REVENUE MANAGEMENT IN TOURISM AND HOSPITALITY

Analytical strategies, decision making, and revenue optimization in competitive contexts

Pablo Raúl Manzano Insuasti

ESPE
UNIVERSIDAD DE LAS FUERZAS ARMADAS
INNOVACIÓN PARA LA EXCELENCIA

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Autor:

Pablo Raúl Manzano Insuasti

Departamento:

Ciencias Económicas, Administrativas y del Comercio

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®REVENUE MANAGEMENT IN TOURISM AND HOSPITALITY: ANALYTICAL STRATEGIES, DECISION MAKING, AND REVENUE OPTIMIZATION IN COMPETITIVE CONTEXTS

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Author Biography

Dr. Pablo Raúl Manzano Insuasti, Ph.D., is an Ecuadorian academic, researcher, and tourism entrepreneur with a solid track record in tourism, hospitality, sustainability, innovation, and higher education. His profile combines scientific rigor, teaching experience, and business practice, giving him a comprehensive and applied vision of revenue management in the tourism and hospitality sector. He has an outstanding academic background: an International Doctorate in Tourism from Anáhuac University in Mexico, an Honorary Doctorate from Gestalt University (Mexico), a Master's degree in Ecotourism and Natural Area Management from UTE University, a Master's degree in Tourism and Hospitality Marketing from the National University of Chimborazo, a Master's degree in Revenue Management from the University of La Rioja (Spain), and a Master's degree in Tourism Neuromarketing from Esco e-Universitas (Spain), in addition to a Diploma in Alternative Tourism and Cultural Policies. He is currently a postdoctoral researcher at the Polytechnic Institute of Leiria (Portugal), where he is conducting research on neuromarketing applied to the narrative of Andean rituals with a focus on tourism.

In academia, he is a tenured Professor and Researcher at the University of the Armed Forces – ESPE, Latacunga campus, and has taught at prestigious institutions such as ESPOCH, UTEG, the Technical University of Cotopaxi, the Technical University of Ambato, and ULEAM. His scientific output addresses areas such as sustainable tourism, knowledge economy, community-based tourism, neuromarketing, and artificial intelligence applied to tourism, with publications in journals indexed in Scopus, ERIHPLUS, and Latindex. He is also the general coordinator of the Ecuadorian Network for Research in Tourism and Sustainability (REDITUS), vice president for Mexico and Central America of the International Tourism Studies Association (ITSA), and a founding member of the Network of Tourism Observatories and Research in Ecuador (ROITE). In parallel, he has developed an active business career as a partner in the Tren Dorado and Dream Garden Hotel, as well as other ventures related to tourism operations and hospitality, thus integrating academic knowledge with the real-world management of companies in the sector. His work reflects precisely this convergence between research, teaching, and managerial practice focused on profitability, sustainability, and innovation in tourism and hospitality.

Affiliation:

Universidad de las Fuerzas Armadas ESPE

prmanzano@espe.edu.ec

Latacunga, Ecuador

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Preface

In an increasingly competitive, digitalized, and uncertain tourism environment, discussing Revenue Management no longer simply means referring to pricing techniques or tactical decisions about availability. Above all, it means understanding a management approach based on information, modeling, anticipation, and strategic coordination. This book starts precisely from that premise: Revenue Management has ceased to be an operational practice confined to the sales area and has become a cross-cutting discipline that influences the profitability, sustainability, customer experience, and adaptability of tourism organizations.

The relevance of this work lies in the fact that it does not approach Revenue Management as an isolated set of formulas, but rather as a decision-making system. Throughout its chapters, the reader will find a rigorous framework that connects economic principles, data analytics, demand forecasting, dynamic pricing, segmentation, tourism distribution, and technological systems, culminating in its application in specific contexts such as hotels, tourist transportation, destinations, rural and community-based tourism, and restaurants. This broad scope is one of its main strengths: it demonstrates that Revenue Management is not a sector-specific technique restricted to large chains, but rather a management approach adaptable to the diverse realities of contemporary tourism.

One of the book´s most valuable contributions is its emphasis on an analytical approach. In a sector historically influenced by managerial intuition, this work champions the need for evidence-based decision-making. Forecasting, elasticity, segmentation, inventory control, channel mix, performance indicators, and support technologies are not presented here as abstract concepts, but as tools that allow data to be transformed into economically sound decisions. In this sense, the text offers a particularly relevant contribution for those who understand that competing in tourism today depends not only on selling more, but on selling better, to better segments, through better channels, and under criteria of sustainable profitability.

Also noteworthy is the integrative approach taken in examining the relationship between Revenue Management and areas such as marketing, operations, and finance. This perspective avoids a reductionist view and clearly shows that revenue decisions cannot be separated from the value proposition, operational capacity, or overall financial performance. Poorly managed pricing can increase occupancy while simultaneously eroding margins; a poorly designed distribution strategy can boost sales but destroy net profitability; and promotion decoupled from actual demand can cannibalize future revenue. The merit of this work lies in explaining these interdependencies in technical yet accessible language, enabling the reader to understand Revenue Management as a business architecture and not just a marketing tool.

From an academic perspective, the book also offers a particularly useful Chapter Summary for university and professional training. Its progressive structure facilitates the reader´s journey from conceptual foundations to advanced

applications without sacrificing methodological coherence. This makes it a valuable resource for students beginning their studies in the discipline, as well as for professors, consultants, and managers seeking to update their understanding of revenue management in complex tourism contexts. Its usefulness lies not only in explaining what Revenue Management is, but also in showing how it is conceived, how it is implemented, and under what conditions it generates real value.

Another noteworthy element is its sensitivity to the current challenges of the sector. The work is not limited to the traditional scenarios of urban hotels or air transport; it deliberately broadens the field of analysis to include tourist destinations, digital channels, automation technologies, and contexts where profitability must be considered alongside territorial sustainability, carrying capacity, and governance. This conceptual openness enriches the debate and aligns the book with the most relevant discussions in contemporary tourism: the pressure on destinations, digital hyper-distribution, the personalization of the offering, the importance of data, and the need for decisions compatible with the long term.

In short, this book represents a timely and technically sound contribution to the study of Revenue Management in Tourism and Hospitality. Its approach combines conceptual depth, applied utility, and strategic vision. More than teaching how to modify rates, it teaches how to interpret the economic logic of contemporary tourism. More than describing indicators, it teaches how to understand the business through the interaction of demand, capacity, price, technology, and value.

Therefore, this work is destined to become a relevant reference for those seeking to understand, teach, or apply Revenue Management with academic rigor and practicality. At a time when tourism competitiveness demands analytical precision, strategic flexibility, and increasingly informed decisions, this book offers a clear guide for thinking about revenue management not as an isolated technique, but as a core competency of modern tourism management.

Presentation

Revenue Management has established itself as one of the most relevant disciplines for contemporary tourism and hotel management. Beyond its traditional association with pricing, it is now understood as a decision-making system aimed at optimizing revenue through demand analysis, market segmentation, capacity management, sales distribution, and the strategic use of information. In an environment marked by digitalization, increasing competition, and the need to improve profitability, its study is essential in both academic and professional settings.

This book offers a comprehensive view of Revenue Management applied to tourism and hospitality. Its purpose is to provide a solid conceptual foundation while presenting analytical tools and concrete applications in different areas of the sector. Throughout its chapters, the book demonstrates that revenue optimization depends not only on price but also on the interplay between demand, capacity, technology, sales channels, and value creation.

The book is organized into eight chapters. The first develops the fundamentals of Revenue Management and its evolution within the tourism industry. The second section examines its main techniques, processes, and performance indicators. The third focuses on forecasting tourism demand as a support for planning and decision-making. The fourth addresses the principles of dynamic pricing and its importance in competitive contexts. The fifth analyzes market segmentation as a basis for designing differentiated strategies. The sixth studies tourism distribution channels and their impact on profitability. The seventh presents the technological systems that support automation, data analysis, and revenue management. Finally, the eighth explains the application of Revenue Management in different tourism contexts, extending its scope beyond traditional hotels.

Overall, this work aims to support students, teachers, researchers, and professionals interested in understanding Revenue Management as a strategic competency in contemporary tourism management. Its contribution lies in integrating theory, analysis, and application into a proposal that responds to the demands of an increasingly complex, dynamic, and data-driven sector.

Introduction

Revenue Management as a strategic axis of modern tourism management

In contemporary tourism management, Revenue Management has ceased to be an operational tool and has become a central strategic axis; it is no longer just about “selling at the best price”, but about making integrated decisions that affect profitability, brand positioning, customer experience and the economic sustainability of tourism companies.

This evolution can be explained by the current context of the tourism sector. Demand is volatile, highly price-sensitive, and increasingly informed, with customers comparing options in real time, using multiple purchasing channels, and expecting personalized offers; consequently, supply has intensified: more competitors, hybrid business models, and digital platforms that lower barriers to entry. In this scenario, managing prices without a strategic rationale almost inevitably leads to a loss of value.

Revenue Management arises exclusively as a response to this complexity. Its objective is not to maximize occupancy or sales volume, but to optimize total revenue through a deep understanding of demand behavior; this involves deciding what to sell, to whom, when, through which channel, and at what price, always aligned with the organization´s overall strategy.

In modern tourism companies, Revenue Management acts as a data-driven decision-making system, integrating historical information, consumption patterns, demand forecasts, competitive analysis, and customer segmentation. Based on this analytical foundation, dynamic strategies are designed to anticipate market trends rather than reacting to them. This predictive capability is one of the key differentiators compared to traditional pricing approaches.

Additionally, its reach extends far beyond the sales department. Revenue Management influences key areas such as marketing, distribution, operations, and finance. For example, a poorly aligned pricing strategy can increase occupancy but deteriorate operating profitability or negatively impact the customer's perception of value. Conversely, when Revenue Management is implemented as a cross-cutting strategy, it allows for a balance between revenue, costs, and customer experience, generating sustainable results over time.

From an academic and educational perspective, understanding Revenue Management as a strategic axis requires moving beyond a view limited to techniques or formulas. It necessitates approaching it as a management discipline that combines quantitative analysis, strategic thinking, and in-depth knowledge of the tourism market. For future professionals and educators in the sector, this approach is key to interpreting current dynamics and designing management models suited to an increasingly competitive and uncertain environment.

Importance of the analytical approach in decision making.

In modern tourism management, decision-making can no longer be based on intuition, individual experiences, or reactive responses to market conditions. The competitive environment demands a rigorous analytical approach, where data and its systematic interpretation become the cornerstones for more accurate, timely decisions aligned with the organization´s strategic objectives.

An analytical approach allows for a clear understanding of what is happening in the market, why it is happening, and how to respond effectively. In tourism, this includes everything from demand forecasting and customer segmentation to the optimization of prices, resources, and distribution channels (Enríquez-Herrera & Morillo-Cortez, 2022). The use of advanced statistical techniques and predictive models facilitates the identification of complex patterns that traditional methods overlook, supporting decisions with quantifiable evidence.

Recent research has shown that adopting analytical capabilities, particularly in the hotel sector, significantly improves the decision-making process. A study conducted in Egyptian hotels found that dimensions such as analytical skills, data quality, domain knowledge, big data, and sophistication in analytical tools have a positive and significant impact on the effectiveness of organizational decisions, suggesting that organizations that invest in developing analytical capabilities can make more effective decisions aligned with their strategic objectives.

Furthermore, the specialized literature emphasizes that data analytics not only supports short-term tactical decisions, such as price adjustments or promotional campaigns, but also underpins long-term strategic decisions; for example, well-structured analytical frameworks allow for planning resource allocation, anticipating changes in traveler preferences, and designing personalization strategies based on historical behaviors and emerging trends (Li, Wang & Zhang, 2023).

This analytical approach requires not only technological tools, but also human capabilities to interpret, translate, and apply the results of the analysis within the organizational context. The evidence-based culture of tourism companies drives them to continuously evaluate the impact of their decisions and adjust them based on real data and reliable projections.

Relationship between revenue management, marketing, operations and finance.

In modern tourism management, Revenue Management (RM) does not function as an isolated silo within the company; its impact extends and is nourished by areas such as marketing, operations, and finance, forming an interdependent network that sustains competitiveness and organizational efficiency.

In the first instance, the relationship between Revenue Management (RM) and Marketing (MK) is based on strategic and operational cooperation. RM relies on the market intelligence and understanding of customer segments provided by marketing, enabling the design of targeted offers, campaigns, and messaging that truly drive profitable demand. When both areas work in alignment, dynamic

pricing is enhanced by campaigns that appeal to the right segment at the right time, increasing both sales effectiveness and revenue efficiency (e.g., advanced segmentation and synchronized campaigns). Management practice literature indicates that departments that collaborate across RM and MK can improve revenue, increase market share, and balance demand during slow periods (Kuokkanen & Bouchon, 2021; Alrawabdeh, 2022).

This integration is especially critical to avoid contradictory actions, such as marketing campaigns that encourage excessive discounts without considering availability and the demand curve managed by revenue management, or revenue management decisions that establish rigid rates that fail to maximize customer attraction through promotional campaigns. Research on tourism companies has highlighted that coordination between marketing and revenue management directly impacts competitiveness and can even give rise to new integrated practices like *revenue marketing,* which seeks to simultaneously optimize demand and profitability.

In terms of operations, management influences the planning and execution of resources and services that effectively meet projected demand. Management decisions, such as expected occupancy levels, dynamic rates, and segment prioritization, determine how many resources should be available, how staffing should be organized, and how processes should be structured to meet service expectations at different times (for example, high versus low season operations). The synergy between management and operations allows for more efficient management of physical and human assets, reducing unnecessary costs and improving customer service levels.

From a finance perspective, Revenue Management acts as a bridge between revenue projections and actual financial results. RM analytics (such as pricing analysis, demand modeling, and forecasting) feeds into the revenue projections that finance management uses for budgeting, cost control, and profitability assessment. For example, recent studies have found that RM practices are positively correlated with key financial indicators such as revenue per available room (RevPAR), average daily rate (ADR), occupancy, and return on investment (ROI), demonstrating that good RM can boost financial results by aligning with the organization´s accounting and financial goals (Herath, Tham, Khatibi & Azam, 2023). Interdependence can be summarized as follows:

- RM and Marketing: *Marketing* attracts and segments demand; *RM* structures prices and availability to capture the maximum revenue from this demand.
- RM and Operations: *RM* projects demand levels and optimizes inventories; *Operations* adjusts resources and processes to meet those levels efficiently.
- RM and Finance: *RM* generates revenue scenarios and key metrics: *Finance* translates those scenarios into budgets, profitability targets and cost management (Zaki, 2022; Lima Santos et al., 2024).

This integrated approach transforms Revenue Management into a discipline that goes beyond simply setting prices or availability; it coordinates the entire business system to maximize the economic and competitive value of the tourism

organization. Operating in isolation is not only inefficient but also risks creating functional conflicts, misaligning objectives, and limiting the potential for sustainable growth. Therefore, mastering this cross-functional relationship is key for future tourism and hospitality professionals and educators who aspire to lead teams or design complex strategies in an interconnected business environment.

Competencies that the student will develop

Studying Revenue Management from an integrated and analytical perspective allows tourism and hospitality students to develop a set of key skills that are highly demanded in contemporary tourism and hotel management.

First, the student will strengthen analytical and quantitative skills, geared towards data interpretation, demand analysis, forecasting, and performance evaluation using key indicators such as ADR, RevPAR, and GOPPAR. Recent literature in *hospitality* highlights that these skills are fundamental for evidence-based decision-making and for reducing uncertainty in volatile environments (Okumus, et al., 2022).

Secondly, strategic competencies are developed, linked to the ability to understand Revenue Management as a cross-cutting system that articulates pricing, segmentation, distribution channels, and organizational objectives. The student learns to align revenue decisions with marketing, operations, and finance, understanding their impact on overall profitability and the creation of sustainable value (Cross, Higbie & Cross, 2023).

Furthermore, the training approach enhances technological and digital skills associated with the use of information systems, business intelligence tools, and analytical platforms that support dynamic, real-time decision-making. These capabilities are considered critical for professional performance in data - driven tourism and hotel organizations (Mariani & Borghi, 2023).

Finally, students develop critical and professional skills, such as the ability to interpret scenarios, assess risks, justify decisions with technical arguments, and communicate results at different levels of the organization. These skills are essential for performing management, consulting, or teaching roles in tourism and hospitality, where Revenue Management is a core competency of the modern professional profile.

CHAPTER I

FUNDAMENTALS OF REVENUE MANAGEMENT

1.1. Historical evolution of revenue management

Revenue Management is configured as an advanced decision-making approach aimed at optimizing revenue through the strategic coordination of supply, demand, and capacity. Its foundation lies in segmenting demand according to customers´ willingness to pay and purchasing behavior, and in the differentiated allocation of available capacity among these segments, with the objective of maximizing the revenue generated by the company (El Haddad, Roper & Jones, 2008).

From a conceptual standpoint, classic literature defines Revenue Management as the systematic application of information systems, analytical models, and dynamic pricing strategies to sell the right product or service to the right customer at the right time and at the right price (Kimes, 1989; Kimes & Wirtz, 2003). This definition emphasizes the decisional and predictive nature of the discipline, as well as its dependence on timely and reliable information to manage environments characterized by fixed capacity, fluctuating demand, and perishable products.

In functional terms, Revenue Management falls within the scope of marketing management insofar as it directly intervenes in the creation, stimulation, and direction of demand, as well as influencing consumer behavior through price and availability (Cross, Higbie & Cross, 2009; Anderson & Xie, 2010); however, its technical and methodological development transcends marketing, substantially incorporating contributions from operations research, especially regarding optimization and capacity allocation models (Talluri & van Ryzin, 2005), as well as from the economic theory of pricing, which provides the conceptual framework for analyzing price sensitivity and revenue maximization under different market structures (Shy, 2008).

> *Revenue Management is about intelligently anticipating the market to sell to the right customer, at the right time and at the right price, maximizing long-term profitability.*

Taken together, these approaches consolidate Revenue Management as an interdisciplinary discipline, essential for modern tourism management, which integrates marketing, operations and pricing into a coherent decision-making system oriented towards sustainable profitability.

Revenue Management initially developed in the airline industry as a response to the deregulation process of the 1970s, in a context characterized by increasing competition, greater fare freedom, and marked demand volatility. From this pioneering experience, the discipline gradually evolved until it became a standard business practice in a wide variety of economic sectors.

Currently, Revenue Management is profitably applied not only in airlines, but also in hotels, restaurants, golf courses, shopping malls, telecommunications operators, convention centers, and other organizations that share similar structural characteristics, such as relatively fixed capacity, fluctuating demand, and perishable products or services. This sectoral expansion has spurred a significant volume of theoretical and applied research aimed at understanding the fundamentals of Revenue Management and adapting its models to different industrial contexts (Chiang, Chen & Xu, 2007; Cross, 1997; Ng, 2009; Phillips, 2005; Talluri & van Ryzin, 2005).

In particular, the tourism and hospitality sector has been one of the main areas for the development and application of revenue management, given its high dependence on seasonality, demand variability, and intense competition. Several studies have analyzed its implementation in hotels, destinations, and tourism companies, contributing to the consolidation of Revenue Management as a strategic tool in the sector (Hayes & Miller, 2011; Ingold, McMahon-Beattie & Yeoman, 2001; Ivanov & Zhechev, 2012; Kimes, 2003; Lee-Ross & Johns, 1997; Legoherel, Poutier & Fyall, 2013; Mauri, 2012; Tranter, Stuart-Hill & Parker, 2008; Yeoman & McMahon-Beattie, 2011).

1.2. Economic principles of Revenue Management

Revenue Management relies on a coherent set of economic principles that explain how companies can optimize their revenue in environments characterized by limited capacity, uncertain demand, and perishable products or services, conditions especially common in tourism and hospitality (Talluri & van Ryzin, 2005); these principles provide the theoretical basis that justifies demand segmentation, dynamic pricing, and strategic capacity allocation.

One of the central economic principles is the heterogeneity of demand. Consumers differ in their willingness to pay, their price sensitivity, the timing of their purchases, and the value they assign to the product or service. Revenue Management assumes that these differences can be identified and managed through market segmentation, allowing the company to capture a greater economic surplus without increasing available capacity (Phillips, 2005). In this sense, segmentation is not only a marketing tool but also an economic mechanism for maximizing revenue.

Related to the above, the price elasticity of demand is another key principle. From an economic perspective, elasticity measures the degree to which the quantity demanded responds to changes in price. Revenue Management uses this concept to determine when a rate change can increase total revenue and when it can be counterproductive (Shy, 2008). Understanding the elasticity of different market segments allows for the design of differentiated pricing structures that balance volume and profitability, avoiding decisions based solely on occupancy.

Another fundamental principle is the perishable nature of inventory. In sectors such as hospitality or transportation, unsold capacity in a given period cannot be stored or recovered later. This economic condition justifies the use of dynamic pricing and time-based demand management strategies, aimed at stimulating

advance bookings, controlling last-minute demand, or shifting consumption to periods of lower capacity utilization (Kimes, 2003; Talluri & van Ryzin, 2005).

Likewise, Revenue Management is based on the principle of optimization under constraints, since capacity is fixed in the short term and structural costs are usually high, the economic objective is not to maximize the quantity sold, but to maximize the expected revenue per unit of available capacity; this implies making allocation decisions that prioritize certain segments or rates over others, even if this means rejecting demand at certain times (Cross, 1997).

Finally, from a broader economic perspective, Revenue Management can be understood as a practical application of price theory and consumer economics to the business context. It integrates concepts such as price discrimination, rational behavior under imperfect information, and expected revenue maximization, adapting them to real markets characterized by uncertainty and intense competition (Phillips, 2005; Chiang, Chen & Xu, 2007).

These economic principles allow us to understand that Revenue Management is not an intuitive empirical practice, but a discipline based on solid theoretical foundations that translates economic theory into operational and strategic decisions aimed at improving the profitability and sustainability of tourism companies.

1.3. Revenue management vs yield management.

In literature and professional practice, the terms *yield management* and *revenue management* have often been used synonymously; however, from a conceptual and evolutionary perspective, both correspond to different scopes and levels of complexity, the differentiation of which is key to understanding the strategic role that Revenue Management occupies today in tourism management.

1.3.1. The concept of yield management

Historically linked to the airline industry, this approach is associated, in its original form, with the tactical optimization of short-term revenue through inventory control and fare differentiation. Its primary focus is on price and capacity management to maximize unit revenue from a perishable resource, operating primarily through operational decisions and predefined rules. While effective in specific contexts, this approach has a limited scope, focusing almost exclusively on the price-occupancy relationship.

Over time, the increasing complexity of markets, the digitization of demand, and the need to integrate multiple variables led to a conceptual evolution toward Revenue Management. Recent research highlights that Revenue Management represents a natural and strategic expansion of yield management, incorporating advanced data analytics, deep customer segmentation, channel management, non-pricing decisions, and alignment with the organization´s overall objectives (Okumus et al., 2022).

From this perspective, Revenue Management is not limited to maximizing short-term revenue, but seeks to optimize sustainable economic performance by

integrating pricing decisions with marketing, operations, and finance. Cross, Higbie and Cross (2023) point out that this evolution has transformed the discipline into a comprehensive management system for profitable growth, where price is just one of the many levers available to influence demand behavior.

Another relevant difference lies in the time and strategic horizon. While yield management operates predominantly at the tactical level, revenue management incorporates a medium- and long-term vision, supported by forecasts, scenarios, and overall profitability metrics; in this sense, recent studies in tourism and hospitality emphasize that revenue management is consolidating itself as a strategic organizational capability rather than as an isolated optimization tactic (Mariani & Borghi, 2023).

In summary, yield management can be understood as the operational precursor to revenue management; the latter expands its conceptual, methodological, and strategic scope, adapting to highly competitive and data-driven environments. For modern tourism management, this distinction is not merely terminological; it implies a shift from a logic of price control to a comprehensive management of the economic value generated by demand.

1.4. Conditions necessary for its application in tourism and hospitality

The effective application of Revenue Management in tourism and hospitality does not depend solely on the adoption of technological tools or dynamic pricing techniques. Its successful implementation requires the fulfillment of a set of structural, organizational, and market conditions that make this management approach viable and economically justifiable. Recent literature agrees that, when these conditions are not present, the results of Revenue Management tend to be limited or inconsistent (Ivanov & Webster, 2020; Okumus et al., 2022).

First, an essential condition is the existence of relatively fixed capacity in the short term. In the hotel industry, the number of available rooms cannot be adjusted immediately in response to changes in demand, which necessitates optimizing the use of a fixed inventory. This characteristic distinguishes the sector from other productive areas and explains why Revenue Management has found particularly fertile ground in hospitality (Ivanov & Webster, 2020; Cross, Higbie & Cross, 2023).

Secondly, Revenue Management requires that the product or service be perishable, meaning that unsold inventory loses its value once the consumption period has ended. An unoccupied room on a given night cannot be stored or sold later, making every allocation and pricing decision irreversible. This condition justifies the use of dynamic pricing and availability control strategies to manage demand over time (Hayes & Miller, 2021).

A key condition is the variability and uncertainty of demand. Tourism is characterized by strong seasonality, changing booking patterns, and sensitivity to external factors such as events, weather, or economic conditions. Recent studies indicate that Revenue Management is especially effective in environments where demand fluctuates significantly and can be analyzed using

historical data and predictive models (Mariani & Borghi, 2023; Okumus et al., 2022).

Furthermore, customer heterogeneity in terms of willingness to pay and purchasing behavior is essential. The ability to segment demand and offer different prices, conditions, and products to different segments is a central economic principle of Revenue Management. In the hotel industry, this heterogeneity is clearly evident among business and leisure travelers, advance and last-minute bookings, direct customers and users of intermediaries, among others (Ivanov & Webster, 2020; Cross et al., 2023).

From an organizational perspective, the application of Revenue Management requires the availability and quality of data, as well as analytical capabilities to interpret it. Recent literature highlights that the transition to *data-driven models* is a critical condition, since decisions based on incomplete or unreliable information significantly reduce the effectiveness of the system (Okumus et al., 2022; Mariani & Borghi, 2023), in this sense, technology is a necessary enabler, but not sufficient without adequate human skills.

It´s worth noting that a frequently underestimated condition is the internal alignment between Revenue Management, marketing, operations, and finance. Some contemporary research indicates that Revenue Management generates greater value when integrated as a cross-functional and strategic approach, rather than as an isolated practice focused solely on pricing (Cross, Higbie & Cross, 2023; Hayes & Miller, 2021). A lack of internal coordination often leads to conflicting decisions that erode both financial results and the customer experience.

Taken together, these conditions explain why Revenue Management has proven particularly effective in tourism and hospitality, but also why its implementation requires a systemic approach. It´s not simply about applying techniques, but about creating an organizational and analytical environment that enables rational decision-making under uncertainty, geared towards the sustainable optimization of revenue.

1.5. Revenue management in Latin American contexts

The application of Revenue Management in Latin American tourism contexts has experienced progressive development in recent years, although at uneven rates between countries and types of companies. Several sector studies indicate that, while the discipline is widely recognized in conceptual terms, its practical implementation still presents significant gaps compared to more mature markets (Statista, 2024).

