Pride & Ferrell, 2020), which can be a problem since costs can vary within hotels.

Despite there not being a universal or consensual way of setting pricings based on costs and/or investment alone, these evaluations are a necessary starting point.

After the assessment that allows hotels to understand how much revenue is necessary to pay the costs and the investment, the focus of the price setting will be profits.

3.6. The Role of Demand on Pricing

Demand is a function of price, price can also be a determinant of demand (Tranter et al., 2009), and both concepts are connected. Finding the ideal price is a challenge because managers do not want to lose money by under-pricing their services, nor do they want to lose guests by charging prices that those guests are not willing to pay. Studies in price perceptions focus on the willingness to pay and how guests perceive pricing strategies (Andres Martinez et al., 2011; Choi & Mattila, 2005; Jeong & Kim, 2014; Lichtenstein et al., 1993a). There is also the question related to reference prices. Reference prices designate prices that consumers assume to be fair according to their past experiences and knowledge (Majid et al., 2014; Viglia et al., 2016).

Thus, when defining prices hoteliers should consider, among others, these factors: actual demand, demand generators that may affect future dates and which segments will be attracted (e.g., business or leisure). Rekettye & Liu, (2018) mention that the current economy tends to favour price discrimination as the dominant attitude to pricing strategies.

Some studies have been conducted on the theory and practice of economic impact of events (Draper et al., 2018; Getz & Getz, 2018b; Hodur & Leistritz, 2006) that reveal the importance of events in overall tourism. There are also many studies that centre on the impact of sports events (Daniels et al., 2004; Fernández Alles, 2014; Perić, 2018). However, only a short number of studies focus their attention on the direct impact in hospitality prices, such are the cases of Herrmann & Herrmann, (2014), or Maier & Johanson, (2013). These studies show that there are significant impacts on pricing strategies and dynamic pricing

policies according to specific type of demand generators like big events and conventions.

The role of demand on pricing strategies is of the utmost importance, because ultimately the level of demand is what makes a business profitable. When demand does not happen organically, it can be created by manipulating demand generators across the different distribution channels and directed at different segments.

The more information and data about demand the hotel has, the more it can establish its RM strategies. Information that comes from history data within the hotel and the destination, booking pace of the demand, which means when does each segment book so that the most profitable segments will always have rooms available at the hotel. Hotels that control demand generators with a calendar and compare it to their historical data can make better predictions.

3.7. Value-based Pricing

Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large (Pride et al., 2013). This means that customers buy *value*, they buy something, a product or a service that has some sort of value to them. In the Cambridge Dictionary, the noun value stands for *the amount of money that can be received for something, the importance or worth of something for someone* – this is critical in pricing –, *how useful or important something is*, also significant for the concept of pricing, and *a number or symbol that represents an amount* (*VALUE | Meaning, Definition in Cambridge English*

Dictionary, n.d.). The Oxford Business English Dictionary refers to value as how much something is worth compared to its price (Parkinson & Noble, 2005).

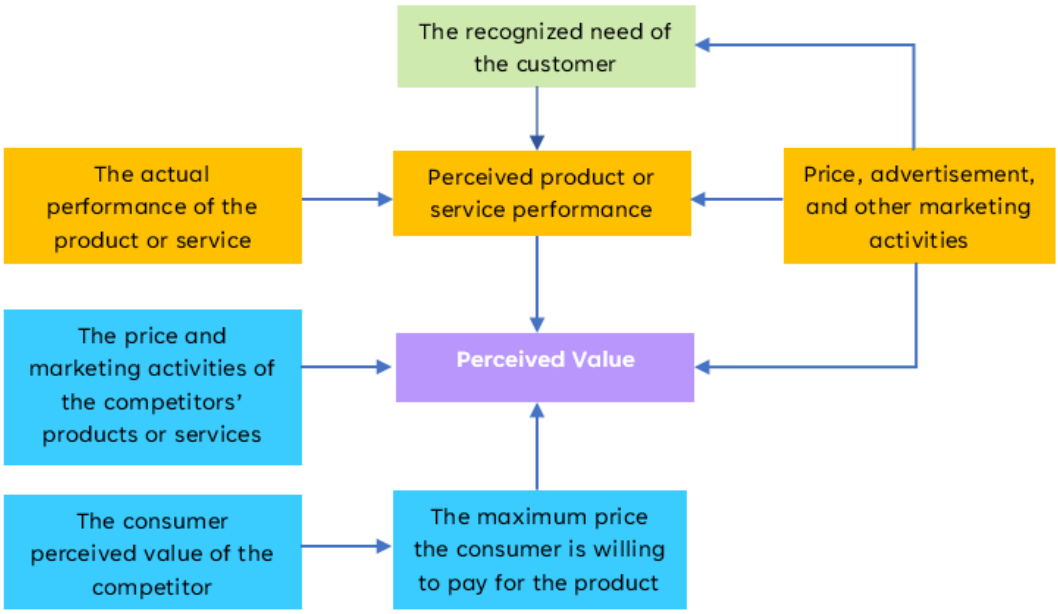
A synonym for the term value is *benefit*, and this is what customers want or are looking for. In the determination of value there is one fundamental element, which is the benefit that the consumer believes he or she will receive from making the purchase (Tranter et al., 2009).

The intangible nature and heterogeneity of the hotel experience make it highly dependent on representations and descriptions to help consumers differentiate between competing products (Cantallops and Salvi, 2014 in Wood, 2018), and this is even more relevant because purchases are most of the times made in advance and totally based on the communicated benefits. The customer must perceive some type of value in order to take the initiative to buy the product.

Perceived value may include material value and quality, benefits received from ownership or usage, and esteem associated with the product or service (Tranter et al., 2009). On the other hand, there are costs associated to the purchases customers make. These costs are not only the value in money exchanged for the product or service. Consequently, the total acquisition cost may include intrinsic costs such as price and extrinsic costs, such as the time it takes to make the purchase (Tranter et al., 2009). Therefore, the perceived product or service value must be equal to or exceed the total acquisition cost in order to translate into total value to the consumer (Tranter et al., 2009). In combination with the notion of perceived value is the notion of "value expectation" (Rekettye, 2019). Value expectation derives from previous experiences, information, and developed assumptions complemented with financial available resources, and, if the product reaches or exceeds the value expectation, the company can expect a rebuy (Rekettye, 2019).

There are some factors affecting perceived value, these factors may lead to a purchase as described by (Rekettye, 2019) and shown below.

Figure 13 – Factors influencing perceived value.
Source: adapted from Rekettye (2019)



Revenue managers must observe consumer behaviour and understand how various price/value relationships impact the purchase decisions made by their customers (Tranter et al., 2009), otherwise when failing to find value in the purchases, customers do not repeat that acquisition, and discourage others from making the same (Nagle & Müller, 2018).

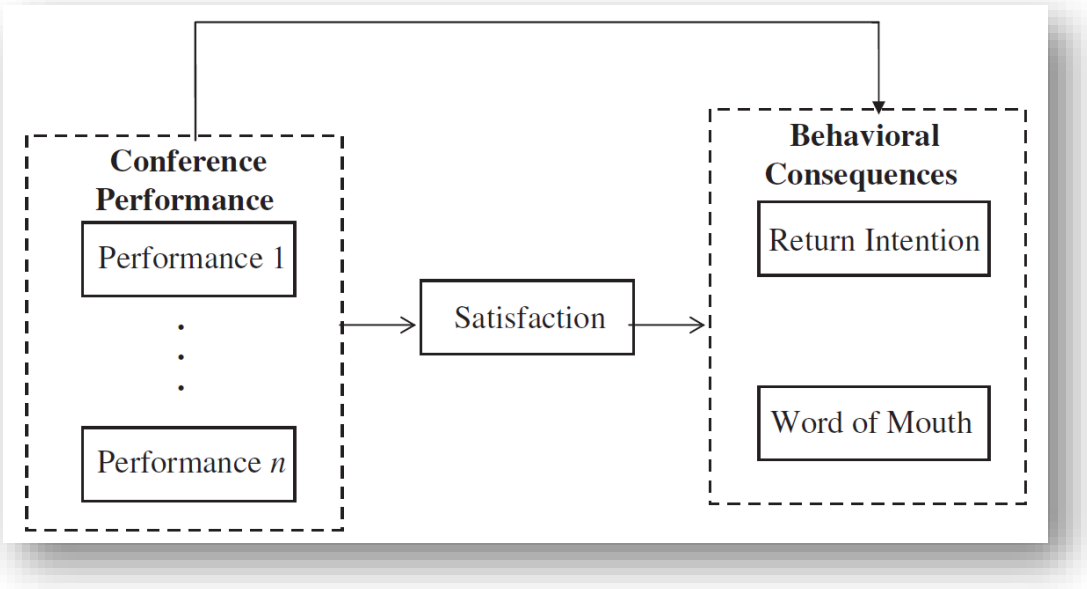
Accordingly, value-based pricing is setting prices based on value perceptions by costumers. It uses the buyers' perceptions of value, not the seller's cost, as the key to pricing (Kotler et al., 2017), it is based on a determination of what a product or service is worth to the customer (Huefner, 2015), and this is an important factor when establishing prices. Value can be intrinsic, for instance the location or services provided, or extrinsic like the guest necessity or time of the reservation.

This value perception is likewise pivotal in the case of events and for several reasons. One of these reasons is the potential return intention. Yet, studies on motivation and satisfaction of business event attendees are critically scarce. Moreover, there are even less studies that examine the relationship between the level of satisfaction toward the behavioural effects of the attendees, specifically their return intention and to recommend the event to others (Halim & Mokhtar, 2016).

Severt et al. (2007), quoting Oliver (1996), denote that convention attendee satisfaction assessment is fundamental to the well-being of attendees, to the profits of hotels and convention centres hosting conventions, and to the stability of destinations and convention centres. Moreover, to the same authors it is important that researchers and practitioners understand the multiple and sometimes complex dimensions used by attendees in assessing the performance of the convention, and their intentions to revisit and/or recommend the conference to others (Severt et al., 2007).

The following picture depicts their conceptual model on relationships between conference performance, satisfaction level, and behavioural consequences. The behavioural consequences contribute to the future success of the conferences and the destination, translated in revisiting intentions and recommendation – word of mouth) not only the destination as leisure but it can also be of the destination as business one.

Figure 14 – conceptual model on relationships between conference performance, satisfaction level, and behavioural consequences.
Source: Severt et al. (2007)

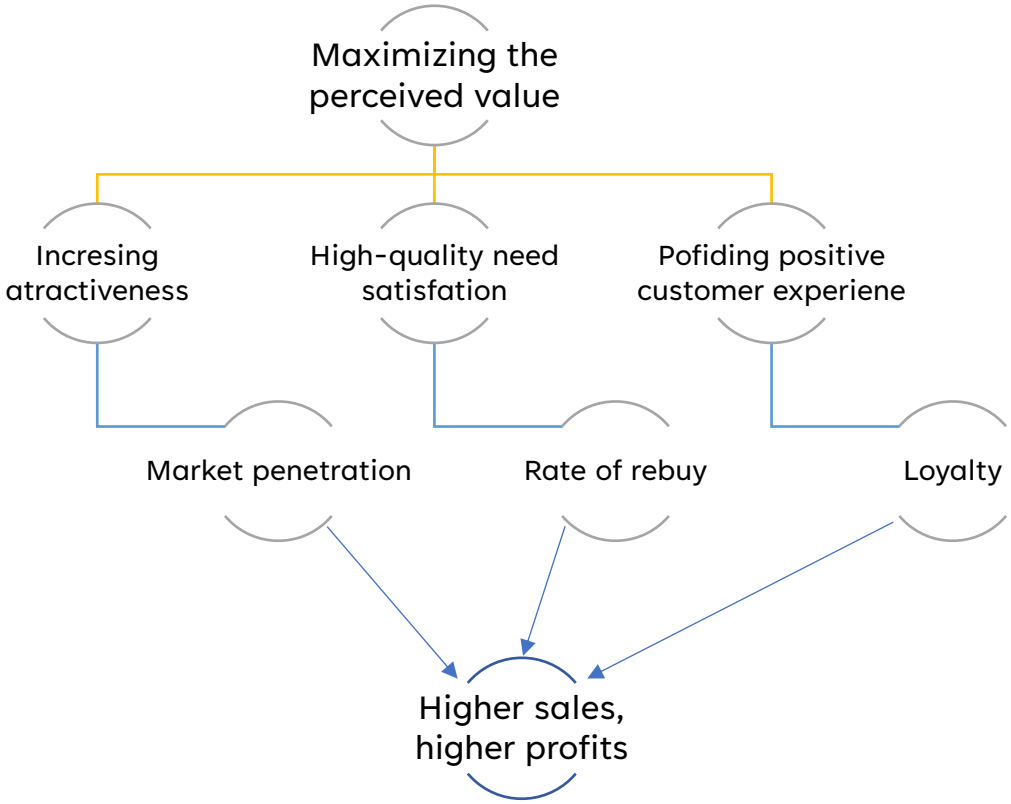


Another reason why value in essential in these types of meetings, is that meeting, incentive, convention, exhibition's (MICE) attendees are found to stay longer and spend more than regular tourists. For example, the Hong Kong exhibition sector contributed US$3.9 billion to the local economy in 2008, an equivalent to 1% of its GDP. Further, it led to a fiscal impact of $118.7 million and the creation of 61,000 full-time equivalent jobs, revealing that exhibition visitors and exhibitors contribute more than overnight tourists (J. Lee & Chon, 2015).

Rekettye & Liu (2018) refer that customers' buying decisions are mainly affected by perceived value, which makes it one of the most important determinants of their willingness to pay, along with price itself. Smith (2012) defends that value from customers' perspectives can act as a guide to evaluating the profitability of the action.

The outcomes of maximizing value according to Rekettye (2019) are clarified in the following figure.

Figure 15 – Maximizing value.
Source: Rekettye (2019)



According to Rekettye (2019) several researchers concluded that transaction-based business customers who had a positive experience spent 140% more than those who had a poor experience, so customer experience leads to increased loyalty, and it contributes to sales growth.

3.8. Customer Knowledge and Segmentation

After understanding the concept of value and how to convey the companies' value to their customers, companies must select their customers and define the segments that most suit their value proposition.

Customer knowledge is the first step before segmentation. It is necessary to understand customers, their beliefs and behaviours and then cluster them in groups which depict the same characteristics, called segments.

Customer knowledge has been identified as a significant influencing factor for business success and goal achievement and it requires the exchange of knowledge from, for and about the customer (Sain & Wilde, 2014).

Customer relationship management (CRM) is perhaps the most important concept of modern marketing, it involves managing detailed information about individual customers and carefully managing customer "touch points" in order to maximize customer loyalty (Kotler et al., 2017). It is also an essential advantage in market segmentation since it allows for a better and more profound knowledge of the customers, existing and potential.

CRM can be defined as the strategic process of selecting customers that a firm can most profitably serve and shaping interactions between a company and these customers. The goal is to optimize the current and future value of customers for the company (Kumar & Reinartz, 2018).

Market segmentation is the process of parting customers, or potential customers, in a market into different groups, or segments (McDonald & Dunbar, 2012). Market segmentation is one of the key building pillars of strategic marketing (Dolnicar et al., 2018). Matching a producer's or service provider's capabilities with customer needs is greatly simplified by knowledge and selective operation in one or more market segments and theory suggests that segments should composed of target customers who respond homogeneously to the promotional activities (Mazanec & Dolnicar, 2022).

The segmentation criterion can be general consumer characteristics, such as age, gender, country of origin, or stage in the family life cycle. Alternatively, it can contain a larger set of consumer characteristics, such as the several benefits sought when purchasing a product or a service, the number of activities undertaken when on vacation, or an expenditure pattern (Dolnicar et al., 2018).

But not only is segmentation necessary in marketing as it is in pricing, since the price is perceived not just a negative factor, which consumes consumers' resources, but perceived as a positive factor, which gives them clues about the product quality (Lichtenstein et al., 1993b), or value.

Price segmentation is, in essence, charging different customers different prices for an otherwise identical or similar product or service, but that customers value differently. Factors that drive (or undermine) value for customers can be used to create a price segmentation policy in that the firm automatically charges more (or less) when and where the product delivers more (or less) utility (Smith, 2012, p. 103)

Market segmentation is the second step in Tranter et al. (2009) Critical Path Leading to Strategic Revenue Management Planning, it is the starting point, along with customer knowledge to a successful RM strategy.

The success of any pricing strategies is dependent upon good customer and market segmentation (Kimes & Wirtz, 2015).

Several studies prove the importance of segmentation in hospitality, (Guo et al., 2013) suggest that an appropriate policy of market segmentation when using online reservation systems is beneficial both for the service suppliers as well as for the consumers.

According to Yelkur & Nêveda Dacosta, (2001), the more specific the segment, the easier it is to estimate demand; the knowledge of demand is essential to adopting a differential pricing strategy, because once customer segments are identified, the next step is to estimate the demand for each of these segments. For these authors, it is fundamental for hotels to realize the importance and attractiveness of one segment over the others (Yelkur & Nêveda Dacosta, 2001).

It is thus essential that RMs learn the reasons why people travel to their destinations and then develop targeted marketing tactics to get the message about their hotel to those travellers. Increased knowledge and targeting of demand generators build incremental revenues, not reduced room rates (Hayes & Miller, 2010).

3.9. Seasonality

A season is a period of time each year when a particular activity takes place or particular conditions exist and seasonal signifies happening or needed during a particular season or varying with the seasons (Parkinson & Noble, 2005).

A common definition of seasonality is "a temporal imbalance in the phenomenon of tourism, which may be expressed in terms of such elements as numbers of visitors, expenditure of visitors, traffic on highways and other forms of transportation, employment and admissions to attractions" (Butler 2001:4, in Butler, 2022).

This imbalance in tourism volume, either leisure or business related, creates several performance issues to destinations and, in particular, to hotels.

The impact of seasonality and its effect on tourism have grown considerable attention in research and have consequently led to an increase in the number of studies that explore consumer behaviour as well as policy related issues (Mitra, 2020).

Variation in the volume of tourism is a result of both natural and human-induced causes. The simplest form of seasonality reflects the natural climatic seasons, which vary considerably with location, the greatest range being experienced at locations in high latitudes, furthest from the equator (Butler, 2022). And this means the availability of natural circumstances, such as the snow in a ski resort, the wave pattern in a surf destination, the temperatures in the typically beach destinations, natural phenomena such as the aurora borealis, and even the duration of the sunlight. And then the human induced causes such as the annual religious festivities, the celebrations, that can be more regular – annual, for example – or hallmark celebrations like the centenary of India's Independence in 2022. Business and leisure events are also human-induced causes of variation in tourism demand.

Nonetheless, seasonality does not mean only fluctuations in tourism demand in between seasons or caused by major events. Tourism firms experience weekly seasonality, like theme parks and hotels regarding the segments they work with the most. If a hotel in Lisbon works mostly with business guests, it usually lowers its occupancy in the weekends and during the summer months.

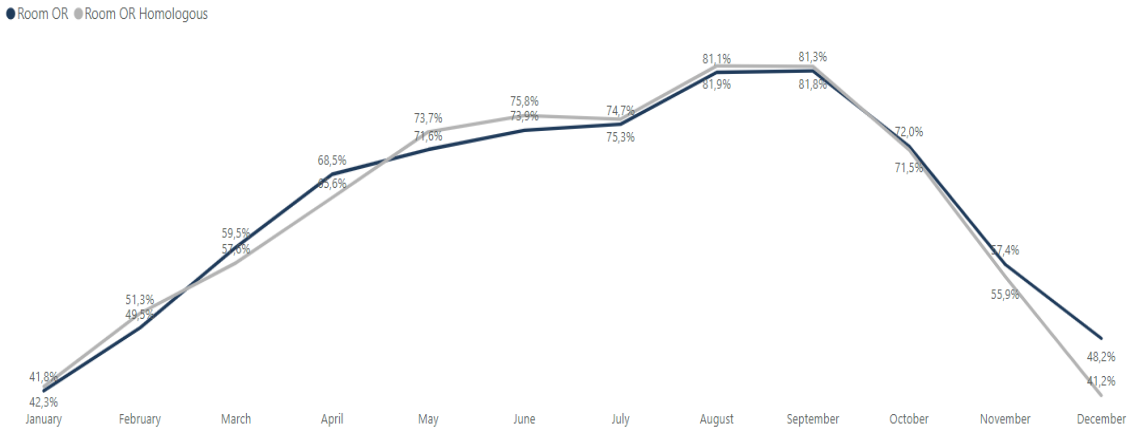
Seasonality can have a dramatic impact on demand and is comparable to price discounts in its importance, it usually varies by merchandise type and by geography as well (Özer & Phillips, 2012).

Mitra (2020) states that most of the studies have analysed seasonality by splitting the time horizon into calendar months, but seasons are unlikely to start on the first day of the month and end on the last day. Besides, this there is a lack of standardization in seasonality measure which makes the comparison of methods a difficult endeavour (Mitra, 2020).

Portugal observes high levels of seasonality. Lisbon, however, is less affect by this phenomenon.

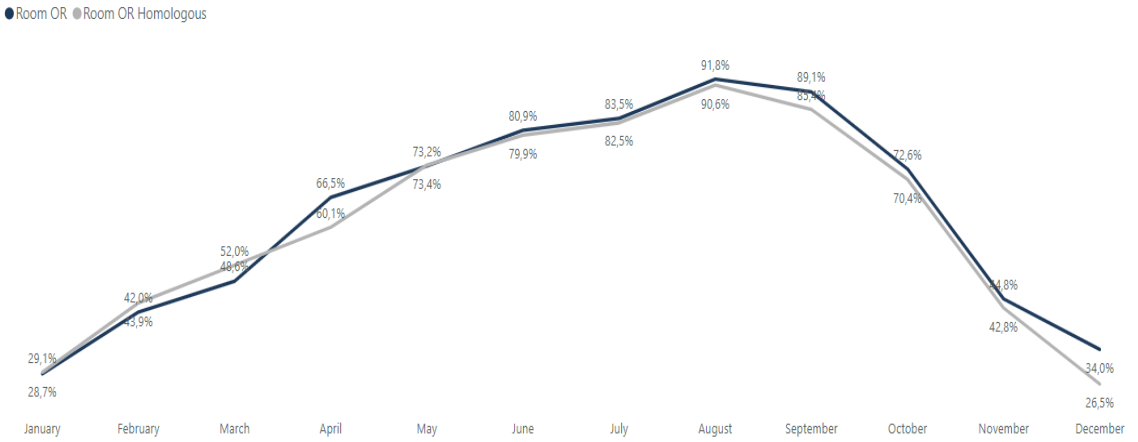
Turismo de Portugal public data allows the observation of these differences. There are regions in the country more affected than others, but Lisbon depicts a different pattern than that of the rest of the country.

Figure 16 – Portugal Room Occupancy 2019 and 2018
Source: Turismo de Portugal.



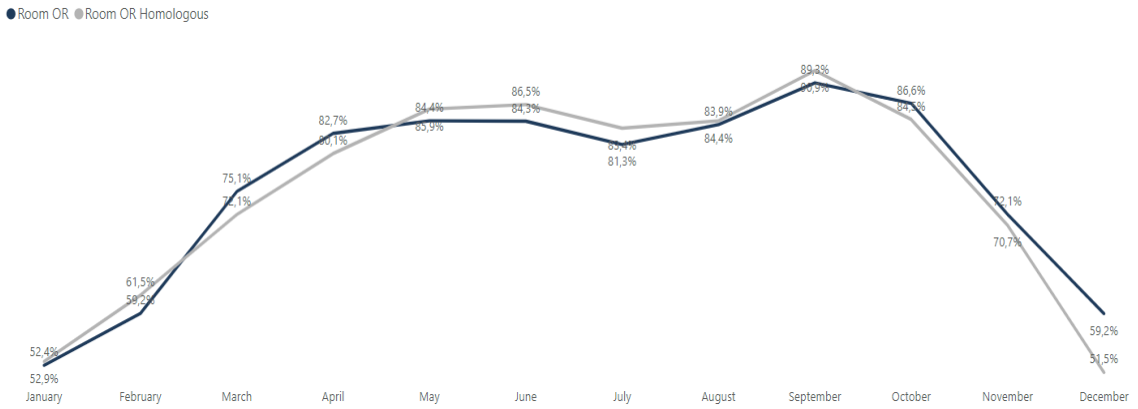
The peak of room occupancy in Portugal is August and September although from May to October the occupancy levels are quite stable. As an example, it is relevant to point out the Algarve region, which is a popular destination in Portugal, but that faces the effects of seasonality with a more obvious intensity, when compared to Lisbon.

Figure 17 – Algarve Room Occupancy 2019 and 2018
Source: Turismo de Portugal.



The Lisbon area has a different pattern than the Algarve and the rest of the country. Demand generators of different sources other than leisure tourism must be responsible for these differences.

Figure 18 – Lisbon Room Occupancy 2019 and 2018
Source: Turismo de Portugal.



Seasonality is seen as a problem because of uneven (inefficient) use of facilities throughout the year (Butler, 2022). It is on the other hand an opportunity either to profit in the higher demand seasons and to develop strategies for the lower ones creating more demand.

Butler (2022) recommends that research attention should be focused more on identifying ways of modifying demand in the origin regions rather than on amending supply in the destinations. This is an interesting point of view specifically for events that can have varying dates.

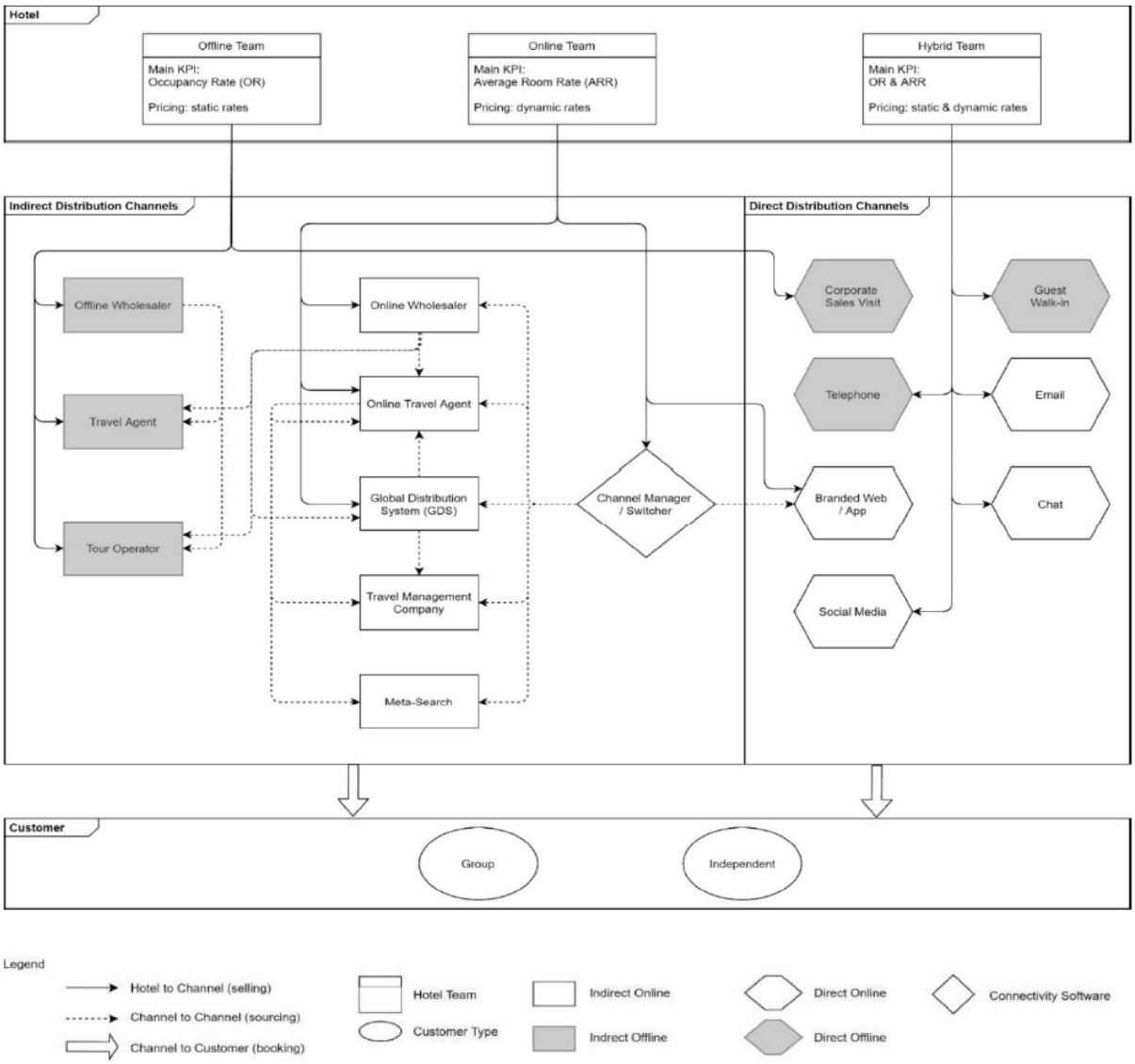
3.10. Distribution Channels

Distribution channels are a chain of intermediaries utilized to make a product or service available to the consumer. One of the difficulties in discussing distribution channels is the lack of standardized definitions to describe them (Pizam & Holcomb, 2007).

Prior to 1993, the categories of tourism distribution intermediaries included retail travel agents, corporate travel agents (also called “travel management companies”), tour operators, Global Distributions Systems (GDS), incoming travel agents, switches, destination marketing organizations, and suppliers (Wang & Kracht, 2014). What happened in 1993 was the commercialization of the internet by means of the World Wide Web. The arrival of the Internet has led to profound changes in hospitality distribution. New business models have been created, as well as online-based reservations networks, which allowed worldwide exposure to products while avoiding intermediaries such as the global distribution system (Pizam & Holcomb, 2007). Distribution in hospitality is complex and costly. Complex because of the diversity of players and costly because it implies commissions to be paid to these players.

The following figure depicts a hotel distribution channel model proposed by (Ibrahim et al., 2022).

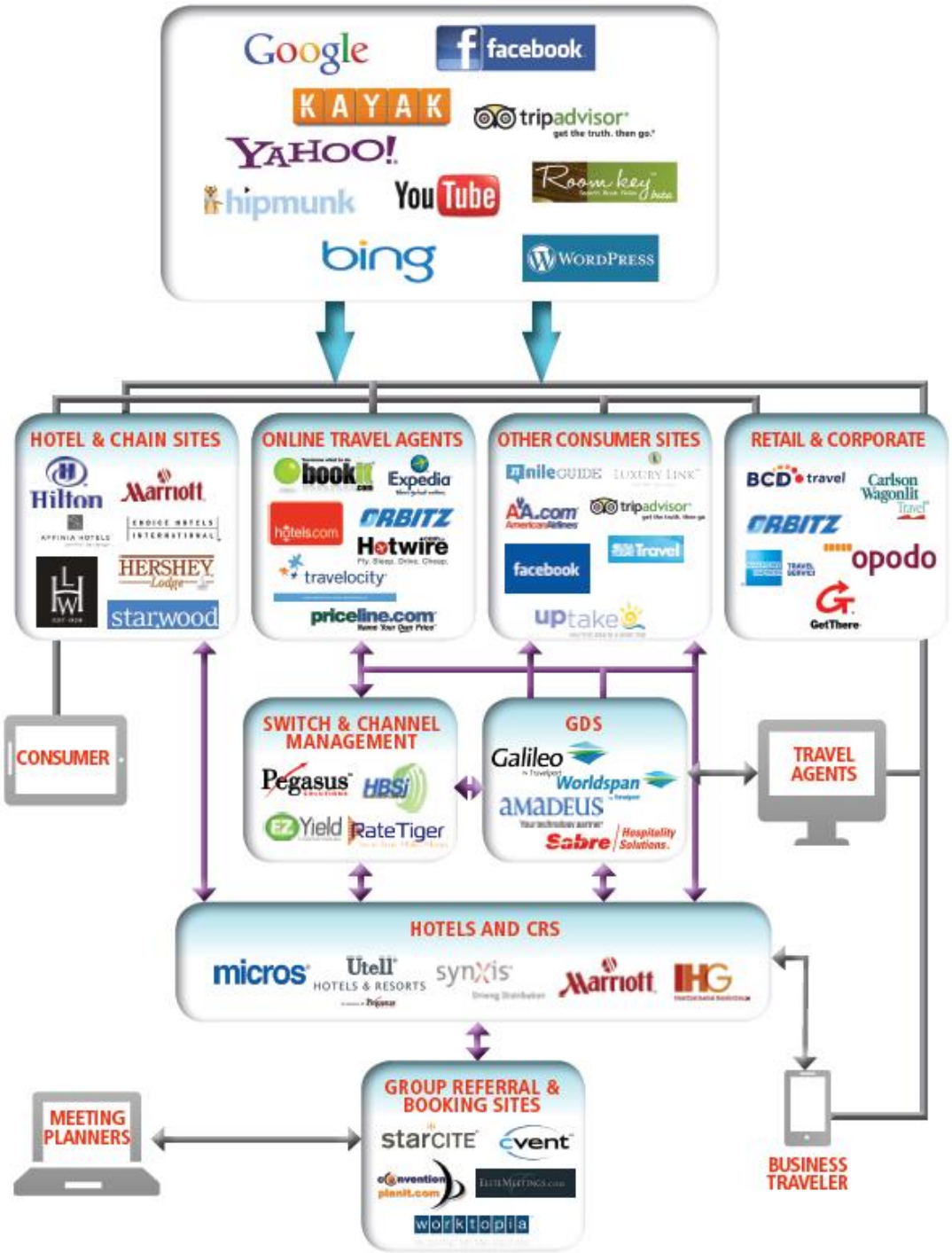
Figure 19 – Proposed Hotel Distribution Channel Model.
Source: Ibrahim et al. (2022)



This figure shows the complexity of the distribution landscape, with an emphasis on the two major points: online and offline, with dynamic and static pricing strategies. The authors refer a need to develop a balanced distribution channel plan, hoteliers must first evaluate the number of channels they use, the mix of direct and indirect channels, and customer interaction to maximize their resources to achieve optimal performances (Ibrahim et al., 2022).

Different distribution channels appeal to different types of buyers. Besides the designation of *online* and *offline*, distribution channels in the hospitality industry may generally be classified as either direct or indirect (Hayes & Miller, 2010).

Figure 20 – The Complex Hospitality Reservation Network
Source: *Green & Lomanno (2012)*



The more direct the less commissions are implied. RMs must understand the channels of distribution available to them and price their products strategically on those channels (Hayes & Miller, 2010).

In 2012 Green & Lomanno published a report where they present the complex hospitality reservation network, and they provide on Figure 20 a scheme showing how complex the distribituin landscape is.

RMs identify each of the major distribution channels that are expected to produce sales and forecast by week, month, and quarter the expected volume of sales each will provide, since distribution systems do not provide equal sales volumes and, just as important, they do not provide equal profit margins (Kotler et al., 2017). Hotels must analyse the production, contribution, and cost analyses for each channel of distribution under consideration (Tranter et al., 2009).

As seen previously the distribution channels have an impact on pricing and different segments use diverse distribution channels and value products and services differently.

3.11. Pricing for Events

Pricing for events is as complex as pricing for any other segment. And this is not the focus of this investigation, since not all the indicators result from a negotiation between a meeting planner and the hotels.