In countries like Mexico, Brazil, Colombia, Chile, and Peru, the growth of the hotel sector and greater exposure to international chains have fostered the adoption of Revenue Management practices, especially in urban hotels and those catering to corporate tourism. According to market analyses cited by Hosteltur Latinoamérica (2022), international hotel chains have acted as the primary disseminators of revenue management methodologies, metrics, and systems, generating a ripple effect on independent establishments.

However, research conducted in independent hotels in Latin America shows that the adoption of Revenue Management is often concentrated on basic pricing decisions, with limited use of advanced tools for forecasting, segmentation, or inventory control. In emerging markets, Revenue Management is often narrowly perceived as a pricing tool rather than a strategic function integrated with marketing, operations and finance (Baker et al., 2020; Sbying & Yoopetch, 2023).

Another distinctive feature of the Latin American context is the high presence of small and medium-sized tourism enterprises, which limits the availability of technological and human resources. According to data analyzed by HSMAI Latin America (2023), a significant portion of the region´s hotels do not have a dedicated revenue manager, forcing these functions to be assumed by general managers or sales managers, thus limiting the analytical and strategic approach.

Macroeconomic volatility also directly influences the application of Revenue Management. Factors such as inflation, exchange rate instability, and demand shocks affect market predictability and hinder the construction of robust forecasting models; in this regard, some research highlights that Latin American managers tend to prioritize short-term decision horizons, which limits the strategic potential of Revenue Management (Ivanov & Webster, 2020).

However, in recent years there has been significant progress in terms of professionalization and training, driven by universities, industry associations, and technology providers. Training initiatives promoted by HSMAI in countries such as Colombia and Mexico have contributed to disseminating a more comprehensive view of Revenue Management, linking it to profitability and not just to occupancy (HSMAI Latin America, 2024).

Revenue Management in Latin America is in a transitional phase, moving from an intuitive and partial application toward a more analytical and strategic approach. This process is conditioned by structural, economic, and organizational factors specific to the region, but it also offers ample opportunity for development in academic training, applied research, and improving the competitiveness of Latin American tourism.

1.6. Key indicators of Revenue Management

In order to generate a suitable structure for the analysis of a hotel and/or tourism organization in the context of Revenue Management, it is common to estimate the following indicators and their conceptualization:

1.6.1. Optimal level of net income and gross operating profit in hotel management

The optimal level of net income and gross operating profit is one of the fundamental principles of modern Revenue Management. A hotel´s net income corresponds to sales revenue after deducting taxes, commissions, and distribution costs, while gross operating profit results from deducting those revenues from the costs associated with providing the service, such as sales, marketing, administration, and human resources costs. However, the key

concept is not the isolated maximization of either of these variables, but rather their combined optimization.

Increasing net revenue does not guarantee an increase in gross operating profit. Attracting a higher volume of guests can involve high marginal costs, especially when the hotel is operating near maximum capacity. In these scenarios, overtime, operational wear and tear, and the likelihood of service errors increase. Overcrowding reduces perceived quality, increases complaints, and negatively impacts customer satisfaction, generating both direct and future financial consequences. Several recent studies suggest that management focused solely on occupancy or RevPAR can be less efficient than management based on profit indicators such as GoPPAR (Ivanov, 2022; Noone, Enz & Canina, 2021).

On the other hand, increasing gross operating profit through aggressive cost-cutting strategies can deteriorate service quality and negatively impact future demand. Cuts in staff, maintenance, or training may temporarily improve margins, but they often result in lower customer loyalty and lost revenue in the long run. Post-pandemic literature has confirmed that service quality and customer experience are key determinants of the recovery and sustainability of hotel performance (Gössling, Scott & Hall, 2021; OECD, 2022).

Consequently, Revenue Management should not be geared towards maximizing revenue at any cost, nor towards increasing profitability through reactive cost adjustments. Its strategic objective is to reach the point where net revenue and gross operating profit are simultaneously optimized, considering marginal costs, operational capacity, customer experience, and guest lifetime value. This approach, supported by the recent evolution towards management models based on total profit, represents the financial maturity of contemporary hotel management (Phillips, 2021; Vinod, 2023).

1.6.2. Correct customer

The concept of the right customer stems from the principle that not all customers generate the same level of profitability for the hotel. While from a purely commercial perspective, every customer may seem desirable, from a financial and operational standpoint, some segments are costlier to serve than the economic value they contribute. There are guests with high operational requirements that entail higher costs for personalization, service time, or compensation, as well as highly price-sensitive customers whose willingness to pay barely covers total operating costs. In both cases, the impact on operating profit can be marginal or even negative.

Therefore, the concept of the “right customer” should be understood in terms of profitability and strategic alignment with the establishment´s positioning. In practice, it is linked to the target market defined in the hotel´sbusiness strategy. The target segment determines the product design, service level, cost structure, and value proposition. Attracting customers whose profiles do not fit this proposition can generate operational imbalances, a deterioration in the experience, and pressure on margins (Ivanov & Webster, 2020; Phillips, 2021).

Modern Revenue Management integrates profitability analysis by segment and marginal contribution models that allow identifying which types of customers generate greater net value, not just greater volume; in this context, advanced analytical tools and artificial intelligence systems allow evaluating customer lifetime value, acquisition costs and service costs associated with each channel and segment (Vinod, 2023; Noone & McGuire, 2022).

Therefore, the concept of the right customer is not defined solely by their willingness to buy, but by their ability to generate sustainable profitability within the hotel´s operating model. Contemporary Revenue Management demands an active and analytical selection of demand, aimed at balancing revenue, costs, and guest experience, thus consolidating a profitable growth strategy consistent with the target market.

1.6.3. Correct product

The concept of the right product is defined by the convergence between the hotel´s value proposition and the target segment´s willingness to pay. It´s not simply about designing an attractive set of services, but about structuring an offering that simultaneously meets three conditions: it generates real value for the right customer by satisfying their needs and expectations; it fits their ability and willingness to pay; and it is profitable for the establishment.

The hotel product must be built upon a predefined target market. Offering services or amenities that do not align with the preferences of the target segment leads to inefficient resource allocation and unnecessary cost increases. Similarly, incorporating features that the customer is unwilling to pay for or that cannot be promoted with a positive margin erodes operating profitability. Recent literature on hotel management confirms that consistency between segmentation, value proposition, and cost structure is crucial for-profit optimization (Ivanov & Webster, 2020; Phillips, 2021).

Consequently, the right product is not necessarily the most complete or sophisticated, but rather the one that balances perceived value and profitability. From a revenue management perspective, product configuration is part of the profit maximization strategy, as it directly influences positioning, pricing structure, and contribution margin per segment (Vinod, 2023).

1.6.4. Correct distribution channel

The right distribution channel is the one that allows access to the right customer with the lowest possible intermediation costs and a positive contribution margin. Hotels can market their inventory through direct channels (their own website, call center) or through intermediaries such as traditional agencies, OTAs, GDSs, and other digital systems. Each channel involves different cost structures, commission levels, and demand profiles.

From a profitability perspective, not all channels are equally suitable. Some contribute volume but with high dependency and high commissions, while others strengthen direct sales and improve the net margin per booking. The optimal choice is not based solely on market reach, but on the balance between customer

acquisition cost, customer lifetime value, and overall profitability (Stangl, Inversini & Schegg, 2020; Guillet & Mohammed, 2022).

Therefore, the right channel is the one that connects the hotel with its target segment efficiently and sustainably, aligning commercial strategy, cost control and maximization of operating profit.

1.6.5. Correct price

Price is a key tool in revenue management because it directly impacts revenue levels and profitability. Through dynamic adjustments over time, a suitable pricing structure across segments, and differentiated conditions for each rate type, a hotel can influence the composition of demand and attract the most profitable customers.

The right price is the one that balances the customer´s willingness to pay with the establishment´s profitability goal. While the customer seeks to minimize their spending and the hotel to maximize its revenue, the optimal point is where the price consistently reflects the perceived value. Recent literature highlights that the perception of fairness and pricing consistency directly influences satisfaction, repurchase intention, and loyalty (Kimes & Noone, 2021; Abrate, Fraquelli & Viglia, 2023).

When customers perceive that the price does not correspond to the value received, the future relationship deteriorates and price sensitivity increases in subsequent purchases; therefore, strategic price management should not be solely focused on maximizing immediate revenue, but on maintaining a balance between perceived value, competitive positioning, and long-term profitability.

1.6.6. Right moment

Timing is critical, as the effectiveness of an offer depends not only on its content or price, but also on the moment it is communicated to the market. The same promotion can generate radically different results depending on the timing of its launch.

For example, a Christmas getaway offer published too far in advance might go unnoticed because it´s not yet part of the customer´s planning horizon. Conversely, if it´s communicated too late, the target market may have already made their bookings. The sales opportunity is directly linked to the booking patterns of each segment and the prevailing booking window.

Ultimately, the right timing is determined through predictive analysis of demand and historical purchasing behavior. Effective revenue management not only defines what to offer and at what price, but also when to intervene to maximize the probability of conversion and the associated profitability.

1.6.7. Correct communication

Effective communication is a strategic component of retail marketing because it directly influences perceived value and price acceptance. Simply defining the right product and an optimal price is not enough; how both are presented to the market shapes the customer´s interpretation and purchasing decision.

The information published on the hotel´s website, the clarity of the pricing conditions, and the pricing framing influence the perception of fairness and transparency. Framing, that is, the way in which rates are structured and presented, can modify the assessment of perceived value without altering the nominal price. Recent evidence demonstrates that the perception of fairness and clarity in communication significantly impact satisfaction, trust, and repeat purchase intention (Kimes & Noone, 2021; Abrate & Viglia, 2022).

When customers perceive consistency between price, benefits, and conditions, the price-value ratio is strengthened and the likelihood of customer loyalty increases; conversely, ambiguous or misleading communication deteriorates the experience even before the service is consumed; consequently, correct communication is not just a marketing issue, but a key tool for protecting profitability and sustaining long-term business relationships.

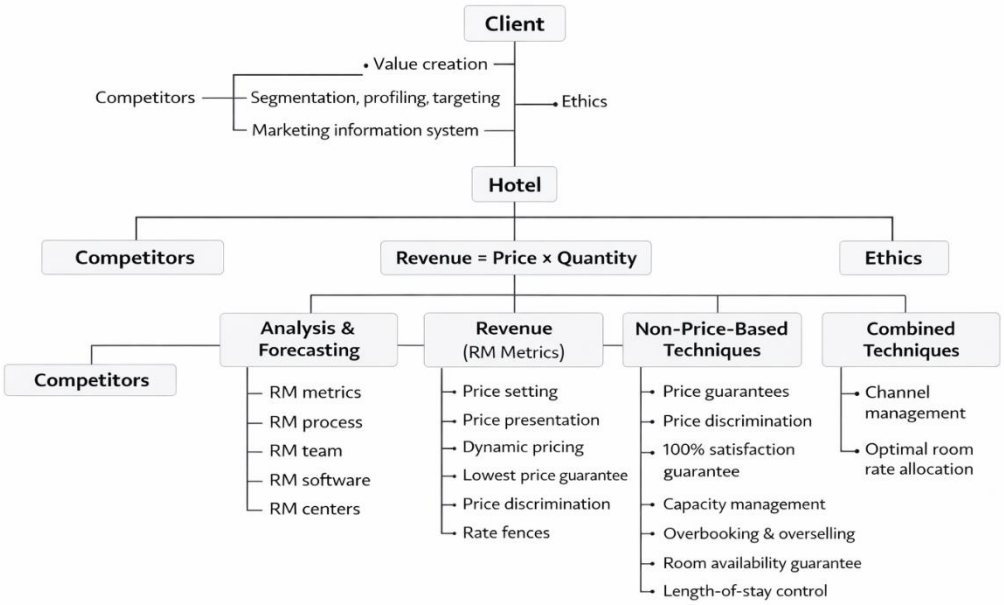
1.7. The Revenue Management Constellation

Revenue Management encompasses a broad set of processes, decisions, and techniques whose integration is complex and difficult to synthesize into a single linear model. The so-called “revenue management constellation” represents a conceptual map that organizes the main terms and relationships that structure this discipline.

At the heart of the model lies the interrelationship between hotel revenue, price, quantity sold, and the customer. These elements form the economic basis upon which strategic and tactical management decisions are built. Revenue management operates not only on prices but also on the dynamic interaction between demand, segmentation, inventory, perceived value, and profitability.

Given its multifaceted and multilevel nature, the constellation should be understood as a non-exhaustive conceptual representation. Its objective is not to cover all the variables involved, but rather to illustrate the fundamental connections between the various components that influence revenue generation and optimization in the hotel industry.

Figure 1. The Revenue Management Constellation: A Conceptual Framework of Core Interdependencies



1.8. What is needed to implement effective hotel Revenue Management?

To implement effective hotel Revenue Management requires the integration of analytical tools, business strategies, and organizational capabilities that allow for optimizing demand management and maximizing the establishment´s revenue.

First and foremost, it is essential to have a data analytics system capable of collecting and analyzing information on bookings, market behavior, demand trends, and historical performance. These systems enable the generation of strategic knowledge for evidence-based decision-making.

Secondly, dynamic pricing strategies should be implemented, which allow rates to be continuously adjusted based on fluctuations in demand, seasonality, booking lead time, and competitive market conditions.

Likewise, it is essential to develop a deep understanding of the target market, identifying customer segments, consumption preferences, purchasing patterns and levels of price sensitivity; this understanding facilitates the design of tourism offers and products aligned with the needs of the consumer.

Another key element is the efficient management of distribution channels, which includes strategic coordination between direct sales, OTAs, metasearch engines, and other digital intermediaries. Proper management of these channels allows for increased hotel visibility and optimized booking conversion.

Additionally, the success of Revenue Management depends on staff training, ensuring that operational and commercial teams understand revenue management principles and work in alignment with the establishment's strategy.

Finally, it is essential to conduct periodic performance evaluations by monitoring key indicators and constantly reviewing results; this process allows for adjusting applied strategies and continuously improving the efficiency of the revenue management model.

Overall, these components form the structural basis for implementing a solid, data-driven, market-oriented hotel Revenue Management system that is sustained by continuous improvement of profitability.

Figure 2. Conceptual Framework of Revenue Management: Strategic and Operational Interdependencies in the Tourism Sector

1.9. Chapter Summary

Chapter I introduces Revenue Management as a strategic discipline aimed at maximizing revenue through the intelligent management of available capacity, demand segmentation, and pricing based on market behavior. From the outset, it is made clear that the goal is not simply to sell more, but to sell better: to the right customer, at the right time, through the right channel, and at a price that reflects the true value of the service. In the context of tourism and hospitality, this logic is especially relevant because supply is limited and perishable; a room that goes unsold on a given date represents lost revenue that cannot be recovered later.

The chapter explains that Revenue Management originated in the airline industry, particularly following deregulation processes that forced companies to compete more dynamically and develop systems capable of adjusting fares, controlling inventory, and anticipating demand. Over time, these principles spread to the hotel sector, where they found a particularly fertile ground for application due to the combination of fixed capacity, variable demand, and high consumer price sensitivity. This historical evolution allows us to understand that Revenue Management is not a management fad, but rather the result of a structural need in service industries with perishable inventory.

Throughout the chapter, the economic foundations that underpin this discipline are highlighted. Demand heterogeneity, price elasticity, price discrimination, and the optimization of limited resources are presented as pillars that allow us to understand why different customers can pay different prices for the same service without this implying a commercial contradiction. In this sense, Revenue Management relies on the ability to interpret consumption patterns, anticipate behaviors, and strategically allocate capacity to the highest-value segments. Its purpose is not only to increase short-term revenue but also to improve the overall profitability of the business through decisions based on information and analysis.

The text also clearly distinguishes between Revenue Management and Yield Management. Although both concepts are closely related, it explains that yield management corresponds to a more tactical approach, focused primarily on inventory control and price variations, while Revenue Management has a broader and more comprehensive scope, incorporating variables related to marketing, distribution channels, consumer behavior, offer design, and the organization´s financial objectives. In this way, it is consolidated as a strategic management tool that transcends pricing logic and is integrated into business decision-making across all areas.

Another key aspect of the chapter is the identification of the necessary conditions for effectively implementing Revenue Management. It highlights that this discipline is especially useful in businesses with limited capacity, fluctuating demand, advance bookings, potential market segmentation, and the availability of reliable data. In the hotel industry, these conditions are naturally present, although their effective use depends on the company´s level of professionalization, the coordination between departments, and the ability to translate data into concrete decisions. Therefore, it emphasizes that Revenue Management cannot be understood as an isolated function, but rather as a

practice that requires coordination between operations, sales, marketing, and finance.

Finally, the chapter situates this discussion within the Latin American context and acknowledges both the progress and limitations in the region. It points out that, although the adoption of Revenue Management tools and approaches has grown in several countries, significant gaps remain in technology, specialized training, and analytical culture. In many cases, pricing decisions continue to rely more on intuition than on systematic forecasting and optimization models. Therefore, the chapter argues that one of the major challenges for tourism and hospitality in Latin America is to consolidate a more strategic vision of revenue, capable of responding to increasingly competitive, digitized, and value-sensitive markets.

CHAPTER II

REVENUE MANAGEMENT TECHNIQUES

As previously mentioned, Revenue Management consists of selling the right product to the right customer at the right time and at the right price. This allows for predicting demand behavior in order to optimize inventory and pricing, thereby maximizing revenue growth. However, it is not only about optimizing during periods of high demand; on the contrary, it helps to estimate demand during low seasons, avoiding price cannibalization.

Table 1. Conceptual Delimitation of Revenue Management: Distinction From Marketing, Sales, and E-commerce Functions

What is Revenue Management?		
Revenue Management	Is not	marketing
Revenue Management	Is not	sales
Revenue Management	Is not	e *-commerce*
Revenue Management becomes a support for the hotel business focused on the analysis and maximization of its profits.		

An excellent RM implies:

a) Information
b) Culture
c) Tools and techniques
d) Operational processes
e) Strategic alignment

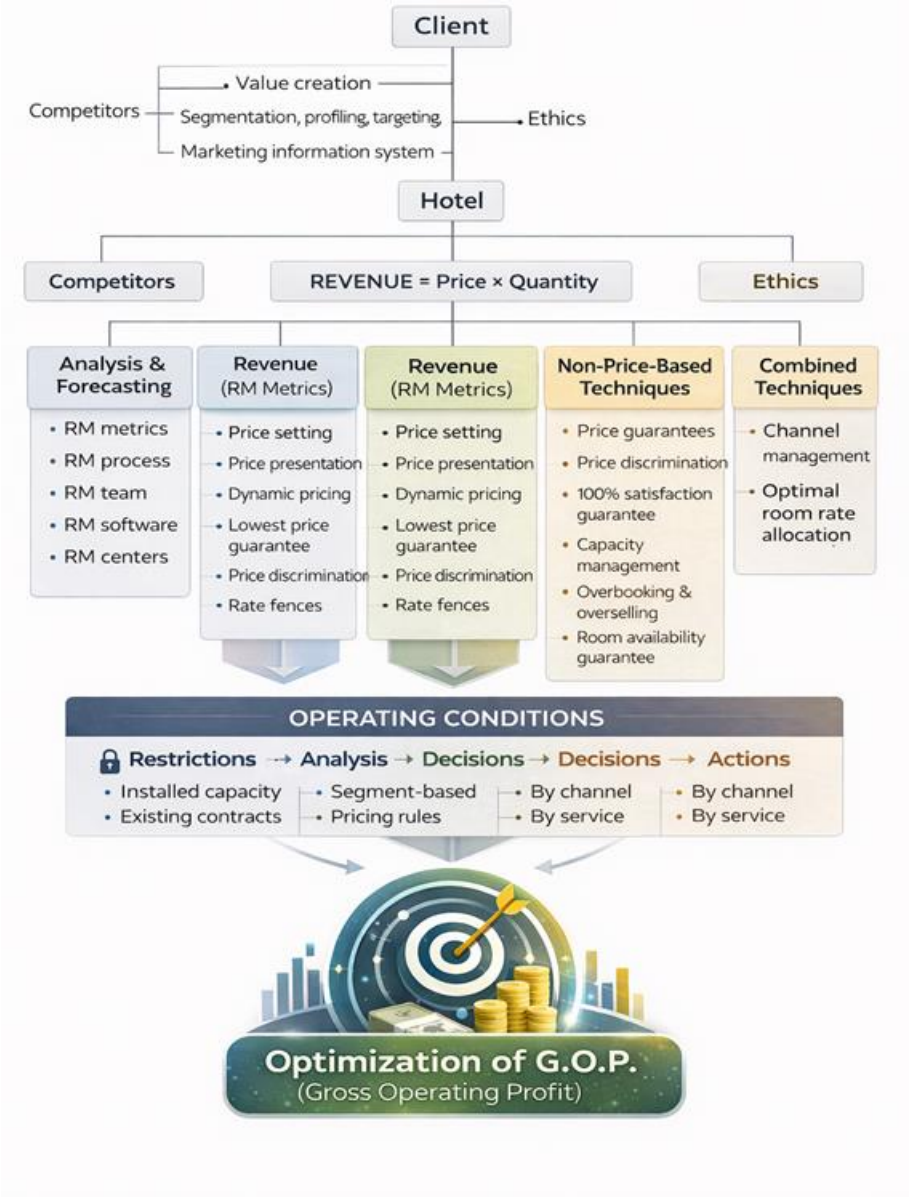
2.1. Birgerjarl model: Business Revenue Intelligence

This model easily compiles the fundamental pillars and main lines of action of Revenue Management, which are:

1. Demand forecasting techniques with patterns, forecasts and cadences
2. Customer knowledge, profitability, segmentation, and elasticity.
3. The *Compset*

This allows for the channeling of two types of techniques or tools, as well as tactical actions and strategies with the purpose of maximizing revenue and supporting the optimization of GOP (*Gross Operating Profit)***,** all without losing sight of the natural constraints of the business and the variable costs of the actions and strategies.

Figure 3: Business Revenue Intelligence: Integral Model for operating profit optimization



This model allows for the precise definition of the multivariate approach that the *Revenue area should have.* The integration of demand forecasting is evident, understood as the union of patterns, forecasts by customer type and the different seasons and cadences, along with knowledge of this and knowledge of the competitive set (Compset).

Customer knowledge focuses on calculating the profitability of the segment in which it participates, the price elasticity, as well as the level of reaction to marketing strategies. The competitive set includes weighted price analysis, trend formation, and detailed analysis of metasearch engines and OTAs.

This set of multifaceted factors leads to tactical and strategic actions that, while influenced by industry constraints such as capacity, hiring, and the business itself, guide the correct strategies for optimizing GOP. These processes are led by

revenue managers whose purpose is to bring together the various departments of a hotel to pursue the established objectives.

2.2. Requirements to apply Revenue Management

At this stage, the evolution of hotel revenue compared to airline revenue lies in the fact that the end customer is already aware that the price is shaped depending on when the purchase is made and understands this variation as logical. On the other hand, hotel customers still feel uneasy about price variations compared to other options.

In this evolutionary scenario, the determination of the uncertainties that the revenue methodology must address and control becomes evident, strengthening and maximizing the return on the certainties that are available, that is:

Table 2. Comparative Analysis of Uncertainties and Certainties in Revenue Management

Uncertainties	**Certainties**
Future arrival of visitors to the destination and demand for hotel rooms	Historical distribution of reservations by type of request or channel
	Hotel *stock (room types)*
	Pickup by reservation status
	Historical percentage of confirmations on requests by reservation type
Weighted *competitive set*	Fees (restrictions) and penalties
Price elasticity of demand	Contractual obligations
Elasticity – price of the competitive set's supply	Elasticity – price of hotel supply
Incidence of *no-shows* and cancellations	Historical average length of stay and number of people per room
	Historical direct variable costs per occupied room and direct margins for services and accessories

Figure 4. Key Enablers of Revenue Management: A Systemic Framework for Data-Driven Decision-Making in Tourism and Hospitality

2.3. Revenue Management cycle and techniques

The Revenue Management cycle is an analytical and strategic process aimed at maximizing revenue through the efficient management of demand, pricing, and available capacity in tourism businesses, particularly in the hotel sector. This cycle is structured as a continuous feedback system based on data and strategic decisions.

First, the process begins with data analysis, where financial, historical, and market information is collected and interpreted. This phase examines variables such as occupancy patterns, customer behavior, seasonality, market trends, and distribution channel performance. Systematic analysis of this data allows for the identification of opportunities to optimize revenue management.

Subsequently, when demand forecasting is developed, a stage in which future levels of tourism consumption are projected using statistical models, trend analysis, and predictive tools. Estimating potential demand allows for anticipating market behavior and planning service availability more efficiently.

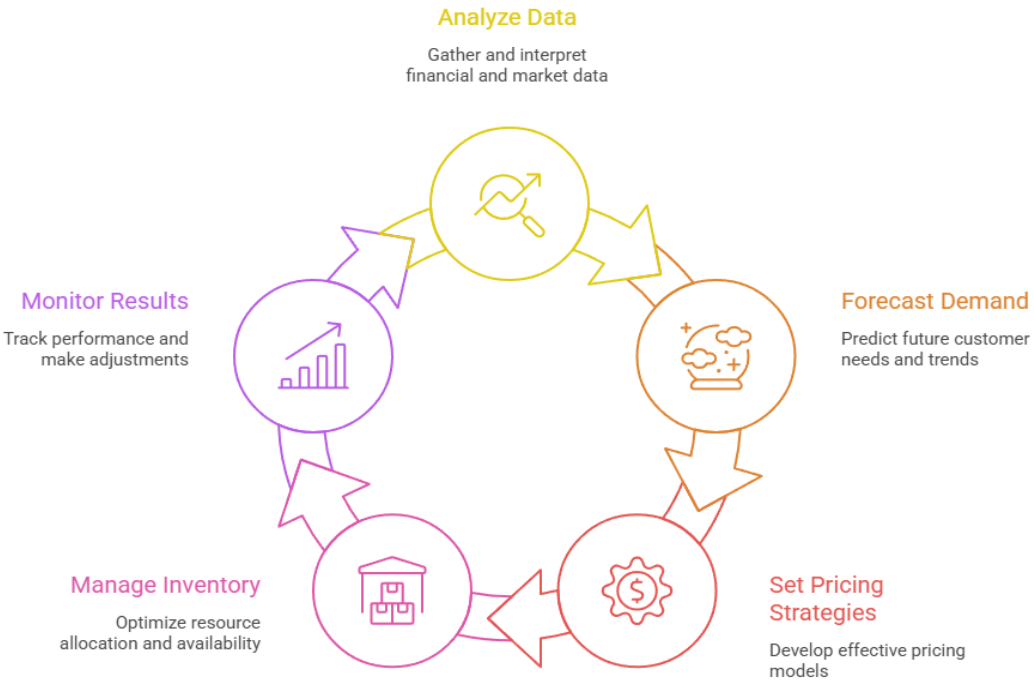
Based on these projections, pricing strategies are designed, establishing dynamic rates adjusted to factors such as booking lead time, customer segmentation, length of stay, and variations in demand. These strategies aim to maximize revenue per available unit while maintaining market competitiveness.