There is however an important issue related to pricing and to events. Hayes & Miller (2010) examine an important point when discussing the role of value in pricing. They mention *The Buyer's Multiview of Value*. The authors remark that buyers utilize not just one but rather four different and unique value formulas when considering a purchase, as represented in the following table.

Table 2 – Four Alternative Value Formulas
Source: *(Hayes & Miller, 2010)*

Whose Money	Spent On	
	You	Someone else
Yours	**A**	**B**
Someone else's	**C**	**D**

The specific value formula utilized depends on whose money is being spent and who receives the benefit of the transaction. Because many buyers in the hospitality industry are not buying products and services for themselves, this represents a particularly valuable insight for hospitality industry RM systems.

The *A* buyers are spending their own money by purchasing goods and services for themselves, so the greatest amount of personal profit, or value, possible is their goal (Hayes & Miller, 2010). The *B* buyers use their own money to buy for another, value is still of great importance to these buyers, so are the perceptions of quality and "even pride" to others (Hayes & Miller, 2010). The *C* buyers use someone else's money to buy something for themselves (Hayes & Miller, 2010).

This may happen when a traveller has a budget to spend on hotels and meals on a business trip sponsored by their company. “When value Formula C buyers can upgrade to the next highest hotel room type, purchase appetizers, drinks, and desserts without undue concern for price, or make significant purchases from a hotel’s highly priced in-room mini-bar, they frequently will do so” (Hayes & Miller, 2010, p. 73).

Regarding *D* buyers, these are spending someone else’s money on others. The hospitality industry identifies this value formula as the one that describes purchases made by professional meeting planners and travel agents, as well as by many others (Hayes & Miller, 2010). Buyers seek value for their clients or group members. In addition, because the choices they make are subject to scrutiny by each member of the group attending the meeting, delivery of the seller’s promised quality is critical to their personal and professional image and, as a result, to their becoming repeat customers of the seller (Hayes & Miller, 2010).

It is important to point that one event can have all these four types of buyers, depending on the type of attendance.

This table was originally presented by Milton and Rose Friedman, on their book from 1990, Free *To Choose: A Personal Statement*[1](Fort Washington, PA: Harvest Books, 1990), pages 116–117.

Dynamic pricing entices several matters addressed in this section. The price setting, that must consider the costs, the return on the investment and the profits. The demand levels are also an important point to consider when establishing prices in a dynamic fashion, because customers in general and

[1] Milton and Rose Friedman, *Free To Choose: A Personal Statement* (Fort Washington, PA: Harvest Books, 1990), pages 116–117.

segments in particular value their purchases differently in also different pints in time, which results in the issue of seasonality. Finally, the distribution represents the place where the customers make their buys. Events may pose a particular type of challenge because different types of buyers can be found for the same event.

3.12. Pricing Analytics

All the strategies and tactics applied in any business need to be analysed in order to assess their success or failure, so that new improvement or corrective measures may be designed.

The etymology of the word analytics is “the use of analysis” and “the part of logic which deals with analysis” (L. Brown, 1993).

This is a very common word to be found nowadays. Analytics can be defined as the process of developing actionable decisions or recommendations for actions based on insights generated from historical data (Sharda et al., 2018). According to the Institute for Operations Research and Management Science (INFORMS), analytics represents the combination of computer technology, management science techniques, and statistics to solve real problems (Sharda et al., 2018, pp. 48–49). Basically, it underlines the idea of looking at all the data to understand what is happening, what will happen, and how to make the best of it (Sharda et al., 2018). And many expressions combine with analytics, all with the same underlying concept. Here are a few examples: customer analytics, data analytics, marketing analytics, and business analytics.

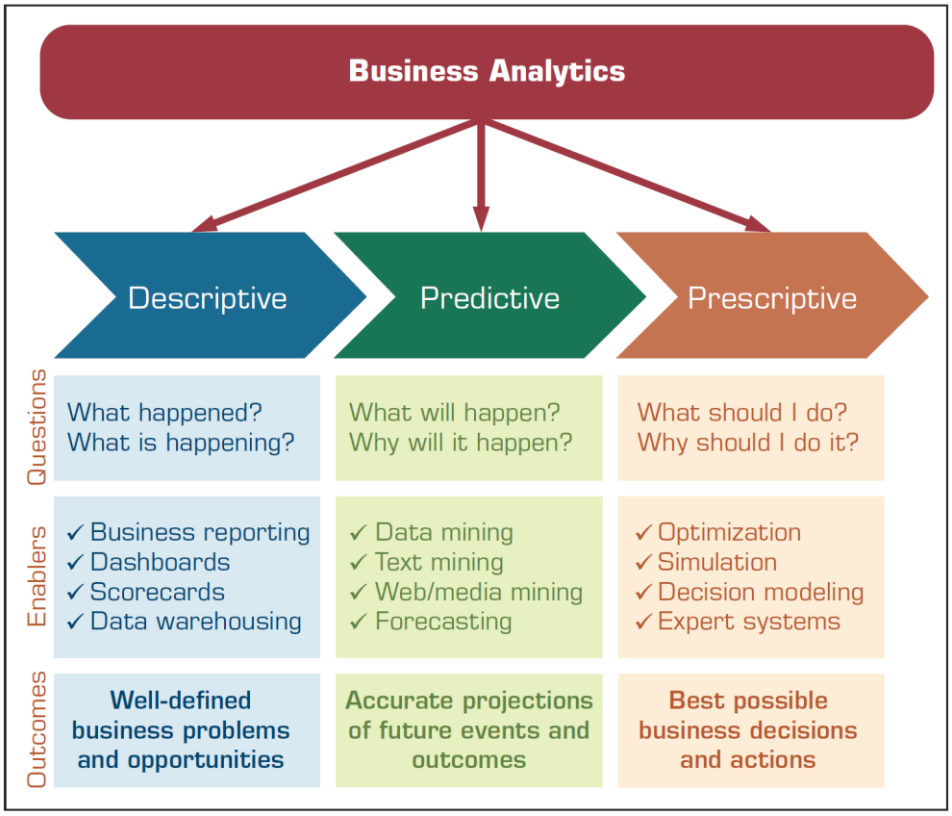
Sharda et al., (2018) introduce, based on INFORMS, three levels of analytics: descriptive, predictive, and prescriptive, in a Business Analytics Model.

The first, descriptive (or reporting) analytics refers to knowing what is happening in the organization and understanding some underlying trends and causes of such occurrences (Sharda et al., 2018).

Predictive analytics aims to determine what is likely to happen in the future. This analysis is based on statistical techniques as well as other more recently developed techniques that fall under the general category of data mining (Sharda et al., 2018).

Finally, the third category of analytics is termed prescriptive analytics. The goal of prescriptive analytics is to recognize what is going on as well as the likely forecast and make decisions to achieve the best performance possible (Sharda et al., 2018).

Figure 21 - Three Types of Analytics.
Source: Sharda et al. (2018, p. 49)



The focus of the present work is on Pricing (descriptive) analytics, using descriptive ways of understanding phenomena.

"The price, or a change in the price, is the only marketing factor that goes directly to the bottom-line of the income statement. Any change the price and the revenue side of the income statement changes immediately. Likewise, the price can be changed almost instantly" (Paczkowski, 2018, p. 4). This ability to change prices at any rhythm to accommodate the strategies that aim to develop revenue and profits needs to be analysed at that same frequency.

A Pricing strategy aims to define a Pricing structure that will lead to a set of Price levels. Pricing analytics will, in turn, analyse those Price levels to measure its effectiveness.

Figure 22 – A Pricing framework and analytics.

As a result, Pricing analytics should be a component of the RM overall practice in hotel companies.

This analysis of the pricing levels must be combined with demand generators, seasonality, segments, and distribution channels. Only this way there can be an understanding of the business performance on the micro level.

Chapter 4 – Hotel Key Performance Indicators

Economics is the study of how society manages its scarce resources (Mankiw, 2018), it seeks to understand the functioning of marketplaces (Begg & Ward, 2020). It is a field of study which covers the study of human behaviour in relation to money. Over the years, the vast spread of the subject of economics has helped in varied fields both micro and macro (Sheela, 2002).

While macroeconomics the study of economy-wide phenomena, including inflation, unemployment, and economic growth, microeconomics is the study of how households and firms make decisions and how they interact in markets (Mankiw, 2018). "Microeconomics examines consumers, firms and workers within markets, seeking to understand why prices change for particular products, what influences the costs of firms and, in particular, what will influence a firm's level of profitability" (Begg & Ward, 2020, p. 5). Or as Donald Getz, defines it, "'Microeconomics' concerns individuals and their consumer behaviour, as well as specific business decisions and how supply and demand find equilibrium in specific markets. In classical economics, 'laws of supply and demand' govern these processes" (Getz, 2007, p. 81).

Perloff (2022), clarifies that microeconomics is often called *price theory* to emphasize the importance of prices in determining market outcomes. Microeconomics describes how the actions of all buyers and sellers determine prices, and how prices influence the decisions and actions of individual buyers and sellers (Perloff, 2022).

The assessment of microeconomics, considering its reference to businesses, the impact on prices, the relationship between supply and demand, and the various

market effects that impact upon a firm's revenues and costs (Begg & Ward, 2020) must materialise in some way.

Key Performance Indicators (KPIs) are those indicators that focus on the aspects of organizational performance that are the most critical for the current and future success of the organization (Parmenter, 2020).

The expression *Key Performance Indicator* is not always found in the literature even though there are references such as Ishaq Bhatti et al. (2014), debating KPIs in manufacturing organizations, Montero Fernández-Vivancos et al. (2015) discussing the selection and implementation of KPIs in project management, and Anand & Grover (2015) presenting a theoretical model to measure supply chain performance using KPIs.

The reason for the not so common use of this expression may rest on the fact that there are four types of performance measures, and not all can be considered as KPIs (Parmenter, 2020).

Parmenter places performance measures in two groups: *result indicators* and *performance indicators* and introduces the term *key* when some measures are more important, and this adds up to four types of performance measures (Parmenter, 2020). It is important to highlight what these four performance measures are, according to Parmenter:

1) Key result indicators (KRIs) give the board an overall summary of how the organization is performing.
2) Result indicators (RIs) tell management how teams are combining to produce results.
3) Performance indicators (PIs) tell management what teams are delivering. Key performance indicators (KPIs) tell management how the organization

is performing 24/7, daily, or weekly in their critical success factors, and by taking action management is able to increase performance dramatically (Parmenter, 2020).

4) Key result indicators (KRIs) are the result of many actions carried out by many teams over a period of time, hence the use of the term "result," and they are the summary of important measures, henceforth the term "key" (Parmenter, 2020). The KPIs are the indicators that focus on the aspects of organizational performance that are the most critical for the current and future success of the organization (Parmenter, 2020).

Organizations can have specialised measures designed for their specific strategy or industry context (Marr, 2012).

Whether focused on results achieved by a set of teams or on organizational performance, KPIs show if a company has reached the necessary standard in one or more factors that are essential to its success (Parkinson & Noble, 2005).

Occupancy, Average Daily Rate and Revenue per Available Room are considered to be KPIs by the hospitality industry.

Revenue Management as a highly used practice in the hospitality industry uses RevPAR as the core benchmark *key performance indicator*, although GOPPAR (Gross Operating Profit per Available Room) (Schwartz et al., 2017) and TRevPAR (Total Revenue per Available Room) are also highly recommended indicators.

Occupancy used to be the primary indicator in the industry, but occupancy alone does not reveal the true performance of any hotel business, since rooms can be occupied at very low rates undermining financial success, so ADR and RevPAR should also be examined.

The Occupancy is calculated:

$$\frac{Number\ of\ Rooms\ Sold}{Total\ Number\ of\ Rooms\ Available\ to\ Sell} \times 100\ = Occupancy\ Rate$$

The result of all the prices charged to guests in a hotel come to one single figure once that total is divided by all the rooms sold and that is the Average Daily Rate.

The Average Daily Rate is calculated:

$$\frac{RoomRevenue}{Total\ Number\ of\ Sold\ Rooms} = ADR$$

It must be also referred that ADR alone is not a sufficient indicator, as rooms can be sold at high rates but nor in sufficient quantity to contribute to the expected financial goals.

Consequently, RevPAR is the most common indicator in the hospitality industry, used to measure hotel operations efficiency (Kimes, 1989b; McGuire, 2015). It is obtained by multiplying the Average Daily Rate (ADR) by Occupancy within a certain period, so it is the result of the combination of two important performance ratios: ADR and Occupancy. Furthermore, ADR and RevPAR are the indicators that allow hotels to explore the effects of dynamic pricing strategies.

Revenue per Available Room is calculated:

$$\frac{Room\ Revenue}{Total\ Number\ of\ Rooms\ Available\ to\ Sell} = RevPAR$$

Or another, simpler, way to compute:

Revenue per Available Room: $Occupancy\ Rate\ X\ ADR = RevPAR$

Appropriately, RevPAR is an indicator that combines occupancy rates (sales volume) and Average Daily Rate (rooms revenue). Although both these indicators are relevant and considered when analysing performance, RevPAR is the most common indicator used in the hospitality industry to measure performance, financial success, and benchmark analysis (Harris, 2013). Hospitality firms consider this indicator to be of paramount importance to measure real performance.

These KPIs are usually the most common and easy to use in public data and statistics and maybe the reason is that other KPIs can expose more internal data that hoteliers do not wish to share.

When analysing hotel performance, RevPAR only relates to revenues generated by selling rooms. TRevPAR focuses on the combined revenues generated by all of the hotel's revenue streams. This is also paramount because all outlets of the hotels must generate revenue and that revenue can be related to the number of rooms a hotel has.

Total Revenue per Available Room is calculated:

$$\frac{Total\ Hotel\ Revenue}{Total\ Number\ of\ Rooms\ Available\ to\ Sell} = TRevPAR$$

According to Hayes & Miller (2010) RevPAR as traditionally calculated does not consider revenue from other hotel services and revenue centres, such as restaurants, spas, golf courses, marinas, and casinos, thus it is necessary to compute RevPOR.

Revenue Per Occupied Room:

$$\frac{Total\ revenue\ (Rooms + Nonrooms)}{Total\ Occupied\ Rooms} = RevPOR$$

It is similar to TRevPAR, but instead of considering the total number of available rooms it considers the occupied rooms. The hotels that generate significant revenues from other revenue centres other than rooms will be very interested in measuring and evaluating its guests' spending patterns (Hayes & Miller, 2010).

With the distribution costs rising at the same time as the distribution landscape complexes itself, the Net Revenue Per Available Room (NetRevPAR) has become a considerable KPI in RM.

Net Revenue Per Available Room:

$$\frac{Room\ Revenue - Distibution\ Costs}{Total\ Number\ of\ Rooms\ Available\ to\ Sell} = NetRevPAR$$

This formula can also be applied to ADR, the Net ADR. Forgacs (2017) denotes that many properties calculate both an internal and an external form of ADR and RevPAR. The internal version (using net room revenue or net ADR) provides a better picture of operating results, while the external version (using total room revenue or the external ADR) is appropriate for comparisons with other properties.

Another very important metric is the Gross Operating Profit Per Available Room (GOPPAR). It is used to inform owners and investors of a hotel's ability to generate profit with its perishable inventory through carefully managing revenues and costs (Wood, 2018).

This is especially important because hotels rely on online distribution and need to increase their opportunity to profit on all revenue streams in the hotel, but also to understand how the costs are being dealt with. This metric is often used to express overall success of the hotel and it is calculated as follows.

GOPPAR:

$$\frac{Total\ Hotel\ Revenue - Total\ Operating\ Expenses}{Total\ Number\ of\ Rooms\ Available\ to\ Sell} = GOPPAR$$

The main purpose of an enterprise or firm is to maximize its profits and to maximize its sales (Sheela, 2002). In order to do so, the enterprise must establish its prices to reach that goal. As already seen, companies select their customers and divides them into segments. Price differentiation or segmentation addresses these different customer segments with different prices, taking advantage of the heterogeneity in willingness to pay across segments (Simon et al., 2019). The aim is to reach out to more customers as possible. The concept *willingness to pay* has an influence on results considering in that it refers to the maximum price at which the consumer would pay to buy a good or a service (Bodea & Ferguson, 2014). This means that companies have a set of prices that derive from the highest price of a good or service. The ideal situation would be that all customers were willing to pay the maximum price to yield the highest revenue, but that seldom ever happens.

Accordingly, there is a measure that can assess the difference between what is charged in reality and the maximum that could have been charged, if there had not been any price discrimination. In hospitality it is called Yield. Yield is a measure of efficiency of both average occupancy and average room rate. This ratio takes the RevPAR number and compares it to the optimum average rate – usually the 'rack' (or published) rate – as a percentage (Burgess, 2014).

The Yield Formula:

$$\frac{RevPAR}{Potential\ Avareage\ Room\ Rate} = Yield$$

Yield is therefore the percentage of income that could be held if 100 percent of available rooms were sold at their full rate. Revenue realized is the actual amount of room revenue earned (number of rooms sold *x* actual rate), revenue potential is the room revenue that could be received if all the rooms were sold at the rack rate (Bardi, 2011). The formula for determining Yield proposed by James Bardi is as follows:

The Yield Formula, by James Bardi:

$$\frac{Revenue\ Realized}{Revenue\ Potential} = Yield$$

This Yield calculation shows how efficiently rooms are being sold (Burgess, 2014) in relation to its potential. On the other hand, it may also mean that the highest rates are established too high in relation to the market where the hotel operates on.

There are other performance indicators that help revenue managers understand the results they are achieving or trying to achieve.

The occupancy rate is important, but it does not include the number of guests in the hotel occupying the rooms. For that assessment hoteliers use the Double or Multiple occupancy rate. The double occupancy refers to the room occupancy by two persons. "Multiple occupancy" is a better expression than "double occupancy" because more than two guests may be housed in one room (Vallen & Vallen, 2014).

Multiple occupancy rate:

$$\frac{Number\ of\ guests\ -\ Number\ of\ Rooms\ sold}{Number\ of\ Rooms\ Sold} = Multiple\ Occupancy$$

The double or multiple occupancy's impact on room revenue is important, since additional charges from extra guests (e.g., a double rate) may yield a better ADR, and a higher TRevPAR, that comes from more consumption within the premises of the hotel.

Another way to compute this ratio is:

$$\frac{Rooms\ sold\ to\ more\ than\ one\ guest}{Number\ of Rooms\ Sold} = Multiple\ Occupancy$$

The Average Length of Stay (ALOS) refers to the average number of nights a guest stays at a hotel. Hotels oftentimes apply Length of Stay (LOS) restrictions to control reservations. Such restrictions happen if a multi-day event attracts guests expected to stay many nights, accepting shorter reservations may prevent a hotel from selling those rooms to longer-staying guests. Accordingly, the revenue manager may limit room sales to those guests who agree to stay a minimum number of days (Forgacs, 2017).

It is calculated as follows:

$$\frac{Total\ room\ nights\ sold}{Number\ of\ Reservations\ checked\ in} = Average\ Length\ of\ Stay$$

Another factor influencing price is the competitive set. The competitive set is defined as an organization's primary direct competitors (Tranter et al., 2009). The Revenue Generation Index (RGI) is a metric used to express the relative Revenue Management success, or underperformance, of a particular hotel in relation to its (direct) competitors. This index for a particular hotel is calculated as follows (Wood, 2018):

Revenue Generation Index Formula

$$\frac{Hotel\ RevPAR}{Competitive\ set\ RevPAR} = Revenue\ Generation\ Index$$

Dynamic pricing sometimes implies price reductions and even though that is arguable, see Canina et al. (2006), it can be necessary to generate more demand. The decision to decrease prices must be made carefully. The objective of a discount to generate more demand and to increase revenues, however costs still need to be covered. When the discounts attract more guests, hotels need to understand how many more rooms are necessary to sell to maintain or increase revenues. That is called the Identical Net Room Revenue and the objective of this calculation is to identify the occupancy percentages that will generate identical net room revenue at changing average daily rates (Forgacs, 2017).

Before calculating the Identical Net Room Revenue, it is necessary to understand the concept of cost and contribution margin. When room revenues and variable costs are known, the contribution margin or net room revenue can be calculated (Forgacs, 2017). "The contribution margin is the amount of sales revenue left over to contribute to covering fixed costs and, once fixed costs are paid, profit" (Forgacs, 2017, p. 13).

The formula for a room's contribution margin is:

(Net) room rate – Variable cost = Contribution margin

Practitioners can compute the Identical Net Room Revenue, when considering the application of discounted rates and decide if the discount will eventually generate enough revenue to compensate the lower rates.

Identical Net Room Revenue formula:

$$\frac{Current\ contribution\ margin}{New\ contribution\ margin}\ x\ Actual\ ocupancy\ percentage\ x\ 100$$
$$= Required\ new\ occupancy\ percentage$$

An example can help clarify this concept. Considering a hotel's ADR at € 138 and its average variable cost is € 18. If the current occupancy is 72 percent, it is necessary to know the occupancy required to generate the same net room revenue if the hotel lowered the ADR to € 115 (adapted from Forgacs, 2017):

$$\frac{€\ 138 - €\ 18}{€\ 115 - €\ 18}\ x\ 0{,}72\ x\ 100 = 89{,}07\%$$

This means that if the hotel drops its price to an average of € 115, it needs to be secure that the additional room sales reach or surpass 89,07% occupancy.

This measure should also be computed when hotels decide to raise their prices and consequently lose some of the most price sensitive customers. The level of occupancy that needs to be achieved under the new pricing levels to cover operational costs.

The *flow-through* is an accounting concept that may not be immediately recognizable as a significant Revenue Management issue, but it clarifies the effect of revenue optimization strategies employed by the Revenue Management team (Hayes & Miller, 2010).

The Flow-through is calculated as follows:

$$\frac{GOP\ \ year - GOP\ last\ year}{Total\ revenues\ this\ year - Total\ revenues\ last\ year} = Flow - through$$

It uses the Gross Operating Profit and the Total Revenue to measure the ability of a hotel to convert increased revenue into increased gross operating profits (Hayes & Miller, 2010).

Table 3 – Hotel Operating Statistics Summary

Source: adapted and expanded from Hayes & Miller (2010)

Statistic	Measures:	Strength	Weakness	Internal or External
Occupancy percentage	Proportion of rooms sold	Easy to compute	Does not consider ADR	External
ADR	Rate at which rooms were sold	Easy to compute	Does not consider occupancy %	External
RevPAR	Rooms revenue generated per available room	Easy to compute	Does not consider non-rooms revenue or profitability	External
RevPOR	Total revenue generated per occupied room	Considers all hotel revenue generated	Does not consider the number of rooms sold or profitability	Internal
Total RevPAR	Total revenue generated per available room	Considers all hotel revenue generated (e.g., rooms, F&B and meeting space)	Does not consider profitability	Internal
NetRevPAR	Rooms revenue minus distribution costs	Considers net revenue per room	Does not assess the total revenue per distribution channel	Internal
GOPPAR	GOP generated per available room	Assesses profitability of room sales effort	Results dependent on non-RM efforts; data may be unavailable	Internal
Multiple Occupancy	Number of guests per room	Considers all the persons in the hotel	Does not account for cost per person	Internal and External
ALOS	The average length of guests' stays in the hotel	Assesses the number of nights rooms are occupied per guest stay	Does not consider revenues or costs	Internal and External
Yield	Actual revenue vs potential revenue	Assesses the level of revenue when	Does not account for total cost	Internal

		compared to potential revenue		
Flow-through	Proportion of revenue increase converted to gross operating profit increase	Assesses profitability of incremental revenues	Results dependent on non-RM efforts; data may not be readily accessible	Internal
Revenue Generation Index	The rooms revenue compared to the competitive set	Allows for a comparison between hotels operating in the same market	Does not account for costs	External
Identical Net Room Revenue	The necessary revenue under different occupation levels	Allows for an easy way to assess levels of revenue under different occupancy percentages	Does not account for costs	Internal

The above table includes internal and external measures. This is because, hotel data analytics available to RMs can be grouped into internal (property-level) data and external data that most frequently is divided into competitive set data and aggregate industry-level data, allowing managers to evaluate the results of operations against internal and external measures or standards (Forgacs, 2017).

The most useful internal measures will relate to the primary products and services a business provides. In the lodging industry, the primary product is room nights and most internal performance measures relate to the sales of room nights and the revenue generated from those sales (Forgacs, 2017). While internal measures compare a hotel's performance with its own history or its budget, they do not provide a complete picture on their own, and therefore the external measures are necessary since hotels do not operate in the void, they operate in a market where other hotels also exist.

All these data allow the hotels to develop a business performance analysis and to manage that analysis by understanding the data and working on it. It can be called Business Performance Management (BPM). BPM refers to the business processes, methodologies, metrics, and technologies used by enterprises to measure, monitor, and manage business performance (Sharda et al., 2018).

Businesses can use an analysis of their past data to help them make decisions with different time horizons: to influence current actions (operational level decisions), short term actions (tactical level decisions), longer terms which reflect organisational goal seeking (strategic level decisions) (Buglear & Castell, 2019).

Business intelligence (BI) is the practice of analysing historical and current data, situations, and performances, with which decision makers get valuable insights that enable them to make more informed and better decisions. The process of Business Intelligence is based on the transformation of data into information, then to decisions, and finally to actions (Sharda et al., 2018).

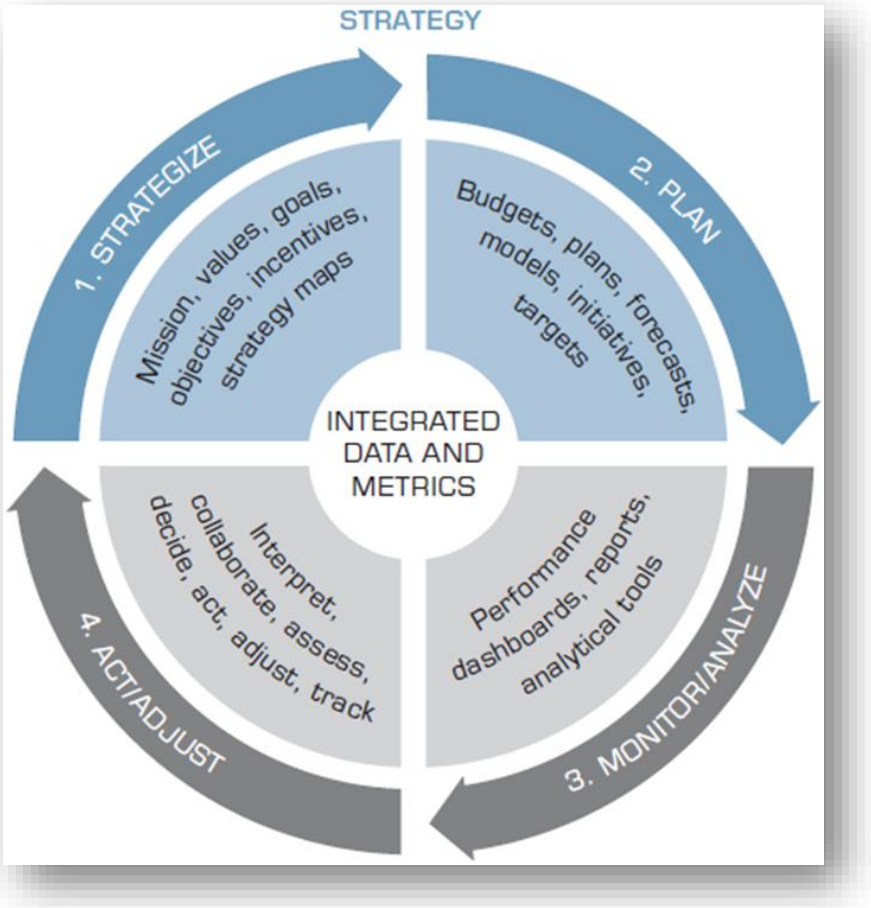
> *The output of many business intelligence analyses are reports or dashboards that summarize interesting characteristics of the data, often described as Key Performance Indicators (KPIs). The KPI reports are user-driven, determined by an analyst or decisionmaker to represent a key descriptor to be used by the business. These reports can contain simple summaries or very complex, multidimensional measures* (Abbott, 2014).

It is the strategic level that Business Analytics are more likely to be used now, using both internal and external sources of data will make companies more responsive to changes in consumer demands and more sensitive to subtle change in the business environment (Buglear & Castell, 2019).

Sharda et al. (2018) refer that the most significant differentiator of BPM is its strategy focus. These authors state that BPM "encompasses a *closed-loop* set of

processes that link strategy to execution to optimize business performance. The loop implies that optimum performance is achieved by setting goals and objectives (i.e., strategize), establishing initiatives and plans to achieve those goals (i.e., plan), monitoring actual performance against the goals and objectives (i.e., monitor), and taking corrective action (i.e., act and adjust)"(Sharda et al., 2018, p. 197) .

Figure 23 – Closed-Loop BPM Cycle
Source: Sharda et al. (2018)



KPIs allow companies not only to understand the present but also to plan for the future. A KPI is not only a metric, it also represents a strategic objective and metrics that measure performance against a goal.

Chapter 5 – The Events

Events are an important motivator for tourism, and figure prominently in the development and marketing plans of most destinations. The term is a broad one and it embraces MICE (meeting, incentive, convention, exhibition) markets, as well sports, concerts, festivals, among others (Getz, 2008). More, event tourism is both a field of study and a globally significant sector of the economy (Getz, 2022).

Planned events, from the smallest meeting or private party to the grandest festival or world championship, are an essential part of human civilization (S. Page & Connell, 2012).

Events occur throughout all sections of society and across all different types of organisations and so what one person or group might see it as being special and unique (e.g., weddings), another group sees as being ordinary and regular (e.g., meetings) and this diverse nature makes it difficult to define events (Berridge, 2006).

An event is an occurrence that is discrete in both time and place. If missed, the event is gone forever – it cannot be completely re-created. Something in the mix of setting, people-to-people interactions, or situational forces (including management) will ensure that it is different in some important respect. And even if a person goes to the 'same' event repeatedly, their experience will always be different – in part because they have changing knowledge and expectations about that event (S. Page & Connell, 2012).

There are four main sectors of event tourism, with each linked and often completely dependent upon a range of venues.

One of these sectors is the sports events sector. Sports are dependent on purpose-built facilities, with every city wanting arenas and stadia capable of attracting events and tourists. Although there are numerous forms of sports and competitions, there are important differences between periodic events that can be permanent fixtures in one place and one-time events that are usually won through bidding. Equally important are differences between spectator events, often linked to professional sports and participation events that attract participants and tourists with special interests (Getz, 2022).

Sports events have been the object of several studies, particularly events such as the FIFA or the Olympic Games (Barreda et al., 2017; Daniels et al., 2004; Perić, 2018; Scandizzo & Pierleoni, 2018).

Another sector consists of entertainment. Frequently supplied by the private entities in the form of concerts, shows, and other spectacles, there is also a range of public and private facilities being utilized, such as theatres, arenas, and parks. Many entertainment events are arranged by venue managers and private promoters, although a growing number, such as artistic competitions and award shows, can be won through bidding (Getz, 2022). Because almost any activity, sport, artistic display, or event can be viewed as 'entertainment', Getz, (2007) clarifies that

> *(...) entertainment is passive, something one experiences for pleasure without the need to think about its cultural or historic significance or the values being expressed. In that sense, entertainment is largely in the realm of hedonistic or pleasure-seeking consumption, not cultural celebration. It also explains why anything called 'entertainment' is a business, part of a huge industry, and often exists outside government social policy or policy for the arts and culture"* (Getz, 2007, p. 37).

Festivals and other cultural celebrations constitute the third sector. Due to the potential for threats to cultural authenticity, their exploitation for tourism purposes is often controversial (Getz, 2022). These are typically produced by not-for-profit organizations or government agencies, frequently held in parks and on streets, with theatres, arts, and cultural facilities as the built venues of choice (Getz, 2022).

Richards & Palmer (2010) suggest that events help cities become more dynamic and liveable places and affirm that cities can develop and manage eventfulness to achieve a wide range of cultural, economic, and social objectives.

The creation and promotion of events such as festivals, shows, exhibitions, fairs, and championships, have become a critical component of urban development strategy across the globe (Richards & Palmer, 2010).

This brings forward the last sector: the business event sector. Business events require convention and exhibition centres, plus the myriad meeting and banqueting facilities within hotels, resorts, and other private and public facilities to work together. Types of events in this category are meetings, incentives, conventions (or conferences or congresses), and exhibitions, known as MICE (Getz, 2022).

Events can also be local or international. In the absence of an exact definition for local or international events, some key characteristics of international events are apparent (Ferdinand & Kitchin, 2022).

> *Perhaps first and foremost is their explicit focus on attracting international audiences. Second, they are large-scale events which have a significant impact on their host communities. Third, they attract international or global media attention. Fourth, these events have specific economic*

imperatives such as increasing tourism visitors, job creation and providing new business opportunities (Ferdinand & Kitchin, 2022, p. 8).

These authors present a table where they point out that key characteristics distinguishing local events from international events.

Figure 24 – Key Characteristics Distinguishing Local Events from International Events
Source: *(Ferdinand & Kitchin, 2022)*

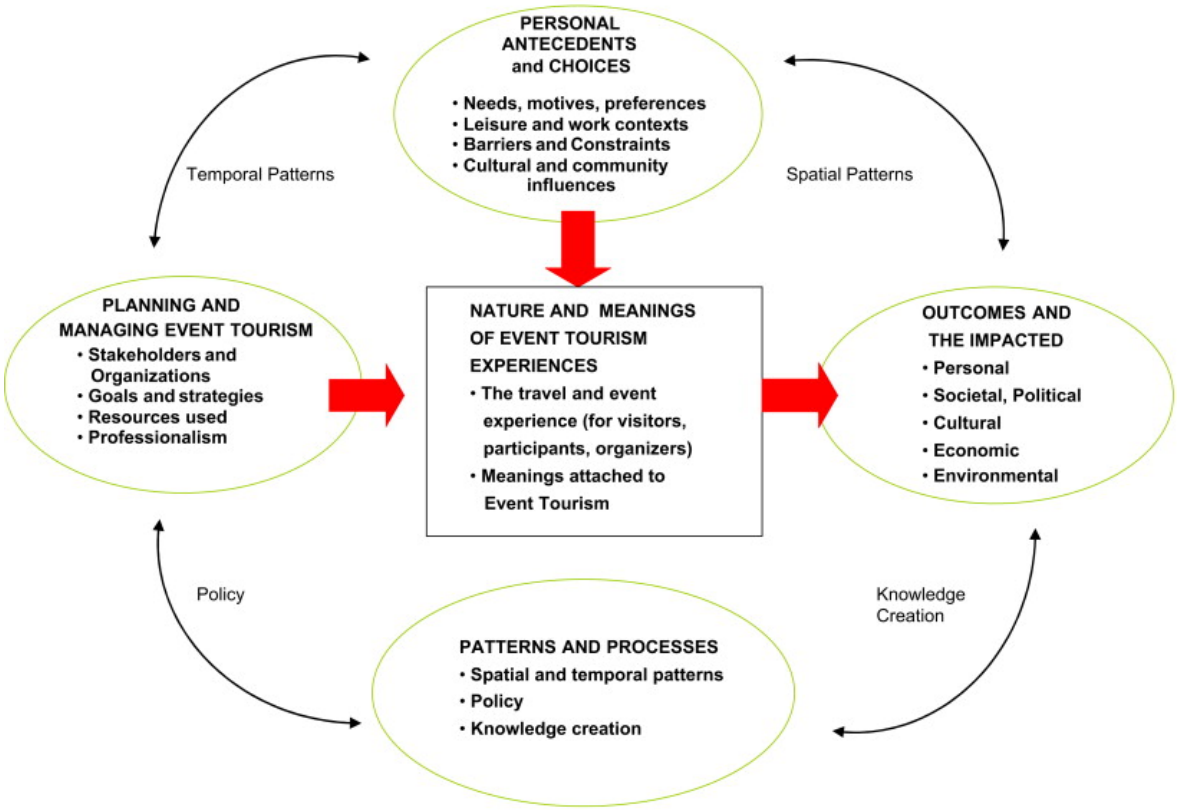
Dimensions	Local or community event	International event
Size	Small-scale	Large-scale
Audiences	Local	Local and international
Media attention	Local	International or global
Impacts	May be restricted to social or community-building, with less focus on income generation	Will have a range of impacts including, increasing tourism visitors, job creation and creating new business opportunities

Event management is a relatively new academic subject and consequently it is important to trace the emergence of the concepts and definitions of events (Berridge, 2006).

Event management is the applied field of study and area of professional practice devoted to the design, production and management of planned events, encompassing festivals and other celebrations, entertainment, recreation, political and state, scientific, sport and arts events, those in the domain of business and corporate affairs (including meetings, conventions, fairs, and exhibitions), and those in the private domain (including rites of passage such as weddings and parties, and social events for affinity groups) (Getz, 2008, p. 404).

When discussing events there is a myriad of subjects, namely the economic impact and patterns and processes, in which demand can be included.

Figure 25 - Framework for Systematically Understanding and Creating Knowledge About Event Tourism.
Source: (Getz, 2008, p. 413)



The planning and managing of events and the personal antecedents and choices help to define the nature and meaning of the event experiences, will generate outcomes and create impacts of different nature, that lead to knowledge creation which will in turn improve the overall expertise and help develop improved initiatives. It is cycle of constant improvement.

5.1. Types and Size of Events

In order to understand Events, a definition is necessary, however that definition, or the definitions found, show that events have diverse typologies or categories. Lunt (2011) deeply discusses the concept of typology applied to events, referring that categorizing events by empirical typology is, as its name suggests, one way that derived primarily from data rather than theory. He makes a deep analysis of the assumptions that have driven definitions of events and typologies and says that empirically derived theory stands between observation and the reformulation of theory, being anchored in a logical positivist paradigm (Lunt, 2011).

Therefore, most typologies derive from observation and there can be different proposal of categories, although it can be argued that events cannot easily be classified by reference to experiences (Getz, 2007).

Because multiple experiences are possible within any event form, the difficulty in typifying events is understandable, but some categories must be defined so that research can be undertaken.

Getz (2007) describes different types of events based on the form of the event:

- Cultural Celebrations
- Festivals
- Carnival
- Heritage Commemoration
- Parades and Processions
- Religious Events
- Political and State Events

- Arts and Entertainment
- Performing Arts
- Literature (these include 'readings', as performances. Storytelling festivals are a variation)
- Visual Arts (one-time 'shows' or 'exhibitions' of visual arts are planned events)
- Business and Trade Events
- Meetings and Conventions
- Exhibitions (Trade and Consumer Shows)
- Fairs (sometimes seen as a synonym of Festival)
- World's Fair (often called Expos)
- Education and Scientific Events
- Sport Events
- Recreational Events
- Private Events

All of these would fit within the four sectors referred above. Interestingly the Encyclopaedia of Tourism, in its 720 entries, does not include a definition of Events. Rather it includes the events under the entry *Festival and Events Tourism* (Jafari & Xiao, 2020), by Getz (2022). On the other hand, it includes a separate entry for MICE (meeting, incentive, convention, exhibition) (J. Lee & Chon, 2015). Association conventions and exhibitions (trade and public shows) account for the significant segments of the growing MICE sector (J. Lee & Chon, 2015). Meetings, expositions, events, and conventions (MEEC) is the designation adopted by Fenich (2016).

MICE or MEEC usually include a considerable type of meetings:

- Meeting
- Exposition or Exhibition
- Event
- Convention
- Trade show
- Seminar
- Workshop
- Conference
- Clinic[2]
- Break-out sessions
- Assembly
- Congress
- Forum
- Symposium
- Institute[3]
- Lecture
- Panel Discussion

All these typologies and "sub" typologies raise the issue of size. Is there a framework of events regarding the participant's number? Are they called participants or attendees? These questions were not easy to answer based on literature.

Already (Bento et al., 2022) found it difficult to find a definition for mega events in terms of size and because there is a debate on what makes a mega event.

> *'Participants' are more than customers or guests, they are necessary for the event to exist. Meetings and conventions do not exist without delegates; there are no marathons without runners; dance festivals need dancers. Exhibitions also require participants, namely the exhibitors. Because these events provide 'targeted benefits' (i.e., they are customized experiences), they can be viewed as*

[2] A workshop-type educational experience where attendees learn by doing.

[3] An in-depth instructional meeting providing intensive education on a particular subject.

> *sub-cultural manifestations, and are highly sought-after by competitive tourist destinations who can either create them or bid on them* (Getz, 2007, p. 27).

The total number of attendees or participants refers to the total number of individual people who attend the event.

For ticketed events, counting attendees or participants can be straightforward, as number of tickets sold is a reasonable indication of attendee numbers (though it does not account for those pre-event ticket buyers who may not turn up on the day or people who buy multiple tickets to different activities within a larger event) (*Counting Attendees*, n.d.).

However, when an event occurs, the impact caused by it is not merely produced by the attendees or participants, but also by support staff, media, sponsors, officials, and volunteers. The participants themselves can bring to the destination their spouses, members of their families or friends, that despite not attend the event itself, generate impact, as for example in number of overnights in hotels.

Getz (2007) denotes that probably most planned events are small and are in the private or corporate spheres, however the greatest attention focuses on the lager events that are open to the public, covered by the media, and generate substantial impacts.

Regardless of the size, there is also an impact and other implications.

Figure 26 – A question of scale and its impacts.
Source: Getz (2007)

The event experience	Small events • Mostly in the private and corporate spheres of interest • The experience might be intensely private or shared with an affinity group	Large events • Mostly in the public sphere of interest • Crowd dynamics can dominate • The event can affect entire communities through media coverage and shared attitudes
Impacts	• Collectively they are significant (e.g., weddings, meetings, parties, most sport meets)	• Each large event has substantial impacts (e.g., festivals, major sport events, fairs and exhibitions)
Media coverage	• Individual, small events seldom attract media attention	• The event itself is of interest to the media, or created primarily as a media event
Policy implications	• Policies related to venues, and to events in general (e.g., health standards, green operations, permits required)	• Policy decisions required for specific events (e.g., decision to bid; infrastructure investments; feasibility studies and impact assessments commissioned)

The terms major, mega, giga and hallmark are used to define big events (Getz, 2007; M. Müller, 2015).

M. Müller proposes a framework to classify major, mega and giga events based on visitor attractiveness, measured by the number of tickets sold; mediated reach, considering the value of broadcast rights; the total cost and the urban transformation, based on capital investment (M. Müller, 2015).

'Mega' refers to the largest and most significant of events however a small music festival can have 'mega' impacts on a small town in terms of tourists, economic benefits, or disruption. It can also refer to media coverage and impacts on image, as in 'the convention attracted worldwide publicity and put the city on the tourist map' (Getz, 2007).

According to (M. Müller, 2015), mega-events are ambulatory occasions of a fixed duration that attract:

1) a large number of visitors,
2) have a large, mediated reach,
3) come with large costs, and
4) have large impacts on the built environment and the population.

The term hallmark is used by Donald Getz as:

> *Hallmark Events are those that possesses such significance, in terms of tradition, attractiveness, quality or publicity, that the event provides the host venue, community or destination with a competitive advantage. Over time, the event and destination images become inextricably linked. Hallmark Events are, by definition, permanent 'institutions' in their communities or societies* (Getz, 2007, p. 24).

Regarding the frequency of an event, Ritchie (1984, in Barreda et al., 2017) defined mega events as "major one-time or recurring events of limited duration, developed primarily to enhance the awareness, appeal, and profitability of a tourism destination in the short and/or long term."

So, either one time or recurring, in both situations, events can be mega or major and cause an impact on the destination.

For events to occur a variety of facilities is necessary. These facilities range in size from hotel suites or small meeting rooms to major convention centres and outdoor festival sites that accommodate thousands of people. Examples of venues:

- Hotels,
- Convention centres

- Conference centres
- Sports facilities and stadiums
- Parks
- Retreat Facilities
- Cruise ships
- Specific Use Facilities
- Theatres, amphitheatres, and arenas
- Colleges and Universities
- Unusual Venues – these are places or locations where usually events are not help, but that can be transformed into a venue.

Simply stated: "[a]ny location where two or more people gather is a meeting site. Whether it is a multimillion-square-foot convention centre or a street corner under a light pole, people will find a place to gather" (Fenich, 2016).

5.2. Events as Demand Generators

There are many factors influencing hotel occupancy and consequently hotel revenue, this happens because market dynamics are influenced by many factors, among which are demand generators (Tranter et al., 2009). A demand generator can be seasonality, weather, political circumstances or other entities or activities that produce demand (Tranter et al., 2009), among these activities are the events, either cultural, sports related or business such as meetings, congresses, and exhibitions.

Events embody important demand generators and there has been a growing interest in the subject as decision markers on the regional level need factual

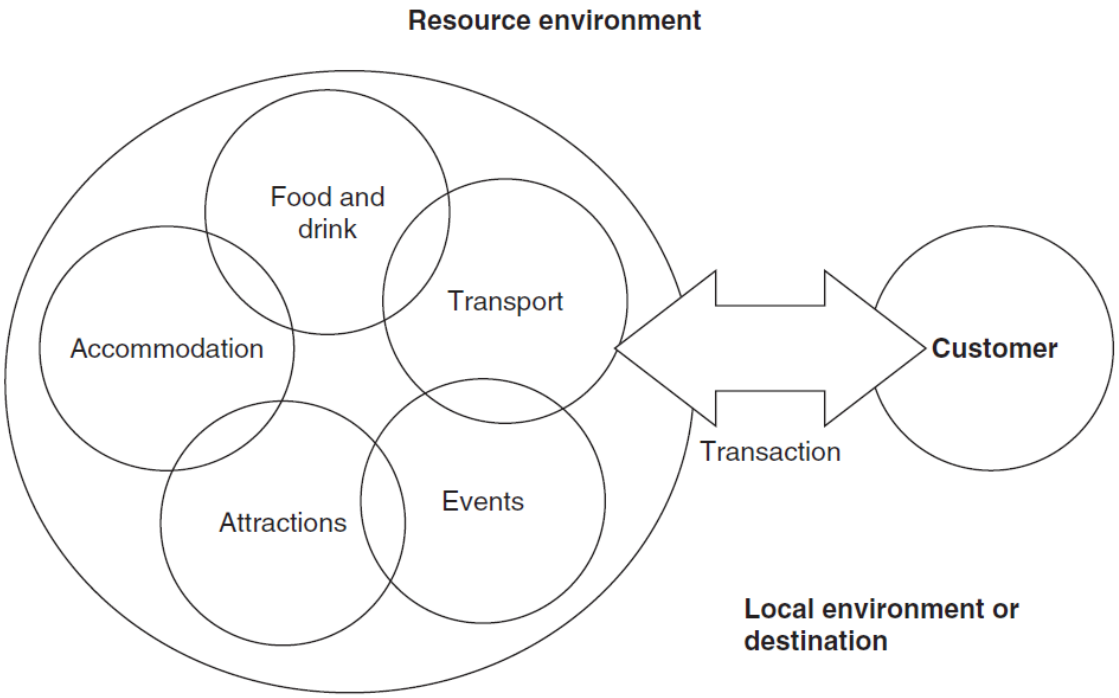
information to support their decisions in order to sponsor those events (Herrmann & Herrmann, 2014) and invest in the needed infrastructures. M. Müller, (2015) proposed a definition for big events by dividing them in three types: Major events, Mega events, and Giga events, but excludes recurring events from all these three categories. Although his definitions exclude recurring events, it will be contemplated the part of Müller's (2015) definition in which it considers major events as "of a fixed duration that (a) attract a large number of visitors, (b) have large, mediated reach, (c) come with large costs and (d) have large impacts on the built environment and the population", even though this event is a recurring one.

Demand for events is especially difficult to predict and major events use long-term tracking studies and market penetration estimates to forecast attendance, but there have been notable failures (Getz, 2008). Event forecasting, attendance forecasting and image enhancement from events and how it can induce tourist demand to destinations have been studied (Getz, 2008), but there is still room for improvement. Many companies exist to produce or supply services to planned events, where hotels are included,

Commercial tourism and hospitality operators tend to see events as one of their 'products' which can be lifted to attract tourists and revenue for their businesses (S. Page & Connell, 2012).

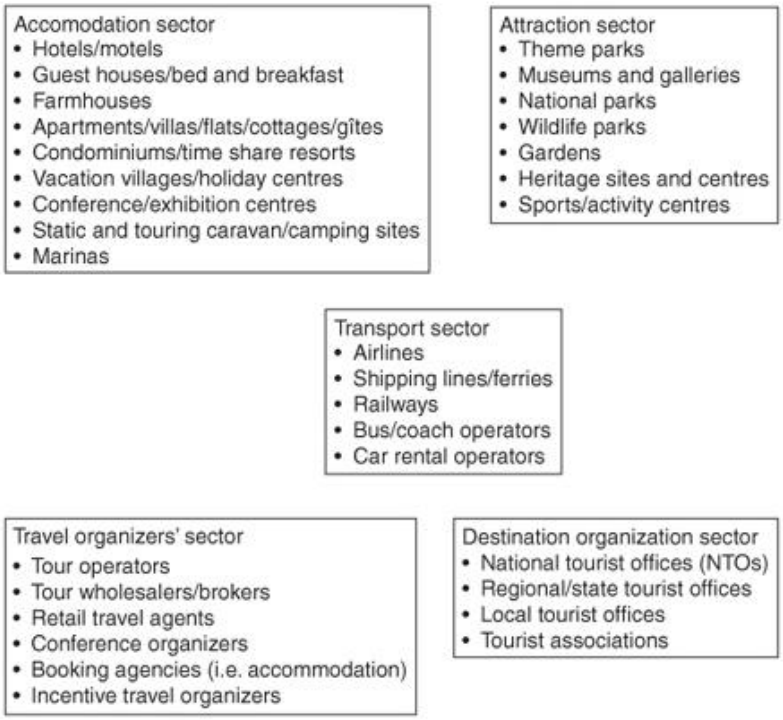
Events are naturally demand generators for hotels. Whenever there is an event, three is potential for some sort of demand in hotels. Hotels are a core element in the tourism activity and necessary for tourism to function. Hotels fall into the domain of accommodations, which are a key part of the infrastructure of the tourism industry and critical to the tourists (O'Halloran, 2014).

Figure 27 – The tourism market.
Source: Cooper et al. (2005) *in* *Cooper & Hall (2007).*



In terms of the physical resources required for events, the 'event infrastructure' needs to be developed and maintained. This includes high quality information, accommodation, transport, and visitor services, as well as venues, indoor and outdoor event spaces, and other festival infrastructure to accommodate competitive programmes (Richards & Palmer, 2010).

Figure 28 – The main sectors of the tourism industry
Source: adapted from Middleton (1994) in Richards & Palmer (2010)



The above figure shows the importance of the accommodation sector in tourism. Accommodation provides is considered an event-support service, along with travel and transport, tourist attractions, retail, and professional services (S. Page & Connell, 2012).

In sum events and accommodation have an interchangeable relationship, in which events need lodging facilities to be provides to attendees or participants and hotels and similar facilities benefit from the income brought by them.

5.3. Measuring the Impact of Events

Tourism takes place in the environment, which is made up of both human and natural features. The human environment comprises economic, social, and

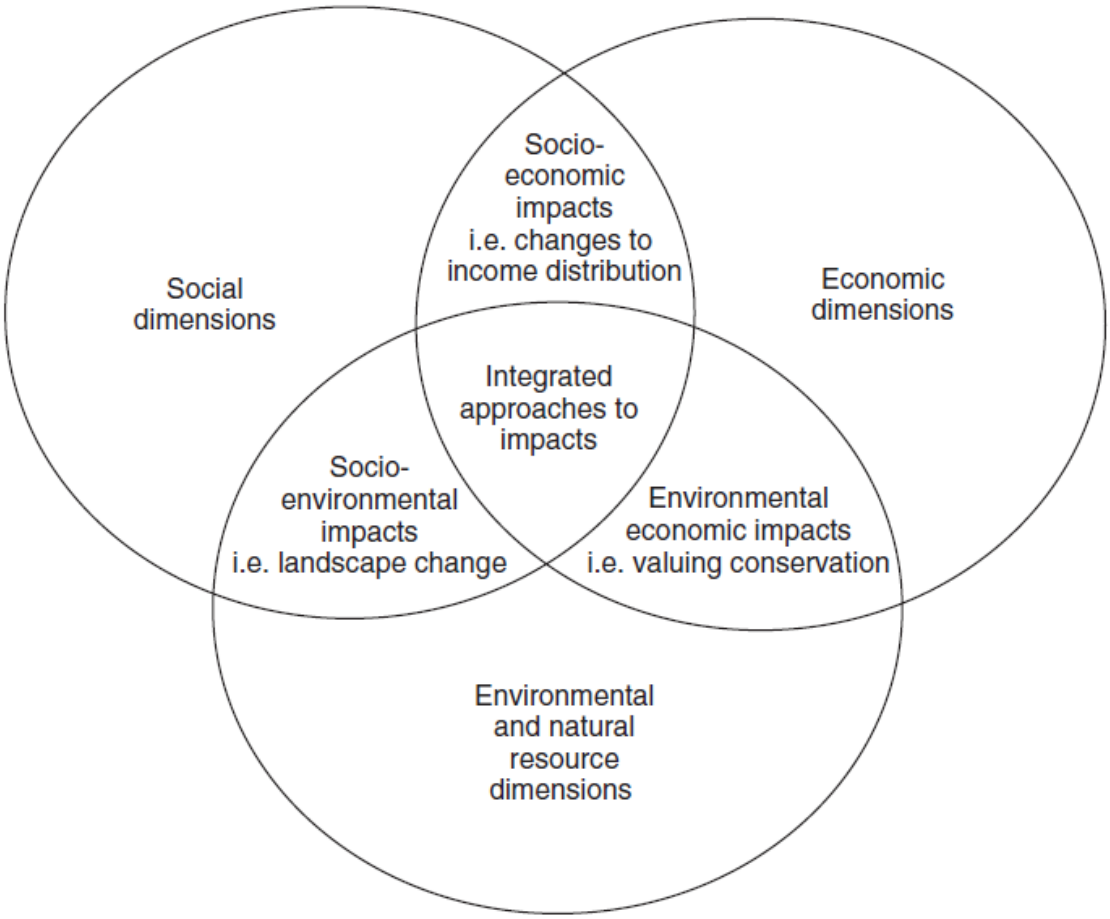
cultural factors and processes(Mason, 2020). The natural environment is made up of plants and animals in their habitat, which comprises a variety of geological and geographical features, such as different rock types and landscape formations (Mason, 2020).

Impacts can be positive or negative, some can be measured objectively, others pose some challenges. 'Incommensurability' is the lack of a uniform measure for all types of impacts, which represents a critical concern when monetary values are not suitable or available for all outcomes (Getz & Getz, 2018a).

Direct, quantifiable measures of impacts are not always available, and sometimes 'surrogate indicators' believed to be associated with the impact being studied are used (Getz & Getz, 2018a).

There are three major dimensions in which tourism that can impact a destination. Events, either business or leisure related, are a part of the tourism landscape and their impacts may be included in the following figure. Events and their impacts, as all tourism activities are interrelated, although no happening at the same time or the same pace. Those dimensions are the social, the economic and the environmental and natural resource dimensions. These categories are not mutually exclusive, and they have a significant degree of overlay, however they serve as semantic devices by which to discuss tourism's effects (Cooper & Hall, 2007).

Figure 29 - Interrelationships between tourism's impacts.
Source: *Cooper & Hall (2007)*



Special events of one kind or another have played an important role in the economic and social development of communities internationally for many years (S. Page & Connell, 2012). This is likely because they are recognised to potentially stimulate business activity, creating income and jobs in the short term and generating increased visitation and related investment in the longer term (S. Page & Connell, 2012).

Historically, economic impacts have been more researched than any other type of tourism impact and there has been a relatively long period in which they have been the focus of tourism research (Mason, 2020).

In general, economics is the study of consumer behaviour in respect to a good or service produced and sold in the market (Aguiló-Pérez & da Silva, 2015). Economics is concerned with scarce resources in the context of unlimited wants. Decisions must therefore be made about what to produce, how to produce it, and the allocation of goods and services and the activity carried out by tourists is provided by a group of economic sectors and companies that produce different goods and services (Getz, 2007). These are likely to be the main reasons for this focus on the economic side of the impact events. Furthermore, 'macroeconomics' concerns the entire economic system, sometimes referred to as 'political economy' because the government and international agreements set the parameters (Getz, 2007). This is particularly relevant because governments are often asked to provide financial support for special events including the allocation of substantial funds to provide or upgrade the facilities required to stage the event. Consequently, governments will generally require credible forecasts of the event impacts and comprehensive evaluations after the event (S. Page & Connell, 2012).

'Microeconomics' concerns individuals and their consumer behaviour, as well as specific business decisions and how supply and demand find equilibrium in specific markets. In classical economics, 'laws of supply and demand' govern these processes (Getz, 2007).

This microeconomics side of the events and issues related to the equilibrium between supply – the hotels – and demand – the events' attendees and how it reflected on hotels' KPIs was the basis for the present research. "'Demand', in economics, is a function of the relationship between price and the quantity 'demanded' for a good or service in specific circumstances. For each price, the

demand relationship tells the quantity the buyers want to buy at that corresponding price" (Getz, 2007).

To understand the value or impact of this equilibrium is necessary for both hotels and events' organizations, and it is the object of this study.

Chapter 6 – The Hotel Industry in Portugal

Although not new, the significance of tourism as a valuable source of income and employment, and as a major factor in the balance of payments for many countries, has been attracting increasing attention on the part of governments, regional and local authorities, and others with an interest in economic development (Edgell, 2018).

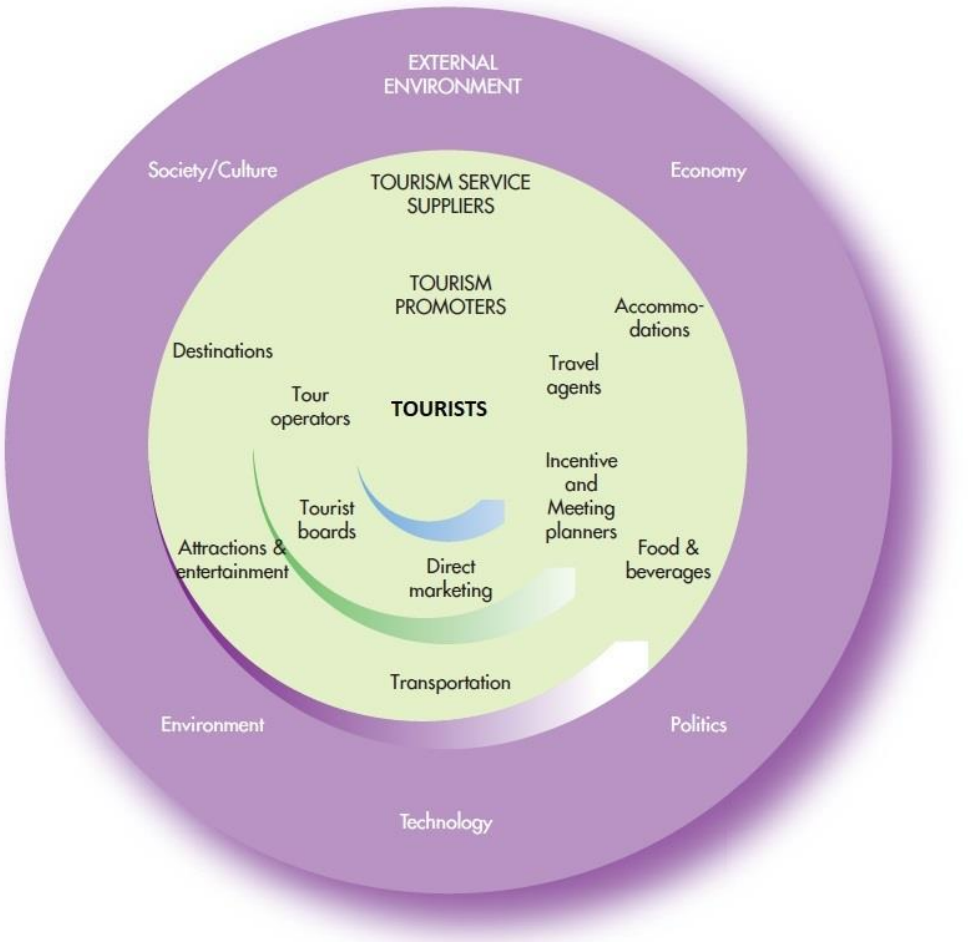
The tourism system consists of consumption and production and the experiences that are generated (Cooper & Hall, 2007). To understand tourism, it is necessary to identify the elements and factors that contribute to tourism consumption and production. Given that movement is integral to tourism one way in which the tourism system can be understood is through the travel paths taken by individual consumers (Cooper & Hall, 2007). This approach is usually labelled a geographical system of tourism and consists of four basic elements:

1) A generating or source region – which is the permanent residence of the tourist and the place where the journey begins and ends.
2) A transit route – which is the path through the region across which the tourist must travel to reach his or her destination.
3) A destination region – the region which the tourist chooses to visit, and which is a core element of tourism.
4) The environment – that surrounds the other three regions (Cooper & Hall, 2007).

In terms of balance-of-trade accounting, tourism is defined as travel and transportation and is determined a business service export from the tourism recipient to the tourism generating economy (Edgell, 2018).

The integrated model of tourism suggested by Cook et al. (2018) depicts the broadness of tourism and the myriad of related activities and how it is influenced by the environment.

Figure 30 – An integrated model of tourism.
Source: Adapted from Cook et al., (2018)



In fact, elements of tourism production comprise distribution and promotion channels for the destination, transport connexions between the source region and the destination, and facilities and attractions, in which hotels and facilities for events are included.

Figure 31 – Main elements of tourism production at different components of the tourism geographical system.

Source: *Cooper & Hall, (2007)*

Generating region	Transit region	Destination
Distribution and promotion channels for the destination in the source region • travel agents • tour operators • online retailers and distributors Transport infrastructure	Transport links between the source region and the destination • aviation services • bus and train services • cruise and ferry services • private and hire cars Transit facilities, i.e. food, accommodation, toilets where tourists have to stop prior to final destination	Facilities and attractions • accommodation • meetings and exhibitions • theme parks • casinos • retail • visitor centres • national parks • restaurants • activities • amenity resources Transport infrastructure • local transport

"Tourism is an economic activity of strategic importance to the country's economic and social development, namely with regard to employment and exports growth", these are the opening words used by the 2017 Economics Minister, Manuel Caldeira Cabral, in the *Tourism Strategy 2027* (Turismo de Portugal, 2017). The *Tourism Strategy 2027* is the strategic guideline for tourism in Portugal for the horizon 2017-2027, and it was created based on a broad participatory process in which the State accepted its responsibility and mobilises its agents and society.

The Portuguese statistics office – *Intstituto Nacional de Estatística* (INE) – estimates that the Gross Value Added (GVA) generated by Tourism was in 2019 8.5% of the national economy's GVA (against 8.0% in 2018), showing a growth of 10.3% in nominal terms, higher than the GVA of the national economy, which was of 4.0% (INE, 2020).

The GVA is the indicator that shows the wealth generated in production, subtracting the value of goods and services consumed to obtain it, such as raw materials. The sum of the GVA of the various sectors of the economy generates the gross domestic product. Thus, and according to these data, the tourism sector grew more than the economy as a whole (4,0%), which shows the importance for the country's Gross Domestic Product (GDP).

Tourist accommodation (hotels, local accommodation, rural tourism, etc.) received nearly 27 million guests, of which more than 16.3 million were non-residents. Those nearly 27 million guests generated almost 80 million overnight stays, of which 48.8 million were non-nationals (Dinheiro Vivo, 2020).

6.1. The Growth of Tourism

Travelling has been a human activity for millions of years: *by 3000 BCE the Egyptians were building wooden boats as long as 75 feet for trade and military purposes and for use in traveling the beautiful 4,000 miles of the Nile River to celebrate the changing of the seasons, good harvests, and thanking the gods for their rich life* (Edgell, 2018, p. 28).

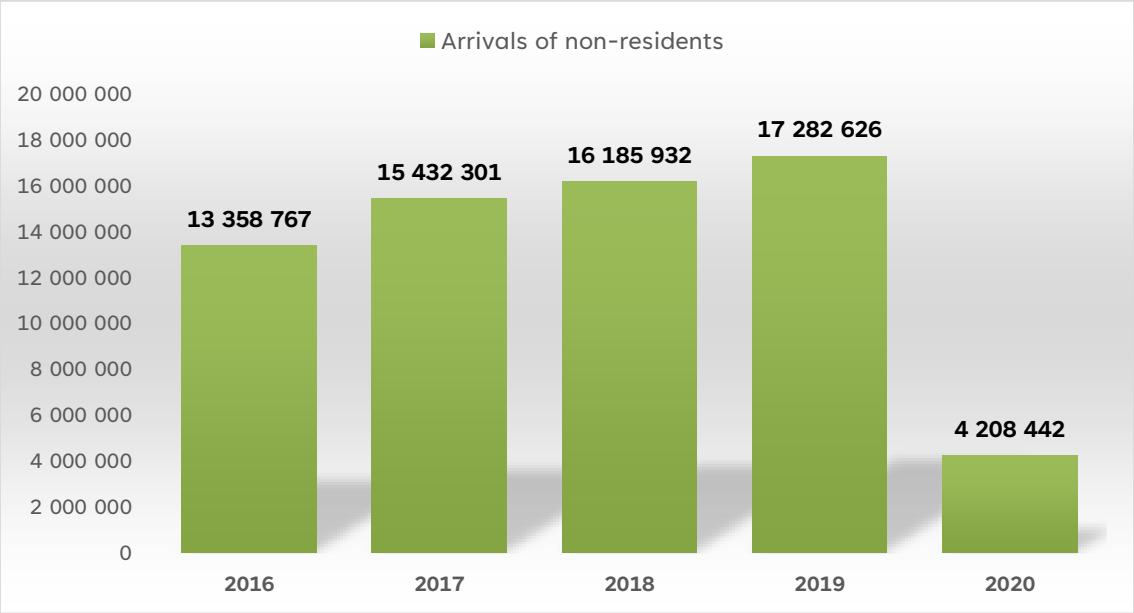
However, it is only in the last 175 years, predominantly the last 100 years, as travel has become more affordable and less difficult, that some of those who travelled were prepared to openly admit that pleasure was one of the motivations for their journeys (Mason, 2020), although people travel for many other reasons than pleasure.

In Portugal the Tourism sector is an activity that up until the beginning of 2020 had been observing a remarkable growth: from the 952 million of tourists in

2005, in terms of international arrivals, to 1,5 thousand million in 2019 (Carrasqueira, 2021).

To better understand the tourism growth in Portugal, the number of arrivals is an important figure.

Figure 32 – Arrivals of non-residents – Portugal 2016-2020
Source: INE



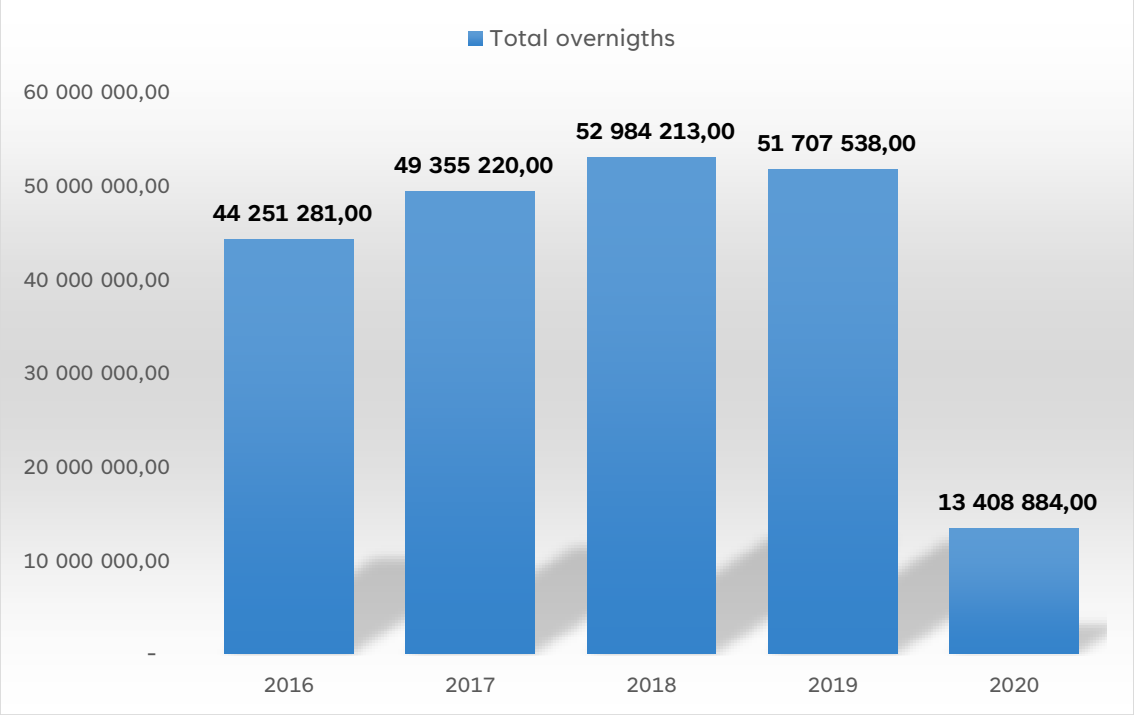
The above figure (Figure 32) illustrates the number of arrivals from 2016 to 2020. Considering that 2020 was an atypical year, the growth if tourism is evident, particularly from 2016 to 2017 with an increase of 15,5% in the number of arrivals. After the growth was 4,9% and 6,8%. The overall difference between 2016 and 2019 is 29,4%, which is a significant growth rate in four years.

This data includes all types of accommodation: hotels, apartment hotels, "pousadas", tourist apartments, tourist villages, camping sites, recreation centres, tourism in rural areas and local accommodation. Local accommodation without restriction regarding capacity on Autonomous Region of Madeira until 2018.

Overnight stays are another powerful indicator. The word itself implies the definition of tourist: an *overnight stay or 24 h away from home has been commonly used to distinguish a tourist from a day tripper or excursionist* (Gibson, 2015).

Alongside with arrivals, so the overnights have increased up until 2020. Figure 28 shows that the overnights percentage increased by 11,5% from 2016 to 2017, the following year observed an increase of 7,4%. However, in 2019 the number of overnights decreased by -2,4%, although the arrivals increased.