The next step involves inventory management, which entails the strategic management of available capacity (rooms, services, or experiences). In this phase, inventory is allocated to different distribution channels, such as online travel agencies (OTAs), direct sales, or global distribution systems, with the aim of optimizing occupancy and economic performance.

Finally, the cycle concludes with results monitoring, where the performance of the implemented strategies is evaluated using key performance indicators such as RevPAR, ADR, and occupancy rate. This monitoring allows for operational and strategic adjustments that provide feedback to the initial analytical process.

In this way, Revenue Management functions as a continuous cycle of business intelligence, where information, prediction, and strategic decision-making are integrated to maximize profitability and improve efficiency in the management of destinations and tourism businesses.

Figure 5. Revenue Management as a Continuous Business Intelligence Cycle



Regarding techniques, the most suitable for applying Revenue Management are the following:

Figure 6. Conceptual Distinction of Revenue Management From Marketing, Sales, and E-commerce Functions

2.4. Key performance indicators in Revenue Management

Revenue management is based on the systematic measurement of performance using quantitative indicators that allow for the evaluation of commercial efficiency, inventory monetization capacity, and the operational profitability of the establishment. These metrics form the analytical basis for strategic and tactical decision-making. The main indicators used in revenue-oriented hotel management are described below.

2.4.1. Basic profitability indicators

2.4.1.1. Occupancy Rate (OCC)

This index expresses the level of occupancy of available capacity during a given period. It is defined as the ratio between rooms actually sold and rooms available for sale. Its formula is as follows:

$$OCC\ (\%) = \frac{sold\ rooms}{available\ rooms}\ X\ 100$$

Reflecting commercial efficiency in terms of volume, it is analyzed jointly with the ADR to avoid distortions.

Example:

A hotel has 50 rooms available for 30 days, which is equivalent to 1,500 rooms available. If 600 rooms were sold during the month, then:

$$OCC\ (\%) = \frac{600}{1{,}500}\ X\ 100 = 40\%$$

This indicates that the hotel recorded an average occupancy of 40% during the analyzed period.

2.4.1.2. Average Daily Rate (ADR)

The ADR measures the average revenue generated per room sold in a specific period. Its formula is as follows:

$$ADR = \frac{Total\ room\ revenue}{Number\ of\ sold\ rooms}$$

Example:

A hotel generates USD 48,000 in room revenue during one month and sold 600 rooms.

$$ADR = \frac{48{,}000}{600} = 80$$

This means that the average selling rate is USD 80 per occupied room.

2.4.1.3. RevPAR (Revenue per Available Room)

This indicator integrates occupancy and average rate, allowing for the evaluation of efficiency in generating revenue per available room.

$$RevPAR = \frac{room\ revenue}{available\ rooms}$$

Example:

If the hotel had USD 48,000 in room revenue and has 1,500 rooms available, then:

$$RevPAR = \frac{48{,}000}{1{,}500} = 32$$

The hotel generates USD 32 in revenue for each available room, regardless of whether it was occupied or not.

2.4.1.4. Advanced profitability indicators

They allow to move beyond traditional measurement focused solely on room revenue and facilitate a comprehensive analysis of the hotel´s economic efficiency. These indicators incorporate variables related to cost structure, revenue diversification, and the business´s actual operating profitability.

2.4.1.5. GOPPAR (Gross Operating Profit per Available Room)

It allows to evaluate the overall efficiency of the hotel in financial terms, integrating the impact of operating costs, making it a more robust indicator than RevPAR, and particularly useful for comparing profitability between hotels with a varied cost structure.

$$GOPPAR = \frac{gross\ operating\ profit}{available\ rooms}$$

Example:

If the hotel earns USD 120,000 in total revenue and operating costs amount to USD 80,000, the gross operating profit will be:

$$120{,}000 - 80{,}000 = 40{,}000$$

With 1,500 rooms available:

$$GOPPAR = \frac{40{,}000}{1{,}500} = 26.67$$

The hotel generates approximately USD 26.67 of operating profit per available room.

2.4.1.6. TRevPAR (Total Revenue per Available room)

This indicator assesses an establishment´s ability to monetize the overall customer experience. It is particularly used in resorts, vacation hotels, and multi-service tourist complexes.

$$TRevPAR = \frac{total\ hotel\ revenue}{number\ fo\ available\ rooms}$$

These revenues include: accommodation, food and beverages, events and conventions, and complementary services (spa, wellness, tours, transportation, etc.)

Example:

If the hotel has:

- USD 48,000 in rooms
- USD 22,000 at restaurant
- $10,000 USD in events

Total revenue:

USD 80,000

So:

$$TRevPAR = \frac{80{,}000}{500} = 53.33$$

The establishment generates USD 53.33 in total revenue per available room

2.4.1.7. Net RevPAR (Net Revenue per available room)

This indicator identifies the real profitability of sales channels, facilitates the optimization of channel management, and is important in contexts of high digital intermediation.

$$NetRevPAR = \frac{Room\ revenue\ -\ distribution\ costs}{Number\ of\ available\ rooms}$$

Distribution costs typically include: OTA commissions, digital marketing costs, and commercial intermediation expenses.

Example:

If the hotel earns USD 48.000 in room revenue and pays USD 6,000 in OTA commissions, the net income will be:

48,000 – 6,000 = 42,000

So:

$$NetRevPAR = \frac{42{,}000}{1{,}500} = 28$$

The hotel generates USD 28 net per available room after commissions.

2.4.1.8. NOPPAR (Net operating profit per available room)

This indicator measures the net profit generated by each available room after deducting all the hotel´soperating, administrative, and financial costs.

$$NOPPAR = \frac{Net\ operating\ profit}{Number\ of\ available\ rooms}$$

Example:

If a hotel earns USD 120,000 in total revenue, has USD 80,000 in operating costs and USD 10,000 in administrative expenses, the net operating profit will be:

120,000 – 80,000 – 10,000 = 30,000

If the hotel has 1,500 rooms available in the month, the calculation would be:

$$NOPPAR = \frac{30{,}000}{1{,}500} = 20$$

The hotel generates USD 20 of net profit for each available room

2.4.2. Strategic market indicators

2.4.2.1. RGI (Revenue Generation Index)

It measures the hotel´s performance in revenue generation relative to the market.

$$RGI = \frac{Hotel\ RevPAR}{Compset\ RevPAR}$$

If RGI > 1, the performance is superior to the competitive set; this indicator is based on benchmarking.

Example:

If the hotel´s RevPAR is USD 32 and the average market RevPAR is USD 28:

$$RGI = \frac{32}{28} = 1.14$$

A value greater than 1 indicates that the hotel is generating more revenue per available room than its competitors.

2.4.2.2. MPI (Market Penetration Index)

Evaluate the hotel´s ability to attract demand in relation to the market

$$MPI = \frac{Hotel\ occupancy}{Market\ occupancy}$$

Example:

If the hotel has 40% occupancy and the market average is 35%:

$$MPI = \frac{40}{35} = 1.14$$

An MPI greater than 1 indicates that the hotel captures more demand than its market

2.4.2.3. ARI (Average Rate Index)

Compare the average hotel rate with the market rate.

$$ARI = \frac{Hotel\ ADR}{Market\ ADR}$$

Example:

If the hotel´s ADR is USD 80 and the market's ADR is USD 75

$$ARI = \frac{80}{75} = 1.07$$

This indicates that the hotel sells its rooms 7% above the market average.

2.5. Chapter Summary

This chapter shifts Revenue Management from a conceptual to an operational perspective. The central idea is that revenue management in the hotel industry is not simply about adjusting rates, but rather about applying a set of analytical and decision-making techniques that allow for anticipating demand, optimizing inventory, and maximizing the establishment's profit. It emphasizes that Revenue Management should not be confused with marketing, sales, or e-commerce, but rather understood as a cross-functional approach to analysis and coordination aimed at improving the hotel´s financial performance.

Building on this foundation, the chapter presents the idea that sound Revenue Management depends on five structural elements: information, organizational culture, tools and techniques, operational processes, and strategic alignment. This formulation allows us to understand that the success of the area depends not only on software or pricing changes, but also on a management architecture capable of integrating data, analytical criteria, and interdepartmental coordination. In this sense, the revenue manager emerges as a facilitator connecting analysis, operations, and strategy.

One of the chapter´s most significant contributions is the incorporation of the Brigerjal Model: Business Revenue Intelligence, used to organize the main lines of action in Revenue Management. The model groups three main pillars: demand forecasting techniques, customer knowledge, and competitive set analysis. Demand forecasting integrates patterns, forecasts, and cadences; customer knowledge focuses on segment profitability, price elasticity, and responsiveness to marketing actions; and the competitive set allows for the observation of weighted average pricing, market trends, and competitive behavior on OTAs and metasearch engines. With this, the chapter demonstrates that Revenue Management is a multivariate approach in which pricing decisions arise from the interaction between demand, customers, and competition, always within operational and business constraints.

The text also introduces a perspective on managing uncertainty. It points out that Revenue Management operates in an environment where not everything can be known with certainty, but uncertainty can be reduced through the intelligent use

of available information. These uncertainties include future visitor arrivals, expected demand, the behavior of the compset, and the incidence of cancellations and no-shows. In contrast, the hotel has partial certainties, such as historical booking data by channel or request type, inventory by room type, pickup rates by reservation status, rate restrictions, contractual obligations, historical elasticity, and direct variable costs. The chapter states that the essence of Revenue Management lies in transforming these available certainties into better decisions regarding inventory, pricing, and availability.

In procedural terms, the chapter organizes Revenue Management techniques into a five-step sequence: market segmentation, historical data analysis, forecasting, pricing strategies, and overbooking strategies. These steps are complemented by information systems that provide ongoing support for operations, ensuring the process is recurrent and systematic, rather than intuitive or isolated.

Finally, the chapter concludes with an analysis of performance indicators. It begins with basic metrics such as OCC, ADR, and RevPAR, which provide insights into occupancy, rate, average daily rate, and revenue per available room. Subsequently, more sophisticated profitability indicators are analyzed, such as GOPPAR, TRevPAR, Net RevPAR, and NOPPAR, which broaden the measurement from room revenue to include operating profit, total revenue, and the impact of distribution costs. Furthermore, strategic market indicators, such as RGI, MPI, and ARI, are incorporated, allowing for comparison of the hotel´s performance against its competitors. The conclusion is that Revenue Management is not based solely on decisions, but rather on the ability to accurately measure the economic impact of those decisions on revenue, margin, and relative market positioning.

CHAPTER III

FORECAST OF TOURIST DEMAND

Demand forecasting is one of the analytical pillars of Revenue Management, as it allows for anticipating market behavior and optimizing the allocation of available capacity. In the tourism sector, where services are perishable, highly seasonal, and sensitive to demand fluctuations, the ability to predict visitor flows and occupancy levels is fundamental for designing efficient pricing strategies and maximizing revenue (Talluri & Van Ryzin, 2005).

In this context, demand forecasting is based on the systematic analysis of historical data, market trends, tourist consumer behavior, and external variables that can influence demand, such as economic factors, special events, or weather conditions. According to Hayes and Miller (2011), the success of Revenue Management depends largely on the accuracy of demand forecasting models, as these form the basis for decision-making related to pricing, inventory availability, and market segmentation.

In the tourism sector, forecasting models not only allow for anticipating hotel occupancy levels, but also predicting the demand for complementary services such as transportation, restaurants, and recreational activities; in this way, forecasting becomes a strategic tool to improve the operational and financial planning of tourism companies.

3.1. Concept of tourism demand forecasting

Forecasting tourism demand can be defined as the process through which future levels of consumption of tourism services are estimated based on the analysis of historical data, market behavior patterns and economic or social variables that affect tourist mobility (Song, Witt & Li, 2008).

From a revenue management perspective, demand forecasting aims to anticipate how many potential customers will be willing to purchase a tourism service within a given period and at what price level. This information allows companies to adjust their pricing strategy and optimize the use of their installed capacity (Ivanov & Zhechev, 2012).

A key characteristic of tourism demand is its temporal variability, as it is influenced by factors such as holiday seasons, school calendars, cultural or sporting events, and macroeconomic conditions; for this reason, forecasting models must consider both the general trend of demand and its seasonality patterns.

Example

Suppose that a city hotel records the following average occupancy levels during the last four years in the month of August:

Table 3. Historical Average Occupancy Rates for August (2021–2024)

Year	Average occupancy
2021	68%
2022	72%
2023	75%
2024	78%

Analysis of this historical data series reveals a growing trend in demand. Based on this information, the hotel estimates that occupancy for August of next year could be approximately between 80% and 82%, provided market conditions remain stable.

This type of estimation allows the Revenue Management department to anticipate strategic decisions, such as:

Figure 7. Strategic Decision Outcomes Derived from Demand Forecasting in Revenue Management

3.2. Importance of forecasting in Revenue Management

Forecasting is an essential tool for revenue management in the tourism sector, as it allows for the transformation of historical data into strategic knowledge for decision-making. According to Talluri & Van Ryzin (2004), the accuracy of demand forecasts is one of the most crucial factors for the success of revenue management systems.

In the hotel sector, available capacity is fixed and cannot be stored for later periods in the short term. If a room is not sold on a given night, the potential revenue associated with that unit is permanently lost; therefore, demand forecasting allows for anticipating occupancy levels and designing strategies that maximize the use of available capacity (Hayes & Miller, 2011).

In the field of Revenue Management, demand forecasts are primarily used to answer three strategic questions:

1. How many potential customers will demand the service in a given period?
2. When will this demand occur?

3. What will the different market segments be willing to pay?

Answering these questions allows tourism companies to optimize the allocation of their available capacity and design dynamic pricing strategies that maximize revenue.

3.3. Forecasting as the basis of the Revenue process

According to Hayes & Miller (2011), revenue management in the hotel industry is based on three interrelated processes:

1. Demand forecasting
2. Optimization of available inventory
3. Strategic pricing

In this sense, the quality of decisions related to pricing and distribution depends directly on the accuracy of the forecasting models. A significant error in demand estimation can lead to two problematic situations:

Figure 8: Impact of Demand Forecasting Errors

For this reason, modern Revenue Management systems integrate advanced statistical models that allow the analysis of large volumes of data from reservation systems, distribution platforms and tourism market trends (Ivanov & Zhechev, 2012).

Example.

Suppose a 120-room hotel analyzes its historical behavior for a holiday weekend.

Historical data:

- Average event occupancy over the last 3 years: 92%
- Reservations confirmed 20 days before the event: 70 rooms
- Historical trend of late bookings: 30 additional rooms

Occupancy forecast:

70 + 30 = 100 rooms

$$\frac{100}{120}\ x\ 100 = 83.3\%\ \ projected\ occupation$$

If the hotel identifies that demand typically increases as the event date approaches, the Revenue Management department might decide:

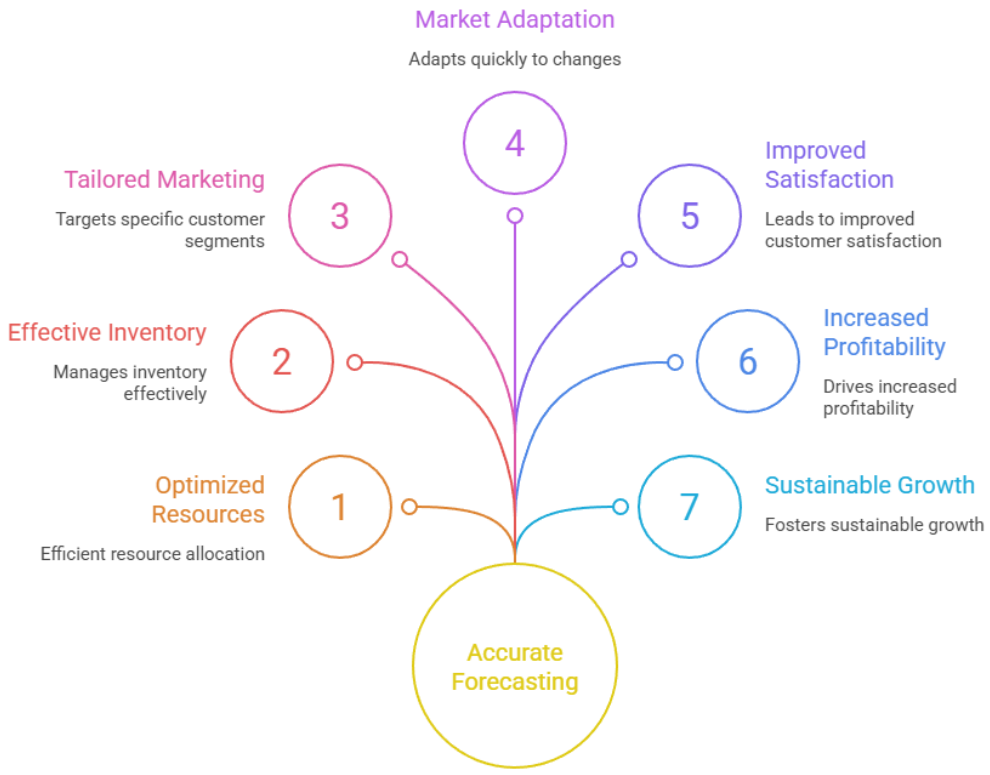
- Gradually increase the available rates
- Restrict discounts in low-margin channels
- Prioritize higher-profit direct bookings

In this way, forecasting allows you to anticipate market behavior and proactively adjust revenue strategies.

3.4. Strategic benefits of forecasting in tourism companies

The systematic implementation of forecasting models generates multiple benefits for tourism and hotel companies. Among the most relevant are the following:

Figure 9. Strategic Decision-Making Based on Demand Estimation in Hospitality Contexts



By anticipating demand levels, companies can prioritize those channels that generate the highest profitability.

3.5. Forecasting and seasonality analysis in tourism

A structural characteristic of tourism demand is its marked seasonality, that is, the concentration of tourist flows in certain periods of the year. This temporal variability is influenced by factors such as:

- School holidays
- Climatic conditions
- Cultural or sporting events,
- Work calendars

Forecasting allows us to identify these seasonal patterns and anticipate their impact on tourism demand. According to Song et al. (2009), time series analysis is one of the most widely used tools for modeling seasonality in tourism.

Example.

A mountain hotel records the following average monthly occupancy:

Table 4: Monthly Occupancy Seasonality Analysis

Month	Occupation
January	90%
February	88%
March	70%
April	65%
May	55%
June	60%
July	85%
August	87%

Analysis of this series reveals the peaks in demand:

- Summer peak season
- School holiday season

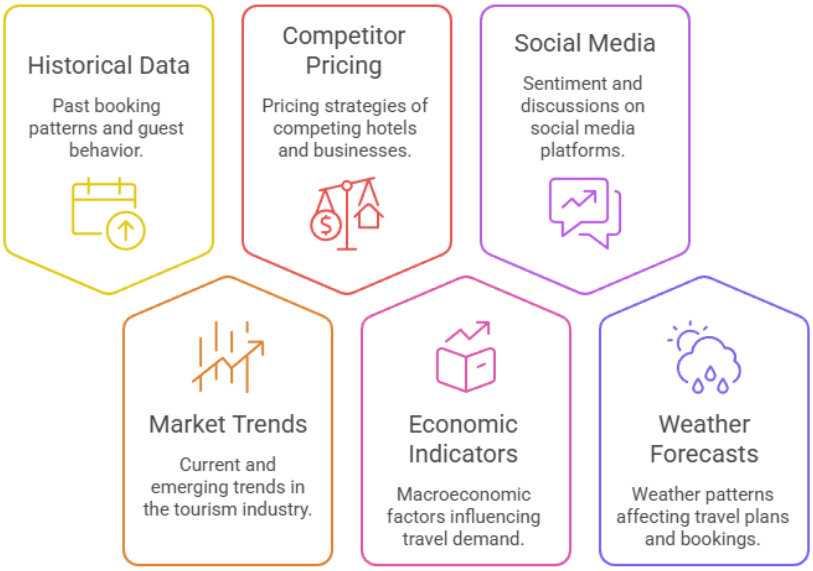
Based on this information, the hotel can design strategies such as:

1. Increase rates during peak demand months
2. Offer promotions during the off-season
3. Adjust inventory availability between different market segments.

3.6. Forecasting and technological systems for Revenue Management

Currently, the development of digital technologies has significantly transformed demand forecasting processes in the tourism industry. Revenue Management Systems (RMS) use advanced algorithms and data analysis techniques to generate automated forecasts based on multiple information sources. The data used by these systems includes:

Figure 10. Consequences of Forecasting Errors in Revenue Optimization



The use of these tools allows for more accurate forecasting and real-time updating of pricing strategies, which significantly improves companies´ ability to respond to market changes (Ivanov & Webster, 2020).

3.7. Sources of information for the analysis of tourism demand

Demand analysis is one of the most relevant components within Revenue Management and tourism planning systems, as it allows understanding market behavior and anticipating future trends in the consumption of tourism services; however, the quality of forecasting models depends largely on the diversity and reliability of the information sources used to analyze demand. In this sense, recent scientific literature highlights that contemporary tourism forecasting models integrate multiple data sources, combining traditional statistical information with new sources from the digital environment and the analysis of large volumes of data (*big data)* (Li, Hu & Li, 2020; Hu & Song, 2020).

Traditionally, tourism demand studies have focused primarily on official statistics and administrative records, such as international tourist arrivals, hotel occupancy rates, and tourist spending. However, technological advances have significantly expanded the dataset available for analysis, incorporating information generated by tourists themselves through digital platforms, search engines, social media, and online booking systems. These new sources of information allow for a more accurate capture of tourist behavior patterns and improve the accuracy of demand forecasting models (Zhang et al., 2022).

In this sense, contemporary analysis of tourism demand is characterized by a multi-source approach, combining traditional statistical data, economic data, tourism market information, and digital data generated by users. This integration allows for the development of more robust models and improves the ability to anticipate changes in tourism market behavior (Nie & Nie, 2025).

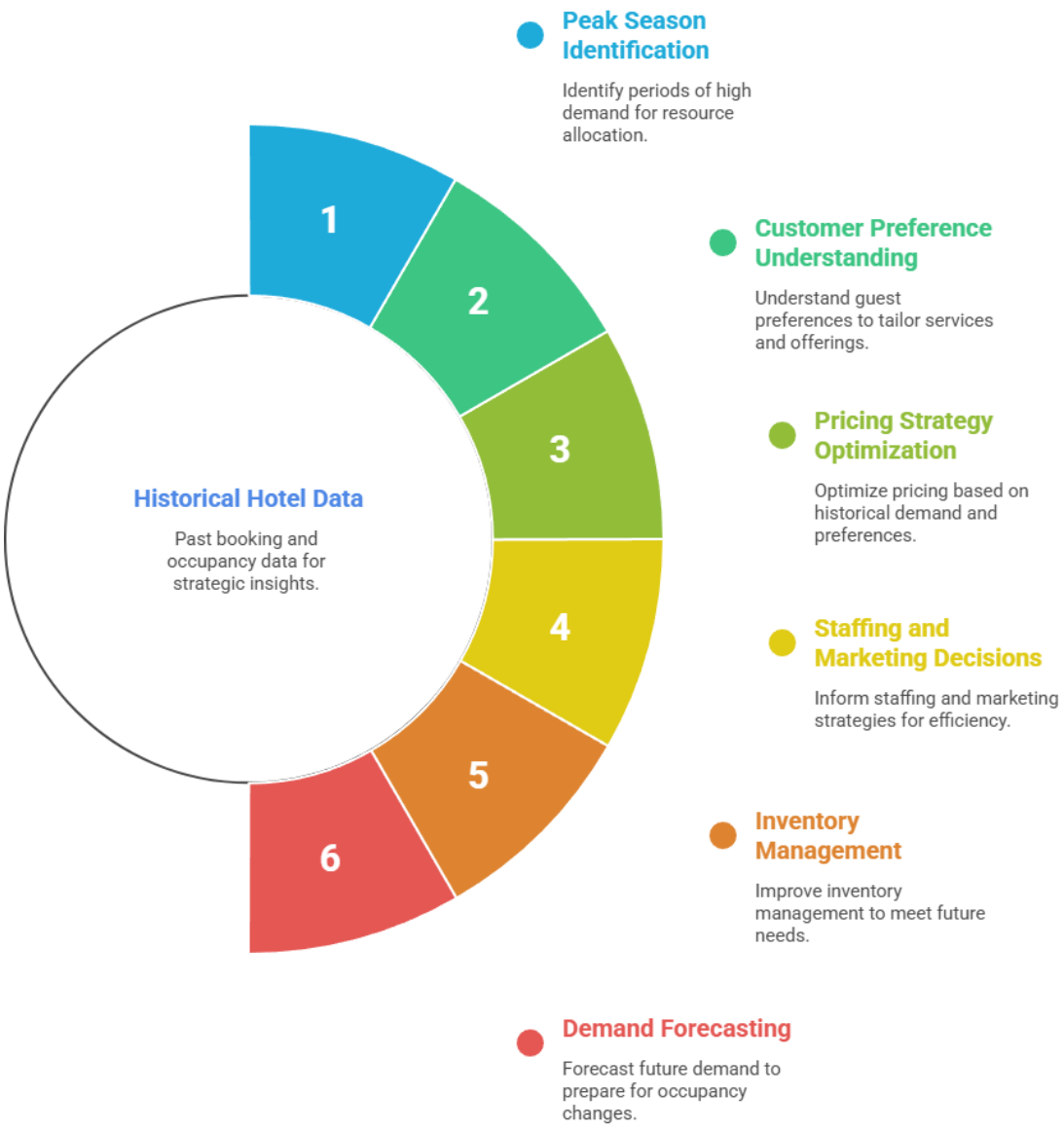
The main sources of information used in the analysis of tourism demand within the context of Revenue Management are analyzed below.

3.8. Historical data on bookings and occupancy

One of the most important sources of information for analyzing demand in the hotel sector is historical booking and occupancy data, which allows for the identification of patterns in the consumption of tourism services. This data is typically stored in hotel management systems (*Property Management Systems – PMS)* and forms the empirical basis for developing demand forecasting models.

Analyzing historical data allows you to identify key variables such as:

Figure 11. Unveiling Insights from Historical Hotel Data



According to recent research in tourism forecasting, the analysis of historical data remains one of the fundamental inputs for modeling the evolution of demand, as it allows the detection of trends and patterns of seasonality in tourist flows (Song et al., 2008).

Example

Suppose a city hotel analyzes its historical occupancy data for the past five years:

Table 5: Annual Occupancy Trend Analysis (2019–2023)

Year	Average annual occupancy
2019	72%
2020	48%
2021	55%
2022	68%
2023	75%

The analysis of this historical series allows us to identify two relevant phenomena:

1. A significant drop in demand during 2020 associated with the impact of the COVID-19 pandemic.
2. A gradual recovery of tourist demand in the following years.

This information allows the Revenue Management department to project demand scenarios and adjust its pricing strategies for the coming periods.

3.9. Official statistics and macroeconomic data

Another key source for analyzing tourism demand is official statistics generated by government agencies and international organizations. Among the most frequently used indicators are:

Figure 12. Unveiling Tourism´s Dimensions Through Data

These variables allow us to understand the economic context in which tourism activity takes place and to evaluate the evolution of demand at a national or regional level. Recent literature indicates that macroeconomic indicators continue to play a fundamental role in econometric models of tourism demand, especially when analyzing international tourist flows (Song et al., 2008; Zhang et al., 2022).

Example

Suppose a tourist destination analyzes the growth of international arrivals in recent years:

Table 6: International Tourist Arrivals Trend (2019–2023)

Year	International arrivals
2019	1.2 million
2020	450,000
2021	650,000
2022	1 million
2023	1.3 million

The analysis of this information allows us to identify a recovery in international tourism after the pandemic, which may indicate a potential increase in hotel demand in the destination.

For a hotel located in that destination, this trend may justify strategic decisions such as:

- Increase investment in international marketing
- Adjust rates during peak demand seasons
- Expand room availability through international channels

3.10. Data generated on digital platforms

In recent years, the development of the digital economy has generated new sources of information for the analysis of tourism demand, among which the data generated by tourists themselves on digital platforms stand out, such as:

Figure 13. Unveiling the Power of Digital Data

Several studies have shown that such data can significantly improve the accuracy of tourism forecasting models, as they reflect the actual behavior of consumers and their travel preferences; in particular, the incorporation of online reviews and data from digital platforms has been shown to improve the performance of tourist arrival prediction models (Li, Hu & Li, 2020).

Furthermore, recent research has shown that internet search data, such as that from Google Trends, can be used to anticipate tourist demand in certain destinations, as they reflect users´ prior interest in traveling to a specific place (Lee, 2025).

Example

A tourist destination analyzes internet searches related to its main natural attraction. Over the past six months, search volume has increased by 35%. This

surge in digital interest can be interpreted as an early sign of growth in tourism demand; consequently, hotels in the destination could anticipate:

- An increase in bookings for the peak season
- Increased traffic on booking platforms
- Increase in hotel occupancy

In this way, the analysis of digital data makes it possible to anticipate changes in demand before they are reflected in official statistics.

3.11. Tourist mobility and behavior data

Another emerging source of information in the analysis of tourism demand corresponds to data on visitor mobility and behavior, which are obtained from technologies such as:

Figure 14. Unveiling Tourism Mobility and Behavior

This data allows us to analyze the movement of tourists within destinations and understand patterns of movement, length of stay, and spatial concentration of tourist activity.

Recent research has shown that integrating mobility and behavioral data can significantly improve the accuracy of tourism forecasting models by allowing the capture of complex dynamics of visitor behavior (Li et al., 2020).

In turn, recent studies have used electronic transaction data to estimate daily tourist demand and analyze consumption patterns in different tourist destinations (Grau-Escolano et al., 2025).

Example

Suppose a tourist destination analyzes mobility data obtained from mobile phones and detects that the number of visitors during a cultural festival increases by 40% compared to a normal weekend.

This information allows hotels in the destination to anticipate:

- A significant increase in hotel occupancy
- Increased demand for food services
- Increase in average market rates

In this way, tourism managers can adjust their pricing strategies and operational planning to respond appropriately to demand.

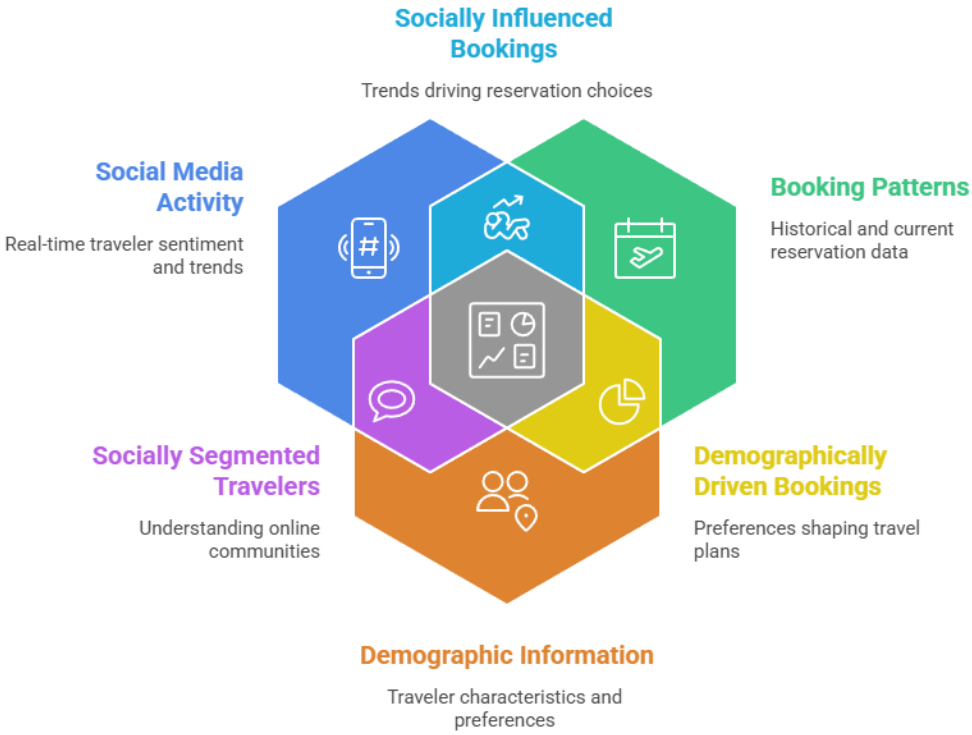
3.12. Integration of multiple data sources in demand analysis

The latest trend in scientific research on tourism demand involves integrating multiple sources of information to improve the accuracy of forecasting models. This approach combines traditional data with new digital sources, allowing for a more comprehensive understanding of the complexity of tourist behavior.

Several studies have shown that models based on multi-source data have a greater predictive capacity than those that use only traditional historical data (Li et al., 2020).

In this sense, modern Revenue Management systems integrate information from:

Figure 15. The Power of Integrated Tourism Data



Combining these sources allows for the development of more robust forecasting models and improves the ability of tourism companies to anticipate changes in market behavior.

3.13. Quantitative methods for forecasting tourism demand

The development of quantitative methods for forecasting tourism demand is one of the most dynamic fields within research in tourism economics and revenue management. These methods allow for estimating future demand behavior based on the analysis of historical data and explanatory variables that influence tourists´ travel decisions. In the context of revenue management, the application of quantitative models is essential for anticipating occupancy levels, optimizing pricing strategies, and improving the allocation of available capacity (Song, Li & Cao, 2022).

Quantitative forecasting models are based on statistical and econometric tools that allow the identification of behavioral patterns in time series of tourism demand. Through these models, it is possible to analyze trends, seasonality, and economic cycles that affect the evolution of tourist flows. In recent years, the scientific literature has highlighted the increasing integration of advanced data analysis techniques, including traditional econometric models, time series methods, and machine learning algorithms, with the aim of improving the accuracy of predictions (Athanasopoulos et al., 2011; Li, Hu & Li, 2020).

In general terms, quantitative methods for forecasting tourism demand can be classified into three main categories;

1. Time series models

2. Econometric models
3. Models based on machine learning

Each of these approaches has specific advantages and its application depends on the type of data available, the time horizon of the forecast and the objectives of the analysis.

3.14. Time series models

Time series models are one of the most widely used approaches for forecasting tourism demand, especially in contexts where extensive historical data on tourist arrivals, hotel occupancy, or advance bookings are available. These models assume that the past behavior of a variable contains relevant information for predicting its future evolution (Athanasopoulos et al., 2011).

Among the most commonly used time series models in the analysis of tourism demand are:

1. Trend models
2. Exponential smoothing models
3. ARIMA (Autoregressive *Integrated Moving Average)* models

These models allow the identification of fundamental components of time series, such as:

- Long-term trend
- Seasonal patterns
- Cyclical fluctuations

According to recent research in tourism forecasting, time series models continue to be widely used due to their ability to capture seasonal patterns characteristic of tourism, especially in destinations with strong seasonal variations (Song et al., 2022).

Example

Suppose a hotel analyzes the monthly occupancy recorded over the past three years

Table 7: Monthly Occupancy Time Series (Three-Year Average)

Month	Average occupancy
January	85%
February	82%
March	70%
April	65%
May	60%
June	62%
July	80%
August	88%

Time series analysis clearly identifies a seasonal pattern characterized by high occupancy during the holiday season and lower demand in the intermediate months.

By applying a time series model, the Revenue Management department can estimate occupancy levels for future months and adjust its pricing strategies accordingly.

3.15. Econometric models of tourism demand

Econometric models are another widely used tool for analyzing and forecasting tourism demand. Unlike time series models, which rely solely on the historical behavior of the variable being analyzed, econometric models incorporate explanatory variables that influence tourism demand, such as income, prices, exchange rates, and transportation costs.

According to the specialized literature, the inclusion of economic variables allows for a significant improvement in the explanatory power of forecasting models, especially when analyzing international tourist flows (Song, Witt & Li, 2008; Song et al., 2019).

Among the most used variables in econometric models of tourism demand are:

- Per capita income in the issuing country
- Relative price of the tourist destination
- Exchange rate
- Transportation costs
- Geographical distance

Example

Suppose a tourist destination analyzes the relationship between per capita income in the source country and the number of tourists visiting the destination.

Table 8: Relationship between per capita income vs tourist arrivals (2019-2023)

Year	Per capita income (USD)	Tourist arrivals
2019	35,000	200,000
2020	33,000	90,000
2021	34,000	120,000
2022	36,000	180,000
2023	38,000	230,000

Econometric analysis can reveal a positive relationship between income growth in the source country and the increase in tourist arrivals. This information is useful for anticipating changes in demand when international economic conditions vary.

3.16. Machine Learning Models

In recent years, the development of machine learning techniques has significantly transformed the field of tourism demand forecasting. These models use algorithms capable of identifying complex patterns in large volumes of data, allowing for improved prediction accuracy compared to some traditional methods (Li et al., 2020).

Among the most widely used machine learning algorithms in tourism demand analysis are:

- Decision trees
- Random forest
- Artificial neural networks
- Support Vector Machines (SVMs)

These methods are particularly useful when large volumes of data are available from multiple sources, such as reservation systems, digital platforms, and internet search data.

Recent scientific literature highlights that hybrid models combining econometric techniques and machine learning algorithms can significantly improve the accuracy of tourism demand forecasts (Gunter & Önder, 2011).

Example

A Revenue Management system analyzes multiple sources of information to forecast hotel demand in a tourist destination:

- Historical booking data
- Internet searches about the destination
- Scheduled events in the city
- Reservation performance in previous years

By applying a machine learning model, the system can identify complex patterns that allow it to anticipate increases in demand more accurately than traditional models.

For example, the algorithm can detect that when an international concert is announced in the city, internet searches increase by 50% and hotel bookings increase by approximately 30% in the weeks leading up to the event.

This information allows the hotel to adjust its rates in advance and optimize the management of its room inventory.

3.17. Integration of hybrid forecasting models

A recent trend in scientific research on tourism forecasting involves the use of hybrid models, which combine different methodological approaches to improve the accuracy of predictions. These models integrate time series techniques, econometrics, and machine learning, leveraging the advantages of each approach.

Several studies have shown that hybrid models can significantly improve forecast accuracy compared to traditional models used in isolation (Song et al., 2022). In the context of Revenue Management, integrating these models allows for the development of more sophisticated forecasting systems capable of simultaneously analyzing multiple variables that influence tourism demand.

3.18. Analysis of seasonality in tourism demand

Tourism seasonality is one of the most relevant structural phenomena in demand analysis within the tourism economy and Revenue Management. It refers to the systematic and recurring fluctuations in tourism demand levels that occur during specific periods of the year, generally associated with climatic, social, cultural, or institutional factors. These variations generate peaks in demand during certain periods (high season) and significant drops during others (low season), posing major challenges for efficient capacity management in tourism businesses (Butler, 2001; Duro Pérez-Laborda & Turrion-Prats, 2021).

From a revenue management perspective, understanding and modeling seasonality is fundamental for designing dynamic pricing strategies, optimizing hotel occupancy, and reducing the economic impacts of underutilizing installed capacity. According to recent research, seasonality continues to be one of the main factors influencing the economic sustainability of tourist destinations, especially in regions highly dependent on holiday tourism (Duro et al., 2021).

In the hotel sector, seasonality directly influences key performance indicators such as Hotel Occupancy (OCC), Average Daily Rate (ADR), and Revenue Per Available Room (PevPAR); for this reason, the systematic analysis of seasonal patterns constitutes a strategic tool for the operational and financial planning of tourism companies.

3.18.1. Types of seasonality in tourism

Scientific literature distinguishes different types of seasonality that affect the behavior of tourist demand. Among the most relevant are:

1.- Climate seasonality

This occurs when weather conditions determine tourists´ preferences for certain destinations at specific times of the year. This phenomenon is particularly evident in sun and beach destinations, where demand increases during the summer months.

For example, in Caribbean coastal destinations, hotel occupancy levels can exceed 90% during the summer months, while in the low season they can drop below 40%.

2.- Institutional seasonality

It is related to school calendars, national holidays, or vacation periods established by educational and work institutions. These calendars generate concentrations of travel during specific periods, for example:

- School holidays
- Long weekends
- National holidays

3.- Cultural or event seasonality

Some destinations experience significant increases in demand associated with cultural events, sporting events or festivals, for example:

- Food festivals
- International sporting events
- Cultural or religious fairs

Recent research indicates that cultural events have become strategic tools to reduce seasonality and diversify tourist demand (Butler, 2001).

Figure 16. Benefits of Forecasting Models in Tourism and Hospitality Revenue Management

3.19. Measuring tourism seasonality

Seasonality can be analyzed using various statistical indicators that quantify the temporal concentration of tourist demand. Among the most commonly used methods in tourism research are:

a. Seasonality indices
b. Coefficients of variation
c. Time series analysis

One of the simplest methods is to calculate the monthly seasonality index, which compares the demand level for each month with the annual average. The formula is as follows:

$$Seasonality\ index = \frac{Monthly\ demand}{Annual\ average}\ x\ 100$$

An index above 100 indicates that the month has a demand higher than the annual average, while values below 100 indicate a demand lower than the average.

3.20. Implications of seasonality for Revenue Management

Seasonality has direct implications for the revenue management strategy of tourism companies. According to recent studies, proper seasonality management allows for a significant improvement in the profitability of tourism companies through strategies such as segmentation, product diversification, and dynamic pricing (Song, Li & Cao, 2022).

The main strategies used to manage seasonality include:

1. Differentiated pricing strategies

During periods of high demand, tourism companies can increase rates due to the greater willingness to pay on the part of tourists; in contrast, in low season discount and promotion strategies are used to stimulate demand.

2. Diversification of tourism products

Creating new tourism products aimed at specific segments makes it possible to attract visitors during periods traditionally considered to be of low demand, for example: meetings tourism (MICE), gastronomic tourism or nature tourism.

3. Strategic capacity management

Seasonality analysis allows for more efficient planning of the use of human and operational resources within tourism companies.

3.21. Practical application: analysis of demand and seasonality in a hotel

In order to integrate the concepts analyzed in this chapter, a practical application based on simulated hotel occupancy data is presented.

Case study

A 120-room city hotel analyzes occupancy levels recorded over a year.

Table 9: comparison of average occupied rooms (Jan – Dec)

Month	Average occupied rooms	Occupation (%)
January	102	85%
February	96	80%
March	84	70%
April	72	60%
May	66	55%
June	72	60%
July	96	80%
August	108	90%
September	84	70%
October	78	65%
November	72	60%
December	102	85%

Calculation of the average annual occupancy

To calculate the seasonality index, it is necessary to first determine the average annual occupancy:

$$Annual\ average = \frac{\sum monthly\ occupancy}{12}$$

$$Annual\ average = \frac{85 + 80 + 70 + 60 + 55 + 60 + 80 + 90 + 70 + 65 + 60 + 85}{12}$$

$$Annual\ average = \frac{860}{12}$$

$$Annual\ average = 71.67\%$$

The hotel´s average annual occupancy is approximately 71.7%.

Calculation of the seasonality index

The seasonality index is calculated using the following formula:

$$seasonality\ index = \frac{Monthly\ occupancy}{Annual\ average} x100$$

Applying the formula to each month yields the following result

Table 10: Seasonality index

Month	Occupation (%)	Seasonality index
January	85	118.6
February	80	111.6
March	70	97.6
April	60	83.7
May	55	76.7
June	60	83.7
July	80	111.6
August	90	125.5
September	70	97.6
October	65	90.7
November	60	83.7
December	85	118.6

Interpretation of results

The analysis of the seasonality index allows for the clear identification of a seasonal pattern in demand.

Peak season (index greater than 110)

- January
- February
- July
- August
- December

These months show significantly higher demand than the annual average. In particular, August registers the highest index (125.5), indicating a strong concentration of tourist demand.

Average season (index between 95 and 110)

- March
- September

During these months, demand remains close to the annual average.

Low season (index below 95)

- April
- May
- June
- October
- November

These periods correspond to seasons of lower tourist activity where hotel occupancy decreases significantly.

Implications for Revenue Management

Seasonality analysis provides strategic information for decision-making within Revenue Management. Based on the results obtained, the hotel could implement the following strategies:

1.- Strategy for maximizing revenue in peak season

During months with indices above 110, policies such as the following could be applied:

- Progressive increase in rates
- Minimum stay restrictions
- Prioritizing the most profitable sales channels

2. Strategies for stimulating demand in the off-season

In months with indices below 90, actions such as the following could be implemented:

- Weekend promotions
- Combined tour packages
- Partnerships with tour operators

3. Diversification of market segments

An effective strategy involves attracting segments that are less sensitive to seasonality, such as:

- Corporate tourism
- Events and conferences
- Academic tourism

According to recent studies, diversifying segments and applying dynamic pricing strategies can reduce the negative effects of seasonality on hotel profitability (Song et al., 2022).

3.22. Chapter Summary

Forecasting tourism demand is a core analytical component of Revenue Management, as it allows for anticipating market behavior and facilitates strategic planning for tourism businesses. In a sector characterized by the perishability of services, the temporal variability of demand, and sensitivity to multiple external factors, the ability to estimate future levels of tourism consumption is fundamental for guiding decisions related to pricing, inventory, and market segmentation.

Tourism forecasting is based on the systematic analysis of historical data, market trends, consumer behavior, and external variables that influence visitor flows. Using this data, tourism organizations can project future demand scenarios and proactively adapt their business strategies. In the context of Revenue Management, forecasts help answer three essential questions: how many potential customers will demand the service, when will that demand occur, and what will be the willingness to pay of different market segments.

Forecasting forms the basis of the revenue management process, since decisions related to pricing and availability depend directly on the accuracy with which future demand levels are estimated. For this reason, modern Revenue Management systems incorporate analytical tools that allow processing large volumes of information from reservation systems, digital platforms, and tourism market statistics.

A structural characteristic of tourism demand is its seasonality. Visitor flows tend to concentrate during specific periods of the year due to climatic factors, institutional calendars, or cultural events. Analyzing these temporal patterns allows for the identification of periods of higher or lower tourist activity, facilitating operational planning and the adaptation of business strategies to market conditions.

In summary, demand forecasting is a fundamental element of Revenue Management, as it provides the analytical basis for understanding the dynamics of the tourism market and guiding the strategic decisions of companies in the sector. The combination of historical data, market information, technological tools, and quantitative methods allows for the development of more accurate estimates of future tourism demand.

CHAPTER IV

FUNDAMENTALS OF DYNAMIC PRICING IN TOURISM

Dynamic pricing is defined as a price management strategy whereby the rates for a product or service are continuously adjusted based on changing market conditions. In the tourism sector, this practice is based on the systematic analysis of demand, capacity availability, and customer segmentation.

From the perspective of Revenue Management, the main objective of dynamic pricing is to sell the right product, to the right customer, at the right time and at the right price, a principle that constitutes one of the conceptual foundations of this discipline (Talluri & Van Ryzin, 2005).

In the hotel sector, dynamic pricing strategies rely on the collection and analysis of large volumes of data from various sources, such as hotel reservation systems (PMS), online distribution platforms (OTAs), internet search trends, occupancy history and rates, among others.

Integrating this data allows for the identification of demand patterns and the strategic adjustment of rates.

4.1. Variables that influence dynamic pricing

Dynamic pricing models in tourism consider multiple variables that influence demand behavior. Among the most relevant are:

1. Projected occupancy level

Expected occupancy is one of the most decisive factors in dynamic pricing. When projected demand is high, hotels tend to increase rates to maximize revenue.

2.- Advance booking (booking window)

The lead time with which customers make their reservations significantly influences pricing strategies. In many cases, hotels offer early booking discounts to ensure a minimum occupancy rate.

3. Market segmentation

Different customer segments exhibit varying levels of price sensitivity; for example, leisure tourists are typically more price-sensitive, while business travelers are less so. Segmentation allows for the design of differentiated pricing structures for each customer group.

4. Competition in the destination

Analyzing competitor hotel rates is a key element in modern dynamic pricing systems. Competitive intelligence tools allow for real-time monitoring of market prices and adjustments to rates accordingly.

4.2. Benefits of dynamic pricing

Implementing dynamic pricing strategies generates multiple benefits for tourism companies, among which the following stand out:

- Revenue maximization
- Optimizing occupancy
- Improvement in market segmentation
- Greater strategic flexibility in the face of changes in demand

Hotels that implement advanced Revenue Management systems can increase their revenue by 5% to 15% compared to those that use traditional pricing models (Ivanov & Webster, 2020).

4.3. Main pricing strategies in Revenue Management

In the context of Revenue Management, tourism companies use various pricing strategies to optimize demand management and maximize revenue. These strategies focus on market segmentation, demand analysis, and strategic management of available inventory.

Below are some of the most commonly used strategies in the tourism and hotel sector.

1. Prices vary by season

One of the most common strategies is to set different rates according to the expected level of demand in each season.

During peak season, rates tend to increase due to tourists´ greater willingness to pay; conversely, during off-season, discounts or promotions are applied to stimulate demand.

Example

A hotel records the following average rate levels:

Table 11: averga rate in seasons

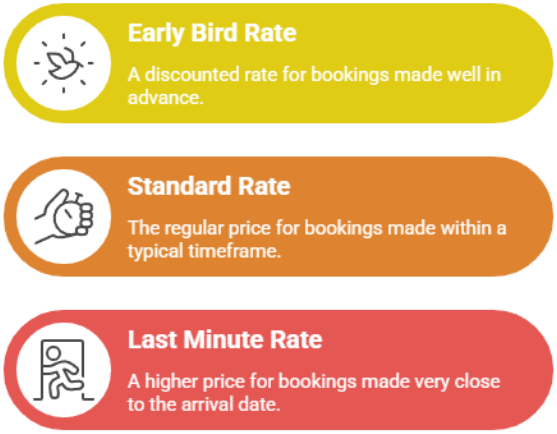
Season	Average rate
Peak season	$150
Mid-season	$110
Off-season	$80

This strategy allows maximizing revenue during peak demand periods and maintaining acceptable occupancy levels during the off-season.

2. Prices based on the advance notice of the booking

Many hotels apply different rates depending on how far in advance the reservation is made. Generally, there are three rate tiers:

Figure 17: type fo rates



Example

A hotel offers the following rates:

Table 12: Fees vs reservation type

Reservation type	Fee
Book 30 days in advance	$95
Book 10 days in advance	$110
Last minute booking	$130

This strategy allows capturing different levels of willingness to pay among customers.

3. Prices segmented by customer type

Another widely used strategy is to establish differentiated rates based on market segment. Hotels typically identify different customer groups (leisure tourism, business travelers, tour groups, travel agencies); each of these segments has distinct characteristics and levels of price sensitivity.

Example

Table 13: Averate rate vs segment

Segment	Average rate
Corporate tourism	$140
Leisure tourism	$120
Tourist groups	$100

Segmentation allows you to maximize revenue by capturing different levels of willingness to pay.

4.- Dynamic pricing based on occupancy

In this strategy, rates are automatically adjusted based on the hotel´s occupancy level. When occupancy reaches certain thresholds, the system increases the available rates.

Example

Table 14: occupation and fees

Occupation	Fee
Less than 50%	$90
Between 50% and 75%	$110
Greater than 75%	$140

This approach allows for optimizing revenue as room availability decreases.

5 *Tour package strategies*

In some cases, hotels offer package deals that include accommodation and additional services. These may include:

- Bed and breakfast
- Accommodation + tours
- Accommodation + transport

Example

Table 15: packages and price

Package	Price
Bed and breakfast	$120
Accommodation + local tour	$150
Accommodation + airport transport	$135

This strategy allows for an increase in the average visitor spending.

4.4. Optimization of hotel inventory

Hotel inventory optimization is a core component of Revenue Management, as it involves the strategic management of available capacity, primarily rooms, with the goal of maximizing the establishment´s revenue. In the hotel sector, inventory has a fundamental characteristic: it is perishable. This means that a room that is not sold on a given night represents lost revenue that cannot be recovered later. For this reason, the efficient allocation of available inventory becomes a critical element for the profitability of tourist establishments (Hayes & Miller, 2011; Ivanov & Webster, 2020).

From an operational perspective, inventory optimization involves deciding how many rooms to allocate to each sales channel, market segment, or rate type, considering expected demand and the potential profitability of each booking. This decision requires continuous analysis of information related to projected occupancy, booking patterns, the behavior of different customer segments, and market conditions.

In modern Revenue Management systems, inventory optimization relies on technological tools that allow for the analysis of large volumes of data and dynamic adjustments to room availability. These systems integrate information from booking platforms, property management systems (PMS), and digital distribution channels, facilitating more efficient management of available inventory.

4.5. Fundamental principles of inventory optimization

Figure 18: Principles of inventory optimization

1.- Segmentation

Hotel inventory can be distributed among different market segments of its potential profitability; for example, hotels often reserve part of their capacity for corporate clients, direct bookings, travel agencies, or online distribution platforms.

Inventory segmentation allows prioritizing reservations that generate higher revenues or contribute to improving the overall profitability of the establishment.

2.- Availability control by tariff type

Another common practice is controlling room availability based on rate level. In high-demand situations, hotels can restrict lower rates to avoid selling rooms below market potential. This practice, known as *rate fencing,* protects higher-value rates during peak occupancy periods.

3. Overbooking Management

Overbooking, or controlled overselling, is a strategy used by many hotels to offset the impact of cancellations or no-shows. It involves accepting more reservations than the number of available rooms, based on statistical estimates of historical cancellation patterns.

When applied properly, overbooking allows maximizing occupancy and reducing the loss of revenue associated with empty rooms.

Example

Suppose a hotel has 100 rooms and analyzes the historical behavior of cancellations, observing that on average 5% of reservations are not completed due to cancellations or no-shows.

Based on this analysis, the Revenue Management department decides to accept up to 105 reservations for a given night.

If 100 guests ultimately arrive, the hotel achieves 100% occupancy; however, if only 95 guests arrive, the hotel avoids the loss of income associated with five empty rooms.

This type of strategy requires a careful analysis of historical customer behavior patterns to avoid situations of excessive overselling.

4.6. Distribution channel management in tourism

Distribution channel management is another strategic element within Revenue Management, as it determines how tourism products reach the end consumer. In the hotel sector, distribution has undergone profound transformations in recent decades due to the growth of digital booking platforms and the consolidation of OTAs.