Figure 33 – Total overnights – Portugal 2016-2020
Source: INE



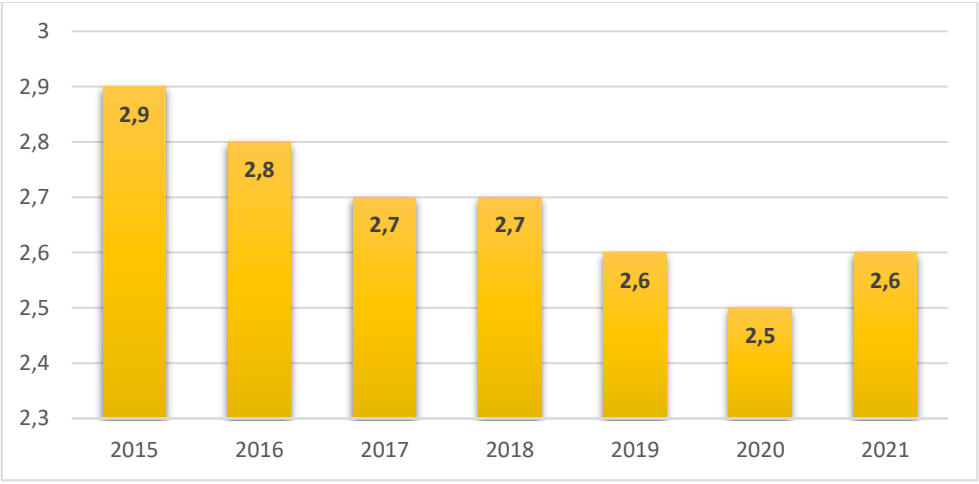
Tourism length of stay (LOS) is a significant *issue in tourism demand management during a time of increasingly shorter stays and fierce competition to attract affluent visitors* (Almeida et al., 2021). LOS affects spending, service offers, the nature and availability of activities and it influences patterns of infrastructure and resource use (Gössling et al., 2018).

Portugal has been observing a decrease in the Average Length of Stay (ALOS) in the last years. In 1995, the average LOS was 4,9 nights, against 3,7 in 2015, which represents an absolute value of less 1.2 nights and a percentage change of minus 24.5 despise an increase of 117,8% in the number of overnights between those periods (Gössling et al., 2018).

Almeida et al. (2021) provide a very practical example in their article discussing the factors that explain the length of stay patterns in Madeira Island. They say that *data released by the Statistical Institute from Madeira Island in 2016 show a daily average spending of 124 euros, implying a loss of 124 euros per tourist for every tourism length of stay drop by one day. More precisely, in a destination with an average number of 1.2 million tourists per year, such as Madeira Island, an income loss of 124 euros per stay/tourist represents an annual loss in revenue of 148.8 million euros* (Almeida et al., 2021).

This shows the real impact and importance of understanding LOS both in a destination as well as in a hotel. In Portugal, the average length of stay has been decreasing.

Figure 34 – Average Length of Stay in Tourist Accommodation Establishments, Portugal
Source: INE

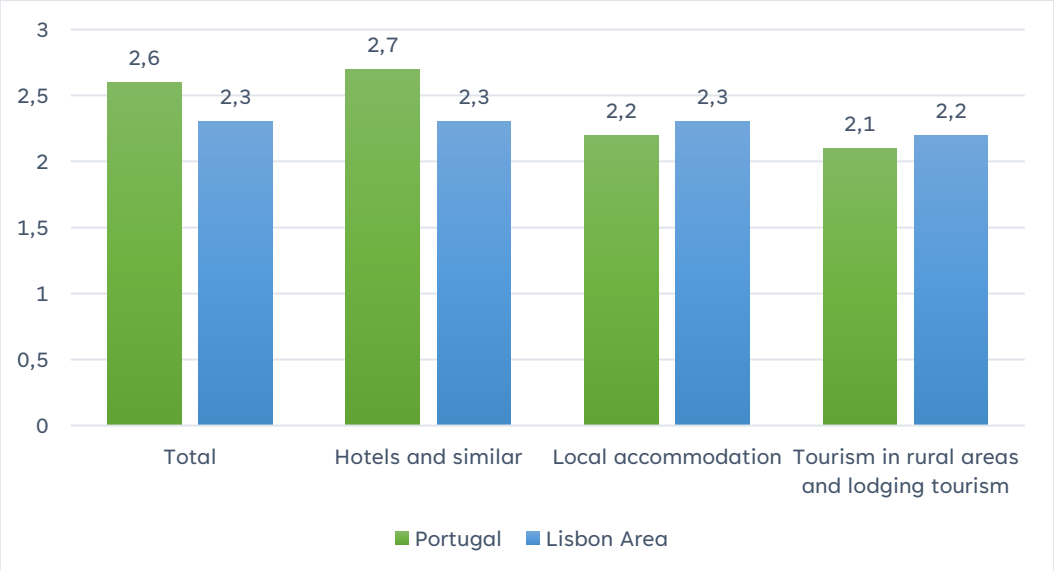


These data refer to Hotels including hotel apartments (1-5 stars); Pousadas, usually located in a national monument building or a building of public interest or located in a building of a local or public regional interest with historic or architectural value. Touristic villages: 3-5 stars; Touristic apartments (vacation): 3-5 stars and Resorts, which consist of at least two accommodation structures. Accommodation structures placed in the rural areas: cabins, structures for agrotourism, rural hotels, camping, and trailers and Local accommodation.

The INE usually separates the data as follows: Hotels and similar, Local accommodation and Tourism in rural areas and lodging tourism.

There is a difference in the ALOS depending on the type of tourist accommodation, as observed on the following figure:

Figure 35 – Average Length of Stay in Tourist Accommodation Establishments: Portugal vs. Lisbon Area – 2019
Source: INE



Lisbon metropolitan area (*Area Metropolitata de Lisboa*) is classified as a NUTS 2 and 3 region covering 18 municipalities. It is the largest urban area in the country

and the 10th largest in the European Union, with a population in 2015 of 2,812,678 in an area of 3,015.24 km².

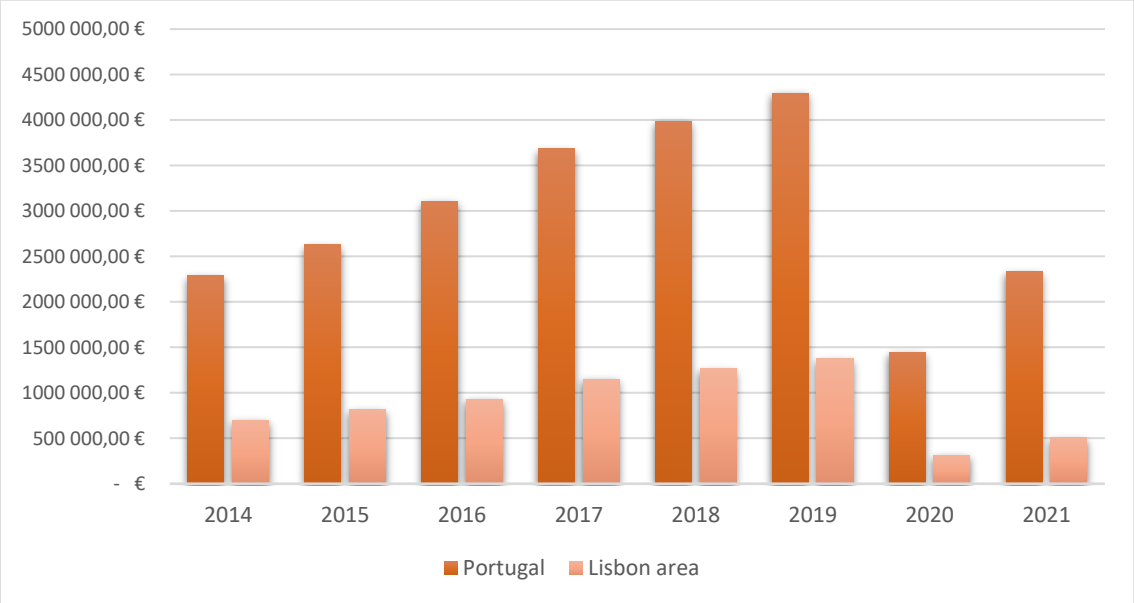
The NUTS classification (Nomenclature of territorial units for statistics) is a hierarchical system for dividing up the economic territory of the EU:

- The collection, development, and harmonisation of European regional statistics.
- Socio-economic analyses of the regions.
- NUTS 1: major socio-economic regions.
- NUTS 2: basic regions for the application of regional policies.
- NUTS 3: small regions for specific diagnoses.

The average LOS in Lisbon Area is lower that it is in the rest of the country, except for Local accommodation and Tourism in rural areas. Local accommodation refers to an establishment that provides temporary lodging services, namely to tourists, for a fee, as long as it does not meet the requirements to be considered a tourist resort. Usually these are apartments and houses, and this is probably the reason for longer stays than in hotels.

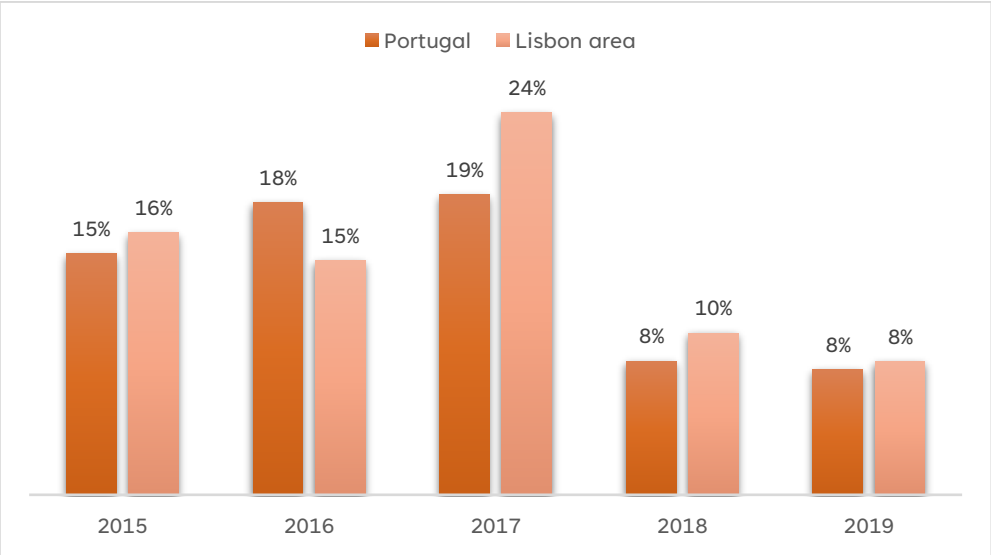
The total incomes in Tourist Accommodation in Portugal and in the Lisbon Area had also been increasing steadily up until the pandemic.

Figure 36 – Total Income (€) in Tourist Accommodation Establishments Portugal and Lisbon Area.
Source: INE



In terms of percentage growth Lisbon Area observed a more marked increase than the rest of the country.

Figure 37 – Percent change in Tourist Accommodation Incomes 2015-2019 Portugal vs. Lisbon Area
Source: INE



It is patent that Portugal and the Lisbon Area benefited from the Arrivals and Overnights growth. Lisbon has most likely benefited from being a European capital and performed better in terms of revenues.

The Deloitte Atlas is an annual publication by Deloitte Portugal about the Portuguese Hospitality[4]. The first European Benchmark was published in 2017 with data referring to 2015, depicts Lisbon in comparison to other European capitals.

The last report published, in 2020, presents the European benchmark in which it is evident that Lisbon is, in terms of Occupancy and RevPAR, at the same level as many other Capitals.

[4] See: https://www2.deloitte.com/pt/pt/pages/real-estate/articles/atlas-hotelaria-2020.html

Figure 38 – European benchmark considering occupancy rate and RevPAR 2019.
Source: Atlas da Hotelaria 2020 | Deloitte Portugal | Insight, n.d.

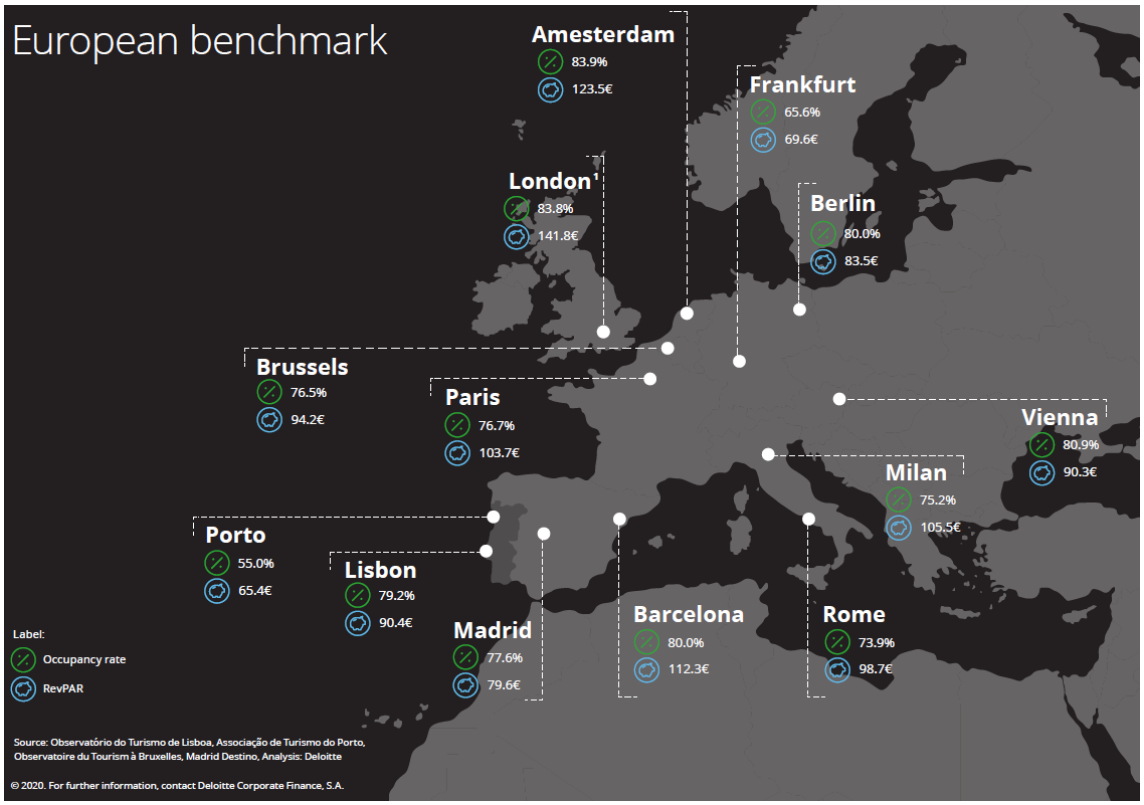
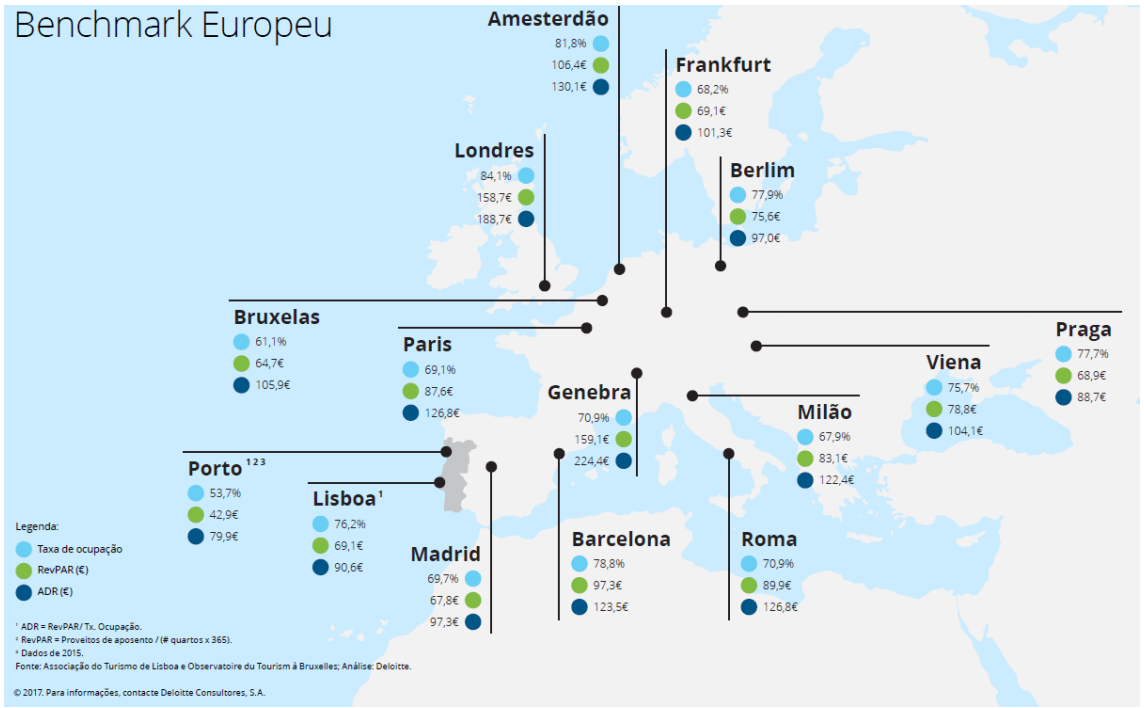


Figure 39 – European benchmark considering occupancy rate and RevPAR 2015.
Source: Atlas da Hotelaria 2016 | Deloitte Portugal | Insight, n.d



6.2. Hospitality KPIs in Portugal and Lisbon

Accommodation is a fundamental sector of the tourism industry and the focus of the present research. Essential hospitality ratios are the focus of this section, starting by the occupancy rate in Portugal, and in the Lisbon Area, and in hotels in both destinations. Room Revenues and the RevPAR will also be presented.

Lisbon is Portugal's capital and largest city in the country, with an estimated population of 544,851, according to the Preliminary Results of the 2021Census. It is Europe's mainland most western capital city and the only one along the Atlantic coast. It is situated at the mouth of the Tagus River. The climate is distinguished by its mild temperatures, in 2021 the average air temperature was 17,8°C (PORDATA).

Concerning the occupancy rate, the evolution is on par with the indicators mentioned on chapter 6.1. Consulting the Travel BI, a webpage available to the public with Tourism and Hospitality data in Portugal, it is possible to access data regularly updated. This is a project developed by the Turismo de Portugal. Turismo de Portugal is the Portuguese National Tourism Authority, the central technical body operating under the command of the Ministry for the Economy and Digital Transition, with jurisdiction throughout the Portuguese territory.

Figure 40 – Occupancy rate in Portugal
Source: *TravelBI by Turismo de Portugal - Taxas de Ocupação Quarto/Cama, n.d.*

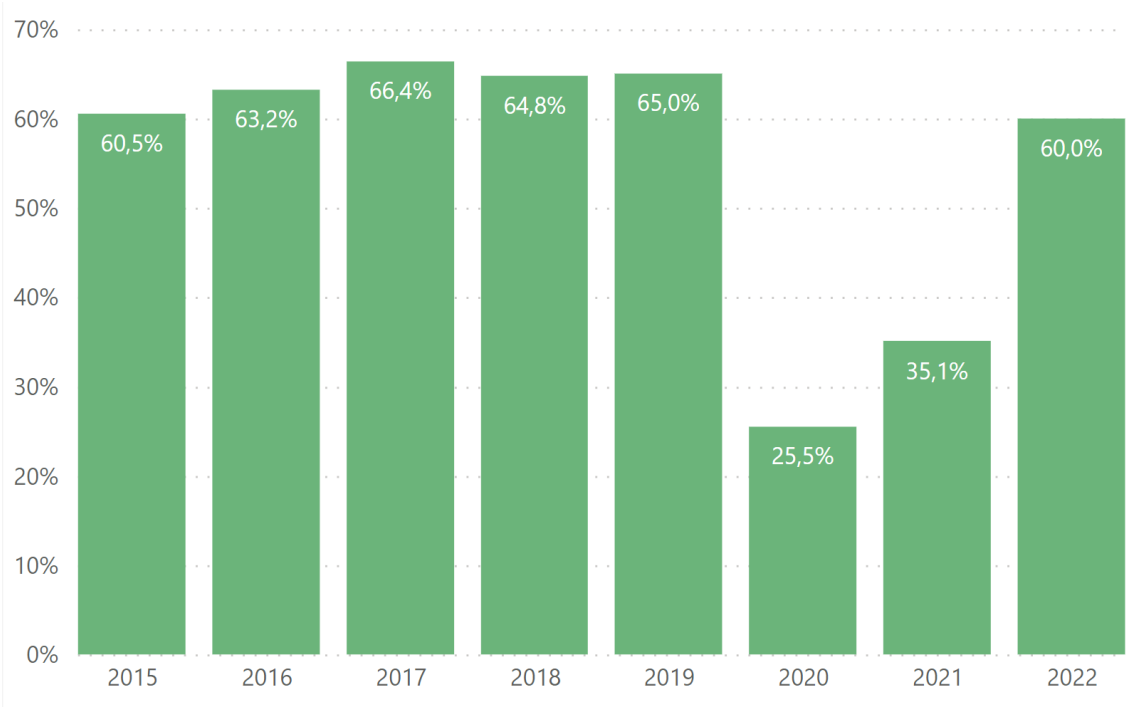
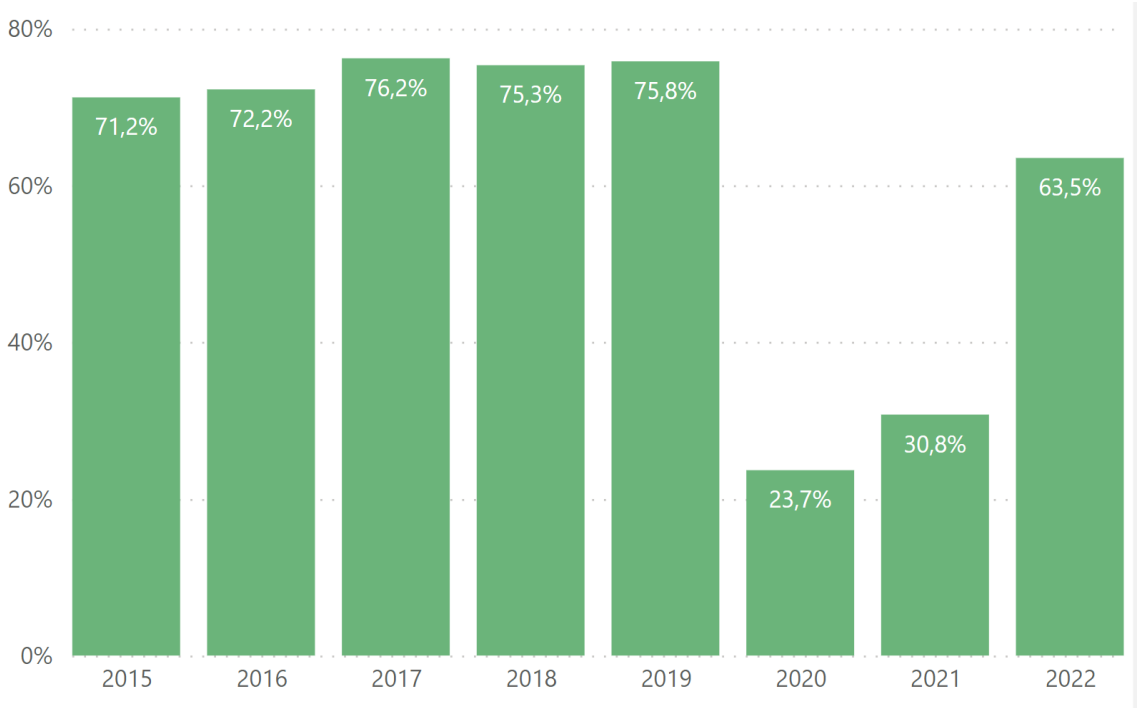


Figure 41 – Occupancy Rate in the Lisbon Area 2015-2022
Source: TravelBI by Turismo de Portugal - Taxas de Ocupação Quarto/Cama, n.d.



The Lisbon Area has had a better performance when compared to the performance of the rest of the country, however they share the same growth tendency until 2019, and the recovery tendency in 2022.

Noteworthy is the fact that the rest of the country had, in 2020 and 2021, a better performance than the Lisboa Area. This possibly is because it is found that the impact of the lockdown was stronger at destinations which are more dependent on international markets, while regions where domestic tourism is relatively stronger the impact is smaller (Costa, 2021).

Concerning Revenues, and specifically Room Revenues, the increase is also evident. Revenues grew 39,2% from 2015 to 2016, then 20,9%, in 2017. After this growth rate the numbers came down to 9,3% and 7,9%, but still increasing.

The Lisbon Area has steadily represented, more than one third of the total Rooms Revenue when compared to the whole country.

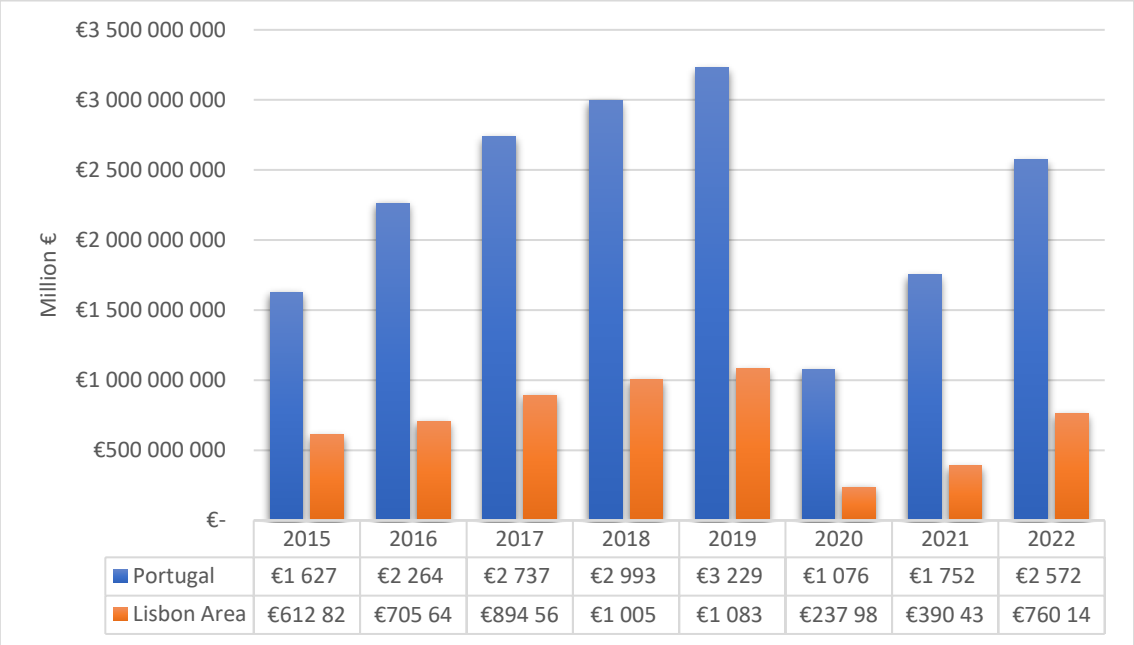
Table 4 – Compared percentage weight in Rooms Revenue: Lisbon Area vs Portugal

2015	+37,7%
2016	+31,2%
2017	+32,7%
2018	+33,6%
2019	+33,6%

When comparing the Lisbon Area and Portugal, again the Room Revenues in Tourist Accommodation Establishments, have seen an increase, except for the pandemic period.

Figure 42 – Rooms Revenue in Accommodation Establishments 2015-2022 (2022 Jan-Jul) Portugal vs Lisbon Area

Source: INE

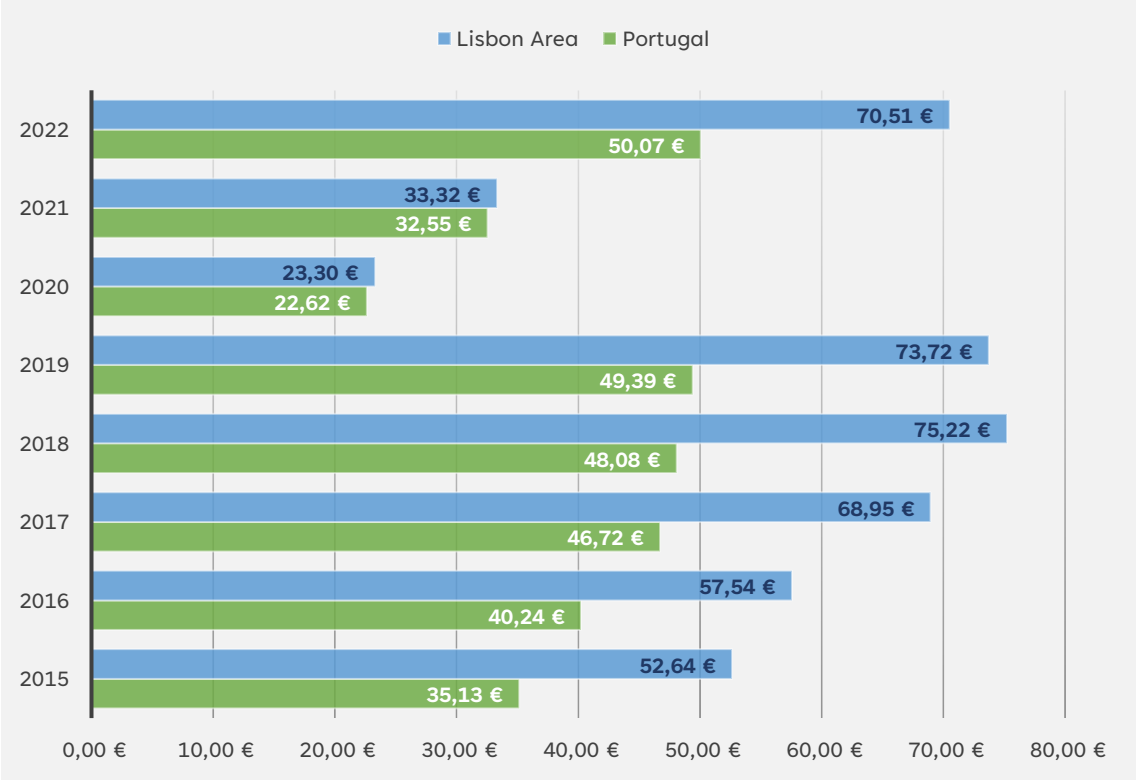


	2015	2016	2017	2018	2019	2020	2021	2022
Portugal	€1 627	€2 264	€2 737	€2 993	€3 229	€1 076	€1 752	€2 572
Lisbon Area	€612 82	€705 64	€894 56	€1 005	€1 083	€237 98	€390 43	€760 14

The impact of the pandemic on Rooms Revenue was, in 2020, of a fall of 66,7% when compared to 2019. In the Lisbon Area it was even profounder: minus 78,0%. On the other hand, the recovery of Lisbon has been more accentuated: between 2021 to 2022 (January to July) the growth was of 46,8%, while Lisbon Area saw a growth of 94,7%, in the same period.

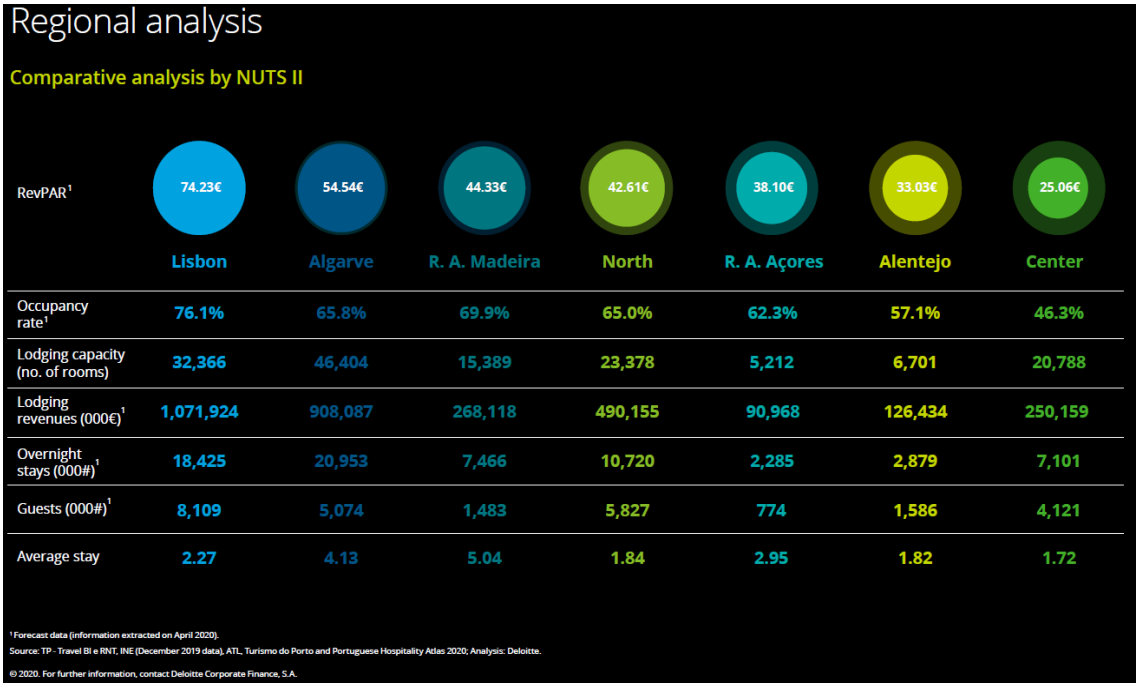
The RevPAR has also seen a significant growth rate, which is logical considering the occupancy and revenues increase.

Figure 43- RevPAR 2015-2022 Portugal vs Lisbon Area
Source: INE



The Deloitte report also shows that the performance of Lisbon is above the rest of the country (*Atlas Da Hotelaria 2020 | Deloitte Portugal | Insight*, n.d.).

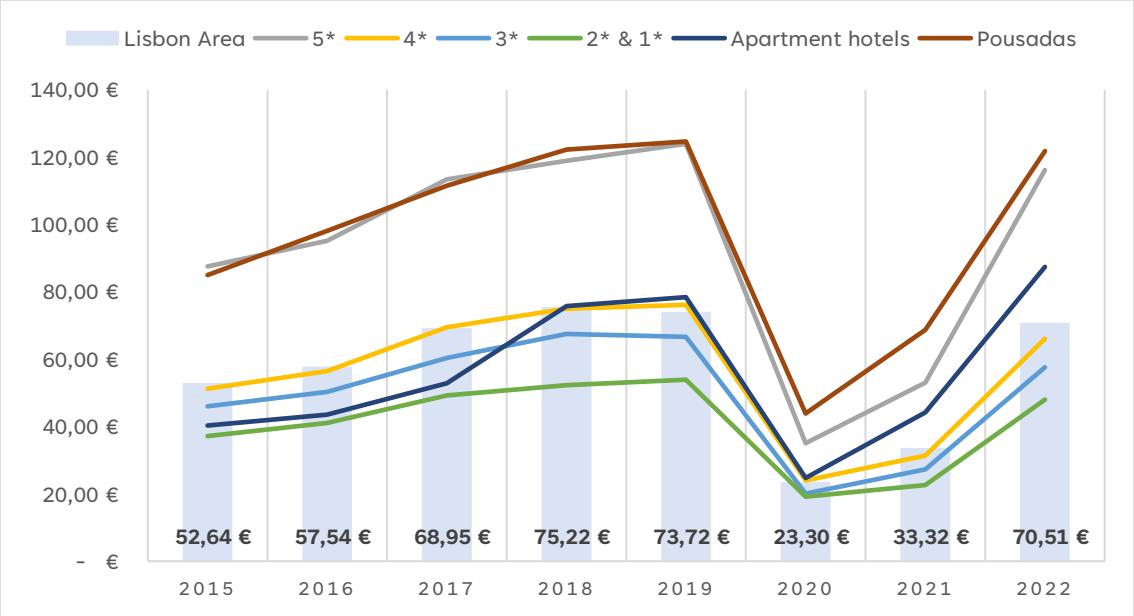
Figure 44 – KPIs Regional Analysis
Source: Atlas da Hotelaria 2020 | Deloitte Portugal | Insight, n.d.