Distribution channels can be defined as the intermediaries or platforms through which customers access tourism services and make their bookings. These channels play a fundamental role in the visibility of tourism establishments and in generating demand (Ivanov & Webster, 2020).

Hotels today typically operate through multiple distribution channels, leading to multichannel distribution strategies. This approach allows them to expand their market reach, but it also presents challenges related to pricing, commissions, and inventory control.

4.7. Main distribution channels in the hotel industry

Hotels typically use various distribution channels to market their rooms:

1. Direct sales
2. Online travel agencies (OTAs)
3. Traditional travel agencies
4. Official hotel website
5. Telephone reservations
6. In-person reservations

1. Direct sales

This channel has a key advantage: it does not generate commissions or intermediaries, allowing for a higher profit margin per booking.

Example

A customer books a room directly on the hotel´s website for a rate of $120; in this case, the hotel receives 100% of the revenue generated by the booking.

2. Online travel agencies (OTAs)

Online travel agencies (OTAs) have become one of the main distribution channels in the hotel sector. These platforms allow users to compare prices, read reviews, and make reservations quickly and easily; however, OTAs typically charge commissions that can range from 15% to 25% of the reservation value, reducing the hotel´snet income.

Example

A customer books a room through an OTA for $120. If the platform's commission is 20%, the hotel receives:

$$120 - (120\ x\ 0.20) = 96$$

In this case, the hotel´s net income is $96.

3. Traditional travel agencies

Despite the growth of digital platforms, traditional travel agencies continue to play an important role in certain market segments, especially in international tourism and group travel.

These agencies typically operate through commercial agreements with hotels and can offer tour packages that include accommodation, transportation, and activities.

4. *Channel management strategies*

To optimize the distribution of their products, hotels often apply various strategies within Revenue Management.

5. *Channel mix optimization*

Its objective is to balance the proportion of bookings from different channels, prioritizing those that generate the highest profitability; for example, a hotel may try to increase the percentage of direct bookings through digital marketing campaigns or loyalty programs.

6. *Tariff parity*

Tariff parity implies maintaining consistent prices across different distribution channels to avoid commercial conflicts and protect the establishment's image.

7. *Disintermediation strategy*

Many hotels are looking to reduce their reliance on intermediaries by offering incentives for direct bookings, such as exclusive discounts on their official website, additional benefits for direct bookings, and/or loyalty programs. These strategies improve profitability and strengthen direct customer relationships.

4.8. Technological integration in Revenue Management

The evolution of Revenue Management in the tourism sector has been closely linked to the development of information technologies capable of processing large volumes of data and generating predictive analyses of demand behavior. In contemporary hotel management systems, strategic decision-making related to pricing, availability, and distribution no longer depends exclusively on managerial intuition, but is based on the use of specialized technological platforms that integrate multiple sources of operational and market information (Ivanov & Webster, 2020; Noone & McGuire, 2022).

In this context, Revenue Management systems have evolved from basic occupancy analysis tools to sophisticated platforms capable of integrating information from reservation systems, digital distribution platforms, historical customer behavior data, and market trends. This technological integration allows for more accurate forecasting of tourism demand and facilitates the implementation of data-driven dynamic pricing strategies.

One of the core components of this technological transformation is the integration of different hotel management systems. Among the most important are *Property Management Systems (PMS),* which manage internal hotel operations; *Central*

Reservation Systems (CRS), responsible for managing reservations from various channels; and *channel managers,* which allow for the simultaneous distribution of room availability across multiple sales platforms. Interoperability between these systems enables more efficient inventory management and automatic rate updates across different distribution channels.

Recent scientific literature indicates that the incorporation of advanced data analysis technologies has significantly improved the accuracy of demand forecasting models and the efficiency of Revenue Management strategies. In particular, the use of *big data* and predictive analytics tools allows the identification of tourist consumer behavior patterns that were previously difficult to detect using traditional analysis methods (Li, Hu & Li, 2020).

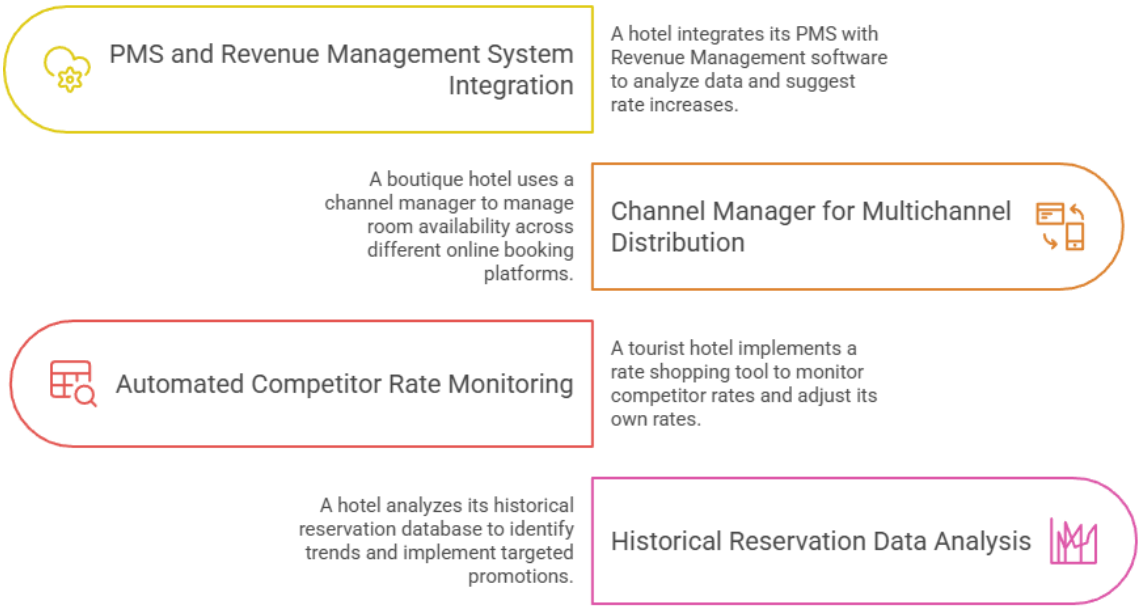
At the operational level, technological integration also facilitates the continuous monitoring of variables relevant to hotel management, such as projected occupancy, advance booking trends, competitor rates, and consumer search trends online. This real-time analysis capability allows hotels to adjust their pricing strategies more quickly and accurately in response to changes in market behavior.

Furthermore, the digitization of Revenue Management processes has facilitated the adoption of automated pricing optimization systems, which use algorithms to analyze multiple variables simultaneously to determine the most appropriate rates at any given time. These tools allow for the management of thousands of price and availability combinations, something that would be virtually impossible using manual processes.

In strategic terms, technological integration not only contributes to improving the profitability of tourist establishments, but also strengthens their capacity to adapt to highly uncertain environments, such as those experienced during economic or health crises that affect global tourist mobility; in this way, technology has become an essential component for the development of smarter, more flexible Revenue Management systems oriented towards evidence-based decision-making.

Example

Figure 19. Data Inputs for Revenue Management Systems (RMS) in Tourism



4.9. Emerging Trends in Revenue Management

The field of Revenue Management applied to tourism continues to evolve rapidly as a result of technological advances, changes in consumer behavior and the increasing digitization of tourism markets; in this context, various emerging trends are redefining the way in which tourism companies manage their pricing, distribution and revenue optimization strategies.

One of the most significant trends in recent years is the integration of artificial intelligence and machine learning into revenue management systems. These technologies enable the analysis of large volumes of data from multiple sources, including reservation systems, social media, internet search platforms, and tourism mobility data. Based on this analysis, algorithms can identify complex patterns in demand behavior and generate more accurate predictions about the evolution of the tourism market (Song, Li & Cao, 2022).

Another significant trend is the growing importance of analyzing consumer behavior in digital environments. Tourism companies are using web analytics tools to understand how users search for information about tourist destinations, compare prices, and make booking decisions. This data allows for more precise adjustments to pricing and market segmentation strategies, adapting them to different tourist profiles.

Furthermore, the development of digital tourism and online intermediation platforms has profoundly transformed tourism distribution models. Hotel companies no longer compete solely with other hotels within a destination, but also with new forms of accommodation, such as vacation rentals managed through digital platforms. This new competitive environment has increased the

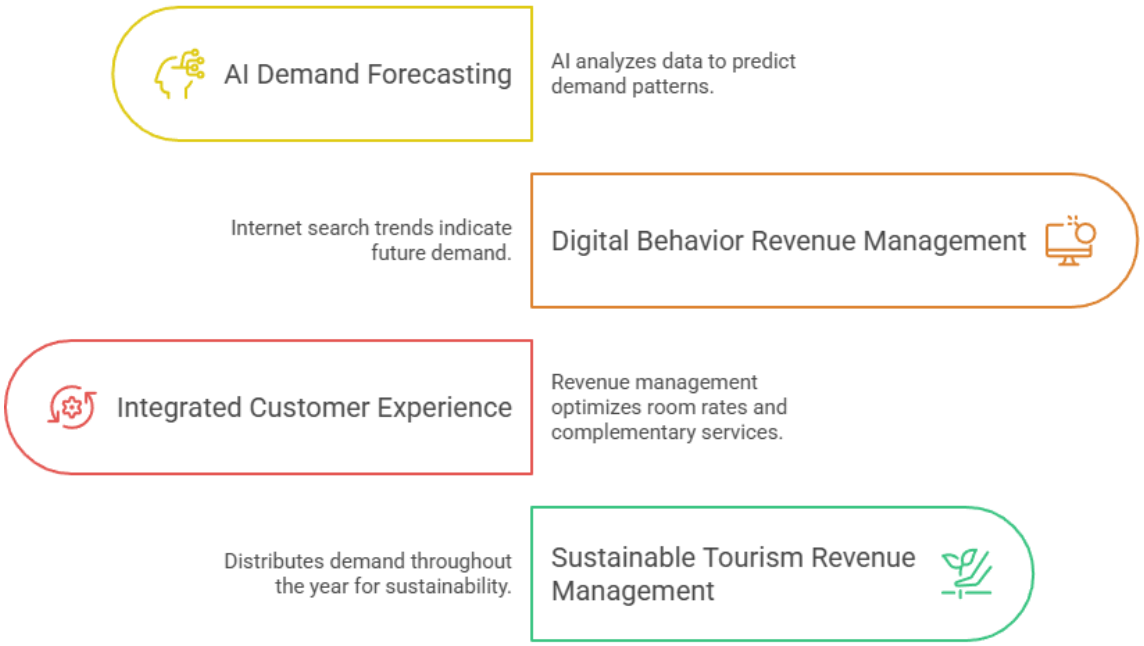
importance of digital positioning strategies, online reputation management, and competitor pricing analysis.

Another emerging trend relates to the integration of Revenue Management with broader customer experience management strategies. In this approach, revenue maximization is not limited to room sales alone, but extends to optimizing total visitor spending within the property, including complementary services such as dining, recreational activities, cultural experiences, and wellness services.

Recent studies highlight the growing importance of sustainability in tourism management, which is also beginning to influence revenue management strategies. In some tourist destinations, tourism flow management policies aim to balance economic profitability with the conservation of the destination´s natural and cultural resources. In this context, demand analysis tools can help to better distribute tourist flows over time, reducing pressure on destinations during peak visitor periods.

These trends reflect a profound transformation in how tourism businesses manage their revenue and their relationship with the market. Contemporary Revenue Management is no longer limited to optimizing prices and occupancy, but is increasingly integrated with data analytics strategies, technological innovation, and sustainable tourism management.

Figure 20: tourism revenue mangament trends



4.10. Chapter Summary

Chapter IV analyzes the fundamentals of dynamic pricing, highlighting its role within revenue management as a mechanism for adjusting tourism service rates according to changing market conditions. In this approach, price ceases to be a fixed variable and becomes a strategic tool that responds to demand patterns, capacity availability, and the characteristics of different customer segments.

The chapter explains that dynamic pricing relies on the continuous analysis of information from various sources, such as reservation systems, occupancy history, search trends, and tourist purchasing behavior. This analysis allows for the identification of demand patterns and the adjustment of rates based on factors such as booking lead time, occupancy trends, and market conditions at the destination.

The study also examines the main variables that influence dynamic pricing, including projected occupancy, booking lead time, market segmentation, and competitor pricing. These variables allow us to understand how tourism demand behaves and how establishments can adapt their rates to respond to different market scenarios.

The chapter also addresses the most commonly used pricing strategies in revenue management, such as seasonal rates, prices based on booking lead time, pricing segmentation by customer type, price adjustments according to occupancy level, and the creation of tour packages that integrate accommodation with additional services.

Another relevant element developed in the chapter is hotel inventory optimization, which consists of managing the available room capacity. Because hotel inventory is perishable, the appropriate allocation of rooms among different segments, rates, and sales channels becomes a key aspect for improving the establishment's economic performance.

The chapter also examines distribution channel management, highlighting the importance of balancing direct sales with intermediary channels such as digital booking platforms or travel agencies. Proper management of the channel mix allows for greater visibility of the hotel in the market and improved management of available inventory.

Finally, the role of technological integration in revenue management is analyzed, highlighting how hotel management systems, distribution platforms, and data analysis tools improve the accuracy of demand forecasting and facilitate strategic decision-making related to pricing and availability.

CHAPTER V

SEGMENTATION OF TOURISM MARKETS IN REVENUE MANAGEMENT

Market segmentation is a fundamental principle of Revenue Management applied to tourism and hospitality, as it allows for the identification of homogeneous groups of consumers who share similar characteristics in terms of purchasing behavior, travel motivations, and price sensitivity. Through this process, tourism businesses can design differentiated pricing, distribution, and marketing strategies aimed at maximizing revenue and improving the establishment's competitiveness.

In the hotel sector, segmentation is especially relevant due to the diversity of tourist profiles that interact with accommodation services. Travelers can differ significantly in their expectations, spending power, purpose of travel, and when they make their bookings; consequently, identifying specific segments allows for adjusting the tourism offering and Revenue Management strategies to the particularities of each customer group (Dolnicar, 2020).

Recent research in tourism marketing indicates that market segmentation contributes to improving the efficiency of commercial resource allocation and allows for the optimization of revenue management through differentiated pricing strategies (Dolnicar, Grün & Leisch, 2018; Noone & McGuire, 2022). In this sense, segmentation is a key tool for understanding tourist behavior and anticipating their consumption patterns.

5.1. Tourism market segments

Tourism market segmentation is defined as the process by which the total tourist market is divided into relatively homogeneous groups that share similar characteristics, needs, or behaviors. This approach allows tourism businesses to design marketing strategies tailored to each segment, thereby increasing the efficiency of their marketing and revenue management efforts.

In the field of tourism, segmentation can be carried out using different analytical criteria, among the most used are demographic, geographic, psychographic and behavioral criteria, each of which allows understanding different aspects of tourist behavior.

Demographic segmentation is based on variables such as age, income level, education level, and family composition. This approach allows for the identification of tourist profiles with similar socioeconomic characteristics. For example, young tourists often exhibit different consumption patterns than older travelers, which can influence their choice of accommodation and their price sensitivity.

Geographic segmentation, on the other hand, focuses on the tourists´ place of origin. This type of segmentation is especially relevant in international tourism, since travelers from different countries may have different cultural preferences, consumption habits, and spending levels.

Another important approach is psychographic segmentation, which analyzes variables related to the tourist's lifestyle, values, and motivations. This type of segmentation allows for the identification of profiles such as adventure tourists, cultural travelers, or tourists focused on rest and well-being.

Finally, behavioral segmentation is based on analyzing tourists´ purchasing behavior. This approach considers variables such as travel frequency, loyalty to the establishment, booking lead time, and price sensitivity. In the context of Revenue Management, behavioral segmentation is particularly useful for identifying customer groups with different levels of willingness to pay.

Example

A hotel located in a tourist city analyzes its customer database and detects three main visitor profiles:

- Young tourists who travel in groups and book at short notice
- Families who make reservations several months in advance
- Corporate travelers making short stays during the week

Based on this segmentation, the hotel can implement differentiated strategies, such as promotional rates for young groups, family packages with additional services, and corporate rates geared towards businesses.

Identifying these segments allows for improved efficiency in business strategies and optimized revenue management for the establishment.

5.2. Traditional segments in the hotel industry

In the hotel sector, market segmentation has evolved towards the identification of traditional demand segments, which group customers based on their reason for traveling and their consumption patterns. These segments allow for more precise Revenue Management strategies and the tailoring of service offerings to the specific needs of each type of customer.

One of the most important segments in the hotel industry is the corporate or business segment, comprised of travelers who travel for work, business meetings, or professional activities. This group of clients typically has particular characteristics, such as lower price sensitivity and a greater need for complementary services like digital connectivity, workspaces, and meeting facilities. In many urban hotels, the corporate segment represents a significant source of revenue during the workweek.

Another example is leisure tourism, which includes tourists traveling for recreational or vacation purposes, is typically more price-sensitive and exhibits different consumption patterns than business travelers. Leisure tourists tend to book further in advance and usually stay longer at their destination, which can increase their consumption of additional hotel services.

A third important segment comprises tour groups, including organized excursions, educational trips, and groups managed by tour operators. These clients typically negotiate special rates due to the volume of rooms they book. Although revenue per room may be lower compared to other segments, selling blocks of rooms allows them to guarantee stable occupancy levels during certain periods of the year.

Another important segment in the contemporary hotel industry is related to meetings, incentives, conferences, and exhibitions (MICE). This type of tourism combines accommodation with professional or academic activities and typically generates a significant economic impact on tourist destinations. Corporate or academic events can generate a significant increase in hotel demand during specific periods.

Example

A business hotel located in a regional capital analyzes the distribution of its annual demand and obtains the following results:

- 40% of guests belong to the corporate segment
- 35% correspond to leisure tourism
- 15% come from organized tourist groups
- 10% participate in MICE events

Based on this distribution, the Revenue Management department can design differentiated pricing and marketing strategies; for example, corporate rates can be offered during weekdays and promotional leisure packages during weekends, with the aim of balancing hotel occupancy throughout the week.

Identifying and strategically managing these segments allows for improved business planning of establishments and maximizes the profitability of accommodation services.

5.3. Digital tourist behavior

To understand the impact of digital tourist behavior on hotel revenue management, it is necessary to integrate variables associated with the digital environment with classic performance indicators such as occupancy rate (OCC), average daily rate (ADR), revenue per available room (RevPAR), and booking pace. Analyzing these variables together allows revenue managers to anticipate changes in demand and optimize their pricing strategies.

In the context of contemporary tourism, the digital tourist is characterized by using multiple online platforms to compare prices, evaluate reviews from other travelers, and make reservations via mobile devices. This behavior generates large volumes of data that can be analyzed to identify demand patterns and adjust the establishment´s business strategies (Noone & McGuire, 2022; Ivanov & Webster, 2020).

Among the most relevant variables associated with the digital behavior of tourists are: the number of searches on booking platforms, the advance notice of the booking, the conversion rate of visits into bookings, the use of mobile devices and the sensitivity to online promotions.

Example

A 100-room city hotel located in a tourist destination analyzes the digital behavior of its potential customers over a 30-day period. The hotel collects information from its website, OTA platforms, and digital analytics systems.

The hotel´s initial data before implementing a digital optimization strategy is as follows:

Rooms available this month:

$$100\ x\ 30 = 3{,}000$$

Initial operating data:

- Monthly visits to the hotel´s website: 12,000
- Online booking conversion rate: 2%
- Bookings generated: 240 rooms
- Additional bookings from OTAs: 960 rooms
- Total rooms sold: 1,200

Calculation of the occupancy rate:

$$Occupancy\ rate = \frac{sold\ rooms}{available\ rooms}\ x\ 100$$

$$Occupancy\ rate = \frac{1{,}200}{3{,}000}\ x\ 100 = 40\%$$

Average Daily Rate (ADR)

The average price per room is $100 USD

Room revenue

$$1200\ x\ 100 = 120{,}000\ USD$$

RevPAR Calculation

$$RevPAR = \frac{room\ revenue}{available\ rooms}$$

$$RevPAR = \frac{120{,}000}{3{,}000} = 40\ USD$$

These results reflect moderate occupancy and a relatively limited income level for the establishment's installed capacity.

Implementation of strategies based on digital behavior

The hotel decides to implement an optimization strategy based on the analysis of tourists´ digital behavior. The actions implemented include:

- Improved search engine ranking (SEO)
- Social media advertising campaigns targeted at specific markets
- Optimizing the booking process on mobile devices
- Online reputation monitoring and active response to guest reviews

As a result of these actions, the digital indicators show significant changes:

- Monthly website visits: 18,000
- Conversion rate: 3.5%
- Bookings generated on the website: 630 rooms
- Bookings on OTAs: 1,170 rooms
- Total rooms sold: 1,800

New occupancy rate

$$Occupany\ rate = \frac{1{,}800}{3{,}000}\ x\ 100 = 60\%$$

Average rate adjustment

Due to increased demand, the hotel decides to slightly increase its average rate to $110 USD.

New room revenue

$$1{,}800\ x\ 110 = 198{,}000\ USD$$

New RevPAR

$$RevPAR = \frac{198{,}000}{3{,}000} = 66\ USD$$

Table 16: Comparison of results

Indicator	Initial situation	After digital optimization
Occupation	40%	60%
ADR	$100	$110
RevPAR	$40	$66
Monthly income	$120,000	$198,000

The analysis shows that incorporating strategies based on the behavior of digital tourists allowed for simultaneous improvement in occupancy and average price, generating a significant increase in revenue per available room.

This example demonstrates how the analysis of digital variables can be effectively integrated with traditional Revenue Management indicators to optimize the profitability of the hotel establishment.

5.4. Price elasticity in tourism

The price elasticity of demand for tourism is one of the most relevant concepts in economic analysis applied to tourism, and particularly in strategic pricing within Revenue Management. This indicator measures the sensitivity of tourism consumers to price variations, which is essential for determining pricing strategies that maximize hotel revenue.

In analytical terms, price elasticity is defined as the ratio between the percentage change in quantity demanded and the percentage change in the price of the tourism product. Its mathematical formula is expressed as follows:

$$Elasticity = \frac{\%\ change\ in\ demand}{\%\ change\ in\ price}$$

When the absolute value of elasticity is greater than one, demand is considered elastic, meaning that consumers react significantly to price changes; conversely, when elasticity is less than one, demand is considered inelastic, indicating that price variations generate relatively small changes in the volume of demand.

In the tourism sector, the elasticity of demand can vary considerably depending on the type of product, the market segment, and the conditions of the competitive environment. For example, leisure tourists tend to be more price-sensitive than business travelers, since the latter tend to travel for work-related reasons and have less flexibility to modify their travel decisions.

From a Revenue Management perspective, elasticity analysis allows the identification of the optimal price level that maximizes the establishment´s revenue, balancing the relationship between occupancy and average rate.

Example

A 120-room holiday hotel is analyzing its demand patterns during the mid-season. The hotel has the following initial data for a 30-day period.

Rooms available during the month:

$$120\ x\ 30 = 3{,}600$$

Initial operating data:

- Average Rate (ADR): 150 USD
- Rooms sold: 2,160

Calculation of initial occupancy

$$Occupany\ rate = \frac{2{,}160}{3{,}600}\ x\ 100$$

$$Occupancy\ rate = 60\%$$

Room revenue

$$2{,}160\ x\ 150 = 324{,}000\ USD$$

Calculation of initial RevPAR

$$RevPAR = \frac{324{,}000}{3{,}600}$$

$$RevPAR = 90\ USD$$

Price adjustment strategy

The Revenue Management department decides to reduce the average rate by 12% with the aim of stimulating demand during the analyzed period.

New average rate

$$150 - (150\ x\ 0.12) = 132\ \text{USD}$$

After implementing this price reduction, demand increased and the hotel recorded 2,880 rooms sold during the same period.

New occupancy rate

$$Occupancy\ rate = \frac{2{,}160}{3{,}600}\ x\ 100$$

$$Occupancy\ rate = 80\%$$

New room revenue

$$2{,}880\ x\ 132 = 380{,}160\ \text{USD}$$

New RevPAR

$$RevPAR = \frac{380{,}160}{3{,}600}$$

$$RevPAR = 105.60\ USD$$

Calculation of the elasticity of demand

Percentage change in demand:

$$\frac{2{,}880 - 2{,}160}{2{,}160} x\ 100 = 33.33\%$$

change in price:

$$\frac{132 - 150}{150} x\ 100 = -12\%$$

Elasticity:

$$Elasticity = \frac{33{,}33}{12} = 2.78$$

The result indicates that demand is highly elastic, meaning that a moderate price reduction generated a proportionally larger increase in the quantity demanded.

Interpretation for Revenue Management

Although the average daily rate decreased from $150 to $132, the increase in occupancy allowed the hotel to increase its total revenue by $56,160 during the period analyzed. Likewise, RevPAR increased from $90 to $105.6, demonstrating that the price reduction strategy was effective in maximizing the establishment's profitability.

This type of analysis is an essential tool for Revenue Management managers, as it allows them to identify pricing strategies that optimize the relationship between occupancy, average rate and profitability of the tourism business.

5.5. Tariff differentiation strategies

Pricing strategies are a cornerstone of revenue management in the tourism and hospitality industry, as they allow for maximizing revenue by applying differentiated prices to different customer segments. This approach is based on the economic principle that consumers have varying levels of willingness to pay,

making it possible to establish pricing structures tailored to the characteristics and behaviors of each market segment.

In the hotel sector, rate differentiation is implemented through various strategies that consider factors such as the time of booking, the length of stay, the distribution channel, the type of customer, or how far in advance the purchase is made; in this way, the same service, a hotel room, can be marketed at different prices depending on the purchase conditions and the customer profile.

Recent literature on hotel management highlights that pricing differentiation strategies allow for simultaneous optimization of occupancy, average price and revenue per available room, elements that constitute key performance indicators in hotel management (Noone & McGuire, 2022).

Early booking rates, corporate rates, differentiated pricing by distribution channel, and promotions associated with tour packages or extended stays, all of these strategies aim to attract different consumer profiles and stimulate demand during off-peak periods.

From a Revenue Management perspective, pricing differentiation is based on the analysis of historical data on demand, booking behavior, customer segmentation, and tourism consumption patterns. This data allows for the identification of times when tourists are more or less price-sensitive and enables price adjustments accordingly.

Example

A 150-room tourist hotel analyzes its monthly demand with the aim of implementing a pricing differentiation strategy based on three market segments:

1. Leisure tourists who book in advance
2. Corporate travelers
3. Tourists making last-minute bookings through digital platforms

For a period of 30 days, the hotel has the following capacity:

Rooms available this month:

$$150\ x\ 30 = 4{,}500$$

Before implementing the rate differentiation strategy, the hotel maintained a single rate of $120 USD for all customers.