According to the Portuguese Regulation (Decreto-Lei n. º 80/2017, de 30 de junho), hotels are classified in categories from 1 to 5 stars. The Pousadas are usually located in national monuments or buildings of public interest and do not show stars but follow the criteria of 3- or 4-star hotels, depending on the type of building or heritage classification where they are installed. Pousadas have a noteworthy reputation because they function as hotels that are a part of the national heritage, and governments actively encourage conversion of heritage properties into hotels, as the 'paradores' in Spain (Cooper, 2016).

This notoriety is event when analysing the RevPAR specifically in hotels and similar.

Figure 45 – RevPAR in Hotels and similar in the Lisbon Area
Source: INE



The RevPAR has been increasing at a regular level until 2019. The 5-star hotels and Pousadas clearly distancing themselves from the rest of the accommodation supply. Apartment hotels were on par with 4-star hotels, but after the pandemic the numbers are detaching from those hotels and getting closer to the 5-star hotels. The RevPAR recovery in Lisbon Area is notable.

Part II

Chapter 7 – The Research Methodology

"The literal meaning of 'research' is meticulous search" (Thomas, 2021). With research one looks to solve problems, observe, and interpret facts, formulate hypotheses, and test them through experiments (Thomas, 2021). "Mankind has been engaged in research (in the generic sense of search for new knowledge) almost since its appearance on earth" (Mukherjee, 2019, p. 16). Research is looking for answers given by the analysis of data.

Methodology is the philosophical framework within which the research is conducted, or it is the foundation upon which the research is based (R. B. Brown, 2006). Also, it can be said that methodology refers to the ways by which knowledge and understanding are established through research (Veal, 2018).

Research is essential for understanding basic everyday phenomena that need to be handled by individuals and organizations with the purpose to improve social life and, in business research, the purpose is to understand how and why things happen (Ghauri et al., 2020).

The idea of paradigm was introduced by Thomas Kuhn in his classic *The Structure of Scientific Revolutions*, in 1970, and the focus of multiple studies about the evolution of scientific knowledge (Munar & Jamal, 2016). The word *paradigm* simply means *a model of something, or a very clear and typical example of something,* and it also means *a set of theories that explain the way a particular subject is understood at a particular time* (*Paradigm*, n.d.). A paradigm is a way of looking at the world. It is composed of certain philosophical assumptions that guide and direct thinking and action (Mertens, 2014). It is a term that derives from the history of science, where it was used to describe a cluster of beliefs and principles that, for scientists in a particular discipline, influence what should be studied,

how research should be done, and how results should be interpreted (Bryman, 2012).

In research, a researcher's philosophical orientation has implications in every decision made in the research process, including the choice of method (Mertens, 2014), making it necessary to clarify the paradigm choice and methods.

(Mackenzie & Knipe, 2006) refer that the choice of paradigm that sets down the intent, motivation, and expectations for the research, is first step and without it there is no basis for subsequent choices regarding methodology, methods, literature, or research design. These authors refer the Positivist/Postpositivist, Interpretivist/Constructivist, Transformative and Pragmatic as four of the most common paradigms (Mackenzie & Knipe, 2006).

The Interpretivist paradigm is when the researcher provides their own accounts or explanation of a situation or behaviour and the Constructivist paradigm happens when people construct their own views of reality and the researcher seeks to discover this phenomenon (Veal, 2018).

The transformative paradigm directly addresses the politics in research by confronting social oppression at whatever levels it occurs, where the researchers consciously and explicitly position themselves side by side with the less powerful in a joint effort to bring about social transformation (Mertens, 2014).

Pragmatism is not committed to any one system of philosophy or reality, the focus is the research question, the data collection and analysis methods are chosen as those most likely to provide insights into the question with no philosophical loyalty to any alternative paradigm (Mackenzie & Knipe, 2006). The pragmatic paradigm places "the research problem" as central and applies all

approaches to understanding the problem (Creswell, 2003, p.11 in Mackenzie & Knipe, 2006).

The Positivism paradigm advocates the application of the methods of the natural sciences to the study of social reality and beyond (Bryman, 2012). Positivism involves scientific, objective, and measurable facts that can predict the future (Donaldson, 1997 in Ghauri et al., 2020). Positivists held that the use of the scientific method allowed experimentation and measurement of what could be observed, with the goal of discovering general laws to describe constant relationships between variables (Mertens, 2014). It was followed by post-positivism, where post-positivists happened to reject the positivists' narrow view that what could be studied was limited to what could be observed, and they questioned the ability of researchers to establish generalizable laws as they applied to human behaviour, and recently suggest that researchers modify their claims to understandings of truth based on probability rather than certainty (Mertens, 2014).

(Veal, 2018) clarifies that the positivist hypotheses are tested using objectively collected factual data which, if successful, produces scientific laws; post-positivist hypotheses found to be consistent (or not) with the data believed to be 'not falsified', establishing probable facts or laws.

Mackenzie & Knipe (2006) discuss the fact that in the literature the terms *qualitative* and *quantitative* are often used in two distinct discourses, one relating to what is more commonly understood to be the research paradigm, as referred above, and the second referring to research methods, specifically how data is collected and analysed.

(Jennings, 2012) identifies two clusters of paradigms, those associated with qualitative research, using qualitative methodologies and those linked to quantitative research, which use predominantly quantitative methodologies. This author also states that among the areas of tourism studies and management, the dominant, hegemonic research paradigms are positivism and post-positivism, clarifying that post/positivistic paradigms adopt:

> - *an ontology that views truth and laws as universal (positivism) or immutable and shaped by historical and social circumstances (post-positivism);*
> - *an epistemology that is objective (positivism) or objective but recognizes the potential for researcher bias (post- positivism);*
> - *primarily a quantitative methodology. Some post-positivistic research may use mixed methods; and*
> - *an axiology predicated on value-free attitudes and a focus on the extrinsic value of research processes and outcomes. Some post-positivistic research may embrace an emancipatory role for research* (Jennings, 2012, pp. 310–311).

The exact nature of the definition of research is influenced by the researcher's theoretical framework and by the importance that the researcher places on distinguishing research from other activities or different types of research from each other (Mertens, 2014).

Research in which numbers are the main medium is designated by quantitative research (Veal, 2018). It is evident that this study opted for the post-positivist paradigm using quantitative methods. Quantitative research is an approach to test theories by examining the relationships among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures (Creswell & Creswell, 2018).

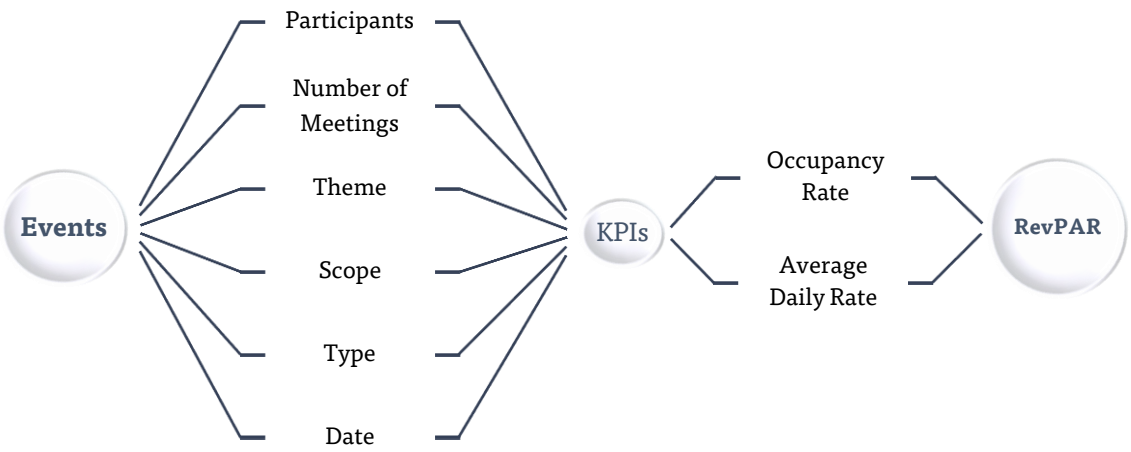
The main objective of this research is to understand the impact that the events have on the major Hotel Key Performance Indicators, specifically the impact on Hotel Occupancy, Hotel Average Daily Rate, and the Hotel Revenue per Available Room – RevPAR, and it uses the Events as the independent variable.

Events have several attributes that can influence the hotel occupancy. The number of participants or attendees is the main impact factor on the occupancy rate of the hotels, since it translates into room nights. The duration of the events also impacts on occupancy as well as the day of the week in which the events occur.

RevPAR is the result of the average daily rate and occupancy rate. If both are worked well – Occupancy and Rates – the RevPAR will be a reflex of that work.

The number of meetings happening daily also impacts on the number of participants and consequently on the occupancy rates and thus average daily rates. Although it must be referred that the number of meetings does not necessarily mean that there will be more participants, because meetings have different sizes and two meetings with 300 participants does not compare to one meeting with 1 500 participants.

Figure 46 – Structure of the Data Analysis



The subject or theme of the meeting, the scope – national or international -, and type – corporate or non-corporate – also impact hotels' KPIs because these may represent different profiles of participants and organizers that may have diverse budgets and resources.

The expression meeting was the one used by the ATL – Lisbon Convention Bureau, although it includes many types of events, so "events" is the expression used in the present research.

7.1. The Sample

To pursue the analysis and answer the objectives, two data sets were used and combined into one full set of data. The Events' data set and the KPIs' data set made available by STR.

The Events' data set was provided by the Associação de Turismo de Lisboa (ATL), Lisbon Tourism Association. The Lisbon Tourism Association – Visitors & Convention Bureau was established in 1997. The ATL is a non-profit private association, and it is the Regional Tourism Promotion Agency for the Region of Lisbon since 2004, maintaining international tourism promotion as its main activity. It cooperates in the organization of events in the city of Lisbon, and it provides financial support to events taking place in the city. The applications for the *Lisboa Financial Program* are the responsibility of the Lisboa Convention Bureau, according to the pre-requisites on the application form (*Visit Lisboa*, n.d.).

The data set provided by ATL was an Excel file which comprised a reference identification for the meeting, but not the name of the event nor the

organization; the starting and ending date, and in some cases the time; the number of participants, the scope of the meeting – national or international –, the type of meeting: corporate or non-corporate, the type of meeting location, that is, where the meeting took place, and finally the theme or subject of the meeting. The data ranges from 2013 to 2019. There were no relevant events in Lisbon in 2020 and 2021 due to the pandemic.

The data set was not even, namely in the fields type of meeting, location and subject of the meeting; this means that throughout the 7 years different entries were registered.

The other data set, the KPIs, were provided by STR, Smith Travel Research, which is an international company that provides data benchmarking, analytics, and marketplace insights for global hospitality sectors. Data provided by this company has been used in many other research papers (Barreda et al., 2017; Canina et al., 2006; Maier & Johanson, 2013). The data was structured on a file called "Daily data", in which daily RevPAR, ADR and Occupancy were recorded. The first file received by STR had data until 2018 and in 2020 I requested for an update for the data of the year of 2019.

7.2. Data Preparation

As stated above, the type of meeting location was not uniform throughout the 7 years of the data set. It had a variety of locations that ranged from the specific hotel to a more general identification that goes from *Hotel* to *Congress & Convention Centre*, to *Hotel/University*, *Other venues*, and *University*, in 2013. The years of 2014 and 2015 describe these locations: *Congress & Convention Centre*,

Hotel, *Other venues*, and *University*. From 2016 to 2019 there is a uniformization: *Congress & Convention Centre*, *Hotel, Other venues*, and *University or other scientific venues*.

To organize and uniform these categories all *Hotel* locations mentioned in the 2013 file were recorded under *Hotel*, and *Hotel/University* was simplified to only *Hotel*, another change was made from *University* to *University or other scientific venues*.

Concerning the subject of the meeting there was also a necessity to classify the data provided since there was no uniformization of the registries all over the 7 years of the data set. These are the registries found throughout the data set:

Agriculture
Architecture
Arts
Chemical Sciences
Commerce
Communication
Culture & Ideas
Ecology & Environment
Ecology & Environment/Economics
Economics
Economics/Ecology & Environment
Economics/Law
Economics/Medical Sciences
Economics/Science
Education
Education/Arts
Finance
Finance/Law
General
Historical Sciences
Historical Sciences/Law
ICT
Industry
Industry/Ecology & Environment
Law
Law/Ecology & Environment
Library & Information
Linguistics
Literature
Management
Mathematics & Statistics
Medical Sciences
Medical Sciences/Technology
Multimedia
Multimedia/Arts
Safety & Security
Science
Science/Management
Science/Technology
Social Sciences
Sports & Leisure
Technology
Technology/Law
Transport & Communication
Transport & Communication/Technology

Because these subjects represent many categories, making it difficult to analyse in statistical terms, 7 groups were created: General, Ecology & Environment, Arts & Culture, Medical & Sciences, Management & Social Sciences, Sports & Leisure and Information and Communication Technologies.

General was already a category, so it was not merged into any other, remaining the same. Sports & Leisure also remained the same category since there was no need to group this already single cluster.

Ecology & Environment encompasses the events listed under Agriculture, Ecology & Environment, Ecology & Environment/Economics, Economics/Ecology & Environment, Industry/Ecology & Environment and Law/Ecology & Environment in the original dataset.

Arts & Culture includes the events listed as Architecture, Arts, Culture & Ideas, Education, Education/ICT, Education/Arts, Historical Sciences, Historical Sciences/Culture & Ideas, Library & Information, Linguistics and Literature.

Medical & Sciences comprises the events listed as Medical Sciences, Science, Chemical Sciences, Economics/Medical Sciences, Economics/Science, Science/Arts, and Medical Sciences/Technology.

Management & Social Sciences includes several categories. The definition of Social Sciences by The New Shorter Oxford refers to social sciences as *the scientific study of the structure and functions of society and social relationships; any discipline, as politics, economics, etc. that attempts to study human society in a systematic way* ("The New Shorter Oxford English Dictionary on Historical Principles," 1994, p. 2931). Thus Management & Social Sciences embraces Commerce, Economics, Finance, Geography, Industry, Law, Law/Commerce,

Management, Management/Communication, Social Sciences/Law, Social Sciences and Finance/Law.

With this classification, the 7 types of events in the 7 years could be clearly explored and analysed.

The total number of participants was analysed in absolute terms and categorized. The categories created for the number of participants considered the financial support given by the ATL. The Lisboa Financial Program from 2021 states that "The level of support for association and corporate events taking place in Lisboa is granted according to the chart below and based on the estimated number of participants" ("The Lisboa Financial Program," 2020):

Figure 47 – Level of support for association and corporate events taking place in Lisboa.

Source: https://www.visitlisboa.com/en/convention-bureau

PARTICIPANTS	High season (April to October)	Low Season (November to March)
50-300	€4,000	€4,800
301-600	€6,500	€7,800
601-1200	€5,000	€7,000
1201-2700	€7,500	€10,500
2701-3800	€10,000	€14,500
3801-5400	€12,500	€18,000
5401-10000	€7,500	€14,000
10001-12000	€15,000	€28,000
OVER 12000	€25,000	€40,000

These represent 9 categories of participants. To shorten this number, and make it more suitable for analysis, 7 categories were created for the number of participants:

Category	*Number of participants*
1	0-50
2	51-300
3	301-800
4	801-1500
5	1501-5000
6	5001-10000
7	Above 10001

Concerning Occupancy rate, ADR and RevPAR categories were also created. For Occupancy, five categories were established:

Category	*Occupancy Rate*
1	0-40%
2	40,1-60%
3	60,1-75%
4	75,1-85%
5	85,1-100%

There were no previous studies found that led to this classification. Category 1 falls below a critical occupancy rate, which is 40%. Category 2 can be considered a middle occupancy category that can occur during the low season and shoulder/middle season. The rest of the classes aimed at understanding higher levels of occupancy related to ADR and RevPAR.

The ADR categories comprised 5 categories. The lowest ADR on the data set was 67,82 Euros and the highest 259,16. These categories pointed at a balanced analysis between these values.

Category	*ADR*
1	0,00-80,00€
2	80,01-100,00€
3	100,01-150,00€
4	150,01-200,00€
5	200,01-1000,00€

The RevPAR categories could not be the same as the ADR because the range of values is wider and so it need a more detailed analysis. The range of values found on RevPAR between 19,17€ and 256,66€, thus 6 categories were created:

Category	*RevPAR*
1	0,00-50,00€
2	50,01-80,00€
3	80,01-100,00€
4	100,01-150,00€
5	150,01-200,00€
6	200,01-1000,00€

Again, criteria for these categories were not found in literature. The categories were created to be used on SPSS analysis, since each line on this software is a variable value making it impossible to analyse.

7.3. Missing Values

The Events' data set provided by ATL had a few missing values in the number of participants. Missing data is common (Egger, 2022) or "a fact of life" as Seshadri states it (Pochiraju & Seshadri, 2019, p. 272), and it is difficult to avoid such problem (Hair et al., 2009, p. 29). In the field of statistics and data analysis there are several ways to deal with this matter, but first it is necessary to assess the extent of the missing data.

Data were missing in the *number of participants* variable in the years 2013, 2014 and 2015. The remaining data: type of event, venue/location, subject, and scope had no entries missing.

There are several types of missing values, “there is missing at random (MAR), missing not at random (MNAR), and missing completely at random (MCAR). MAR data occur when the probability of a missing value of a variable depends on other variables, but not the variable in question. MCAR data are unrelated to both the other variables and the variable in question” (Paczkowski, 2018, p. 262). Here, it seems to be the case of missing completely at random (MCAR), because the missing data are unrelated to both the other variables and the variable in question, it was basically unknown.

In 2013, the total of events was 1077, the events with the missing number of participants were 247, representing 22,94%. Of the unknown number of participants, 103 were corporate events, and 144 were non-corporate, representing 41,70% and 58,30%, respectively.

In 2014, from the 1048 recorded events, 155 were missing the number of participants, which represents 10,97% of the total. From these, 93 were corporate events and 22 were non-Corporate, representing 80,87% and 19,13%, respectively.

Finally in 2015, in a total of 1422 events, in 509 were missing the number of participants, representing 35,79% of the total, with 314, 61,69%, being corporate and 195, 38,31%, non-corporate.

There are several ways to handle missing values. One method is to exclude all observations where the values are missing, (Cleff, 2019; Egger, 2022; Pochiraju & Seshadri, 2019, p. 272), which means to delete records with any missing data. This does not seem to be the best solution since other important variables were present: type, scope, duration, location, and subject of the event. There are other methods such as imputation by Linear Regression, ignoring the missing data, or

imputing missing values using means and medians (Cleff, 2019; Mirkin, 2019; Paczkowski, 2018).

Thus, the decision made was that the method of imputing should be the mean. This is one of the most widely used methods (Hair et al., 2009, p. 61). Leedy & Ormrod refer the importance of describing the procedures to deal with missing data and the question of biasing the results (Leedy & Ormrod, 2015). To overcome these issues, values were imputed by type of meeting, subject, scope, and location. I started by narrowing the type of meeting: corporate or non-corporate; then the scope: national or international, then the location and the theme. After calculating the mean values in these categories, the "Unknown" cells were replaced by the mean found within the groups.

After these processes the two data sets were combined into one whole data set. The KPIs data set has one entry per day, so daily data. The events data set had one entry per meeting, so it was necessary to combine daily KPIs and the number of meetings and events per day. One day can have several events with different characteristics. For this excel was used and a pivot table built merging daily KPIs and the meetings and events. When analysing only the events, the Events data set was used and not the total data set. Consequently, two data sets were used in this research: the total data set, with KPIs and merged evets per day and the total events data set with, in some cases, several events per day.

7.4. The Main Variables

There are several studies that analyse RevPAR, ADR and/or Occupancy as Key Performance Indicators. Barreda et al. (2017) use them when they study the

impact of a mega-sporting event, the "2014 FIFA World Cup", on hotel pricing strategies and performance. Kim et al. (2019) debate the effect of hotels' price discounts on performance recovery after a crisis and use RevPAR and Occupancy as performance indicators. When investigating convention hotel demand and group segmentation, (Maier & Johanson, 2013) also use ADR and RevPAR. Enz et al. (2016) explore the effects of competitor pricing levels on relative revenue on a sample of over 4,000 hotels in Europe over a ten-year period (2004–2013) using ADR, RevPAR, and Occupancy in their descriptive statistics. (Moro & Rita, 2019) identified common city characteristics influencing room occupancy and feature RevPAR in their model. Sainaghi (2011) tries to identify RevPAR determinants of individual firms located in a destination, the city of Milan, using independent variables in the "what" and "where" dimensions.

It is essential to understand the real impact of the Web Summit in Lisbon. It was therefore necessary to investigate the results of Occupancy (overnight stays or room nights), ADR, and RevPAR throughout the 7 years, *and* during each date of the event: 4 years from 2016 to 2019 (in 2020 there was not a Web Summit due to the pandemic). I compared the *before* and *after* with percentage changes. Then, and similarly to Enz et al., (2016), I searched for maximum and minimum values and tried to justify the maximum values by crossing them with the events happening in Lisbon. Because maximum and minimum values, or range, do not provide a picture of the real variability and dispersion of the data analysed, I went further than previous studies and used descriptive statistics to describe the data and looked for measures of central tendency such as the median versus the mean to find out if the differences were significant. Also, the standard deviation was analysed to understand the spread of values and how far they are from the mean. Descriptive statistics refer to all techniques used to obtain information based on

the description of data from a population and it aims to reveal data in a purposeful, summarized fashion and, in this way, to transform data into information (Cleff, 2019).

The measured variables were the RevPAR, the Occupancy, and the ADR over 7 years. Daily data collected from STR allowed for a comparative study between hotel performance before and after the Web Summit in specific dates and not only monthly averages. I compare the 3 years prior to the event and the last 4 years of the event taking place in Lisbon. The sample size is 79 hospitality companies that represent 35,27% of a total of 224 properties in the STR census. STR defines its census as *the total number of hotels and rooms in a particular segment (i.e., country, market, or submarket)*(*Census | STR*, n.d.). These hotels provide STR with daily and monthly data and range from Economy to Luxury Class: 2 Economy Class, 18 Midscale Class, 20 Upper Midscale Class, 23 Upscale Class, 13 Upper Upscale Class, and 3 Luxury Class. The KPIs are from these hotels' RevPAR, ADR, and Occupancy data. I analysed the years before the Web Summit, starting in 2013, so 3 years prior to the event, and then the last 4 years of the event, starting in 2016 up to 2019.

Daily data, which is not always used in events' impact research, allows for a more precise analysis namely if there are occupancy peaks during the event and the total length of stay; if the occupancy of the nights before and after the event are influenced, that is, if attendees tend to arrive before the event or extend their stay, or if the occupancy is steady or it fluctuates throughout the event's duration. This is important because hoteliers seek to maximize guest stays and make use of practices such as bookings with a minimum length of stay.

7.5. Data Analysis and Discussion

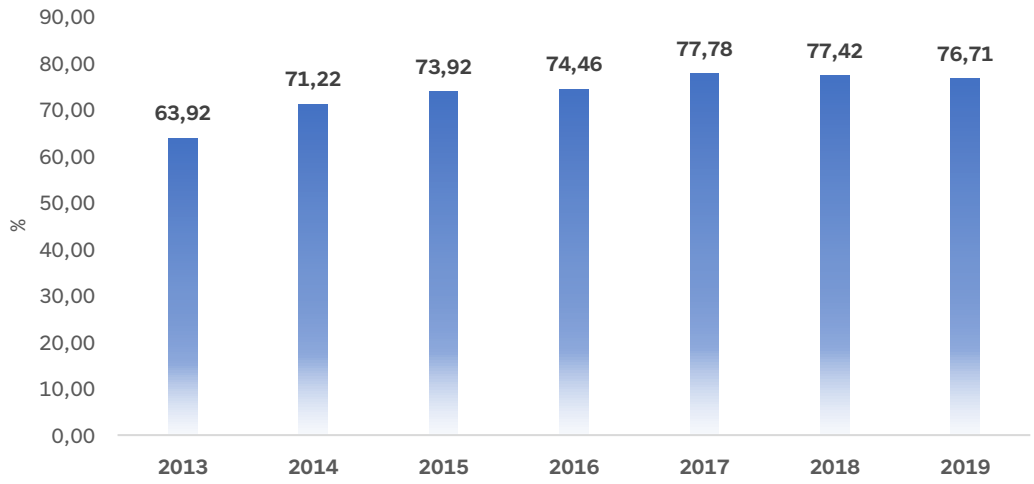
To answer the objectives, a thorough analysis of all data was performed. Excel and its statistics module to analyse the data was used, as well as the SPSS, Version 28.0.0.0 to perform a deeper analysis and the descriptive statistics. The use of Excel was an assumed choice because SPSS is not usually used in hotel KPIs analysis in the industry, more so are the Excel tools and the PMS software (Cross, 1997; Hayes & Miller, 2010). Excel is a spreadsheet application available with 'Microsoft Office' suite, useful for data management and analysis (Thomas, 2021). There have also been several recently published books that use Excel as a data analysis tool (Caiado, 2012; Cleff, 2019; Guerrero, 2019; Thomas, 2021) and some books refer to the use Excel as analysis tools in hospitality (Bodea & Ferguson, 2014; McGuire, 2015, 2017).

General KPIs were first analysed, and then descriptive statistics were used to understand the performance of hotels in Lisbon. Correlations and the analysis of variance (ANOVA) were also observed as to "examine whether changes in one or more variables are related to changes in other variables" (Thomas, 2021, p.74).

In 2013 the overall occupancy rate in Lisbon was 63,9%, with a small growth in the two following years: 2014, 71,2% and in 2015, 73,9%. In 2016, the first year of the event there is not much evidence of a major growth in the annual occupancy and probably no one expected an annual big impact on that year.

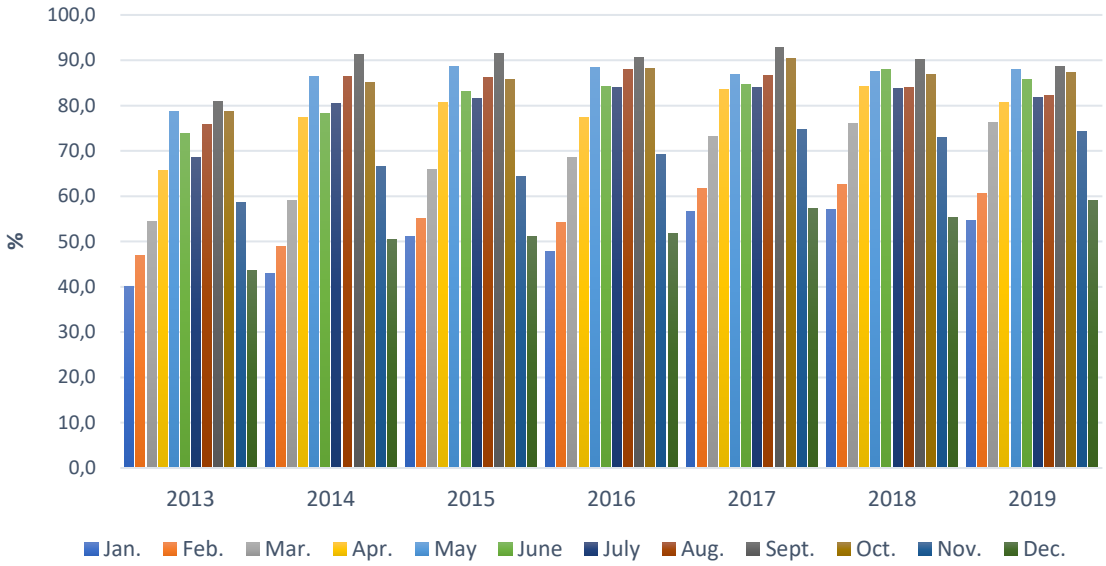
It is evident that the occupancy rates in Lisbon had been growing steadily in the past 7 years, although 2017 and 2018 have almost the same occupancy, and then a slight decrease in 2019.

Figure 48 – Data set Annual Occupancy Percentage, Lisbon: 2013-2019



In fact, occupancy rates in Lisbon had been growing gradually. When observing monthly differences, it is clear that the year of 2014 saw the biggest growth with months, such as April, July, August, September, November, and December seeing the occupancy rate increasing from 13,4% (in November) to 17,8% (in April). This pattern continues in the following year, specifically in the first trimester. Similar growth was observed again in the first two months of 2017, again with the month of January gaining 19,0% in occupancy compared to the previous year. But after the general improvement of 2014, the occupancy rates have not seen major increases and in 2019 there was even a slight decline.

Figure 49 – Data set Monthly Occupancy Rate 2013 to 2019



Also relevant is that the occupancy rate in the usual lower months, such as January, February, November, and December, has grown after 2016 and it has kept a level that had not been observed before. The differences between higher and lower months occupancy are less evident after 2016. In 2013 the difference between maximum and minimum statistics values is much greater than in the years after the Web Summit. In 2013 the minimum value of occupancy was 25,2% with a tendency to rise.

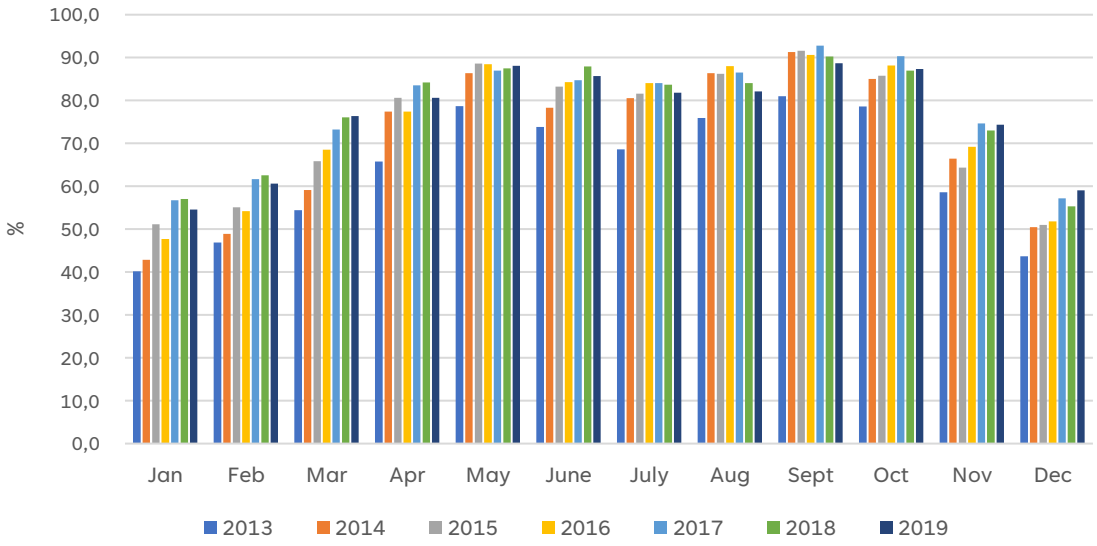
Table 5 –Occupancy Rate Descriptive Statistics 2013-2019

Occupancy	2013	2014	2015	2016	2017	2018	2019
Minimal	25,2	26,6	29,1	31,6	36,0	35,4	38,0
Maximum	94,8	99,4	98,4	98,5	98,3	97,3	97,6
Mean	63,9	71,2	73,8	74,4	77,8	77,2	76,7
Median	67,3	76,8	77,9	79,0	81,9	80,8	80,4
Mean deviation	16,5823	18,4726	17,2418	17,2211	15,0642	14,7289	14,2995
Q1	51,1047	54,4368	61,0698	60,5703	67,9514	67,8829	67,7424
Q3	77,0539	85,9937	88,4738	88,8518	90,1741	88,8072	88,2277
IQR	25,9492	31,5569	27,4039	28,2814	22,2227	20,9242	20,4853
Coefficient of Variation	25,9451	25,9471	23,3530	23,1418	19,3536	19,0742	18,6505

After 2016 there is a clear increase in the minimum values, revealing a lower impact of seasonality on occupancy. If this is because of the number of events, it is still unclear at this point.

When looking at occupancy rates over the years, the months with better performance in Lisbon are May, September, and October, but it can be considered that between April and October the performance is very regular, more so after 2016.

Figure 50 – Data set Monthly Occupancy 2013-2019

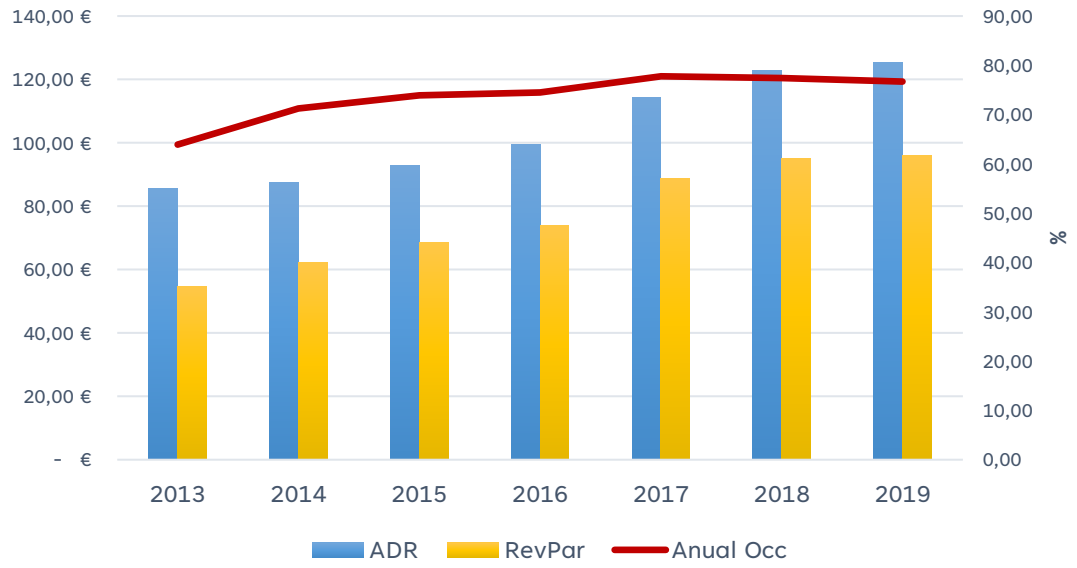


Nonetheless, hotels analyse their performance based on their revenue and not only occupancy, as revenue is the true indicator of a successful pricing strategy (and a fundamental of pricing). When analysing the evolution of ADR and RevPAR, it is evident that the occupancy rate has grown but the revenues have seen an even improved growth performance.