Initial operating data:

Rooms sold: 2,700

Average Rate (ADR): 120 USD

5.6. Initial occupancy calculation

$$Occupancy\ rate = \frac{2{,}700}{4{,}500} x\ 100$$

$$Occupancy\ rate = 60\%$$

Room revenue

$$2{,}700\ x\ 120 = 324{,}000\ USD$$

Initial RevPAR

$$RevPAR = \frac{324{,}000}{4{,}500}$$

$$RevPAR = 72\ USD$$

Implementation of a tariff differentiation strategy

The hotel decides to apply three-tiered pricing structures:

Segment 1 **– Early *booking***

Customers who book more than 30 days in advance

- Rate: 105 USD
- Rooms sold: 1,200

Segment 2 – **Corporate rate**

- Rate: 140 USD
- Rooms sold: 900

Segment 3 – **Flexible rate for last-minute bookings**

- Price: 160 USD
- Rooms sold: 900

Calculation of revenue by segment

Revenue segment 1:

$$1{,}200\ x\ 105 = 126{,}000\ USD$$

Segment 2 Revenue:

$$900\ x\ 140 = 126{,}000\ USD$$

Segment 3 Revenue:

$$900\ x\ 160 = 144{,}000\ USD$$

Total revenue:

$$126{,}000 + 126{,}000 + 144{,}000 = 396{,}000\ USD$$

Total rooms sold:

$$1{,}200 + 900 + 900 = 3{,}000$$

New occupation

$$Occupancy\ rate = \frac{3{,}000}{4{,}500} x\ 100$$

$$Occupancy\ rate = 66.7\%$$

New Average Rate (ADR)

$$\boldsymbol{ADR} = \frac{396{,}000}{3{,}000}$$

$$\boldsymbol{ADR = 132\ USD}$$

New RevPAR

$$\boldsymbol{RevPAR} = \frac{396{,}000}{4{,}500}$$

$$\boldsymbol{RevPAR = 88\ USD}$$

Interpretation of results

Implementing the pricing strategy significantly improved the hotel´s performance indicators:

Table 17: results before and after the strategy

Indicator	Before the strategy	After the strategy
Occupation	60%	66.7%
ADR	$120	$132
RevPAR	$72	$88
Total revenue	$324,000	$396,000

The analysis shows that the application of differentiated rates made it possible to capture different market segments and simultaneously increase occupancy and average rate, as a result RevPAR increased by USD 16 per available room, which represents a significant improvement in the profitability of the establishment.

This type of strategy is a common practice in contemporary hotel management and is closely linked to the use of dynamic pricing tools, which allow rates to be adjusted according to demand, consumer behavior and the conditions of the tourism market.

5.7. Segmented inventory management

Segmented inventory management is one of the most relevant components of contemporary revenue management strategies in the hotel industry, as it allows for the strategic allocation of available hotel capacity to different customer groups based on their profitability level, purchasing behavior, and willingness to pay. In the hotel context, inventory is characterized as a perishable resource with limited capacity; therefore, efficient inventory allocation is a key element for maximizing revenue and profitability (Vinod, 2023).

In operational terms, segmented inventory management involves determining how many rooms should be reserved for each type of customer, considering factors such as booking lead time, distribution channel, price paid by the guest, and cancellation rate. This process is closely linked to demand forecasting systems and optimization models used in modern Revenue Management systems, which analyze historical data and behavioral patterns to estimate future demand for each segment (Talluri & van Ryzin, 2005).

In the hotel sector, each of the market segments to whom the accommodation service is offered presents different characteristics in terms of booking behavior and price sensitivity, for example, business travelers tend to book with less advance notice and show less price sensitivity, while leisure tourists usually plan their trips further in advance and show greater sensitivity to promotions or discounts (Vinod, 2023).

The digitization of hotel management systems has facilitated the implementation of more sophisticated inventory management strategies; in particular, systems based on artificial intelligence and data analysis allow for continuous evaluation of the evolution of demand and dynamic adjustment of room availability for each market segment, avoiding the advance sale of rooms at low prices when there is

a high probability of receiving higher value reservations on upcoming dates (Mariani et al., 2018).

In this context, strategic inventory management helps to avoid the phenomenon known as demand displacement, which occurs when rooms that could potentially be sold at higher prices are occupied by lower-value reservations made too far in advance. This problem has been extensively studied in the Revenue Management literature, as it can significantly affect a hotel´sprofitability if availability levels are not properly managed by segment (Talluri & van Ryzin, 2005).

Applied example

A 140-room city hotel analyzes its inventory management over a 30-day period with the aim of optimizing room allocation among different market segments.

Total hotel capacity

$$140\ x\ 30 = 4{,}200$$

Prior to implementing an inventory segmentation strategy, the hotel sold its rooms without clear differentiation between types of customers.

Initial operating data:

- Rooms sold: 2,730
- Average Rate (ADR): 125 USD

Calculation of initial occupancy

$$Occupancy\ rate = \frac{2{,}730}{4{,}200} x\ 100$$

$$Occupancy\ rate = 65\%$$

Room revenue

$$2{,}730\ x\ 125 = 341{,}250\ USD$$

RevPAR

$$RevPAR = \frac{341{,}250}{4{,}200}$$

$$RevPAR = 81.25\ USD$$

These results show a moderate level of occupancy and financial performance that can be improved through a more efficient inventory allocation strategy.

Implementation of segmented inventory management

The Revenue Management department decides to strategically allocate available inventory to three main market segments:

Corporate segment

- Rooms allocated: 1,200
- Average Rate (ADR): 150 USD

Leisure tourism segment

- Rooms allocated: 1,300
- Average Rate (ADR): 120 USD

OTA reservations segment (last minute)

- Rooms allocated: 900
- Average Rate (ADR): 165 USD

This strategy responds to the logic of capturing advance leisure bookings to guarantee a minimum occupancy base, maintaining availability for corporate travelers during working days, and reserving a portion of the inventory for last-minute customers who are generally willing to pay higher rates (Talluri & van Ryzin, 2005; Phillips, 2005; Noone et al., 2021; Kimes, 1989).

Calculation of revenue by segment

Revenue by corporate segment

$$1{,}200\ x\ 150 = 180{,}000\ USD$$

Revenue by leisure segment

$$1{,}300\ x\ 120 = 156{,}000\ USD$$

Revenue by OTA segment

$$900\ x\ 165 = 148{,}500\ USD$$

Total revenue

$$180{,}000 + 156{,}000 + 148{,}500 = 484{,}500\ USD$$

Total rooms sold

$$1{,}200 + 1{,}300 + 900 = 3{,}400$$

New occupancy rate

$$Occupancy\ rate = \frac{3{,}400}{4{,}200} x100$$

$$Occupancy\ rate = 81\%$$

New Average Rate (ADR)

$$ADR = \frac{484{,}500}{3{,}400}$$

$$ADR = 142.50\ \text{USD}$$

New RevPAR

$$RevPAR = \frac{484{,}500}{4{,}200}$$

$$RevPAR = 115.36\ \text{USD}$$

Interpretation of results

The results obtained demonstrate that implementing a segmented inventory management strategy significantly improved the hotel´sfinancial performance. Occupancy increased from 65% to 81%, while the average daily rate rose from $125 to $142.50, resulting in a considerable increase in RevPAR, which went from $81.25 to $115.36.

This type of analysis demonstrates that the strategic allocation of inventory to more profitable segments allows for the simultaneous optimization of hotel occupancy and revenue, which is one of the objectives of contemporary Revenue Management (Vinod, 2023).

5.8. Chapter Summary

This chapter analyzes tourism market segmentation as a key strategic pillar of revenue management, as it allows for an understanding of the differences in purchasing behavior, price sensitivity, and travel motivations among various types of tourists. Based on this understanding, tourism businesses, especially hotels, can design differentiated pricing, inventory, and marketing strategies aimed at maximizing revenue generated by their available capacity.

In the hotel industry, segmentation is crucial due to the heterogeneity of travelers who interact with accommodation services. Tourists differ in variables such as the purpose of their trip, the timing of their booking, the length of their stay, and their expected spending level. These differences allow for the identification of relatively homogeneous groups within the market, facilitating the design of pricing policies and sales strategies tailored to each specific segment.

The chapter explains that tourism segmentation can be carried out using various analytical criteria, including demographic, geographic, psychographic, and behavioral criteria. Demographic segmentation allows for the identification of profiles based on age, income, or family composition; geographic segmentation analyzes the origin of tourists and their cultural differences; while psychographic segmentation focuses on lifestyles, values, and travel motivations. Behavioral segmentation, for its part, studies consumption patterns such as booking lead time, travel frequency, and price sensitivity.

From a revenue management perspective, segmentation is not just a marketing tool, but a strategic mechanism for optimizing the allocation of available inventory. By identifying segments with varying levels of willingness to pay, the hotel can design differentiated pricing strategies and strategically allocate its capacity among different types of guests, maximizing the total revenue generated by available rooms.

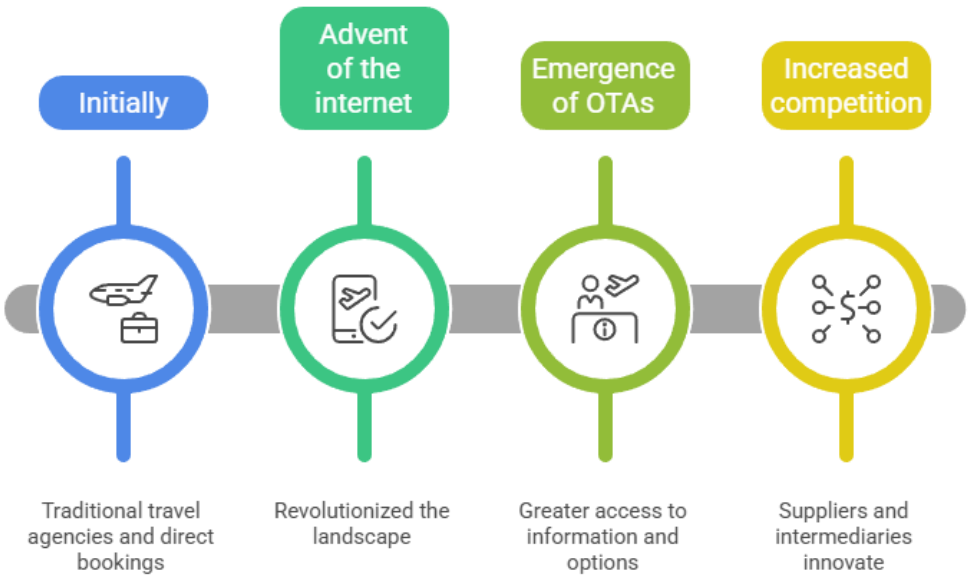
It is concluded that segmentation is an essential tool for decision-making in revenue management, as it allows for understanding the structure of tourism demand, designing differentiated pricing policies, and strategically allocating available inventory. In an increasingly competitive and data-driven environment, the ability to analyze and manage market segments is becoming a key competency for hotel management professionals.

CHAPTER VI

TOURISM DISTRIBUTION CHANNELS

6.1. Evolution of tourism distribution

Figure 21. Evolution of Tourism Distribution Systems: From Traditional to Digital Ecosystems



Tourism distribution is a key structural component of the tourism system, as it determines the mechanisms by which tourism products and services reach end consumers from suppliers. Conceptually, tourism distribution channels can be defined as the set of intermediaries, technological platforms, and commercial mechanisms that facilitate the marketing of services such as accommodation, transportation, tour packages, and travel experiences. The evolution of these channels has been deeply intertwined with technological changes, shifts in consumer behavior, and the increasing digitalization of the global economy (Buhalis & Law, 2008).

Historically, tourism distribution was characterized by a strong presence of traditional intermediaries, primarily retail and wholesale travel agencies. For much of the 20th century, access to tourism products depended almost exclusively on these intermediaries, who fulfilled fundamental functions such as organizing tour packages, managing reservations, and providing personalized customer service. In this model, wholesale tour operators negotiated with hotels, airlines, and other suppliers to structure packages that were subsequently marketed through retail agencies. This system enabled the expansion of international tourism during the 1960s and 1970s, especially in sun and beach destinations, consolidating a highly intermediated distribution structure (Cooper et al., 2008; Holloway & Humphreys, 2019).

The evolution of tourism distribution began to transform significantly with the introduction of Global Distribution Systems (GDS) during the 1980s and 1990s. These systems, originally developed by airlines, automated inventory and reservation management, facilitating travel agencies´ access to up-to-date information on availability and fares. The implementation of GDSs represented a major shift in the operational efficiency of the tourism sector, as it reduced transaction times and improved coordination between suppliers and intermediaries (O´Connor, 2020).

With the expansion of the internet in the late 20th and early 21st centuries, tourism distribution underwent an even deeper structural transformation. The emergence of digital platforms allowed tourism providers to market their products directly, in some cases reducing their dependence on traditional intermediaries. This phenomenon led to disintermediation processes, where hotels, airlines, and tour operators began to promote their own direct sales channels through websites and online booking systems; however, a new type of digital intermediation emerged in parallel, represented by online travel agencies (OTAs), which quickly positioned themselves as dominant players in global tourism distribution (Buhalis, 2003; Inkpen, 1998).

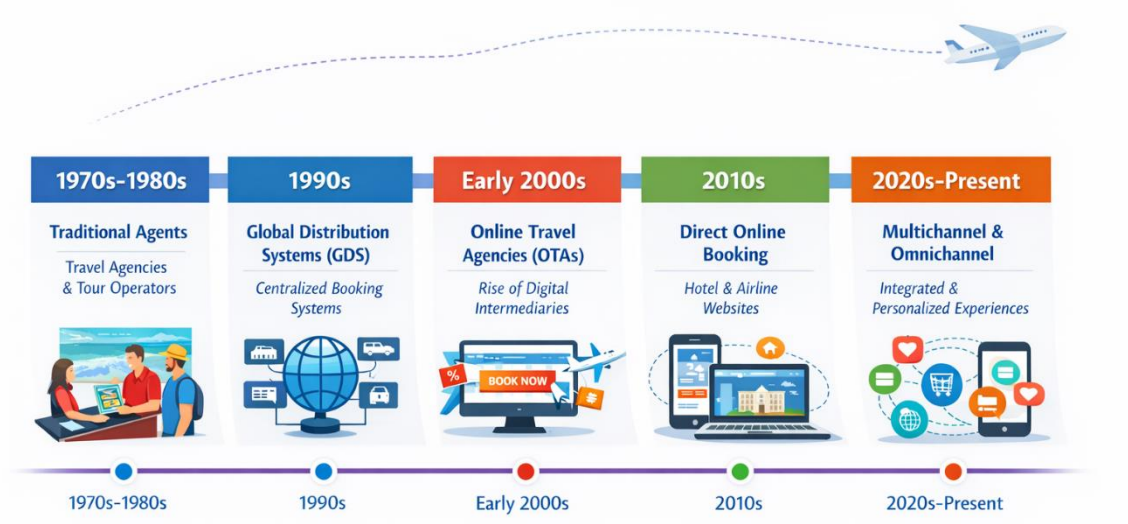
Online travel agencies (OTAs) have radically transformed how tourists access information and make bookings, integrating a wide range of tourism services, price comparisons, and user review systems into a single platform. This convergence of information, prices, and digital reputation has led to greater transparency in the tourism market, but it has also intensified competition among providers. In this context, hotels and other industry players must carefully manage their presence across multiple distribution channels, balancing the visibility offered by digital platforms with the associated costs of commissions and intermediation fees (Buhalis & Law, 2008; Xiang et al., 2015; Mariani et al., 2018).

In recent years, tourism distribution has continued to evolve towards more complex models characterized by multichannel and omnichannel approaches. Multichannel approaches mean that tourism providers simultaneously use different marketing channels, such as direct sales, traditional travel agencies, OTAs, metasearch engines, and mobile platforms. Omnichannel approaches, on the other hand, seek to integrate these channels seamlessly to offer a smooth shopping experience to the consumer, regardless of the device or platform used to make the booking (Buhalis & Law, 2008).

Furthermore, the development of advanced digital technologies such as artificial intelligence, big data analytics, and personalized recommendation systems is redefining tourism distribution processes. These tools allow for real-time analysis of consumer behavior, optimization of tourism product visibility, and personalization of offers based on individual traveler preferences. As a result, distribution channels no longer function solely as marketing mechanisms but also as platforms for generating and analyzing strategic information about the tourism market (Gretzel et al., 2015; Ivanov & Webster, 2019; Li et al, 2020).

From a contemporary perspective, the evolution of tourism distribution can be understood as a transition process from a model dominated by physical intermediaries to a highly interconnected digital ecosystem, where multiple actors and platforms coexist. In this scenario, the ability of destinations and tourism companies to effectively manage their distribution channels has become a critical factor for competitiveness, market visibility, and revenue optimization.

Figure 22: evolution of tourism distribution channles



6.2. Direct and indirect channels in tourism distribution

The structure of tourism distribution channels is based on the relationship between tourism service providers and the end consumer. In a global context, these channels can be classified as direct or indirect, depending on the presence or absence of intermediaries in the marketing process. This distinction is fundamental to understanding contemporary tourism marketing strategies, particularly in a context characterized by market digitalization, the expansion of technological platforms, and the transformation of tourism consumer behavior. In this sense, several studies indicate that distribution channels are a key element in the competitiveness of tourism companies, as they directly influence product visibility, customer acquisition, and revenue optimization (Buhalis, 2000; Buhalis & Law, 2008; Xiang et al., 2015).

Traditionally, the tourism system was dominated by indirect channels, where intermediaries played a central role in marketing tourism products; however, the development of the internet and the digitalization of the sector have allowed many tourism companies to develop direct marketing channels, generating a structural transformation in the distribution system. Currently, both models coexist within an environment characterized by multichannel strategies, where companies combine different sales mechanisms to expand their market reach (Buhalis & Law, 2008).

6.3. Direct tourism distribution channels

Direct channels are characterized by the marketing of tourism products or services directly between the supplier and the end consumer, without the intervention of intermediaries. This model has gained increasing importance in the contemporary tourism sector, especially thanks to the expansion of digital technologies and online booking systems. As Buhalis & Law (2008) point out, digitalization has allowed hotels, airlines, and tour operators to develop their own booking platforms, strengthening their commercial autonomy and reducing the costs associated with intermediaries.

One of the most representative examples of the direct channel is sales through a hotel´s website. In this case, the establishment provides the customer with a booking engine that allows them to check availability, compare rates, and complete the reservation immediately. This strategy offers significant advantages for the tourism company, as it allows them to reduce commissions paid to intermediaries and directly access valuable information about customer behavior. In this sense, hotels that manage to strengthen their direct channels tend to improve their profitability by minimizing intermediation costs and developing loyalty strategies based on customer data management (Stangl, Inversini & Schegg, 2020; Buhalis & Law, 2008).

A practical example can be seen in a boutique hotel located in a cultural destination that decides to implement a promotional strategy focused on direct bookings through its website. Suppose a hotel publishes a rate of USD 150 per night on an OTA platform, while on its official website it offers a rate of USD 145 accompanied by additional benefits such as included breakfast or flexible cancellation. Although the price difference is relatively small, the hotel avoids paying commissions that can range from 15% to 25% of the booking value, which considerably increases the profit margin per room sold (Kimes, 2016; Ivanov & Zhechev, 2012).

Another example is shown: a tour operator specialized in community-based tourism can promote cultural experiences through campaigns on Instagram or Facebook, integrating direct booking links that allow visitors to purchase the service without traditional intermediaries. In this way, the tour provider maintains complete control over the marketing process and communication with the customer.

However, despite their advantages, direct channels also present significant challenges, including the need to invest in technological infrastructure, digital marketing, search engine optimization, and online reputation management. Without these tools, the visibility of tourism products can be limited compared to distribution platforms with a greater global presence (O´Connor, 2024; Vinod, 2024; Nyathela-Sunday & Bannobhai-Anwar, 2024; Phan, 2024).

Figure 23: direct distribution channels

6.4. Indirect channels of tourism distribution

Indirect channels involve the participation of one or more intermediaries in the marketing process of the tourism product. These intermediaries facilitate the connection between suppliers and consumers, performing functions such as promotion, supply aggregation, price comparison, and reservation management. Despite the growth of direct channels, indirect distribution continues to play a fundamental role within the global tourism system (Buhalis & Lz, 2008; Stangl et al., 2020; O´Connor, 2024; Vinod, 2024).

Among the most traditional intermediaries are travel agencies and tour operators, which have historically played a central role in organizing and marketing tour packages. In this model, the tour operator negotiates with different suppliers to design integrated packages that are subsequently marketed through retail agencies. This system has been particularly relevant in international tourism and in source markets with a high volume of travelers (Arsić et al., 2025; Žunić & Uzunalić, 2025; Rizky & Tricahyono, 2025).

A classic example of an indirect channel can be seen in the marketing of sun and beach vacation packages. A European tour operator might design a package that includes airfare, resort accommodation, and airport transfers. This package is then sold through retail travel agencies located in different cities. In this case, the end consumer purchases the tourism product without interacting directly with the hotel or airline.

In the contemporary context, traditional intermediaries have been complemented by new digital players. These platforms allow tourists to compare prices, check availability, and make reservations with multiple providers from a single interface. OTAs play a fundamental role in the online visibility of hotels, especially for independent establishments that do not have large digital marketing budgets (Stangl et al., 2020; O´Connor, 2024; Vinod, 2024).

For example, an independent hotel located in a heritage city can use an OTA to increase its presence in international markets. Through this platform, the hotel appears in search results for tourists comparing different accommodation options. Although the hotel must pay a commission for each booking generated, the visibility offered by these platforms can be crucial for attracting new customers (O´Connor, 2024).

Another key player within contemporary indirect channels is the travel metasearch engine, which functions as an aggregator of information from multiple booking platforms. These systems allow users to compare prices from different OTAs and direct channels, subsequently redirecting the customer to the platform where the final booking is made. This model has significantly increased transparency in the travel market and intensified competition among providers (O´Connor, 2024; Vinod, 2024).

Figure 24: indirect distribution channels

6.5. Comparison between direct and indirect tourism distribution channels

To better understand the strategic implications of both distribution models, it is helpful to analyze their main advantages and disadvantages.

Table 18: comparison between distribution channels

Criterion	Direct channels	Indirect channels
Definition	Direct marketing between tourism provider and end consumer without intermediaries.	Marketing mediated by intermediaries such as travel agencies, tour operators or digital platforms.
Examples	Official hotel website, telephone reservations, social media with booking engine, direct sales at the establishment.	Travel agencies, tour operators, online travel agencies (OTAs), metasearch engines.
Advantages	Greater control over pricing, inventory and customer experience; direct access to consumer data; elimination of intermediary fees	Greater international visibility; access to broad source markets; greater potential volume of bookings
Disadvantages	It requires investment in digital marketing, web positioning and technology; less initial visibility if the brand is little known (O´Connor, 2024).	Payment of commissions between 15% and 25% per booking; less control over the relationship with the client
Control over the customer experience	High	Medium or low
Access to customer data	Complete	Limited
Impact on profitability	Higher margin per reservation	Lower unit margin but higher potential volume

6.6. Strategic channel integration

Currently, tourism distribution cannot be understood as a choice between direct and indirect channels; on the contrary, most tourism companies implement multichannel strategies, combining both types of distribution to maximize their market presence. As Buahlis and Law (2008) point out, the main strategic challenge lies in effectively managing the coexistence of multiple channels, avoiding price conflicts, and maintaining consistency in the marketing strategy.

For example, a city hotel may distribute its inventory simultaneously through its official website (direct channel), an international OTA (digital indirect channel), and traditional travel agencies (physical indirect channel); in this scenario, the establishment must carefully coordinate its rates and availability to avoid inconsistencies that could affect the customer's perception or generate conflicts with intermediaries.

Consequently, the contemporary tourism distribution system can be understood as an interconnected ecosystem where suppliers, intermediaries, and technology platforms continuously interact to facilitate consumer access to tourism products. The ability to strategically manage this ecosystem is now one of the most crucial factors for the competitiveness of tourism businesses and destinations in the global market.

6.7. Online travel agencies (OTAs) in hotel distribution

Online Travel Agencies (OTAs) are among the most influential digital intermediaries in contemporary hotel distribution systems. Operationally, OTAs are technology platforms that aggregate accommodation listings, compare prices, and facilitate transactions between hotels and end consumers through online booking systems. From a Revenue Management perspective, these channels function not only as marketing intermediaries but also as mechanisms for generating demand, providing market visibility, and optimizing room inventory.

Currently, OTAs have transformed the tourism distribution architecture by reducing search costs for consumers and expanding hotels´ international reach. According to Gabelaia and Gabelaia (2025), digital intermediation platforms have redefined the competitive dynamics of the hotel sector by allowing establishments of varying sizes to access global markets without the need for traditional distribution networks. In this context, OTAs act simultaneously as sales channels, marketing platforms, and market information systems, making them strategic tools within hotel revenue management.

Among the most relevant platforms in the industry are Booking.com, Expedia Group and Agoda, which operate under commission models that generally range between 15% and 25% of the booking value, depending on the market, the visibility contracted by the hotel and the promotion strategies within the platform (Stangl et al., 2020).

From a Revenue Management perspective, presence on OTAs primarily serves three strategic objectives:

1. Increase the hotel´s visibility in global markets
2. Capture international or digitally intensive demand segments
3. Optimize occupancy during periods of low demand

In turn, OTAs significantly influence the booking behavior of the digital tourist, as they concentrate comparison, reputation and booking functions in the same

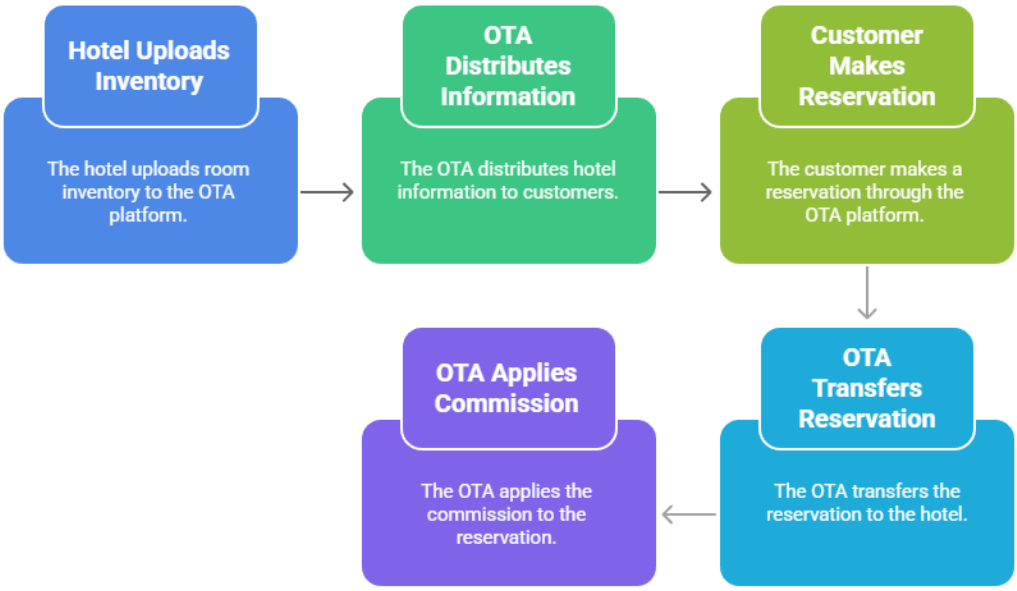
digital environment (Filieri, Yen & Yu, 2021), consequently, these platforms have become a structural element within the contemporary hotel distribution ecosystem.

6.7.1. How OTAs work in the hotel distribution system

From an operational perspective, the functioning of an OTA can be described by a flow of information and transactions composed of three main actors: hotel – intermediary platform – end customer.

1. The hotel uploads its room inventory to the platform using a *channel manager* or the OTA´s own extranet.
2. The OTA distributes hotel information (rates, availability, photos, reviews, and services)
3. The end customer makes the reservation through the digital platform
4. The OTA transfers the booking to the hotel and subsequently applies the corresponding commission.

Figure 25. Operational Flow of Online Travel Agencies (OTAs) in Hotel Distribution Systems



This digital intermediation model allows the hotel to expand its market reach, even though this involves distribution costs that must be strategically managed within the revenue management system.

Example

Suppose an 80-room city hotel markets part of its inventory through an OTA

The following data is recorded during a specific week:

- Rooms sold through the OTA: 40

- Average Daily Rate (ADR): 110 USD
- OTA commission: 18%

The gross revenue generated by this channel would be:

$$Gross\ income = 40\ x\ 110 = 4{,}400\ USD$$

The commission paid to the OTA would be:

$$Comission = 4{,}400\ x\ 0.18 = 792\ USD$$

Therefore, the net income received by the hotel would be:

$$net\ income = 4{,}400 - 792 = 3{,}608\ USD$$

From the revenue manager´s perspective, this result allows for an assessment of whether the OTA channel is profitable in relation to other distribution channels, such as the hotel´sofficial website or direct bookings.

6.7.2. Strategic importance of OTAs in Revenue Management

Despite the cost of intermediation, OTAs remain a fundamental component of hotel distribution strategy. Hotels use these platforms not only to generate sales, but also as dynamic demand management tools, especially in contexts of uncertainty or volatility in the tourism market (Guillet & Mohammed, 2015; Stangl, Inversini & Schegg, 2016; Kimes, 2022).

OTAs also provide valuable information for competitive analysis, allowing you to observe competitor hotel rates, reputation rankings, and real-time demand patterns. This type of information is crucial for adjusting pricing strategies, promotions, and market segmentation.

Finally, within contemporary revenue management systems, OTAs should not be understood solely as sales intermediaries, but as strategic platforms for market intelligence and demand generation, whose proper management can significantly contribute to optimizing hotel revenue.

6.8. Channel managers and distribution systems in hotel management

The increasing complexity of tourism distribution systems has led to the development of technological solutions that allow for the efficient management of room availability, rates, and inventory across multiple sales channels. In this context, channel managers and hotel distribution systems have become fundamental tools within contemporary revenue management strategies, as they allow for the integration of direct and indirect channels into a unified digital environment.

A channel manager can be defined as specialized software that connects a hotel´smanagement system with multiple distribution platforms, allowing for real-

time updates of room availability, rates, and commercial restrictions across various channels simultaneously. This type of technology is essential for avoiding operational problems such as overbooking, ensuring rate consistency across platforms, and optimizing the exposure of hotel inventory in the digital marketplace (Ivanov & Webster, 2020).

The automation of distribution processes is one of the cornerstones of technological transformation in the hotel industry. The integration of hotel management systems and distribution platforms significantly improves operational efficiency and data-driven decision-making, especially in environments characterized by high volatility in tourism demand (Buhalis & Law, 2008). In this sense, channel managers function not only as technological connectivity tools but also as strategic instruments for optimizing hotel revenue.

6.9. Technological integration within the distribution ecosystem

Channel managers operate by integrating different systems that make up the hotel´stechnological infrastructure. Among the most important components are:

1.- **PMS (Property Management System)**

It is the hotel´s central management system, responsible for managing reservations, check-in/out, room availability, and billing. The PMS forms the operational base to which all other technological systems are connected.

2.- **Channel Manager**

It acts as a technological intermediary between the PMS and the different distribution channels. When a reservation is made on any platform, the system automatically updates room availability on all other connected channels.

3.- **Global Distribution Systems (GDS)**

These platforms allow hotels to integrate into distribution networks used primarily by travel agencies and international corporations; among the best-known systems are Amadeus IT Group, Sabre Corporation, and Travelport.

Interoperability between these systems allows hotels to simultaneously manage multiple marketing channels, reducing operational errors and improving the efficiency of the distribution strategy (Kimes, 2022; Buhalis, Yin & Xu, 2026).

Operational functioning of a channel manager

The operating process of a channel manager is described by a sequence of technological interaction:

1. The hotel enters rates and availability into the PMS

2. The channel manager synchronizes this information with all connected channels.

3.- When a customer makes a reservation on an OTA or direct channel, the platform sends the information to the channel manager.

4. The system automatically updates the available inventory in all other channels.

This mechanism allows for consistency between different distribution channels and avoids overselling situations, a common problem in hotels that manually manage their inventory.

Example

Suppose a boutique hotel with 60 rooms distributes its inventory through three channels:

- Official hotel website (direct channel)
- Booking.com
- Expedia Group

The hotel initially establishes the following availability:

- Rooms available: 60
- A customer makes a reservation for 2 rooms through an OTA.

The information flow will be as follows:

1. The OTA registers the reservation

2. The channel manager receives the booking information

3. The system automatically updates the inventory across all channels

Availability is adjusted as follows:

$$60 - 2 = 58\ available\ rooms$$

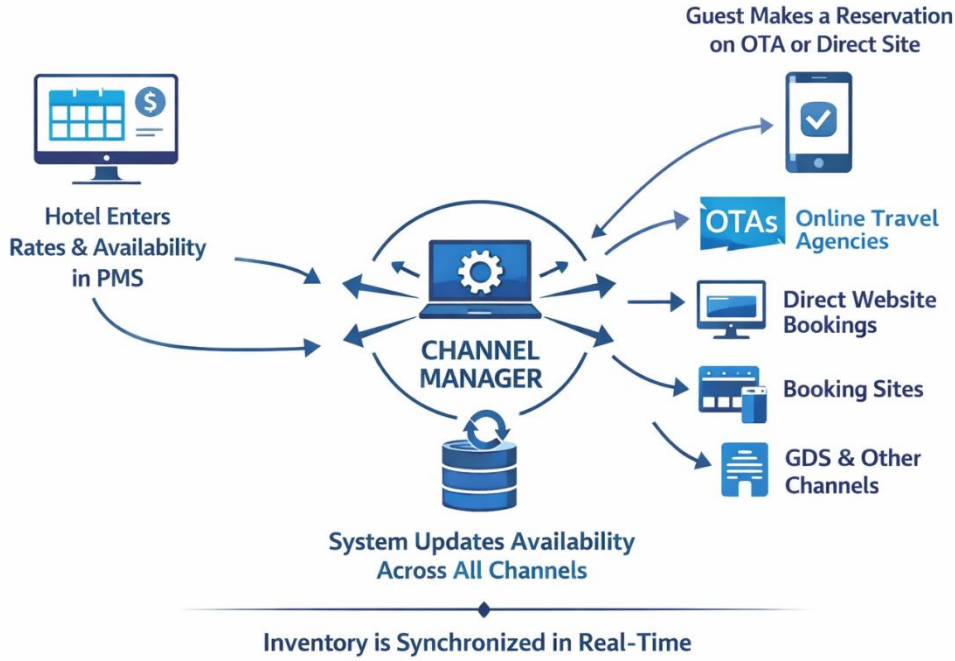
In this way, the remaining 58 rooms are updated simultaneously on the hotel´swebsite and on all connected platforms, avoiding inconsistencies in availability.

6.10. Strategic importance for Revenue Management

In practice, channel managers enable the implementation of advanced revenue strategies such as dynamic inventory allocation, price parity across channels, and optimization of the distribution mix. The proper integration of technological systems can increase the efficiency of sales channels and improve the performance of key indicators such as RevPAR and occupancy (Ivanov & Webster, 2020).

Furthermore, these systems facilitate market data analysis, allowing revenue managers to evaluate the performance of each channel, identify demand patterns, and adjust pricing strategies in real time; consequently, channel managers and digital distribution systems have become structural components within contemporary hotel distribution ecosystems, enabling integrated, automated, and strategically targeted room inventory management

Figure 26. Conceptual Model of Revenue-Driven Distribution Strategy.



6.11. Intermediation costs

In the context of Revenue Management, intermediation costs represent one of the most relevant strategic factors in managing distribution channels. These costs correspond to the commissions, technology fees, and marketing expenses that hotels must bear when selling their rooms through intermediaries such as OTAs, GDSs, metasearch engines, or traditional agencies. From a revenue management perspective, the objective is not limited solely to maximizing occupancy or the average room rate, but rather to optimizing the net revenue generated by each booking, considering the costs associated with each distribution channel (Ivanov & Webtser, 2020; Noone & McGuire, 2022).

The digital transformation of tourism has intensified the use of intermediary platforms within the hotel distribution ecosystem, where OTAs have acquired a dominant position in many tourism markets due to their ability to concentrate demand, offer price comparability, and provide global visibility to accommodation establishments. However, this intermediation involves commissions that can represent a significant proportion of the revenue generated by a booking. Several studies indicate that OTA commissions typically range between 15% and 25% of the booking value, depending on the hotel´ssales volume, its positioning within

the platform, and the commercial agreements established with the OTA (Ivanov & Webster, 2020).

From a Revenue Management perspective, these costs must be analyzed using indicators that allow for the evaluation of the profitability of each distribution channel. In this sense, the concept of Customer Acquisition Cost (CAC) is fundamental to understanding how much a hotel must invest to generate a booking through a specific channel. While a booking generated through the direct channel may involve expenses associated with digital marketing, metasearch campaigns, and maintenance of the booking engine, a booking from an OTA involves a direct commission on the value of the room sold (Noone et al., 2021; Phillips, 2021).

The strategic analysis of intermediation costs is also related to the concept of Net Revenue per Available Room (Net RevPAR), an indicator that measures the actual revenue a hotel receives after deducting commissions and other distribution costs. Incorporating net revenue-based indicators allows revenue managers to make more precise decisions about inventory allocation across different sales channels (Ivanov & Webster, 2020). In this way, the evaluation of each channel´s profitability is not limited to the volume of bookings generated, but rather to the net revenue those bookings contribute to the hotel.

Another relevant aspect within the analysis of intermediation costs is the impact of excessive dependence on OTAs on the hotel´s commercial structure. Several authors highlight that, although these platforms facilitate access to international markets and contribute to improving the establishment´s visibility, they can also generate a partial loss of control over the customer relationship, as well as a reduction in the hotel´s profit margin (Talón-Ballestero & González-Serrano, 2023; Lima Santos et al., 2024; Subying & Yoopetch, 2023). Consequently, many contemporary revenue management strategies seek to balance the use of intermediaries with the strengthening of direct channels through loyalty programs, digital marketing strategies, and optimization of the booking experience on the hotel´s website.

Furthermore, intermediation costs are not limited solely to commissions paid to OTAs. In practice, hotels must also bear other costs associated with digital distribution, such as payments for the use of channel managers, booking engines, revenue management systems, advertising on metasearch engines, and electronic payment processing fees. These technological costs are part of the digital infrastructure required to compete in the contemporary tourism market and must be considered within the profitability analysis of distribution channels (Phillips, 2021; Lima Santos et al., 2024).

From a strategic perspective, revenue management proposes managing distribution channels through an approach known as channel mix optimization, which consists of balancing the sales volume generated by each channel with its intermediation costs. This approach allows hotels to use OTAs to stimulate demand during periods of low occupancy or to access international markets,

while direct channels are used to maximize the profitability of bookings during periods of high demand (Ivanov & Webster, 2020; Noone et al., 2021). Therefore, the efficient management of intermediation costs becomes a key element to ensure the sustainability of the hotel´sintermediation.

Applied demonstration: calculation of the intermediation cost

To illustrate the impact of intermediation costs on hotel profitability, the following example is presented applied to a medium-sized urban hotel.

The hotel has 50 rooms and presents the following operational indicators:

- Average annual occupancy: 70%
- Average Daily Rate (ADR): 100 USD

Annual hotel capacity

$$50\ x\ 365 = 18{,}250\ rooms$$

Rooms sold with a 70% occupancy rate

$$18{,}250\ x\ 0.70 = 12{,}775\ rooms$$

Annual gross income

$$12{,}775\ x\ 100\ USD = 1\ 277{,}500\ USD$$

Suppose that the distribution of reserves is carried out as follows:

- 50% OTAs
- 30% direct channel
- 20% agencies and GDS

Revenue generated by OTAs:

$$1277{,}500\ x\ 0.50 = 638{,}750\ USD$$

If the average OTA commission is 18%:

$$638{,}750\ x\ 0.18 = 114{,}975\ USD$$

Revenue generated by traditional agencies:

$$1\ 277{,}500\ x\ 0.20 = 255{,}500\ USD$$

If the average commission from traditional agencies is 12%:

$$255{,}500\ x\ 0.12 = 30{,}660\ USD$$

Total intermediation cost:

$$114{,}975 + 30{,}660 = 145{,}635\ USD$$

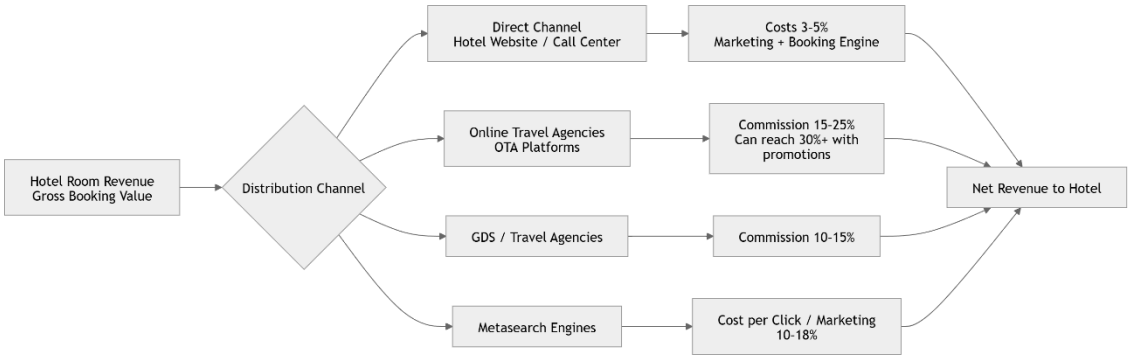
Approximate net hotel income:

$$1\ 277{,}500 - 145{,}635 = 1\ 131{,}865\ USD$$

This example demonstrates that intermediation costs can represent more than 11% of the hotel´stotal revenue, highlighting the importance of strategically managing distribution channels within revenue management.

Impact of intermediation costs on hotel revenue

Figure 27. Functional Logic of a Revenue Management System (RMS) in the Hotel Industry



The figure illustrates how different distribution channels affect the hotel´s net income after deducting intermediation costs, highlighting the importance of balancing the use of intermediaries with direct sales strategies.

6.12. Profitable distribution strategies

Within hotel revenue management, profitable distribution is not limited solely to the choice of sales channels, but also involves designing operational strategies that maximize the net revenue generated by each booking. Currently, hotels compete in a highly dynamic digital environment where profitability depends on the ability to integrate technological tools, data analysis, and marketing strategies aimed at optimizing demand generation. In this sense, strategic distribution management becomes a fundamental component of the revenue management cycle, as it allows for the coordination of pricing, inventory, and promotional decisions to improve indicators such as RevPAR and Net RevPAR (Talón-Ballestero & González-Serrano, 2023).

One of the most relevant strategies for achieving profitable distribution is dynamic pricing, also known as *dynamic pricing.* This strategy involves adjusting hotel rates based on variables such as market demand, customer booking behavior, seasonality, and inventory availability. The economic principle behind this practice is that the price should reflect the value perceived by the customer at each point in the demand cycle. Thus, during periods of high demand, prices can

be increased to maximize revenue per available room, while during periods of low demand, promotional rates are applied to encourage advance bookings or attract price-sensitive segments (Yeoman, 2024; Lima Santos et al., 2024; Qi et al., 2024). This approach allows for the optimization of hotel inventory allocation, which is a perishable resource that cannot be stored once a guest's stay has ended.

Another key strategy is the use of *rate fences,* which allow for market segmentation through specific conditions associated with each rate. Rate fences can be based on time restrictions (such as advance bookings or minimum stays), cancellation policies, or customer characteristics. These barriers allow for different prices to be offered for the same product without creating perceptions of unfairness among consumers, since each rate is associated with specific purchase or usage conditions. The proper application of these strategies increases the efficiency of price discrimination and improves the economic performance of hotel inventory (Talón-Ballestero et al., 2023).

A third strategy involves the analysis and intensive use of reservation data for decision-making. The growth of digital booking platforms has generated large volumes of information on customer behavior, including variables such as booking lead time, cancellation rates, and consumer preferences. Analyzing this data allows hotels to develop predictive models that improve the accuracy of demand forecasts, facilitating the implementation of more efficient pricing and availability strategies. Incorporating reservation data into analytical models allows for the optimization of both room rates and overbooking levels, increasing the hotel´s expected revenue (Subying y Yoopetch, 2023; Lima Santos et al., 2024; Saitta et al., 2024).

Another key strategy for profitable distribution is making booking conditions more flexible, especially in contexts of high uncertainty or changes in consumer behavior. Empirical evidence shows that offering more flexible cancellation policies or modifying booking policies can stimulate demand and reduce the customer's perception of risk. During periods of crisis or market fluctuations, hotels that adopt more adaptive booking policies manage to maintain higher occupancy levels and revenue stability (Napierala, Lesniewska-Napierala & Burski, 2020; Pavlatos, Kostakis & Digkas, 2021).

Finally, an emerging strategy within profitable distribution is the development of value-based promotional strategies, including early bird offers, service packages, or incentives targeted at specific market segments. These strategies are not solely based on price reductions but on creating additional value for the customer, such as complimentary services, room upgrades, or exclusive benefits. Empirical evidence indicates that these strategies increase the perceived value of the tourism product and improve booking conversion without significantly impacting the hotel´s average daily rate (Rady et al., 2023).

These strategies reflect an evolution in hotel distribution management, where the focus is shifting from simply marketing inventory to comprehensive management

based on data, market segmentation, and optimization of the economic value of each reservation.

Applied demonstration: impact of a dynamic pricing strategy

To illustrate the practical application of these strategies, we analyze the hypothetical case of a hotel with 80 rooms and an initial average rate of USD 95. The hotel registers an average annual occupancy rate of 68%.

Annual capacity:

$$80\ x\ 365 = 29{,}200\ available\ rooms$$

Rooms sold:

$$29{,}200\ x\ 0.68 = 19{,}856\ rooms$$

Initial annual income:

$$19{,}856\ x\ 95\ USD = 1\ 886{,}320\ USD$$

Suppose the hotel implements a dynamic pricing strategy, increasing rates by 12% during periods of high demand (approximately 40% of the year) and reducing them by 8% during periods of low demand (60% of the year) to stimulate advance bookings.

High demand rate:

$$95\ x\ 1.12\% = 106.40\ USD$$

Low demand rate:

$$95\ x\ 0.92\% = 87.40\ USD$$

If the strategy allows the average occupancy to increase to 72%, the new calculation would be:

$$29{,}200\ x\ 0.72\% = 21{,}024\ sold\ rooms$$

Estimated annual income:

(21,024 x weighted average rate ≈ 97.5 USD)

Approximate income:

2 049,840 USD

Implementing dynamic pricing strategies would generate an estimated increase of USD 163,520 annually, demonstrating how strategic price and demand

management can significantly improve hotel profitability without increasing installed capacity.

Table19: Revenue management strategies applied to profitable distribution

Strategy	Operational description	Objective in revenue management	Expected impact
Dynamic pricing	Continuous adjustment of rates based on demand, booking lead time, seasonality, and destination events	Maximize revenue per available room (RevPAR)	Increase in average revenue per booking
Rate fences	Market segmentation through purchase restrictions (advance booking, cancellation, minimum stay)	Apply efficient price discrimination	Better targeting of segments with varying price sensitivity
Demand forecasting	Use of historical data and predictive analytics to estimate future demand levels	Optimize pricing and inventory decisions	Reduction of uncertainty in planning
Flexible booking policies	Adjustment of cancellation or modification conditions for reservations	Stimulating the conversion of reserves in contexts of uncertainty	Increased occupancy and customer confidence
Value-based promotions	Additional packages or benefits that increase perceived value without excessively reducing the price	Increase conversion while maintaining the average rate	Improved competitive positioning

Several studies have shown that combining these strategies improves the economic performance of hotel inventory by integrating demand analysis, market segmentation, and dynamic pricing management (Talón-Ballestero et al., 2023). Furthermore, the use of predictive models based on reservation data helps optimize decision-making in highly volatile tourism market contexts (Webb et al., 2022; Yeoman, 2024).

6.13. Conceptual model: Revenue – driven distribution strategy

The following conceptual model synthesizes the relationship between demand analysis, strategic tools, and financial results within hotel distribution management.

Figure 28. Architecture for Revenue Management in Tourism

6.14. Chapter summary

The analysis of tourism distribution channels reveals that the marketing of accommodation services has undergone a significant transformation driven by the digitalization of the tourism market and the emergence of new technological platforms. Throughout this chapter, we have examined how the evolution of tourism distribution has shifted from traditional models dominated by physical intermediaries to digital ecosystems where multiple actors, technologies, and commercial strategies interact.

In this context, hotels operate simultaneously through direct and indirect channels, which necessitates the strategic management of availability, rates, and room inventory across diverse marketing environments. The emergence of technological tools such as channel managers and distribution systems has enabled the automation of inventory management and the maintenance of rate consistency across multiple platforms, reducing the risk of overbooking and improving the operational efficiency of hotel establishments.

Likewise, the chapter has addressed the role of online travel agencies and other digital intermediaries in generating tourism demand, highlighting both their benefits in terms of visibility and access to global markets and the challenges associated with intermediation costs and other costs, mainly represented by

commissions and digital marketing expenses, which directly influence hotel profitability and require analysis within revenue management strategies.

Finally, various profitable distribution strategies have been analyzed, including the use of dynamic pricing, market segmentation through rate fences, booking data analysis, and the development of value-based promotions. These strategies allow for optimizing the economic performance of hotel inventory and maximizing key indicators such as RevPAR and Net RevPAR.

Overall, managing distribution channels is a fundamental component of modern revenue management. The ability to integrate technological tools, data analysis, and adaptive business strategies allows hotels to improve their competitiveness in an increasingly digitalized tourism market focused on revenue optimization.

CHAPTER VII

TECHNOLOGICAL SYSTEMS APPLIED TO REVENUE MANAGEMENT

7.1. Hotel management systems (PMS)

The Property Management System (PMS) forms the technological foundation of modern hotel operations. Its traditional function has been to manage reservations, room allocation, check-in, check-out, billing, and guest profiles; however, in contemporary hospitality, its role is broader, as it acts as a central hub for integrating operational and commercial data. Buhalis & Leung (2018) argue that many of the hotel industry´s specialized technology packages, identified precisely as PMS, have migrated to cloud environments and increasingly rely on APIs and integrations to support current and future hotel operations. This transition implies that the PMS should no longer be understood solely as an administrative tool, but rather as an infrastructure upon which other strategic systems are built.

From a Revenue Management perspective, the value of a PMS lies in its ability to transform the hotel´s daily operations into actionable data. Each recorded reservation provides crucial variables: arrival date, length of stay, market segment, applicable rate, booking channel, advance booking, modifications, cancellations, and historical customer behavior. Buhalis & Leung (2018) explain that successful hotel digitalization depends, among other factors, on process agility, technological integrability, a data-driven culture, and the quality of information governance. This means that the PMS must not only store data but also do so consistently and in connection with the rest of the hotel´s digital ecosystem, as the strategic utility of the information depends on this.

In operational terms, a PMS improves coordination between areas that previously functioned in a more fragmented way. Front desk, housekeeping, reservations, sales, and administration can all work on the same database, updated in real time. OPERA Cloud´s current technical documentation precisely illustrates this logic: centralized data, access from anywhere, open architecture, and integration via APIs. Consequently, a modern PMS allows room availability, cleanliness status, rates, and guest profiles to be synchronized, reducing errors and accelerating operational response. While this description comes from a specific solution, it reflects a structural trend in the industry: the consolidation of interoperable cloud platforms as the foundation of hotel management (Buhalis & Leung, 2018).

Another key function of the PMS is building a unified view of the guest. Peng et al. (2025), in reviewing digital transformation in hospitality, show that technology adoption is linked not only to internal efficiency but also to improvements in service quality, stakeholder relations, and customer behavior. Following this

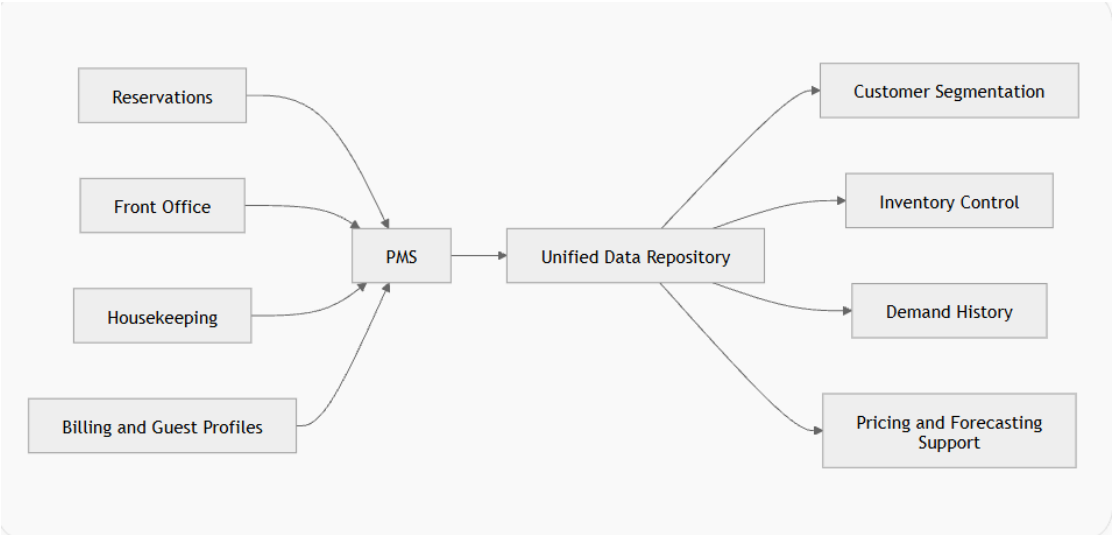
logic, the PMS allows for the consolidation of stay history, preferences, incidents, consumption patterns, and loyalty levels. This is especially relevant for Revenue Management because a good understanding of the guest allows for moving from generic to segmented decisions; for example, differentiating between a high-frequency corporate client, a vacationing family with greater price elasticity, or a repeat guest with a high probability of purchasing through direct channels.

On a more practical level, the PMS plays an indirect but crucial role in revenue optimization by ensuring the quality of source data. No pricing or forecasting model can function reliably if reservations are incorrectly coded, segments are mixed, or sales channels are not properly recorded. Lima Santos et al. (2024) specifically warn that technological fragmentation and a lack of data integrity remain significant barriers to hotel digitalization. Therefore, in the context of Revenue Management, the PMS should be evaluated not only for its transactional capacity but also for its ability to produce clean, consistent, and reusable data.