The Average Daily Rate (ADR) and the Revenue per Available Room (RevPAR) experience significant changes. Between 2013 and 2019 the ADR grew by 46,32% and the RevPAR grew by 75,58% which stands significantly above the 20,00% change observed in the Occupancy Rate growth. This evolution cannot

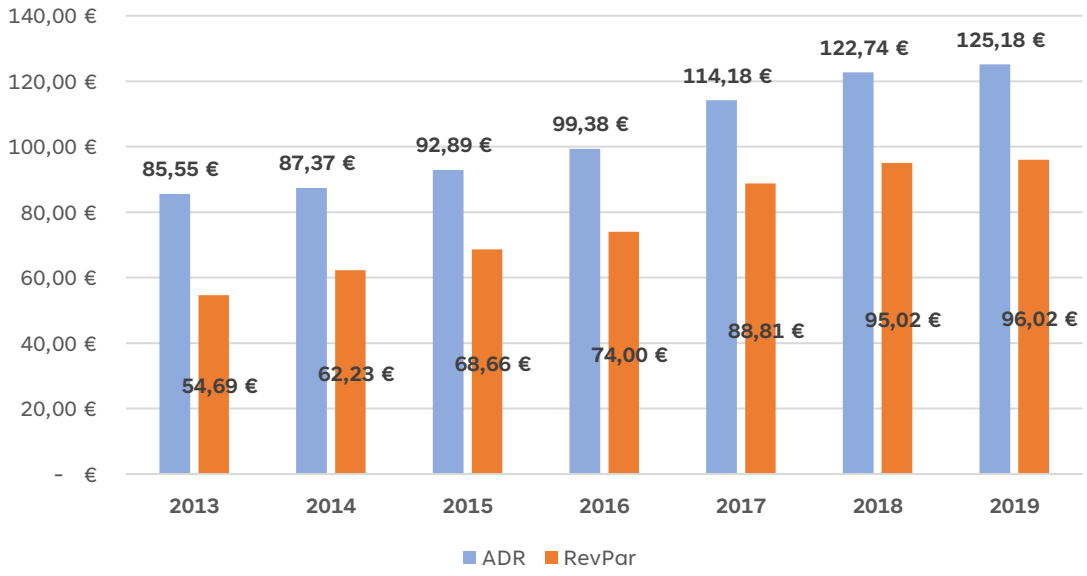
be attributed to the Web Summit event alone or any other big event, but also to the major campaigns carried out by the Portuguese Tourism Bureau (Turismo de Portugal).

Figure 51 – Data set Yearly ADR, RevPAR and Occupancy percentage, Lisbon, 2013-2019



A more detailed observation of the ADR and RevPAR clearly demonstrates that the evolution of these two KPIs has been substantial.

Figure 52 – Data set ADR and RevPAR Lisbon 2013 to 2019



This data set analysis reveals the same patters observed on Chapter 6: a growth in all KIPs both in the country and in Lisbon Area. These results validate the data sample for this study since they are aligned with the overall results observed in Lisbon. The object of the research is the years between 2013 and 2019.

7.5.1. Descriptive Statistics

Descriptive statistics explain the basic characteristics of the data (Sharda et al., 2018) that will help to accomplish the main goals of this research.

"Descriptive research is very common in the leisure and tourism area, for three reasons: the relative newness of the field, the changing nature of the phenomena being studied and the frequent separation between research and action", refers (Veal, 2018, p. 7), which is the present case: daily analysis throughout a period of seven years is new and it reveals a change or evolution in patterns of pricing patterns as well as the number and nature of events. The issue of separation between research and action may be attenuated here mostly practitioners can use their own data to perform this type of analysis within their own organizations.

Regarding Hotel KPIs, the search was for maximum and minimum values in the 7 years analysed. Then analysed two periods referred as *before* and *after the Web Summit* and looked for relationships between events and price levels. Then, more detailed research was executed, with the focus on the Web Summit event, in the Case Study chapter.

I primarily looked for maximum and minimum values in Occupancy, ADR and RevPAR throughout the 7 years.

Occupancy had its lowest value at 25,19% and maximum at 99,40%. As far as revenues are concerned, the minimum ADR was 67,82 Euros and the maximum was 259,16 Euros, and RevPAR had a minimum value of 19,17 Euros and a maximum of 256,66 Euros. The mean (or average) values for Occupancy, ADR and RevPAR were 73,07%, 98,18 Euros and 73,96 Euros, respectively.

"Measures of dispersion are the mathematical methods used to estimate or describe the degree of variation in a given variable of interest" (Sharda et al., 2018). Considering that measures of dispersion – or spread – of data values give a framework within one can judge and understand if the mean (or average) represents the data (Sharda et al., 2018). I wanted to validate the degree of variation within the three variables. These measures would allow to confirm if the performance, during the months of November and during the Web Summit, is distinct from the mean values, thus having an impact on overall performance.

I examined the standard deviation in the seven years and in the months of November before the Web Summit, and in more detail in the years of the event.

Measures of dispersion such as the standard deviation are sensitive to outliers (Bruce & Bruce, 2017). To avoid this, I computed the Mean Absolute Deviation (MAD). The MAD is a simpler way to compute the overall deviation from the mean (Sharda et al., 2018) and it is not influenced by extreme values. This will help understand the pricing dynamics.

Finally, I also computed the Interquartile Range (IQR). Like the MAD, the IQR does not take outliers into account only showing the distance between the middle 50 per cent of the data.

Table 6 – Descriptive statistics for Occupancy, ADR, and RevPAR – Years 2013-2019

	Occupancy	ADR	RevPAR
Minimal	25,19	67,82	19,17
Maximum	99,40	259,16	256,66
Mean	73,58	101,58	77,10
Median	77,51	95,15	74,41
Standard deviation	16,9	22,5429	30,8405
Q1	61,7816	84,4122	53,5083
Q3	87,2987	115,366	96,9497
IQR	25,5171	30,9542	43,4414

Although the MAD is not a very high value, it is still observed a spread in the KPIs, more accentuated on the RevPAR. When observing at the IQR, which is not as influenced by the extreme values, and observing the minimum and maximum values there is clearly a dispersion indicating that prices are dynamic.

Table 7 – Data set Mean Absolute Deviation (MAD) for Occupancy, ADR, and RevPAR – Years 2013-2019

Occupancy		ADR		RevPAR	
MAD:	11,65	MAD:	17,65	MAD:	21,79

These pricing dynamics may also justify the increase of the ADR and Occupancy.

It is more patent if both periods are compared: before and after the first Web Summit. The period before the Web Summit goes from 2013 to 2015, the before the Web Summit starts on 2016 and it goes until the 2019 in this analysis. The Web Summit started in 2016 and the reason it is considered “after” is because the announcement of this Event happened in September 2015, when it was it communicated that it would be moving from Dublin to Lisbon.

Table 8 – Data set Descriptive statistics for Occupancy, ADR, and RevPAR – Years 2013-2015

	Occupancy	ADR	RevPAR
Minimal	25,19	67,82	19,17
Maximum	99,40	259,16	256,66
Mean	69,65	86,73	61,81
Median	72,89	84,34	62,04
Standard deviation	17,9469	13,5185	23,1782
Q1	55,6055	78,5494	43,5453
Q3	83,7703	91,761	76,4849
IQR	28,1649	13,2116	32,9395

The maximum value on the RevPAR KPI happened before the Web Summit and it is due to a sports event: the 2014 UEFA Champions League Final in May of that year. There is a significant difference in the minimum and maximum values of the RevPAR, but the difference between the mean and the median is not as significant.

When looking at the MAD before 2016, the ADR and RevPAR have lower values, which shows that the pricing dynamics were not as relevant as they were throughout the 7 years. Also, the occupancy MAD is slightly higher because the seasonality is more evident.

Table 9 – Mean Absolute Deviation (MAD) for Occupancy, ADR, and RevPAR – Years 2013-2015

Occupancy		ADR		RevPAR	
MAD:	13,12	MAD:	11,45	MAD:	17,10

After the Web Summit the statistics display different results. The minimal values in all three KPIs have all risen, especially the ADR and the RevPAR.

Table 10 – Descriptive statistics for Occupancy, ADR, and RevPAR – Years 2016-2019

	Occupancy	ADR	RevPAR
Minimal	31,63	75,95	26,41
Maximum	98,47	207,11	201,64
Mean	76,53	112,71	88,55
Median	80,50	109,95	90,17
Standard deviation	15,43	21,52	30,90
Q1	66,891	95,192	63,641
Q3	88,927	125,667	108,847
IQR	22,036	30,475	45,206

After 2016 the MAD shows that Occupancy has had less variation, on the other hand, that MAD values for ADR and RevPAR clearly show that the prices have been more dynamic, and it is probably this dynamic that keeps the occupancy more stable.

Table 11 – Mean Absolute Deviation (MAD) for Occupancy, ADR, and RevPAR – Years 2016-2019

Occupancy		ADR		RevPAR	
MAD:	10,09	MAD:	29,45	MAD:	23,24

Measures of dispersion are accurate techniques to assess if dynamic pricing strategies, more specifically when comparing all the three KPIs: Occupancy, ADR and RevPAR. If Occupancy measures are high and ADR is low it means that seasonality is a factor, but pricing strategies does not accompany that periodicity. Analysing RevPAR values alone also provides some sort of answer, but it does not answer the question of weather is only seasonality, or ADR or a combination of both as a result of dynamic pricing strategies.

After understanding the analysis regarding KPIs it is necessary to understand the events in the city of Lisbon.

7.5.1.1. The Events

Between 2013 and 2019 the ATL has a record of 10 402 events, from these events, 4792 were corporate and 5610 non corporate. 5488 were national events and 4912 international events. All these representing a total 2 345 590 participants or attendees. 5 229 were events with duration superior to one night. This is relevant because there is a significant number of events that last only one day. The duration of the events has an impact on the potential room nights, still, events with only one day duration also represent potential room nights since attendees may arrive before the event or leave the day after.

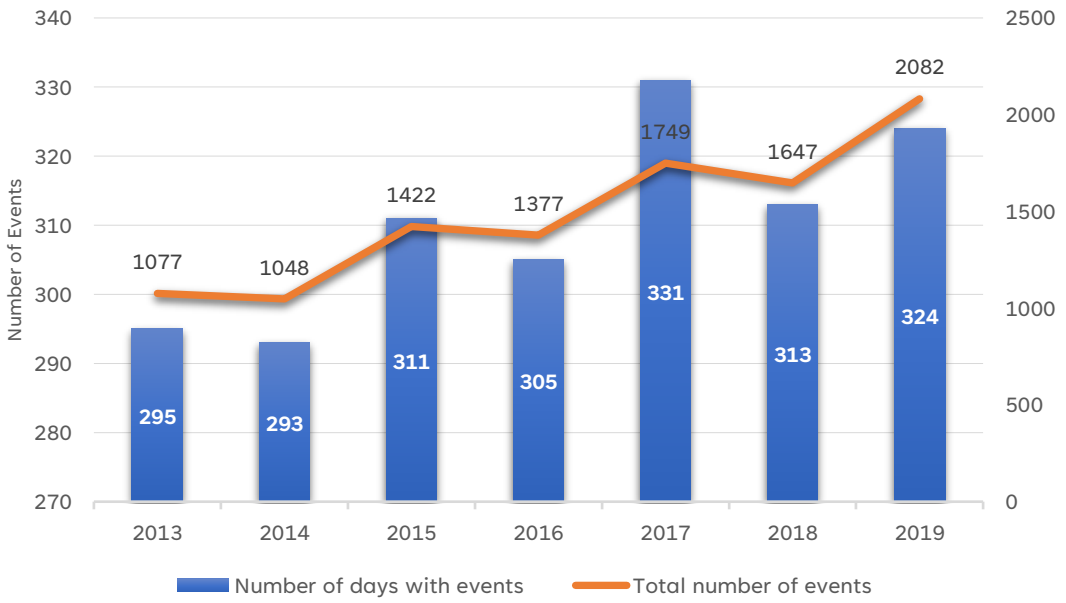
Regarding the type of events, Management & Social Sciences Events represent the highest number of events, and Ecology & Environment Events as well as Sports & Leisure Events have the lowest percentage.

Table 12 – Total Number of Events per Theme and Percentage Weight

Arts & Culture Events	Ecology & Environment Events	Management & Social Sciences Events	General Events	Information & Communication Technologies Events	Medical Sciences Events	Sports & Leisure Events
1 256	233	3 653	1 562	1 662	1 731	305
12,08%	2,24%	35,12%	15,02%	15,97%	16,64%	2,93%

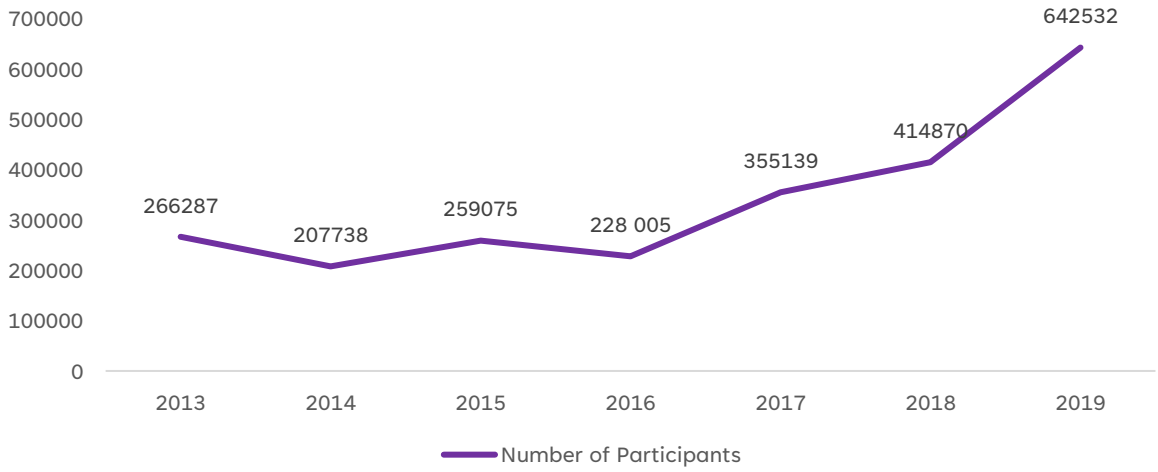
There is a clear evolution on the number of events occurring in Lisbon throughout the period of analysis. 2013 and 2014 have very similar number, then there is an increase of 35,7% in 2015 with a slight decrease in 2016, -3,2%. 2017 observes another leap of 26,9%, then another decrease of 5,8% and then again, an increase of 26,4% in 2019. Clearly there is a substantial change in the number of events every two years: in 2015, 2017 and 2019.

Figure 53 – Evolution of the number of Events and the Number of Days with Events



Concerning the evolution of the overall number of participants there is a significant growth, especially after 2017 an in 2019.

Figure 54 – Overall number of participants 2013-2019



It needs to be highlighted the first years the Web Summit occurred in Portugal, was in 2016. The number of participants is reported to be 53 056 people and another 19 000 youngsters with reduced price tickets, and it still represents a decrease of 22,8% in the number of participants.

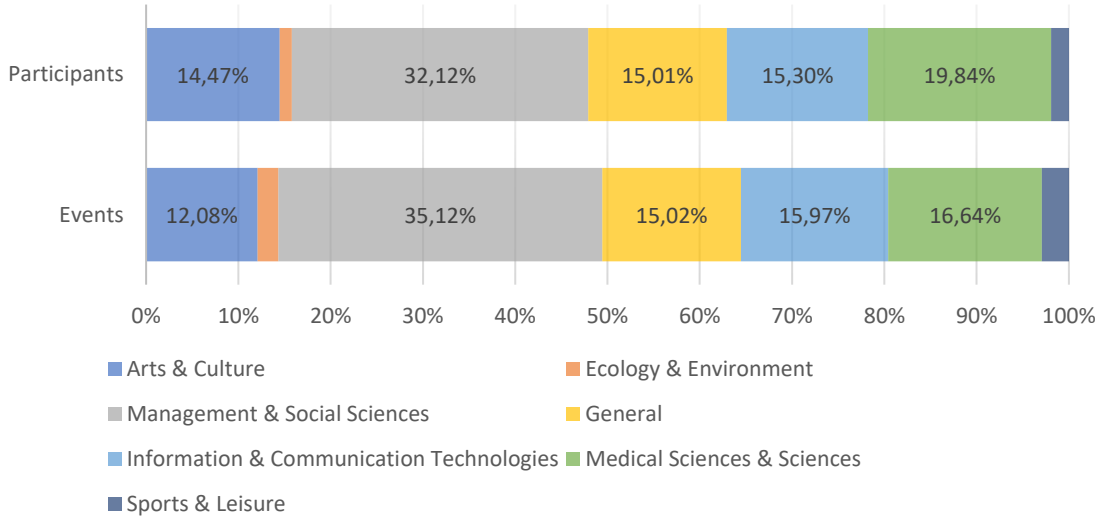
The number of participants not only has an impact on the occupation rates but also locally, with more tourists contributing to the economy, buying goods, visiting museums, and going to bars and restaurants.

Table 13 – Total Number of Participants per Theme of Event 2013-2019

Arts & Culture Events	Ecology & Environment Events	Management & Social Sciences Events	General Events	Information & Communication Technologies Events	Medical Sciences Events	Sports & Leisure Events
343480	31 661	762 352	356 337	363 128	470 904	45 784
14,47%	1,33%	32,12%	15,01%	15,30%	19,84%	1,93%

The total number of participants by itself it is not a sufficient indicator, it is necessary to distinguish the number of participants per type of meeting.

Figure 55 – Total percentages of Participants vs. Events



Management and Social Sciences have the highest number of events and participants. Medical Sciences represent 16,64% and almost 20% of the participants. The number of participants will influence the hotels' KPIs, thus these differences must be described. The number of participants will translate in potential room nights.

To understand the potential room nights that can come from these events, I multiplied the number of participants by the event duration. Here, events with no overnights – 1-day events – were also computed due to the reasons already mentioned. So, the minimum potential rooms nights that can come from these events are: 6 605 524. But because these are potential overnights, I also computed the total real overnights by the number of participants. For example, an event with a duration of two days has one overnight multiplied by the number of participants. This resulted in 4 259 934 overnights or room nights.

Events have an average duration of 2,49 days representing a 1,49 length of stay over the seven years.

To further understand what types of meeting take place and their relationship with hospitality firms results it is necessary to deepen this analysis. SPSS was used to understand the subject of the events and the types of the events.

The frequency statistics for the total number of events:

Table 14 – Descriptive Statistics – Total Number of Events

N	Valid	2172
	Missing	384
Mean		4,79
Median		4,00
Standard error		3,421
Variance		11,703
Asymmetry		1,186
Standard asymmetry error		,053
Range		20
Sum		10402

The above table shows that there was an average of 4,79 meetings or events per day in Lisbon.

The total number of events is relevant, however national, and international events can have a different impact on overnights and pricing strategies.

Table 15 – Descriptive statistics Scope and Type of Event

Descriptive Statistics	N	Minimum	Maximum	Sum
National	5490	1	1	5490
International	4912	1	1	4912
Total Corporate	4792	1	1	4792
Total Non-corporate	5610	1	1	5610
N valid	0			

The meetings or events are either national or international and they can be corporate or non-corporate. The above count shows that there are more national events than international, and more non-corporate than corporate events.

International events may have more potential room nights and corporate events may also represent more potential for revenues. These results show that there is still potential for growth.

Table 16 - Crosstabs Scope and Type of Events 2013-2019

	N	Percentage
National * Total Corporate	2362	22,7%
National * Total Non-corporate	3128	30,1%
International * Total Corporate	2430	23,4%
International * Total Non-corporate	2482	23,9%

There were more national than international events. And there were more non-corporate than corporate events.

The non-corporate events are organized by universities, polytechnics, nonprofit organizations, professional associations, public entities, or the government. The corporate events are organized by firms and enterprises. The original data set does not clarify the criteria. 30,1% of all the events are national and non-

corporate events. At the international level, the division is more equitable, and the absolute number of corporate international events is superior to the national number of corporate events.

This distinction does not mean that there can be different resources, because many non-corporate events can be sponsored by large corporations therefore expanding the budget and allowing the hotels to practice higher prices. For this reason, the analysis should try to understand the theme of the meeting as to understand the KPI levels related to it. Before it is required to crosstab the type with the theme.

Table 17 – Crosstab Theme of Event Category and Type of meeting 2013-2019

		Type of meeting		
		Corporate	Non-Corporate	Total
Theme of Meeting	Architecture, Arts & Culture	127	1129	1256
	General	792	770	1562
	Management & Social Sciences	1830	1823	3653
	Information & Communication Technologies	1033	629	1662
	Medical Sciences & Science	738	993	1731
	Ecology & Environment	53	180	233
	Sports & Leisure	219	86	305
Total		4792	5610	10402

Management & Social Sciences (M&SC) and Information & Communication Technologies represent the major number of corporate events followed by General and Medical Sciences & Science. On the other hand, M&SC are followed Medical Sciences and Science in the non-corporate events.

The number of events is not enough to reveal the impact on occupancy, for this analysis, the number of participants is necessary. It is also necessary to understand if the number of events corresponds to the number of participants category, because the number of events alone does not reveal the full its impact.

As previously observed on Table 13, 52,58% of the total number of participants came to Lisbon for Management & Social Sciences and Medical Sciences & Science events.

The following table shows that Management & Social Sciences and Medical Sciences & Science have the most events with the highest number of participants. From a total of 11 events with more than 10 000 participants, 6 pertained to these subjects' category.

Table 18 – Crosstab Theme of Event Category and Participants Category

		Participants Category							
		1-50	51-299	300-799	800-1499	1500-4999	5000-9999	Above 10000	Total
Theme of Meeting	Architecture, Arts & Culture	442	585	208	15	4	1	1	1256
	General	662	760	109	20	8	1	2	1562
	Management & Social Sciences	1418	1890	261	62	18	1	3	3653
	Information & Communication Technologies	624	863	144	21	5	3	2	1662
	Medical Sciences & Science	536	938	160	59	25	10	3	1731
	Ecology & Environment	68	144	18	3	0	0	0	233
	Sports & Leisure	162	126	12	4	0	1	0	305
Total		3912	5306	912	184	60	17	11	10402

Seasonality is a yearly, monthly, and weekly phenomenon. Events usually take place during the week, except for some major sporting events, such as the already mentioned Final of the UEFA Champions League that was on a Saturday.

The next section will investigate the seasonality topic, both on the twelve-monthly level as well as on a weekly basis related to hotel KPIs.

Most of the events are small and medium size. Major events usually more mediatic impact and help attracting visibility to the destination. It is important that major events do continue to occur as to keep the destination attractive and

relevant for other events. Throughout the seven years there were 11 events with more than 10 000 participants Medical Sciences and Science had 3 events in this category and 10 events in the category 5000 to 9999, and 25 with between 1500 to 4999 participants. In fact, the second and third highest RevPAR found in the seven-year period was found during a Medical event: in 2017, from October 6th to 9th – an average RevPAR of 191,11 € (on the 7th 201,64 €) – The XXXV Congress of the European Society of Cataract and Refractive Surgeons (ESCRS) 7-11 October 2017 (nearly 16 000 delegates – nonofficial numbers). And again in 2017, from September 11th to 14th – with an average RevPAR of 198,42 € (on the 11th 201,51 €) – The 53rd Annual Meeting of the European Association for the Study of Diabetes 11-15 September 2017 (nearly 18 000 delegates – nonofficial numbers).

The first was a Sports event: The Champion's League Final between Real de Madrid and Atlético de Madrid, but this only a one-day event.

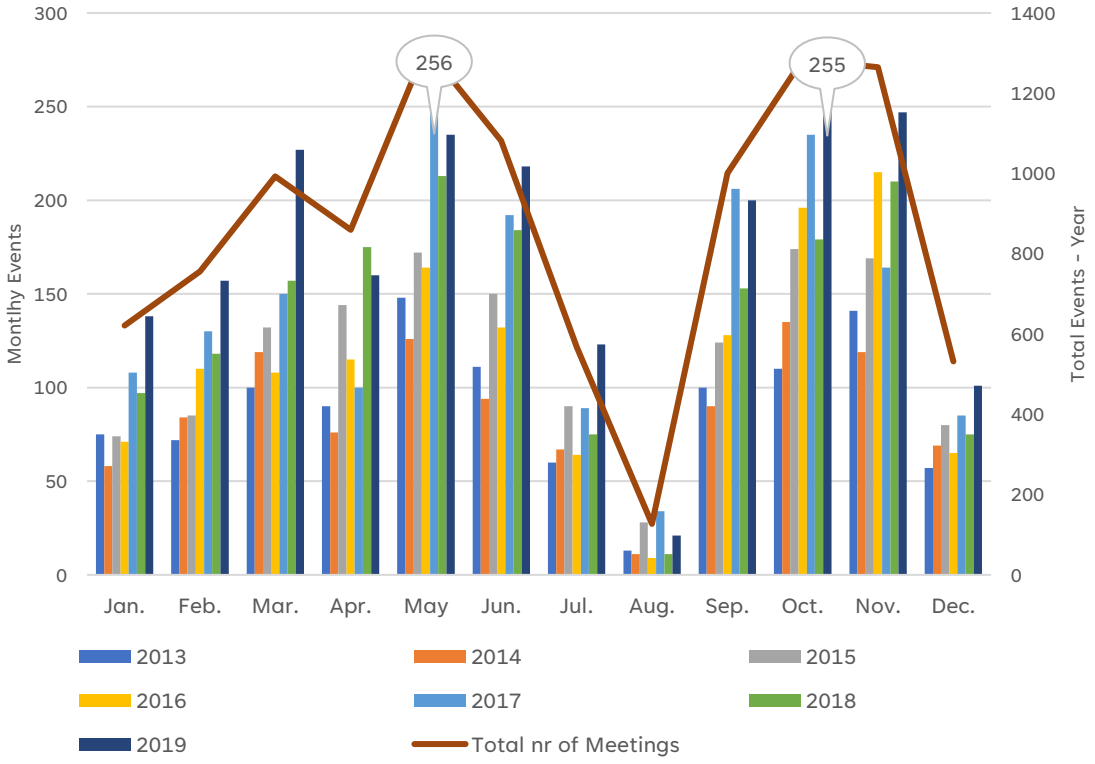
7.5.1.2. The Events and Hotel KPIs

Understanding if there is an impact or a relationship between Events, RevPAR, ADR, and Occupancy on each day of the week is important for hotels to develop their pricing strategies and for event planners as well.

Events occur mostly during the months of May and from September to November. The months with less Events are August and December. In December, Events cease to happen on the second fortnight, opening room for leisure and shopping guests.

The month of November saw an increase in the numbers, particularly after the first Web Summit in 2016.

Figure 56 – Number of Events per Month 2013-2019

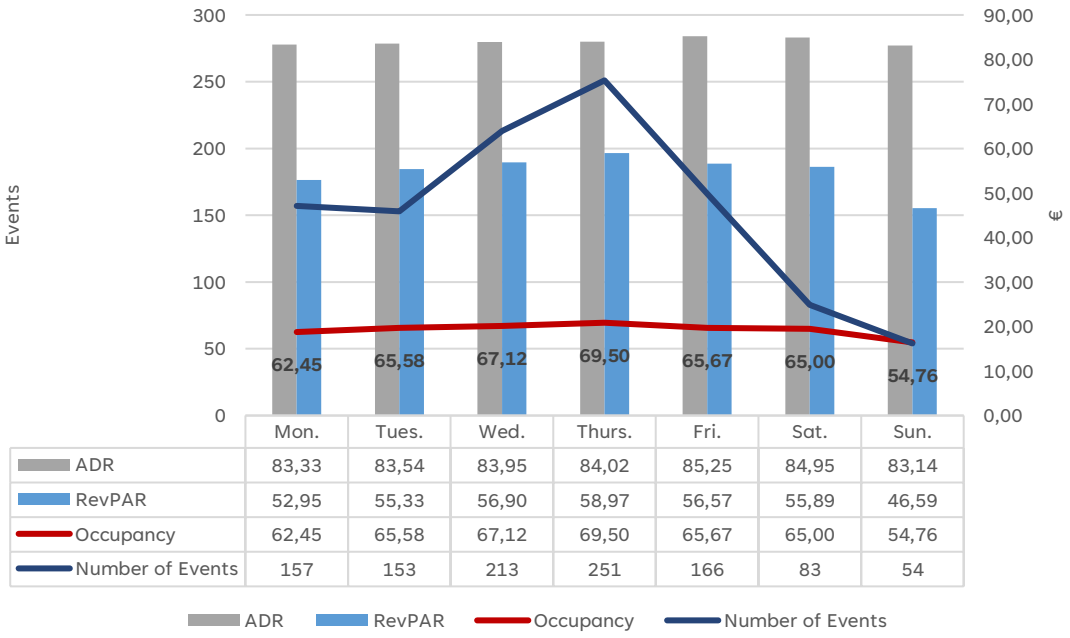


2016 registered the highest number of events in the month of November, this may be explained by the impact and novelty of the WS, which stimulated other Events, that can be considered "satellite events".

It is now necessary to understand events per day of the week since hotels operate on a daily basis and the different days of the week impact differently on occupancy and revenue performance levels.

In 2013, events took place mostly between Tuesday and Friday, with the peak number on Thursdays, already representing an opportunity to allow guests to extend their stays.

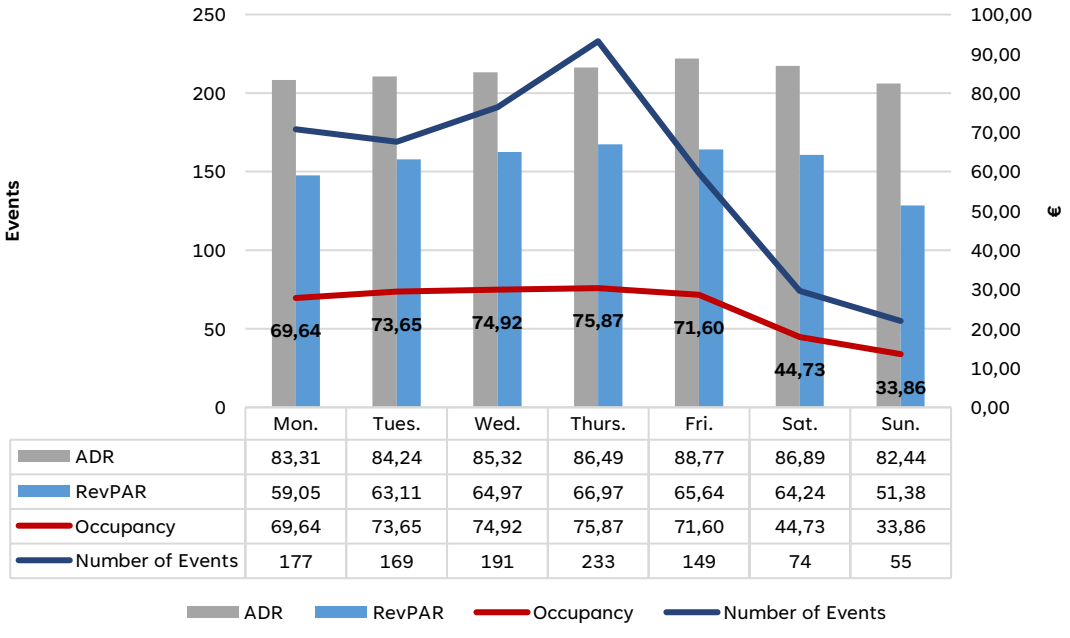
Figure 57 – ADR, RevPAR, Occupancy and Events by Day of Week – 2013



	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
ADR	83,33	83,54	83,95	84,02	85,25	84,95	83,14
RevPAR	52,95	55,33	56,90	58,97	56,57	55,89	46,59
Occupancy	62,45	65,58	67,12	69,50	65,67	65,00	54,76
Number of Events	157	153	213	251	166	83	54

In 2014 the pattern is the same with a slight increase on the number of events at the beginning of the week.

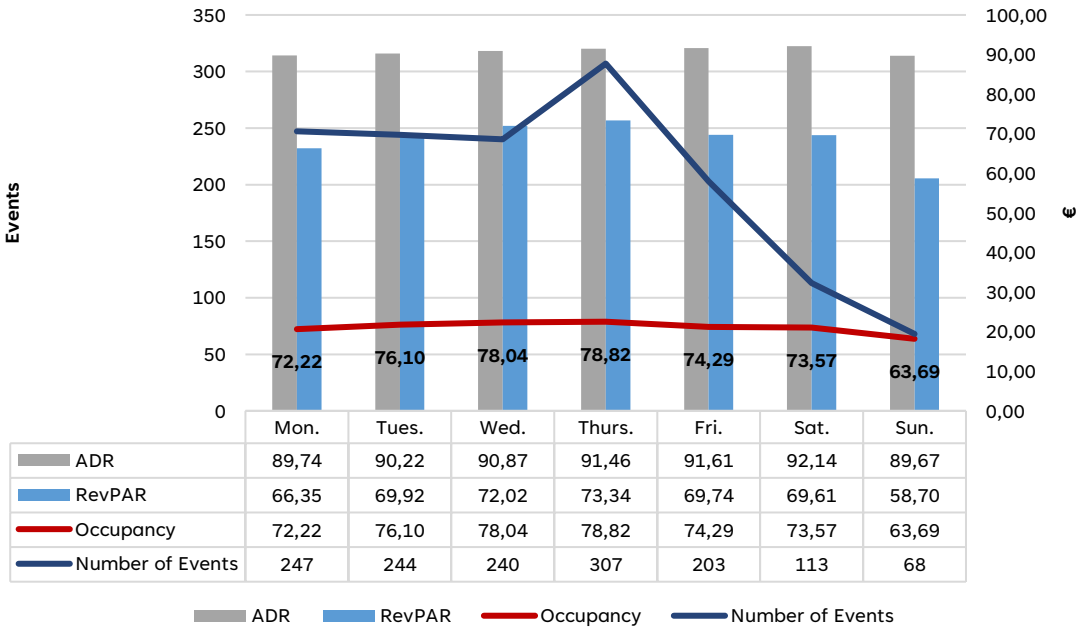
Figure 58 – ADR, RevPAR, Occupancy and Events by Day of Week – 2014



	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
ADR	83,31	84,24	85,32	86,49	88,77	86,89	82,44
RevPAR	59,05	63,11	64,97	66,97	65,64	64,24	51,38
Occupancy	69,64	73,65	74,92	75,87	71,60	44,73	33,86
Number of Events	177	169	191	233	149	74	55

In 2015 the increase in events at beginning of the week sees a clear increase. The occupancy, the ADR and the RevPAR also seen an increase. This possibly shows a better planning in the Events and the pricing dynamics.

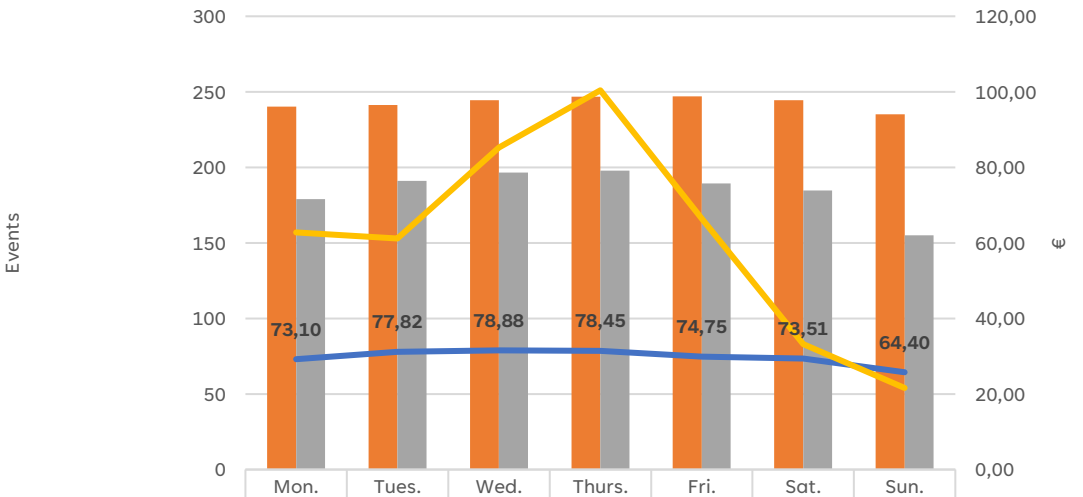
Figure 59 – ADR, RevPAR, Occupancy and Events by Day of Week – 2015



	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
ADR	89,74	90,22	90,87	91,46	91,61	92,14	89,67
RevPAR	66,35	69,92	72,02	73,34	69,74	69,61	58,70
Occupancy	72,22	76,10	78,04	78,82	74,29	73,57	63,69
Number of Events	247	244	240	307	203	113	68

In 2016, the first year of the Web Summit, the same pattern of events' occurrences throughout the week is observed, however events at the beginning of the week have again a decrease.

Figure 60 – ADR, RevPAR, Occupancy and Events by Day of Week – 2016



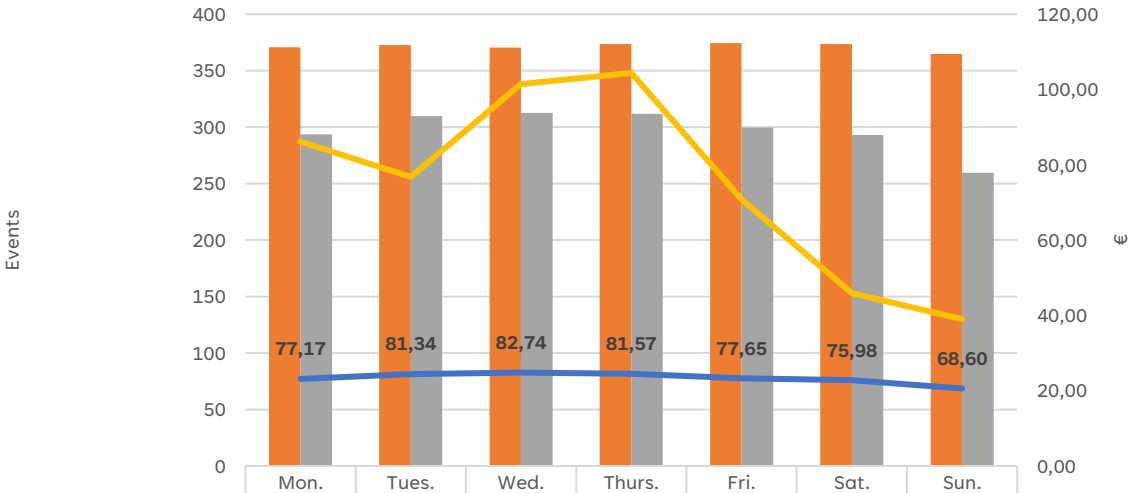
	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
ADR	96,09	96,55	97,81	98,72	98,81	97,77	94,05
RevPAR	71,56	76,45	78,65	79,12	75,76	73,86	62,04
Occupancy	73,10	77,82	78,88	78,45	74,75	73,51	64,40
Number of Events	157	153	213	251	166	83	54

The following years observe, not only an increase in the number of events, but also more events happening in other days of the week, especially with more events starting on Mondays.

The fact that events, specifically after 2017, have a tendency to start more at the beginning of the week allows for more events to happen in more days and not just concentrated on Tuesdays to Thursdays. This is important not only for hotels as well as for the venue administrators and transportation.

It also allows for some sort of work on the side of the hotels to incentivize their guests to book the Sunday night, which is usually less busy.

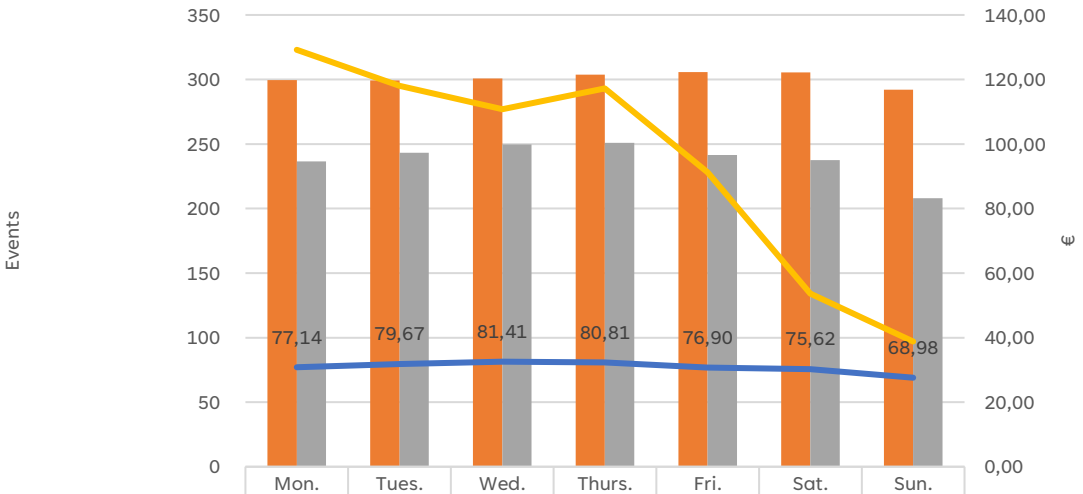
Figure 61 – ADR, RevPAR, Occupancy and Events by Day of Week – 2017



	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
ADR	111,17	111,79	111,14	112,05	112,28	112,10	109,45
RevPAR	88,12	92,92	93,81	93,54	89,85	87,95	77,84
Occupancy	77,17	81,34	82,74	81,57	77,65	75,98	68,60
Number of Events	287	256	338	348	236	153	130

2018 sees an increase in the events on Mondays, as much as this day is the day with the most events in the whole year. Even though there are more events on Monday the highest RevPAR is observed on Thursday. This shows that probably events the generate higher revenues still choose this day.

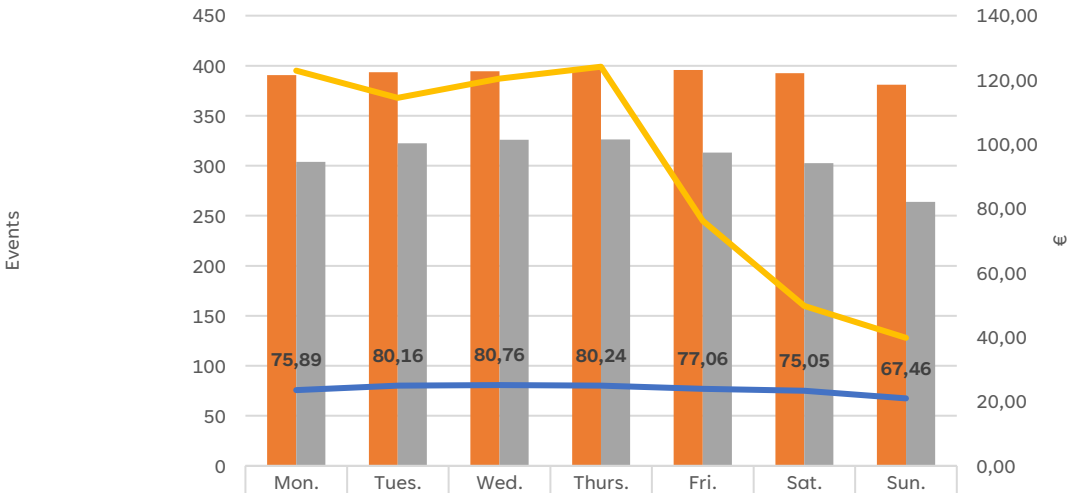
Figure 62 – ADR, RevPAR, Occupancy and Events by Day of Week – 2018



	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
ADR	119,78	119,68	120,33	121,48	122,25	122,18	116,86
RevPAR	94,57	97,29	99,88	100,37	96,57	95,04	83,18
Occupancy	77,14	79,67	81,41	80,81	76,90	75,62	68,98
Number of Events	323	295	277	293	228	134	97

2019 is a consolidation year. Clearly from Monday to Thursdays the number of events is quite regular. The highest ADR and RevPAR are observed between Tuesday and Thursday.

Figure 63 – ADR, RevPAR, Occupancy and Events by Day of Week – 2019



	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
ADR	121,53	122,41	122,70	123,30	123,13	122,14	118,54
RevPAR	94,51	100,33	101,42	101,52	97,45	94,18	82,10
Occupancy	75,89	80,16	80,76	80,24	77,06	75,05	67,46
Number of Events	395	368	387	399	245	160	128

Friday does not have the same number of events as the rest of the week but both ADR and RevPAR have high values, suggesting that probably some of the

attendees or participants pay extend they stay until Saturday. This is relevant considering the potential length of stay that can be worked on during events.

7.6. Correlation and Analysis of Variance

Correlation can be used to examine the relationships between two or more variables (Veal, 2018, p. 541). The relationships can be positive, meaning that when one variable increases, so does the other one. Conversely, the relationships can be negative. Variables are negatively correlated if one variable increases as the other decreases. Un-correlated variables have no relationship between each other.

There is a positive correlation between the number of events and the RevPAR. So, events do have an impact on the RevPAR, which is expected.

Table 19 – Correlations – RevPAR vs. Total Nr of Events

Correlations

		RevPAR	Total Nr of Events
RevPAR	Pearson Correlation	1	,344**
	Sig. (2-tailed)		<,001
	N	2556	2172
Total Nr of Events	Pearson Correlation	,344**	1
	Sig. (2-tailed)	<,001	
	N	2172	2172

**. Correlation is significant at the 0.01 level (2-tailed).

There is also a positive correlation when observing the occupancy and the number of events.

Table 20 – Correlations – Occupancy vs. Total Nr of Events

Correlations

		Total Nr of Events	Occ %
Total Nr of Events	Pearson Correlation	1	,323**
	Sig. (2-tailed)		<,001
	N	2172	2172
Occ %	Pearson Correlation	,323**	1
	Sig. (2-tailed)	<,001	
	N	2172	2556

**. Correlation is significant at the 0.01 level (2-tailed).

There is also a positive correlation when observing the ADR and the number of events.

Table 21 – Correlations – ADR vs. Total Nr of Events

Correlations

		ADR	Total Nr of Events
ADR	Pearson Correlation	1	,296**
	Sig. (2-tailed)		<,001
	N	2556	2172
Total Nr of Events	Pearson Correlation	,296**	1
	Sig. (2-tailed)	<,001	
	N	2172	2172

**. Correlation is significant at the 0.01 level (2-tailed).

The above correlations are positive, but not too strong, interestingly all around the same values, reinforcing that events do have some impact of those hotels' KPIs. On the other hand, it also shows that meetings or events are important demand generators they are not the most important ones. There is a balance: even if other demand generators are not being analysed in this study, the fact that the correlation exists but it is not the strongest possible, it means that other factors can have bigger correlations.

Interestingly, the correlation is not so evident, it is weak actually, when comparing the Number of Participants with Occupancy and RevPAR.

Table 22 – Correlations – Occupancy percentage vs. Total participants

Correlations

		Occ %	Total Participants
Occ %	Pearson Correlation	1	,122**
	Sig. (2-tailed)		<,001
	N	2556	2172
Total Participants	Pearson Correlation	,122**	1
	Sig. (2-tailed)	<,001	
	N	2172	2172

**. Correlation is significant at the 0.01 level (2-tailed).

It is not clear that the participants occupy single or double rooms. So, the rooms are sold regardless of the occupancy type, thus 2 participants can occupy one or

two rooms, making the occupancy levels more difficult to analyse in relation to the number of participants.

Table 23 – Correlations – RevPAR vs. Total participants

Correlations

		Total Participants	RevPAR
Total Participants	Pearson Correlation	1	,188**
	Sig. (2-tailed)		<,001
	N	2172	2172
RevPAR	Pearson Correlation	,188**	1
	Sig. (2-tailed)	<,001	
	N	2172	2556

**. Correlation is significant at the 0.01 level (2-tailed).

Table 24 – Correlations – ADR vs. Total participants

Correlations

		Total Participants	ADR
Total Participants	Pearson Correlation	1	,195**
	Sig. (2-tailed)		<,001
	N	2172	2172
ADR	Pearson Correlation	,195**	1
	Sig. (2-tailed)	<,001	
	N	2172	2556

**. Correlation is significant at the 0.01 level (2-tailed).

It is only slightly higher the correlation between revenues – ADR and RevPAR – and the number of participants.

The Analysis of Variance (ANOVA)

"The *analysis of variance* (ANOVA) is an effective technique to determine whether the differences between means of more than two samples are statistically significant" (Thomas, 2021, p. 159).

Categories were created for Occupancy, ADR and RevPAR in order to allow this ANOVA analysis.

I analysed whether the RevPAR has any type of relationship with the number of events and the number of participants. There is a clear relationship, as it can be observed below.

Table 25 – Analysis of variance RevPAR Category with Total Events and Participants

ANOVA – RevPAR Category

		Sum of the squares	df	Mean Square	Z	Sig.
Total Nr of Events	Between groups	3267,248	5	653,450	63,928	<,001
	Within groups	22140,176	2166	10,222		
	Total	25407,424	2171			
Total Participants	Between groups	820227469,821	5	164045493,964	17,078	<,001
	Within groups	20805981519,256	2166	9605716,306		
	Total	21626208989,077	2171			

The 6 RevPAR categories are:

1 0,00-50,00€
2 50,01-80,00€
3 80,01-100,00€
4 100,01-150,00€
5 150,01-200,00€
6 200,01-1000,00€

There are statistically significant values ($p < .001$) that allow for the statement that the RevPAR and the number of events and participants relate.

The same analysis was made for the ADR category and the Occupancy rate category, with the same results, confirming the correlation results previously presented.

Table 26 – Analysis of variance ADR Category with Total Events and Participants

ANOVA – ADR Category

		Sum of the squares	df	Mean Square	Z	Sig.
Total Nr of Events	Between groups	1977,952	4	494,488	45,735	<,001
	Within groups	23429,472	2167	10,812		
	Total	25407,424	2171			
Total Participants	Between groups	1451312005,390	4	362828001,348	38,972	<,001
	Within groups	20174896983,687	2167	9310058,599		
	Total	21626208989,077	2171			

Table 27 – Analysis of variance Occupancy Category with Total Events and Participants

ANOVA – Occupancy category

		Sum of the squares	df	Mean Square	Z	Sig.
Total Nr of Events	Between groups	2993,293	4	748,323	72,348	<,001
	Within groups	22414,130	2167	10,343		
	Total	25407,424	2171			
Total Participants	Between groups	397878241,439	4	99469560,360	10,154	<,001
	Within groups	21228330747,638	2167	9796184,009		
	Total	21626208989,077	2171			

Another important analysis refers to the theme of the events. The subject of the meeting implies different organizers, institutions, and participants that suggest also different budgets, sponsors, and participants willingness to pay.

It is important to verify if the different themes have different relationships with the Occupancy category, the ADR category, and the RevPAR.

The relationships may different, because participants in a medical science event may be able to pay a higher rate that a student participating in a sports event, for example.

The most significant relationships concern the Management & Social Sciences Events, the General Events, the ICT Events and Medical Science & Science Events. Interestingly Sports and Leisure Events have the least significant relationship with occupancy in Hotels in Lisbon.

Table 28 – Analysis of variance Occupancy Category with all Themes of Events

ANOVA – Occupancy Category

		Sum of the squares	df	Mean Square	Z	Sig.
Architecture, Arts & Culture Events	Between groups	4,346	4	1,087	1,578	,178
	Within groups	581,729	845	,688		
	Total	586,075	849			
Ecology & Environment Events	Between groups	,403	4	,101	,890	,471
	Within groups	23,303	206	,113		
	Total	23,706	210			
Management & Social Sciences Events	Between groups	218,322	4	54,581	23,194	<,001
	Within groups	3649,786	1551	2,353		
	Total	3868,108	1555			
General Events	Between groups	24,581	4	6,145	8,771	<,001
	Within groups	707,632	1010	,701		
	Total	732,213	1014			
ICT Events	Between groups	45,158	4	11,290	15,819	<,001
	Within groups	762,920	1069	,714		
	Total	808,078	1073			
Medical Sciences & Science Events	Between groups	33,907	4	8,477	13,295	<,001
	Within groups	725,604	1138	,638		
	Total	759,512	1142			
Sports and Leisure Events	Between groups	,411	4	,103	,750	,558
	Within groups	36,585	267	,137		
	Total	36,996	271			

The same pattern of relationship is found when analysing the ADR category.

Table 29 – Analysis of variance ADR Category with all Themes of Events

ANOVA – ADR Category

		Sum of the squares	df	Mean Square	Z	Sig.
Architecture, Arts & Culture Events	Between groups	7,712	4	1,928	2,817	,024
	Within groups	578,363	845	,684		
	Total	586,075	849			
Ecology & Environment Events	Between groups	,336	4	,084	,742	,565
	Within groups	23,370	206	,113		
	Total	23,706	210			
Management & Social Sciences Events	Between groups	253,274	4	63,318	27,168	<,001
	Within groups	3614,834	1551	2,331		
	Total	3868,108	1555			
General Events	Between groups	11,848	4	2,962	4,153	,002
	Within groups	720,365	1010	,713		
	Total	732,213	1014			
ICT Events	Between groups	29,836	4	7,459	10,246	<,001
	Within groups	778,242	1069	,728		
	Total	808,078	1073			
Medical Sciences & Science Events	Between groups	17,008	4	4,252	6,517	<,001
	Within groups	742,504	1138	,652		
	Total	759,512	1142			
Sports and Leisure Events	Between groups	,312	3	,104	,760	,518
	Within groups	36,684	268	,137		
	Total	36,996	271			

Although here the least significant are the Ecology & Environment Events followed by the Sports and Leisure Events.

The RevPAR Category also shows the same patterns, but here the AA&C Events also have a relationship with the RevPAR even if is not as significant as the rest of the relationships, it is worth pointing out.

Table 30 – Analysis of variance RevPAR Category with all Themes of Events

ANOVA – RevPAR Category

		Sum of the squares	df	Mean Square	Z	Sig.
Architecture, Arts & Culture Events	Between groups	8,062	5	1,612	2,354	,039
	Within groups	578,013	844	,685		
	Total	586,075	849			
Ecology & Environment Events	Between groups	,865	4	,216	1,951	,103
	Within groups	22,841	206	,111		
	Total	23,706	210			
Management & Social Sciences Events	Between groups	299,074	5	59,815	25,977	<,001
	Within groups	3569,034	1550	2,303		
	Total	3868,108	1555			
General Events	Between groups	24,078	5	4,816	6,862	<,001
	Within groups	708,135	1009	,702		
	Total	732,213	1014			
ICT Events	Between groups	49,427	5	9,885	13,916	<,001
	Within groups	758,651	1068	,710		
	Total	808,078	1073			
Medical Sciences & Science Events	Between groups	35,367	5	7,073	11,106	<,001
	Within groups	724,144	1137	,637		
	Total	759,512	1142			
Sports and Leisure Events	Between groups	,684	4	,171	1,258	,287
	Within groups	36,312	267	,136		
	Total	36,996	271			

Summarising with a final ANOVA analysis, on the following page, the number of events and the participants in them do have an impact in the Lisbon hotels' KPIs.

Table 31 – Analysis of variance Total Number of Events and hotels' KPIs

ANOVA – Total Number of Events

		Sum of the squares	df	Mean Square	Z	Sig.
RevPAR Cat	Between groups	313,427	19	16,496	15,253	<,001
	Within groups	2327,455	2152	1,082		
	Total	2640,882	2171			
ADR Cat	Between groups	95,905	19	5,048	9,403	<,001
	Within groups	1155,260	2152	,537		
	Total	1251,165	2171			
Occ % Cat	Between groups	341,551	19	17,976	13,941	<,001
	Within groups	2774,835	2152	1,289		
	Total	3116,387	2171			

The total number of events has a clear impact on the RevPAR, ADR and Occupancy categories, with no differences in the level of significancy.

Table 32 – Analysis of variance Total Number of Participants and hotels' KPIs

ANOVA Total Participants

		Sum of the squares	df	Mean Square	Z	Sig.
RevPAR Cat	Between groups	1566,269	1171	1,338	1,245	<,001
	Within groups	1074,613	1000	1,075		
	Total	2640,882	2171			
ADR Cat	Between groups	722,637	1171	,617	1,168	,006
	Within groups	528,529	1000	,529		
	Total	1251,165	2171			
Occ % Cat	Between groups	1764,192	1171	1,507	1,114	,038
	Within groups	1352,195	1000	1,352		
	Total	3116,387	2171			

On the other hand, the total number of participants reveals a higher difference between the occupancy categories. This signifies that, events and its participants have a bigger impact on the revenues – considering RevPAR and ADR – than specifically on the occupancy levels. Events yield revenues worth considering by hotels in their pricing strategies.

The next chapter will take a closer look at the impact of one Event – the Web Summit – in the hotels' KPIs in Lisbon.

Chapter 8 – The Case Study: The Impact of the Web Summit in Lisbon Hotels

Case studies focus on a particular instance (object or case) and aim at achieving an understanding within a complex context (Mertens, 2014). A case study involves the study of an example – a case – of the phenomenon being researched. The aim is to seek to understand the phenomenon by studying single examples (Veal, 2018). The Web Summit and its impact in Lisbon was the starting point of the present research then extended to more types of events. Nonetheless, it is still relevant to observe in more detail this single event and understand its impact in the city of Lisbon, the Portuguese country capital city.

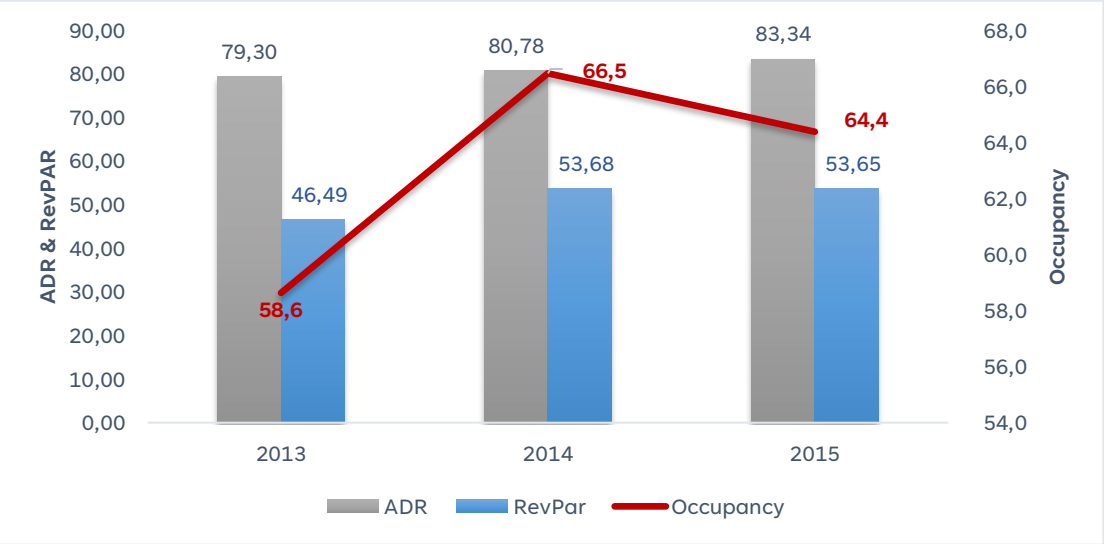
The Web Summit takes place in November, a month with lower occupancy and lower prices when compared to the annual numbers. This technology summit had its first edition in Dublin, Ireland, in 2009 and it had 200 participants. It has grown over the years and in 2014 its co-founder, Paddy Cosgrave, announced that event would move to Lisbon in 2016.

Portugal was the host country of the *2004 UEFA European Football Championship*, the Euro 2004. The final game occurred in Lisbon with an attendance 62,865 supporters. And in 2014 the UEFA Champions League Final in the same stadium, which has a capacity of 65 000 places. The Web Summit announced a participation of 57 000 participants of the first year and 64 000 on the second.

This was the biggest event so far in Lisbon with a duration of more than one day, so the focus of this research is to understand its real impact on hotel performance.

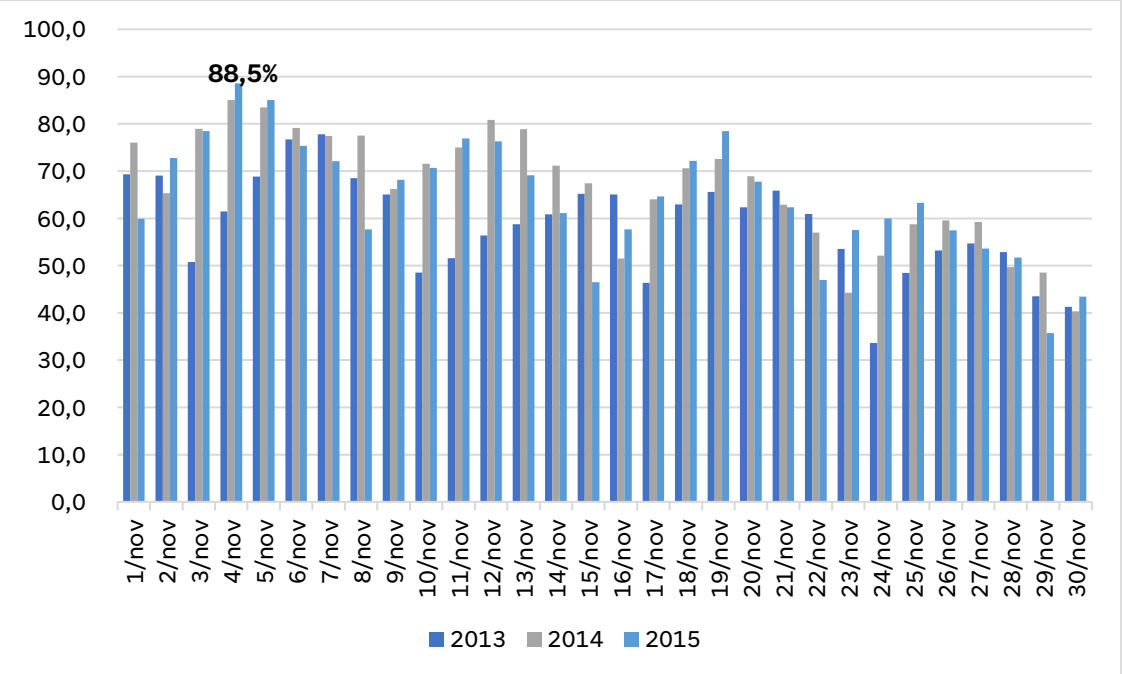
In the years before the Web Summit the KPIs in Lisbon were performing well but not all at the same increase level. The ADR is increasing, but both the Occupancy and RevPAR see a slight decrease in 2015.

Figure 64 – November occupancy, ADR and RevPAr 2013-2015



When taking a closer look at the daily occupancy rates during the month of November, it is observed that the beginning of the month performs better, and the highest value happened on the 4th of November 2015.

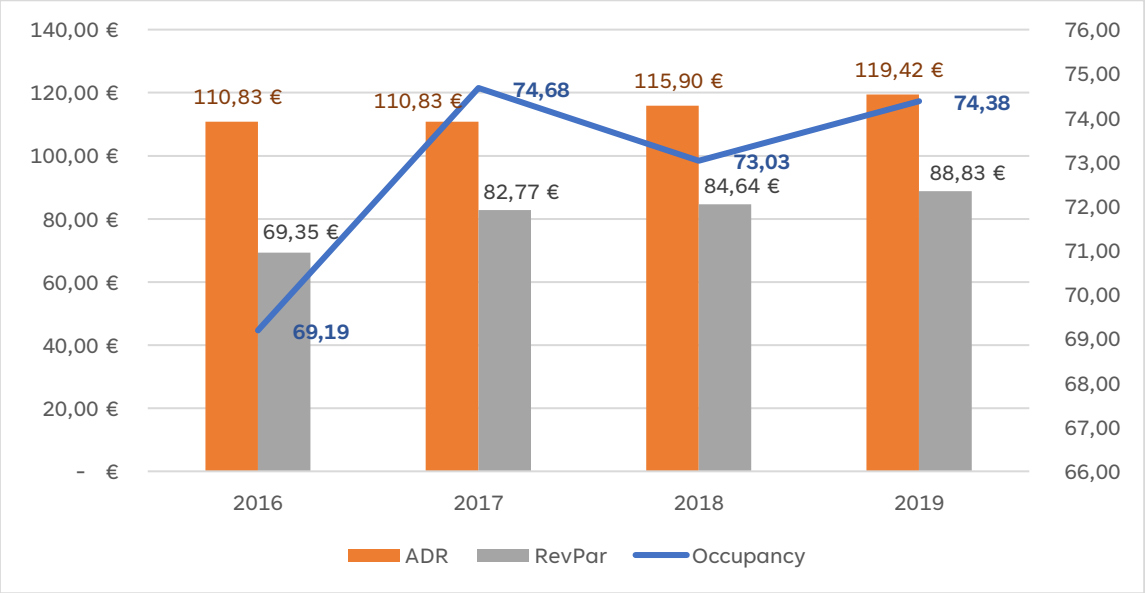
Figure 65 – November occupancy, before the Web Summit: 2013-15



Also, the occupancy rate is higher during the weekdays when compared to the weekends.

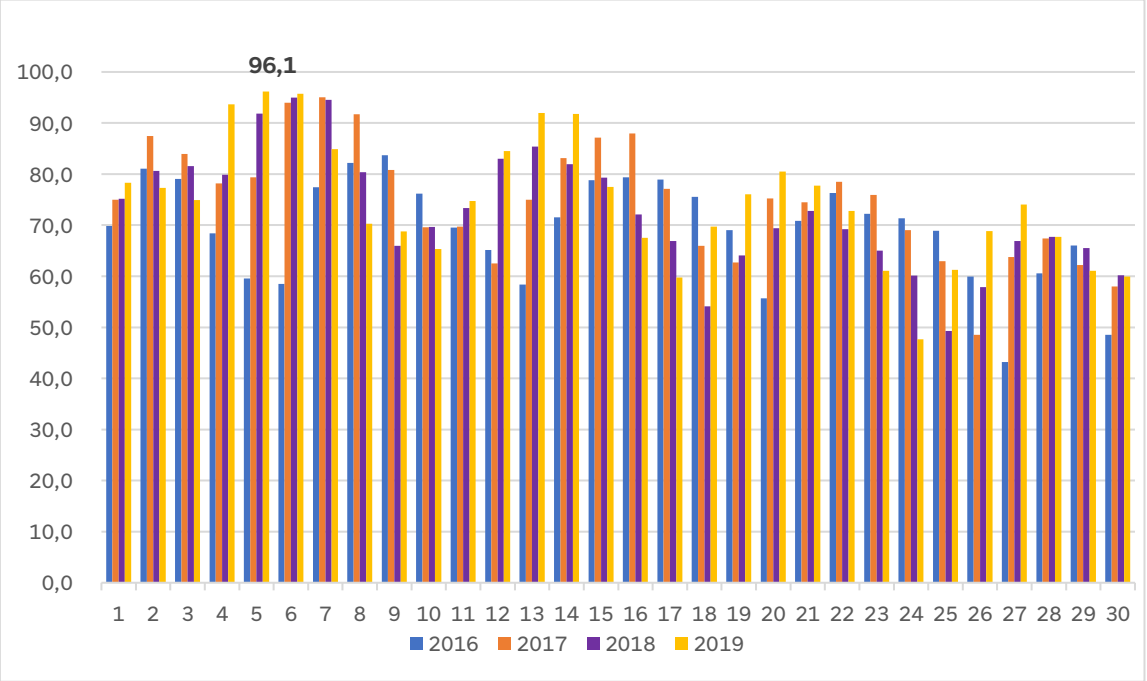
After the second Portuguese edition of the event, in 2017, the Associação da Hotelaria, Restauração e Similares de Portugal (AHRESP) reported that there would have been less 30 to 40% guests in Lisbon hotels during that period if the Web Summit had not taken place (Monteiro, 2017), showing the importance of this event and the risen interest in keeping it in Lisbon.

Figure 66 – November occupancy, ADR and RevPAR 2016-2019



On the first year of the event the ADR on the month of November surpassed the annual ADR, growing 20,3% from the previous year. The RevPAR had an even more exponential growth of 29,3%.

Figure 67 – November occupancy, with Web Summit: 2016-19



As previously mentioned, the Web Summit started in 2016, and in that year and the following (2017) the event started on a Monday going through Thursday, three nights, and four days of the week. On the first year (2016), the hotel occupancy on the three nights increases as the event continues and it is still significant in the last night of the event. However, in the two following years the occupancy of the first and second night of the event is superior, probably meaning that attendees do not stay the whole event. This is relevant when considering establishing a minimum Length of Stay (LOS) upon reservation. It is important to point out that in 2018 the event dates had an adjustment and, instead of starting on a Monday, the event started on a Sunday. This would probably be interesting for hotels since Sundays do not usually perform well on this day of the week. Nevertheless, the occupancy on the first night does not perform as good as in the previous year: in 2017, November 6th sees an occupancy of 94%, and in 2018, the 4th of November, observes an occupancy of 79,9%, so

this is probably why the beginning of the Web Summit went back to a Monday. It is interesting to perceive these behaviours and one might conclude that business travellers travel during the week and not so much on Sundays.

The average occupancy during the three nights of the event was: 2016, 81,1%; 2017, 93%, 2018, 88,9%, and in 2019, 95,2%. It is also interesting to verify that, in 2018, on the night of the last day of the event (7th to the 8th of November), the occupancy was of 94,5%, contradicting the 2017 performance of 80,8%, and that of 2016 of 76,2%. This might mean that attendees do not leave on the last day and stay an extra night. In 2019 it was 84,9% on Thursday.

The average occupancy throughout the four nights, from the first night up to the night of the last day of the event (making it a five day stay in Lisbon) was in 2016 of 79,9%; in 2017, 90,4%, in 2018, 90,3% and 92,6% in 2019. This last year, the Web Summit started on a Monday as in the first two years.

My first objective was to understand if there is a significant impact on Occupancy, and it can be seen that there is, in fact, an impact.

Moving to Revenue, I will first analyse the Average Daily Rate (ADR). In 2018 the ADR for the three nights of the event was 146,26€, and, with fourth night included, the ADR was 142,69€. The average ADR in November was 100,24€. In 2017 the ADR of the three nights of the event was 159,01€, and on the fourth night (the last day of the event) it drops to 137,69€, making the ADR of the four nights fall to 153,68€. Even so it is a high value when compared to the annual average in Lisbon. In 2018, the year the event started on a Sunday, the ADR of the first three nights was 152,41€ and 155,30€ when considering also the fourth night. It represents an increase in value when compared to the previous year, but the best performing days were, in contrast to 2017, the last two nights with an

ADR of 168,74€ and 163,99€. These are revealing numbers when considering in which day of the week these types of events should occur and when they should start and finish. In 2019 the ADR for the three nights of the event was 166,70€, and, with fourth night included, the ADR was 159,08€.

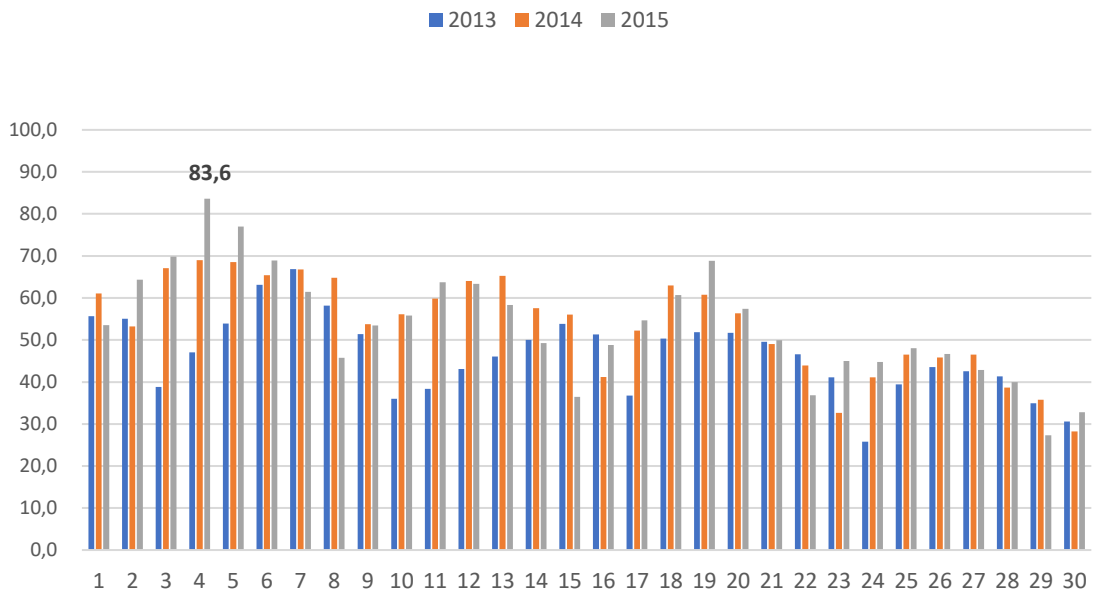
This data shows that there is a significant impact on prices, answering the second question or objective, that was to understand if there is a significant impact on the Average Daily Rate, and it is confirmed that there is, in fact, an impact on this KPI.

Monitoring the previous analysis done for occupancy and ADR, the average RevPAR in 2016 was, for the three nights of the event, 118,63€. The RevPAR for the second and third nights was 120,49€ and 122,88€ respectively. On the night of the last day of the event the RevPAR was 100,55€, still above the average monthly numbers: the RevPAR in November 2016 was 69,35€. The following year showed the same pattern but with an increase in RevPAR performance: on the three nights – Monday through Wednesday – the RevPAR was 148,83€ and on the night of the last day 111,26€. In 2018, when the event started on a Sunday the performance was better on the second and third night – Monday and Tuesday – and on Wednesday night, the last day of the event. Comparing patterns, the average RevPAR on the first three nights is 136,70€, although the remaining days, Monday, and Tuesday, saw an average RevPAR of 145,54€, and on the night of last of the last day of the event it was 155,05€. In 2019, the three nights – Monday through Wednesday – the RevPAR was 158,68€ and on the night of the last day 115,66€.

These differences can be justified with the beginning of the event on a Sunday, which might not be as appealing to the attendees, and maybe for this reason the event, in 2019, went back to the initial formula – Monday through Thursday.

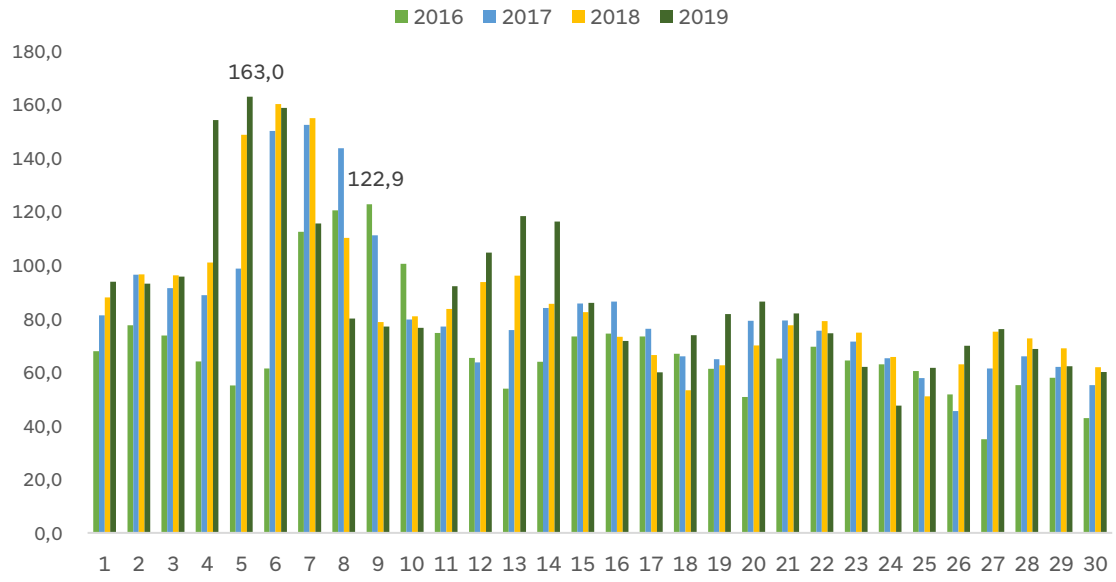
Another characteristic to point out is that, in 2018, when the event ended on a Wednesday, the night of the 8th of November (Thursday) had a RevPAR of 110,22€, which is above the monthly average and probably meaning the participants are more willing to prolong their stays than to arrive early at events.

Figure 68 – Daily RevPAR – November 2013-2015



Considering that RevPAR is the performance indicator that best describes the success of hotels, a clear impact on this ratio is observed, which was the third objective: yes, there is a significant impact on hotels' RevPAR during this event. The difference is obvious because there is an increase of 32,6% from the highest RevPAR in 2016 to the highest RevPAR in 2019.

Figure 69 – Daily RevPAR – November 2016-2018



Before the Web Summit the highest RevPAR in November was 83,60 Euros, in 2015, and the highest price in the last edition of this Summit was 163,00 Euros.

Focusing on the months on November to understand the impact of a major event in a traditionally low season month.

Table 33 – Descriptive statistics for Occupancy, ADR, and RevPAR – November 2013-2019

		Occ	ADR	RevPAR
Minimum	2013-2019	33,6	70,1	25,8
Maximum	2013-2019	96,1	169,5	163,0
Mean	2013-2019	68,6	97,6	68,7
Median	2013-2019	69,0	92,5	64,0
Standard deviation	2013-2019	12,49745	21,30745	26,32853
Q1	2013-2019	60,18957	81,04867	51,60942
Q3	2013-2019	77,48383	106,8592	77,9284
IQR	2013-2019	17,29425	25,81049	26,31898

The Figure 33 statistics refer only to the months of November throughout the 7 years. Here a smaller spread of values is observed. The Web Summit is included in this data.

Table 34 – Descriptive statistics for Occupancy, ADR, and RevPAR – November 2016-2019

		Occ.	ADR	RevPAR
Minimal	2016-2019	31,63	75,95	26,41
Maximum	2016-2019	98,47	207,11	201,64
Mean	2016-2019	76,53	112,71	88,55
Median	2016-2019	80,50	109,95	90,17
Mean deviation	2016-2019	15,43	21,52	30,90
Desvio Padrão	2016-2019	15,431	21,526	30,911
Q1	2016-2019	66,891	95,192	63,641
Q3	2016-2019	88,927	125,667	108,847
IQR	2016-2019	22,036	30,475	45,206

When analysing the months of November in the years when the Web Summit occurred, there is an increase in the minimum value, which seems to be justifiable because of the evolution in prices, on the other hand there is a very small difference on the Standard Deviation between the two periods, this showing that the pricing dynamics remained similar. It must be highlighted that the 3 KPIs saw an increase.

Table 35 – Descriptive statistics for Occupancy, ADR, and RevPAR – Web Summit days 2016-2019

		Occ	ADR	RevPAR
Minimum	2016-2019	76,20	126,47	100,55
Maximum	2016-2019	96,14	169,53	162,99
Mean	2016-2019	87,83	151,77	134,19
Median	2016-2019	91,74	151,74	143,72
Standard deviation	2016-2019	7,07873	13,65303	22,10848
Q1	2016-2019	80,60193	137,39485	111,89850
Q3	2016-2019	94,76313	164,32799	154,65624
IQR	2016-2019	14,16120	26,93313	42,75774

Figure 35 depicts the statistical data for the dates when the Web Summit occurred. Values in both the ADR and RevPAR are very high, showing that the event made the prices go up. The standard deviation and the IQR are quite high in the days of the event, proving that there are differences in pricing throughout the event.

8.1. The Case Study Results

Results show that ADR and RevPAR increased up to 85,6% and 115,8% when compared to the same period in the previous year (2016 compared to 2015) and Revenue per Available Room saw an increase of up to 117,5% (2015 vs. 2016).

Average RevPAR on the first three weekdays in November 2015 (Monday to Wednesday) was 57,66 €. The average RevPAR on the first three weekdays in November 2016 (Monday to Wednesday) was 118,63 €. Occupancy saw an increase of up to 21% on the second year of the event (the first day of the event in 2017 when compared to the first day in 2016 – Monday). 2018 did not see the same increase, nonetheless numbers did not decrease, and RevPAR and ADR continued to perform very well.

Starting the event on a Sunday did not appear to be the best solution because occupancy performed below the two previous years (it went back to starting on a Monday in 2019.) This also shows that probably business travellers choose weekdays and prefer to prolong their stay until the end of the week.

In the 7 years, the differences between the median and the mean show that the first is higher in Occupancy, but considering revenues, in both ADR and RevPAR the mean is higher. This shows that Occupancy is less variable and less affected by extreme values. On the other hand, in the ADR and RevPAR the means are higher than the median values, revealing a bigger spread of the data and this is corroborated by the standard deviation of 21,02 in the ADR and 29,65. The MAD confirms these results. The IQR also confirms the spread of Revenues – ADR and RevPAR – supporting that there is a strategy of dynamic pricing.

The month of November, chosen for this event, in the six years reveals that there has been a variability in the KPIs, similar throughout the whole period in study. When observing the month of November only when the Web Summit occurred, it is patent, not surprisingly, that the higher KPIs happened in the years of the event.

The Web Summit days show good results in all KPIs. Although the SD and IQR are not very high when regarding occupancy, the same is not observed in both ADR and RevPAR, where there is a SD of 21,29 and an IQR of 40,64. This proves that probably prices were not protected despite the dated being known with a year in advance and a possible forecast could have been done. When exposing the IQR of 40,64 only on the Web Summit days can reveal that possible minimum length of stay and premium prices protection did not yield the expected results or were not practiced by hoteliers.

Because the maximum values found in the 7 years analysed were not during the target event, I wanted to find out what had led to that performance, and concluded that the best RevPAR performing dates were:

2014, May 23rd and 24th – The Champion's League Final between Real de Madrid and Atlético de Madrid – 256,66 €. Showing that big sporting events do have a major impact in Hotels' RevPAR identically proved by (Barreda et al., 2017).

2017, September 11th to 14th – with an average RevPAR of 198,42 € (on the 11th 201,51 €) – 53rd Annual Meeting of the European Association for the Study of Diabetes 11-15 September 2017 (nearly 18 000 delegates – nonofficial numbers).

2017, October 6th to 9th – with an average RevPAR of 191,11 € (on the 7th, 201,64 €) – XXXV Congress of the European Society of Cataract and Refractive Surgeons (ESCRS) 7-11 October 2017 (nearly 16 000 delegates – nonofficial numbers).

Chapter 9 – Conclusions

Revenue management is a set of strategies and tactics developed by the commercial aviation industry and used in several areas such as hospitality, restaurants, or car rentals due to the nature of these activities, such as relatively fixed capacity, perishable inventory, inventoried and time-variable demand (Kimes & Wirtz, 2015) among others. It is critical because it reflects on price, which is the major driver of profit in companies (Baker et al., 2010; Simon et al., 2019). Many factors affect price, as the concept of price itself and what dynamic pricing is. It is also fundamental to understand customers, segments, seasonality which convert into different levels of demand, in which Events, due to their nature as demand generators, become an important motivator for tourism.

Hospitality firms and hotels use Revenue management to help them manage their revenues by understanding the levels of demand and adjusting prices accordingly.

This study aims to understand how Events relate to and impact on hotels' KPIs in the city of Lisbon. It also analyses the direct impact of the Web Summit in those hotels' KPIs.

It analyses daily data between 2013 to 2019. The period of time is divided in two parts: before the Web Summit, which is from 2013 to 2015; and after the Web Summit, which is after the debut of the event in Lisbon, from 2016 to 2019. The Events in both periods are analysed in terms of evolution and days of the week. The hotels' KPIs are also analysed in both periods. The search looked for differences that could support the fact that Web Summit was beneficial to the city of Lisbon, not just during the event itself – which is the scope of the case study – but throughout a longer period of time, which is the scope of the thesis.

Two data sets were used, one provided by STR and the other provided by the ATL - Turismo de Lisboa - Visitors and Convention Bureau. After combining the datasets into was it was possible to have a daily view of the major hotels' KPIs and events happening in Lisbon.

The occupancy in the hotels under this study, in the city of Lisbon, had been growing steadily since 2013, the biggest change happened from 2013 to 2014, in all variables. After 2017 the occupancy rates never went below the 76%.

Monthly occupancies show the same growth pattern in all months of the year, however, seasonality is evident. The effects of seasonality are evident, meaning the lower season is clearly from January to March and after October. The highest occupancy months are May, September, and October. June also portrays interesting occupancy levels, particularly after 2017, somewhat lowering the effects of seasonality. Within the lower season, the month that observed the highest occupancy rate is November, very clearly after the first Web Summit in 2016.

The months with lower occupancy rates may open the door for more events to happen, benefiting from a less crowded destination and better negotiated rates.

The coefficient of variation of the occupancy rate had been lowering since 2013 and in 2017 this figure fell below the 20 points. This happened because the minimum values of occupancy increased from 25,2% in 2013 to 38,0% in 2019. This shows that although seasonality is still a phenomenon, it is less evident than it was before 2016.

Observing in more detail the monthly occupancy rates throughout the full period of analysis the month of July sees less occupancy levels than the month of August. In July the number of events decreases significantly, so hotels cannot rely

on these guests to work on their occupancies. The same decline is observed in the month of August, showing that events do play an important part in occupancy rates.

Research results show that between 2013 and 2019 the Occupancy had its lowest value at 25,19% (2013) and the maximum at 99,40%. The Mean (or average) values for Occupancy were 73,07%, the Median 77,51%. Both, the Minimal (25,19%) and Maximum (99,40%) Occupancy values occurred in the years before the WS.

The highest occupancy value happened in 2014 during the UEFA Champions League Final in May of that year. This event also produced the highest ADR and RevPAR in the seven-year analysis. This confirms the impact of one-time mega events, especially of those Sports related.

Advancing to revenue performance KPIs, it would be predictable that those would also see an improvement, and so they did. However, this increase is far more substantial than that of the occupancy.

The minimum ADR was 67,82 € and the maximum 259,16 €, the Mean (or average) values was 101,58 € and the Median 95,15 €. The RevPAR had a minimum value of 19,17 € and a maximum of 256,66 €, the Mean (or average) values was 73,96 €, the Median 74,41 €. The growth in ADR was of 46,32% and the RevPAR of 75,68%.

This is a clear indication that prices increased, and the most significant differences were found after the Web Summit's (WS) first year, 2016. It is indeed after this year that the differences were more significant. Weather this is attributable only to the WS is debatable because there have been numerous campaigns to promote Portugal and Lisbon. Nonetheless it can also be stated that

the WS came to Lisbon as a result of those campaigns and then many other events followed. It can also be affirmed that before the WS a few events took place successfully and that may also have caused a positive image of Lisbon, thus attracting more events.

In the period of the WS, after 2016, there is an increase in the lower values of Occupancy, ADR and RevPAR which are justified by the values already observed in Portugal and the Lisbon Area which had been gradually rising.

The Maximum value on occupancy was 98,47%, in 2016, only slightly below the 99,40% observed in 2014.

Regarding the revenues, both ADR – 207,11 € – and RevPAR – 201,64 € – are significantly below, but that does not demonstrate any sort of underperformance when observing other measures such as the Mean, the Median and the MAD.

The Mean occupancy increased to 76,53% in 2019, which is on par with the already referred increasing tendency.

The differences on the ADR and RevPAR are more significant. The average ADR changed from 86,73 €, before the WS, to 112,71 €, after the WS, which is a 29,96% increase. The RevPAR went from 61,81 € to 88,55 €, a growth of 43,26% in the same periods.

It is unambiguous that the performance of these two KPIs is much different in the period of the WS, 2016-2019.

The number of Events in Lisbon was stable until 2015, with an average of 244 200 events per year in the period 2013-2015. In 2016, the first year of the Web Summit in Portugal, the number of Events dropped to under 228 005. After 2017, the number of Events escalated to 355 139, to 414 870 in 2018, and to 642 532 in 2019.

Descriptive analysis of the data set proves to be more informational for both practitioners and academics, providing valuable insight to the data.

Measures of central tendency, like Medians, Standard deviation, Interquartile Range (IQR), and Mean Absolute Deviation (MAD) provide academics and researchers more detailed results when assessing quantitative values in KPIs.

Correlation analysis for KPIs and Events also demonstrates an association between the growth of events and the hotels' KPIs. The analysis showed that there was an evolution, which could be considered to be normal, but the values also confirm a deeper change after 2016, when that evolution took a higher jump than it had been observed before.

Therefore, the number of Events did impact all KPI levels. Events do generate more Occupancy, and better rates translated into a better ADR and RevPAR, providing a positive answer to the first question of this study: *1. Do the events that happen in Lisbon impact the Occupancy levels, Average Daily Rate, and Revenue Per Available Room of the Lisbon hotels?*

The next research question – Question 2 – was to whether there is *evidence of pricing dynamics being practiced in Lisbon*. To find evidence of dynamic pricing practices, the Standard deviation and the MAD results are more appropriate. If the values in these indicators are relatively high (and not influenced by extremes) which means that there is a dynamic price setting throughout the period of analysis.

The Standard deviation is a measure of how dispersed the data is in relation to its mean. If the Standard deviation is low, it means that the data are clustered around the mean, a high Standard deviation (SD) indicates that the data are more spread

out. The MAD is a measure of dispersion not influenced by extreme values, so the higher the MAD, the more spread the values are.

The Occupancy MAD in the seven-year period was 11,65%. In the years 2013-2015 it was 13,12% and 10,09% in 2016-2019. This indicated that occupancy became more stable after 2016. The Occupancy SD in the period of 2013-2015 is 17,75%, higher than in the following period (15,43%), indicating the same pattern: the overall occupancy levels increased after 2016.

The Mean Absolute Deviation ADR was 17,65€, and the Mean Absolute Deviation RevPAR was 21,79€. Although the ADR and RevPAR MAD are not a very high in this period, it still denotes a spread in those KPIs, more accentuated on the RevPAR. When observing the IQR, which is also not as influenced by the extreme values, and observing the minimum and maximum values, there is clearly a dispersion indicating that prices were to some extent dynamic.

Splitting the analysis in the two major periods: *before the WS* – 2013-2015 – and after the WS – 2016-2019 – if the values show differences, it must mean that dynamic pricing strategies were put in place by the hotels. So, comparing the two periods, the SD for the ADR and RevPAR increased from 13,52€ to 21,52€ and 23,18€ to 30,90€, respectively. The spread of these values is the result of the use of dynamic pricing practices leading to higher Mean and Median values. The absolute occupancy values increase from 69,65% to 76,53% would not be enough to justify those changes.

The MAD solidifies these conclusions. The ADR MAD was, in the period of 2013-2015 of 11,45€ and of 29,45€ in the period of 2016-2019. The RevPAR MAD went from 17,10€ to 23,24€. Values are visibly more spread out.

These figures are evidence of the practice of dynamic pricing strategies and that those strategies do increase performance in the long run. The measures of descriptive statistics, particularly those not affected by extremes values, can be helpful for practitioners to understand the impacts of their RM policies. These measures can be applied in longer or shorter periods of time and can be done by segment, distribution channel, nationality, and season as well as in all industries using dynamic pricing strategies.

Answering question 3 – *Do the scope and type of the events predict different levels of performance*? –, it is palpable that the scope and type of the events also generate different levels of performance. Events can be of national of international scope, and corporate or non-corporate type of events. It was necessary to comprehend which type and scope of events produce more room nights and have more revenue potential.

There were more national events and non-corporate events, 30,1%. There is still potential for growth on both variables: attract more international events with the potential of generating more room nights and corporate events that generate more revenues. The WS may act as a marketing tool on this subject. On the other hand, this result also shows that the national market requires attention and work on the same issues such as the extension of stay. Domestic tourists have the same potential in this matter. The simple analysis on the scope and type did not yield significant results. Nevertheless, it is self-evident that international events have the potential of generating more room nights and thus more revenues for hotels. An event with the duration of two days implies one overnight as minimum, but most international events can imply additional overnights due to the distance and travel limitations which must be considered when forecasting demand. To scope and type of events need further investigation as to understand if there are

differences relevant for analysis, apart from the fact that international events my represent more potential room nights.

The different themes or subjects of the events, the object of question 4 – *How do the different themes of the events impact those indicators?* –, produced more information. Events are different in their theme or subject; they can be Sports events or Medical events, they can bring more or less participants, have different organizers with diverse budget levels, have different durations and the need for venues with various characteristics.

Management & Social Sciences Events represent 35,12% of the total, followed by Medical Sciences and Science, 16,64%, the ICT Events and the General Events. All these subjects also show the best statistical results regarding occupancy. These are also the Events that generate a better ADR and consequently a better RevPAR, and the Events with more participants. These are relevant results because practitioners can work on their Revenue Management practices regarding the potential room revenues generated by these events' themes.

Question 5, *How do the events help hotels overcome the effects of seasonality*? Events do not happen evenly throughout the year. The months with the most Events are May, October, and November. June also performs very well. Events happen in late spring and the fall, which seems to contribute to lessen the seasonality effects.

Seasonality is not only monthly, but it also happens during the week. Analysing the values during the week, and more specifically after 2016, it is clear that, although occupancy does not have severe fluctuations, there is an improved RevPAR performance accompanied by the increased number of events. This is confirmed by the correlation analysis and the same results happen for occupancy.

The total number of Events is relevant but even more so is the duration of those Events which translates into potential room nights, and these directly affect hotels' KPIs. The duration of the events can be of one day up to 2 or 3 weeks. Even one day events can translate into potential room nights especially when regarding also the scope variable. The days of the week with more events are mid-weekdays. After 2016, more events started on a Monday. So, events should be considered regarding the potential room nights and the day of the week in which they occur so that extent of stay can be worked on by hotels. These measures will help lessen the effects of seasonality and increase the average length of stay.

The months with less Events are August and December. In December, Events cease to happen on the second fortnight. The month of November saw an increase in the numbers, particularly after the first Web Summit in 2016. Although seasonality is still observed, events do contribute to lessen its effect. Events have an average duration of 2,49 days representing a 1,49 length of stay over the seven years.

All in all: results show that despite the expected growing results in occupancy levels in the city of Lisbon, after the first Web Summit that growth becomes more accentuated. This evidence is even clearer regarding the Average Daily Rates (ADR) and Revenue per Available Room (RevPAR). Results also show that both ADR and RevPAR have distinctly increased after 2016. Their coefficients of variation are wider resulting from pricing dynamics which overall increase performance.

Events do play a major role in occupancy and revenue performance. There is clearly a positive impact in the all the key performance indicators that were subject to analysis. There is also a positive indicator that attendees tend to extend their stay up until the following weekend. The first two years saw a price increase

that tended to stabilise. Events held in the month of November can be an interesting way of ending the year since December is usually more for the leisure holidays and business activity only comes back strong usually after February.

This research focussed on the analysis of impact of the Web Summit on the Key Performance Indicators, supporting that Lisbon's hotels saw an evident increase in the Occupancy that otherwise would not happen, and the financial indicators also show the impact of this event: ADR increased and RevPAR, the reference indicator, almost doubled from the highest value of the three years before the event – 83,60 € – to 160,30 € in 2018.

As far as Pricing dynamics are concerned there is clearly a strategy of dynamizing the prices to increase revenues and profits. But it must be underlined that during the event the range of the ADR and RevPAR is still high, which probably shows that the approaches to the pricing where made based on demand and not so much on forecasts. Also, most probably the hotels did not apply minimum length of stay policies through the event. When the forecasted demand is high hotels should protect high rated to avoid the spread noted in the ADR and RevPAR range. Responding only to levels of demand may not grant the best results, so premium price protection and minimum length of stay strategies are advised, concurring with Bowdin et al. (2012) when referring to the impact events have on visitors extending their length of stay and visiting other regional tourism destinations and attractions.

Overall, events are in general important for hospitality firms, bringing profitable business independent of the type of event, justifying the attention governments are increasingly giving to tourism and, in particular, to events as image makers and providing competitive marketing advantage (Bowdin et al., 2012).

This investigation is coextensive with previous research both regarding the impact of events and dynamic pricing strategies. Guillet & Mohammed (2015) refer that in the core process of a successful RM strategy and this study supports that position adding a specific demand generator and relating it with other factors. It also corroborates the studies by Abrate et al. (2010); Barreda et al., (2017); and Herrmann & Herrmann, (2014) in that understanding the demand generators and what they imply is fundamental when defining dynamic pricing tactics and strategies and applying differential pricing. When (Butler, 2022) refers that seasonality cannot only be seen as negative and that it can be modified, although little has been achieved, this study shows that a refined analysis between events – of all sorts – can help organizations to better define their calendars to overcome this issue.

The microeconomic side of events is the equilibrium of supply and demand that Getz (2007) refers to and this research provides information that sustains that events do provide destinations with more demand and they yield better revenue results.

With this study, it was possible to assess the extent to which events influence the performance of Lisbon hotels' KPIs, evidence was found that pricing dynamics are used advantageously in the city of Lisbon and it was also possible to determine which type of events impact the most on Lisbon hotel's KPIs.

Major contributions

Major contributions are to academics and practitioners. Academics can use this model of research and apply it to similar research or adapt it to studies using continuous data that need an assessment in its variation. In an analytics

standpoint this study provides a framework to develop more studies involving descriptive analytics – when analysing prices and events – to help predict levels of demand related to specific events, allowing prescriptive analytics to come into order by recommending the best rates.

In terms of theoretical contributions, this is the first time that research has examined daily Occupancy, ADR and RevPAR and the Days of the Week for a specific event. Also, descriptive statistics other that averages and maximum and minimum values were analysed, and those were the Standard Deviation, IQR and the MAD. In this sense, we agree with other authors that it is necessary to deepen these studies regarding pricing strategies in specific dates with specific demand generators and make progress in research regarding the use of more sophisticated statistics in a sector characterized by simpler analysis that not always prove a "bigger picture", and the importance for tourism.

This study has other practical implications related to addressing the gap between academics and professionals in the hotel sector. One way to do this might be to focus on analysing the average variations in the KPIs and using more measures central tendency such as the median and measures of dispersion when examining Occupancy, ADR and RevPAR.

Academics can also use this model outside the hospitality. Tourism enterprises that have fluctuating demand can use it to better plan their offerings according to the different levels of demand.

Practitioners such as hospitality operators can use this model to assess their internal practices regarding pricing dynamics, compare them to their competition, adjust the model to fit their own needs such as segmentation analysis and other specific periods or other variables.

Limitations & Recommendations

There are two major limitations in this study, and they concern both data sets. The hotel data set is not even, which means that the hotels are not evenly represented by category which may cause some bias in the KPIs. Events data set is also limited to the events and events processed by the Associação de Turismo de Lisboa, whose focus is more on the events, and it does not regard other themes that represent valuable demand generators, such as big music festivals and religious events. A major recommendation for tourism organizations, in Portugal to the Turismo de Portugal, is to create a data source where hotels and other tourism service providers can access information regarding events in order to adjust their planning according to the levels of demand. This data will allow better planning for all the tourism stakeholders.

Events are not the only demand generators so further investigation should be made regarding those factors using this same model. It is important to look at demand generators with higher correlation values, which in turn will help destinations and hotels operators to understand what factors have the biggest impact on their KPIs.

Seasonality is in itself a demand generator, but it can be worked or manipulated with the creation of demand generators such as events.

Hotel operators should work with this external data and their own CRM programs to encourage their event/business guests to extend they stays after an event or come one night or two earlier at their convenience.

Hotels can also use more sophisticated analysis such as the Measures of central tendency, like Medians, Standard deviation, Interquartile Range (IQR), and Mean Absolute Deviation (MAD) to better assess their dynamic pricing strategies.

These measures can be used in all sorts of ways: referring to a specific period of time instead of full years, they can be applied to different segments or other variables. The more data hotels collect from their PMSs the more data they can analyse using these measures.

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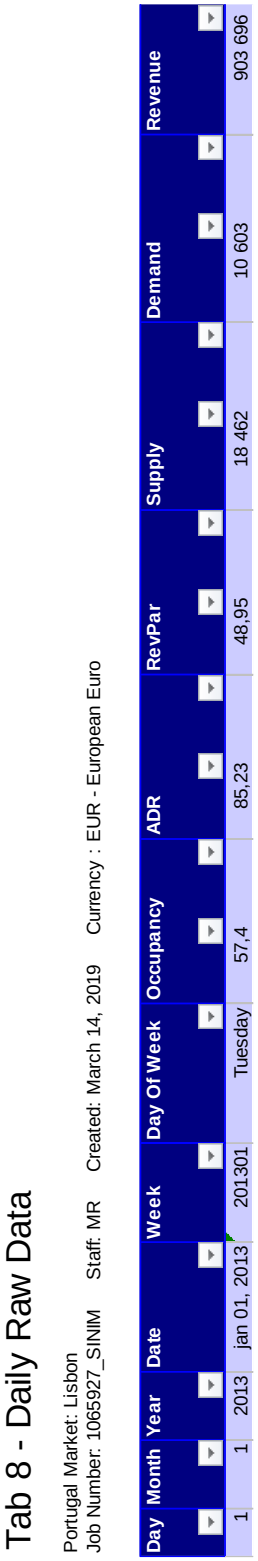
Appendices

Appendix 1

– The STR data structure:



Tab 8 - Daily Raw Data

Portugal Market: Lisbon
Job Number: 1065927_SINIM Staff: MR Created: March 14, 2019 Currency : EUR - European Euro

Day	Month	Year	Date	Week	Day Of Week	Occupancy	ADR	RevPar	Supply	Demand	Revenue
1	1	2013	jan 01, 2013	201301	Tuesday	57,4	85,23	48,95	18 462	10 603	903 696

The STR data file used is their Raw Data, which means theses values are not worked on.

It starts in 2013 and it ends in 2019.

Appendix 2

– The events data structure

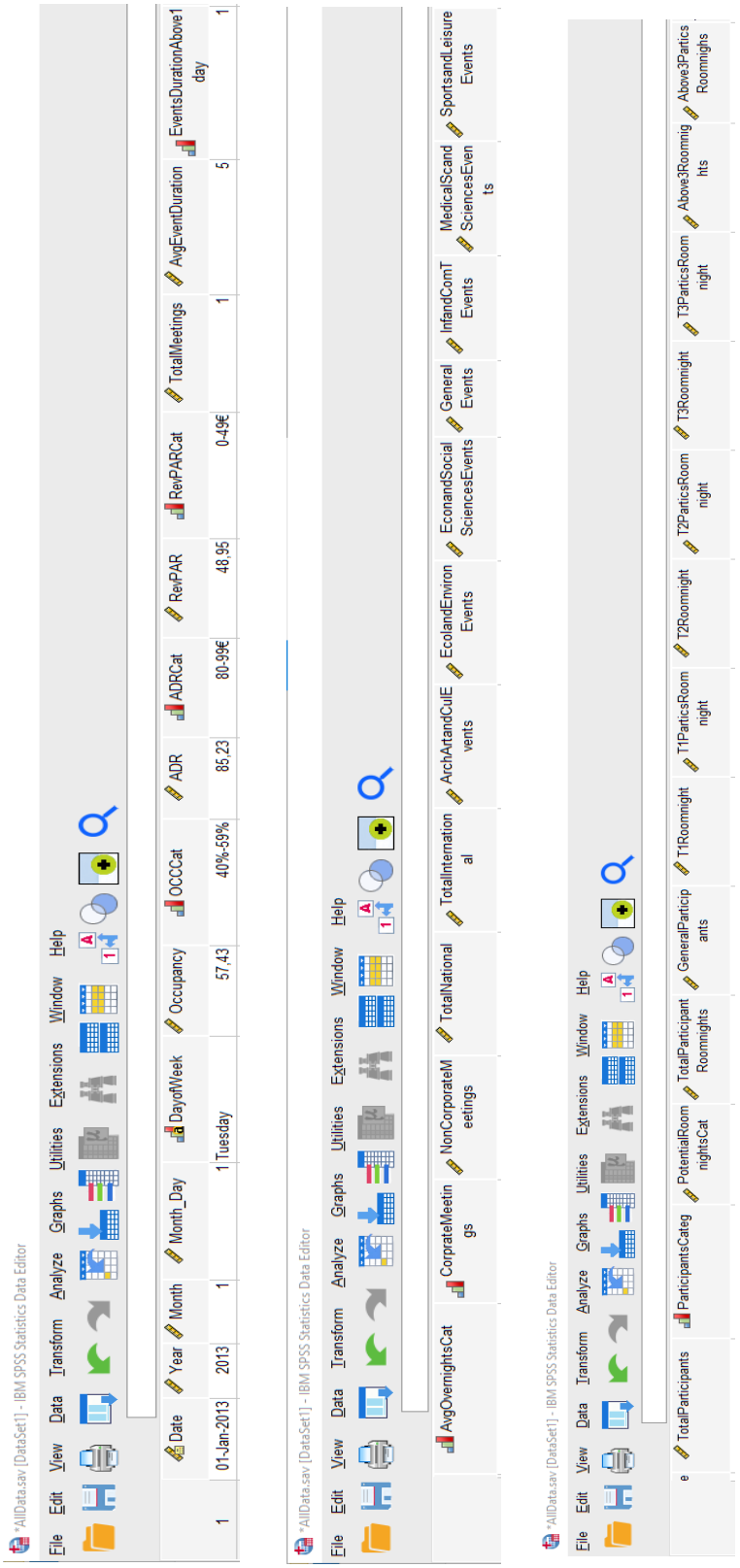
Meeting	Starting date (dd-mm-yy)	Ending date (dd-mm-yy)	Type of meeting	Number of Participants	Scope	Type of meeting location	Theme of the meeting
Lx0001	02/01/19	02/01/19	Corporate	120	National	Hotel	Medical Sciences
Lx0002	02/01/19	02/01/19	Corporate	198	National	Hotel	Communication

The raw data set provided by the ATL – Lisbon Convention Bureau had 8 entries by Meeting identification, which was not provided for privacy reasons.

There was one excel sheet per year from 2013 to 2019.

Appendix 3

– The Combined data structure



Both Data sets were combined into one using an Excel Pivot table. Then they were introduced on SPSS for analysis.