Example

In a 100-room city hotel, the PMS records that corporate guests booking between monday and thursday typically choose flexible rates and one- or two-night stays. At the same time, it identifies that weekend bookings come primarily from OTAs and are more price-sensitive; with this information, the sales team can better differentiate pricing strategies by customer type. In this case, the PMS doesn´t set the price itself, but it provides the essential input for the hotel to understand its demand, the channels through which it arrives, and the value generated by each segment.

Figure 29. PMS applied to the hospitality industry



In management terms, the PMS should be understood as the informational backbone of the hotel. Its importance for Revenue Management lies not only in automating processes, but also in capturing, organizing, and integrating operational and commercial data that will then be used to segment, forecast

demand, and support more informed pricing decisions. Without a robust, interoperable, and well-governed PMS, Revenue Management operates on unstable ground.

7.2. Revnue Management Systems (RMS)

If the PMS organizes the operation and generates the transactional data, the Revenue Management System (RMS) transforms that data into business recommendations. Its main purpose is to support decision-making regarding pricing, inventory, availability, constraints, and demand mix, based on forecasting and optimization models. Talon-Ballestero and González-Serrano (2023) emphasize that dynamic pricing is at the core of Revenue Management and that the development of big data has significantly enriched pricing techniques. This observation is key because it shows that the current RMS is not limited to changing rates, but rather forms part of a broader logic of predictive analytics and business control.

One of the essential components of RMS is demand forecasting. Saitta et al. (2024) demonstrated that analyzing booking curves using machine learning improves daily hotel demand forecasting, using real data from three hotels. More recently, Yeoman (2024) proposed an interpretable machine learning model based on principal components and demonstrated that it outperformed all benchmark methods across different forecast horizons. In both cases, the central idea is the same: the more accurate the forecast, the more robust the decisions regarding pricing, rate closures, minimum stay requirements, or group bookings.

Recent literature also shows that RMS is not only useful for large chains. Subying & Yoopetch (2023) found that even independent hotels can apply daily forecasting models with satisfactory results, combining traditional techniques and methods such as XGBoost depending on the time horizon analyzed. This finding is relevant because it challenges the notion that advanced Revenue Management is exclusive to large operators with very high budgets; in reality, the sophistication of RMS may vary, but its logic is applicable to properties of different sizes, provided there is a minimum base of reliable data.

In addition to forecasting, RMS incorporates optimization mechanisms that relate expected demand, elasticity, available inventory, and channel behavior. Webb et al. (2022) show that dynamic pricing in the hotel industry must simultaneously consider the pickup curve, price elasticity, and last-minute demand shocks. This approach is especially useful for understanding that RMS does not work with elastic demand, but rather with uncertain and changing demand; therefore, the most advanced systems adjust recommendations as the pace of bookings, cancellations, competition, seasonality, or the proximity of the stay date changes.

In practice, an RMS integrates multiple sources: PMS data, historical occupancy data, past pricing, restrictions, distribution channels, digital reputation, and, in some cases, market variables. Current industry solutions precisely describe this combination of forecasting, automation, and business control. Idea

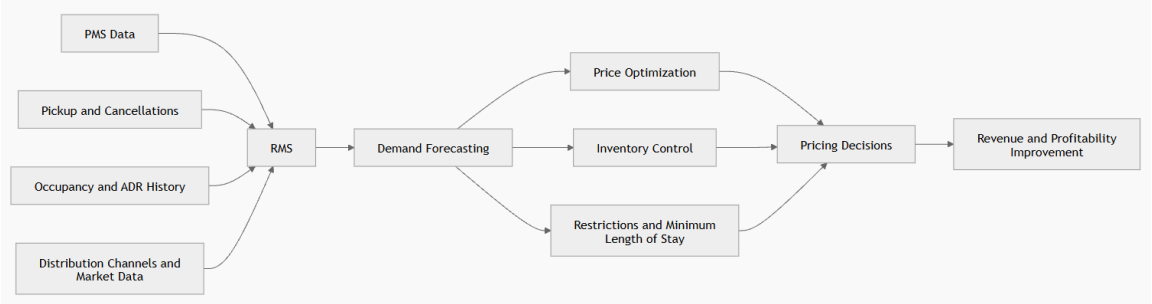
documentation indicates that an RMS combines AI-driven forecasting with pricing, availability, and overbooking controls to maximize revenue and simplify decision-making. Beyond the vendor´s marketing language, this description aligns with recent academic literature: the RMS operates as an analytical decision layer that reduces improvisation and increases the consistency of pricing strategy.

However, it´s important to avoid a purely automated view. A Rate Management System (RMS) improves decision quality, but it doesn´t eliminate the need for managerial judgment. Peng et al. (2025) remind us that digital transformation in hospitality remains a fragmented field, where technology adoption yields varying results depending on organizational capabilities, strategy, and implementation quality. Similarly, Kökény et al. (2025) emphasize that a data-driven culture and systemic integration remain essential for capturing the true value of technology. In other words, an RMS can recommend optimal rates, but if the hotel lacks reliable data, accurate segmentation, or alignment between sales, marketing, and operations, its potential is significantly reduced.

Example

A resort, 45 days before a holiday weekend, detects that bookings for standard rooms are growing faster than historical averages. The Revenue Management System (RMS) projects occupancy exceeding 90%, recommends gradually increasing the best available rate, closing discounts on lower-contributing channels, and implementing a two-night minimum stay. At the same time, it notes that family suites are still lagging and suggests maintaining a selective promotional policy for direct bookings. In this scenario, the RMS isn´t “predicting” the future; rather, it´s processing early demand signals and translating those signals into more profitable pricing and inventory decisions.

Figure 30: Functional logic of an RMS in the hotel industry



The RMS represents the advanced analytical layer of Revenue Management. Its function is not only to automate pricing, but also to anticipate demand, interpret market signals, and recommend decisions regarding rates, availability, and restrictions in scenarios of fixed capacity and uncertain demand. The better the integration between PMS and RMS, the greater the hotel's ability to transform operational data into profitable and traceable decisions.

7.3. Big Data in tourism

In the tourism context, big data should not be understood merely as a large accumulation of data, but rather as the ability to capture, integrate, and analyze heterogeneous, high-frequency signals from multiple sources to support management decisions. This field has expanded rapidly, with applications extending to destination management, reputation, and hotel performance. Lyu, Khan, Bibi, Chan, and Qi (2022) point out that big data has broadened the scope of tourism research and provides useful knowledge for hotel and revenue management; meanwhile, Li et al. (2021) document that big data analytics in hospitality and tourism has grown steadily, constituting a consolidated research domain, although it still requires greater methodological triangulation and more robust theoretical foundations.

From a Revenue Management perspective, the value of big data lies in its ability to shift from management based on aggregated historical data to management based on early signals of demand, customer behavior, digital reputation, cancellations, mobility, and market context. This transition is crucial in tourism because capacity is perishable, demand is uncertain, and the window of opportunity for deciding on rates, restrictions, or inventory is limited. Li et al. (2021), in their review of tourism forecasting using internet data, show that recent research has shifted toward using data from search engines, web traffic, social media, and multiple sources to improve demand prediction. Similarly, Talón-Ballestero and González-Serrano (2023) emphasize that dynamic pricing is at the heart of Revenue Management and that big data technologies have enriched the techniques available for its implementation.

Applied to tourism and hospitality, big data combines internal and external sources. Internal sources include reservation data, pickup curves, lead time, length of stay, ADR, occupancy, cancellations, no-shows, and guest transactional profiles; external sources include internet searches, web traffic, online reviews, user-generated photos, observable market prices, digital news, mobile device mobility data, and other contextual indicators. Li et al. (2021) organize internet data into categories such as search engines, web traffic, social media, and multiple sources; Qi et al. (2024) add that, in tourism and hotel forecasting, digital big data encompasses web queries, online statistics, visual data, and textual data; and Shing & Kang (2023) show that even passive mobile and GPS data allow for measuring temporal and spatial patterns of tourism with high correlation to local reference data.

The first major contribution of big data to Revenue Management is the detection and prediction of demand. Instead of waiting until the end of the month or relying solely on conventional historical data, hotels and destinations can incorporate digital signals that appear before or during a booking. Li et al. (2021) show that search engine data is the most widely used dataset in tourism forecasting, precisely because it captures consumer interest before the trip. Qi et al. (2024) further demonstrated that incorporating heterogeneous data from multiple

sources (economic variables, online searches, and news) substantially improves the prediction of tourist arrivals compared to traditional benchmarks. This is particularly relevant for revenue management because a better forecast not only improves expected occupancy but also the timing of pricing and restrictions decisions.

In the hotel industry, this predictive capability becomes even more valuable when working at a daily level and with operational granularity. Qi et al. (2024) showed that grouping historical booking curves using machine learning improves the daily forecast of hotel demand, especially in volatile environments. Similarly, Hopken et al. (2023) developed spatiotemporal approaches for daily hotel demand, demonstrating that incorporating spatial relationships and multiple time scales improves predictive accuracy. The implication for Revenue Management is direct: big data not only allows us to know how much to sell, but also when demand pressure increases, in which segments, and with what temporal pattern.

A second key contribution is the use of big data to enrich dynamic pricing. Talón-Ballestero et al. (2023) argue that big data technologies have facilitated information processing and enriched pricing techniques in a context where the sector is moving towards open pricing and more customer-centric approaches. In practical terms, this means that rates are no longer based solely on historical occupancy and begin to respond to much more nuanced signals: search behavior, implicit elasticity, reputational changes, booking rate, customer segmentation, and contextual volatility. Big data, therefore, shifts pricing from a reactive logic to a more probabilistic and contextualized one.

The third contribution is advanced customer and market segmentation. Traditional Revenue Management typically works with relatively stable segments (corporate, leisure, OTA groups, direct), but big data analytics allows the discovery of micro-segments and cross-cutting behaviors that are not always visible with market segmentations based on unsupervised learning. It shows how to start with raw data and obtain actionable clusters for profit-oriented decisions. At a more specific leve lof Revenue Management, recent studies propose the use of data mining and machine learning techniques to identify customer segments base don behavioral patterns, improving demand forecasting and revenue optimization. This approach enables a shift from traditional demographic segmentation to more dynamic and data-driven customer typologies with differentiated pricgin value (Dolnicar, 2023; Mkono & Tribe, 2024; Ivanov & Webster, 2023).

The fourth contribution, highly relevant and sometimes underestimated, is the prediction of cancellations and net demand. For Revenue Management, it is not enough to know how many rooms are booked; it is also important to know how many reservations are likely to be canceled and how far in advance. Cancellations are critical aspecto of revenue management, as they directly affect occupancy levels and forecasting accurancy, requiring hotels to implement strategies such as overbooking and flexible pricing policies to mitigate their

impact (Antonio et al., 2020; Zakhary et al., 2021; Talluri & van Ryzin, 2020). Their work uses PNR data and machine learning techniques to identify guests with a high probability of cancellation, which opens the door to more refined policies regarding deposits, pricing rules, controlled overbooking, and inventory prioritization. In strategic terms, big data improves not only the forecast of gross demand but also the calculation of realizable demand.

An additional key dimensión of big data in tourism lies in the análisis of user-generated content as a source of predictive signals. Data such as online reviews, ratings, images and other digital interactions go beyond reflecting reputation, serving instead as early indicators of demand patterns and customer preferences. Recent studies show that incorporating textual and visual content from online platforms into forecasting models can significantly enhance prediction accurancy, as these data capture real-time consumer perceptions and behavioral intentions (Xiang et al., 2021; Marine-Roig & Anton Clavé, 2020). Futhermore, the integration of unstructured data through techniques such as text mining and image análisis enables the transformation of qualitative information into quantifiable variables that support Revenue Management decisions, particularly in pricing and demand forecasting (Park, Lee & Nicolau, 2020; Li, Xu, Tang, Wang & Li, 2020), in this context, digital reputation evolves from being a purely marketing-related construct to becoming a measurable and actionable input for forecasting and pricing strategies.

At the destination level, big data also allows for a better understanding of the mobility and spatial pressure of demand, which is especially useful for destinations with multiple points of attraction or for chains with properties distributed within the same city or region. Ahas et al. (2020) and Salas-Olmedo et al. (2020) classify digital sources for measuring tourism and demonstrate that passive mobile data captures temporal patterns with a high degree of accuracy compared to local reference data. In parallel, Caldeira an Kastenholz (2020) and Shoval and Ahas (2020) explore the potential of high-frequency data from mobile devices and Wi-Fi networks to anticipate crowding in tourist destinations. From a revenue perspective, this type of data can support decisions regarding pricing by date, minimum stay restrictions, selective closures, and commercial redistribution among establishments or areas within the destination.

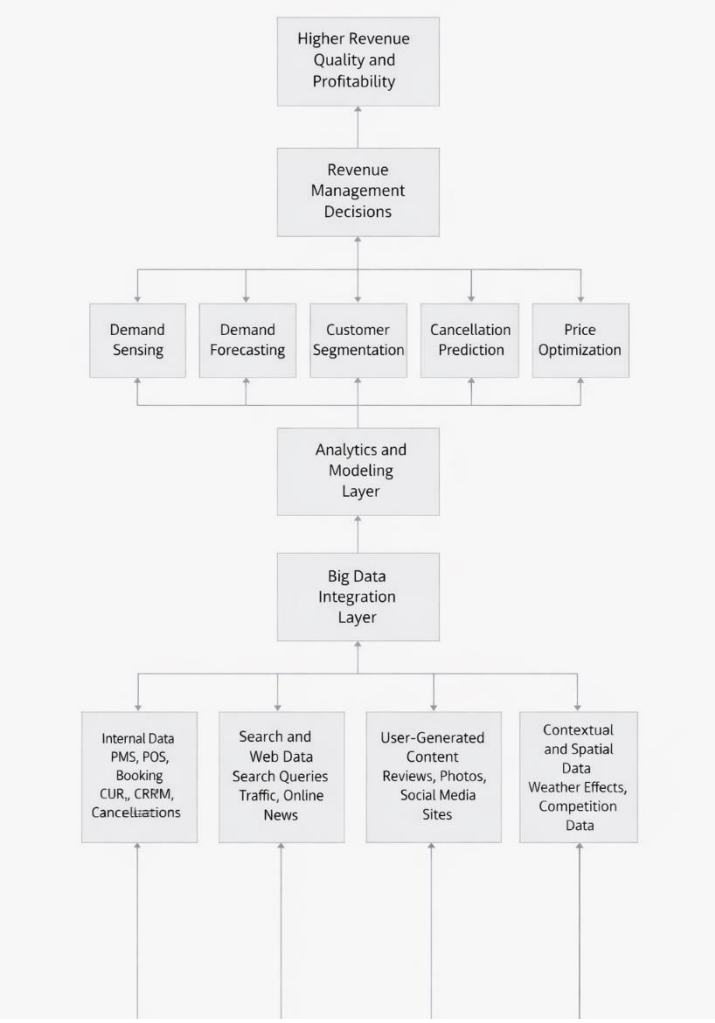
However, the contribution of big data is not automatic and its value depends on the level of system integration, analytical capabilities and organizational readiness. Recent research indicates that the adoption of big data analytics in hospitality is influenced by factors such as technological infrastructure, managerial support, competitive dynamics, and is associated with improvements in operational and financial performance, as well as customer-related outcomes (Mikalef et al., 2023; Akter et al., 2022). At the same time, scholars emphasize that challenges remain, particularly regarding methodological rigor, data integration and the need for stronger theoretical frameworks to guide the effective use of big data in tourism contexts (Grover et al., 2022; Fosso Wamba et al., 2023).

Consequently, big data in tourism should be understood as a business intelligence infrastructure that feeds Revenue Management at four levels: early demand detection, highly granular forecasting, intelligent segmentation, and pricing and inventory optimization. Its power lies not only in better prediction but also in reducing the gap between what happens in the market and what the hotel or destination is able to interpret and execute commercially. When internal PMS/RMS data is integrated with external signals, the organization can move toward more responsive, faster, and evidence-based revenue management.

Example

A coastal hotel destination operates three properties under the same management company: a restaurant, a business hotel and an aparthotel. The revenue team integrates internal booking data from the PMS and RMS with external signals from Google search trains, OTA review text, user-generated photos, local event calendars, weather forecasts, competitive rates and mobile-based destination traffic indicators. Two weeks before a holiday weekend, search intensity for the destination rises, review sentiment about beachfront Access improves and mobile activity suggests increasing visitor concentration in the resort area. At the same time, booking curves show faster pickup for family rooms and longer booking Windows for premium categories. Based on these combined signals, the revenue team increases BAR for the resort, applies a two-night minimum stay, protects premium inventory for high-value segments and keeps the aparthotel more price-flexible to capture late demand. In parallel, the business hote maintains softer rates because the external signals do not indicate equivalent compression for weekday corporate demand. In this case, big data does not replace managerial judgment; Instead, it improves forecast timing, sharpens segmentation and supports differentiated pricing decisions across properties.

Figure 31: Big data architecture for Revenue Management in tourism



7.4. Artificial intelligence applied to pricing

In the field of Revenue Management, artificial intelligence applied to pricing can be understood as the use of algorithmic models capable of learning from historical data and current signals to recommend, simulate, or execute prices more accurately than manual or purely rule-based schemes. From a broader perspective, Kopalle, Kumar and Subramaniam (2020) define dynamic pricing as price changes driven by variations in four major drivers of demand: people, product configurations, periods, and locations. In the hospitality industry, Talón-Ballestero et al. (2023) point out that this logic has evolved toward open pricing approaches and greater customer centricity, creating the ideal space for AI to intervene not only by adjusting rates but also by identifying behavioral patterns, price sensitivity, and market conditions that would be difficult to process manually.

The relevance of AI to hotel pricing is explained by the very nature of the tourism product: fixed capacity, perishable inventory, uncertain demand, and high heterogeneity of customers, channels, and booking windows. In this environment, AI does not replace the classic principle of Revenue Management, but rather amplifies it. Huang and Rust (2024), in their analysis of AI research trends within

tourism and hospitality, show that the field has grown rapidly and that topics such as deep learning and generative tools have recently gained prominence. In terms of pricing, this expansion means that hotels now have a richer methodological foundation for transforming demand signals into pricing decisions instead of relying solely on seasonal calendars, simple comparisons with competitors, or manual occupancy rules.

The first major contribution of artificla intelligence (AI) to pricing lies in its ability to enhace demand forecasting as price optimization fundamentally depends on accurate demand estimation. Recent research show that machine learingn models significantly improve forecasting performance by capturing nonlinear patterns, booking dynamics and temporal variability in hotel demand (Zakhary et al., 2021; Gunter & Onder, 2022; Hopken et al., 2023). From a pricing perspective, this implies that AI-driven systmes do not generate prices arbitrarily but instead learn from booking trends, inventory pressure and time-specific demand fluctuations, translating these insights into mjore refined decisions regarding rates, restrictions and variability; in this sense, the effectiveness of pricing strategies is directly linked to the quality of demanda learing processes.

The second contribution of AI is the imporved estimation of demand elasticity and responsiveness to price changes. Studies in Revenue Management highlight that pricing decisions must simultaneously account for booking pace, price sensibity and demand uncertainty, particularly unde volatile conditions (Abrate et al., 2023; Ivanov, 2024). AI-based approaches allow for the modeling of complex and nonlinear relationships between price, demand and remaining inventory, moving beyond traditional rule-based adjustments toward adaptive and data-driven pricing mechanisms; as a result, pricing evolves from simple incremental changes to a more sophisticated system that constinuously learns from market responses.

A third key contribution of AI is its potential to support more granular segmentation and, in some cases, personalized pricing strategies. Recent literatura identifies personalization as a growing tren in hospitality, while also emphasizing that customer responses to personalized offers vary significantly depending on perceived fairness and value (Noone et al., 2023; Filier et al., 2023). From a Revenue Management perspective, this suggests that AI can facilitate the design of prices and offers tailored to diferente customer segments, although such strategies must be carefully aligned with customer expectations and ethical considerations; consequently, technological capabilities must be complemented by a strategic understanding of customer behavior and market context.

AI also improves pricing by shifting the focus from gross demand to expected net demand. A hotel may have a very strong apparent pickup; however, it could end up with lower occupancy than anticipated if it doesn't properly model cancellations. Recent research on assembler and explainable classification for hotel cancellations indicates that cancellation prediction serves capacity management and can be designed with an explicit focus on profitability. From a

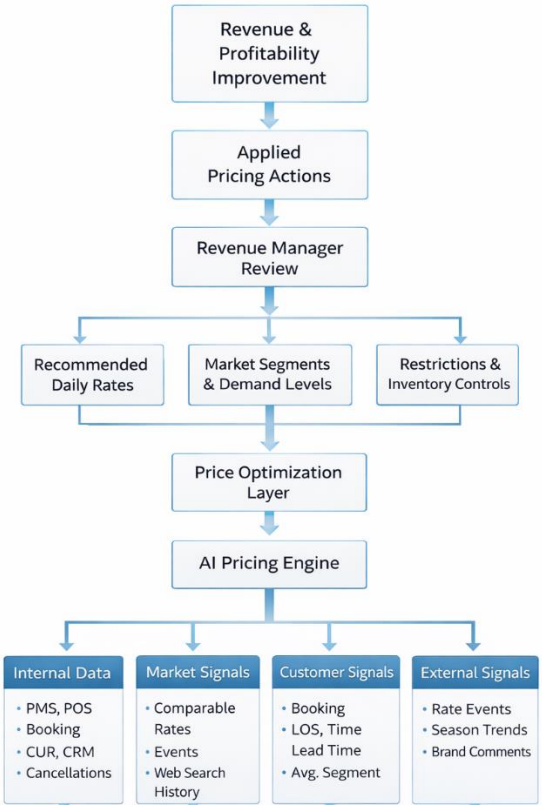
pricing perspective, this means that AI helps avoid two classic mistakes: selling too cheaply for fear of occupancy that ultimately materializes, or selling too expensively, relying on reservations that are later canceled. With a better estimate of net demand, the recommended price becomes more consistent with the actual available inventory.

Artificial intelligence applied to pricing constitutes the analytical and adaptive layer of contemporary Revenue Management. Its main contribution lies not in automating rate changes, but in learning from demand behavior, estimating price response, anticipating cancellations, supporting more refined segmentation, and transforming all that information into more profitable and defensible pricing decisions. Its true value emerges when integrated with the PMS, RMS, and the hotel´s commercial governance, enabling the organization not only to react to the market but also to interpret its signals more quickly and accurately.

Example

A city hotel with 180 rooms uses an AI-enabled main engine connecting to its PMS, RMS, channel manager and competitor-rate feed. The system detects that bookings for the next three weekends are accelerating faster than the historical pattern, while cancellation risk remains below average and online review sentiment has recently improved for premium rooms. Instead of applying a flat percentage increase across all categories, the model recommends a differentiated pricing strategy which is stronger BAR increases for superior rooms, moderate increases for standard rooms, stricter minimum length-of-stay control are high-demand rates and selective doscount closure on OTA channels with lower contribution. At the same time, the system keeps weekday corporate rates more stable because booking curves for business travelers remain within the normal range. The revenue manager reviews the recommendation, adjusts one date because of a local event not fully reflected in the data and approves the final strategy. In this scenario, AI does nor replace managerial judgment, it improves forecasting accuracy, price differentiation and timing of intervention.

Figure 32: AI – enabled pricing workflow in hotel revenue management



7.5. Automation of tariff management

The automation of pricing management is one of the most significant transformations in contemporary revenue management. It´s no longer simply about changing prices faster, but about shifting a substantial part of the decision-making process from intuition and fixed rules to systems capable of integrating data, modeling demand, estimating elasticities, and executing pricing adjustments across multiple channels in near real time. Recent research also shows that the study of artificial intelligence in hospitality and tourism has expanded significantly, while the pricing literature confirms that dynamic pricing remains the core of hotel revenue management (Talón-Ballestero et al., 2023).

In analytical terms, pricing automation is understood as the evolution from management based on descriptive reports to a tiered analytics architecture. Mikalef et al. (2023) distinguish five types of analytics in hospitality and tourism: descriptive, exploratory, predictive, prescriptive, and cognitive, and emphasize that cognitive analytics is the most advanced, as it is the only one that explicitly relies on artificial intelligence and machine learning.

From an operational perspective, an automated pricing system functions as a data-driven value chain, where the most robust models combine internal and external sources for better results. Zakhary et al. (2021) propose a market forecasting framework for hotels that continuously learns from heterogeneous sources; meanwhile, Talón-Ballestero et al. (2023) highlight that big data has

enriched dynamic pricing techniques and pushed the sector toward more customer-centric approaches, such as open pricing. Consequently, pricing automation should not be viewed as an isolated module, but rather as the result of technological integration between commercial, operational, and analytical systems.

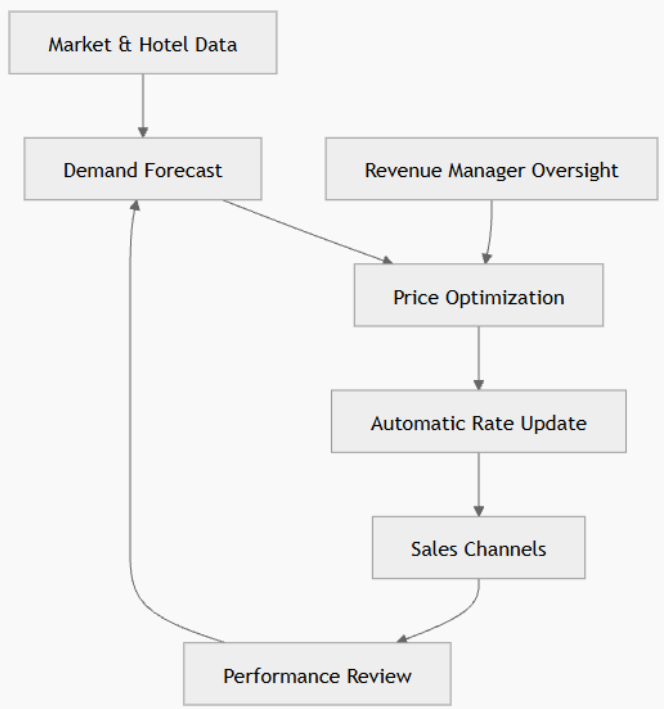
The heart of this automation is forecasting. Once the forecast is generated, automation enters its prescriptive phase, where the system not only estimates what will happen but also recommends the best possible pricing action. This stage involves business rules, price limits, length of stay restrictions, available inventory, occupancy targets, parity thresholds, and, in some cases, personalization parameters. Talón-Ballestero et al. (2023) show that the recent evolution of hotel pricing is moving from fixed, homogeneous rates toward more open and refined schemes in which technology allows for price modulation by channel, context, and willingness to pay. Thus, the automation of rate management becomes a logic of continuous optimization that integrates forecasts, elasticity, and commercial execution.

However, it would be a mistake to interpret this evolution as a complete replacement of human judgment. In highly automated environments, decisión-making tends to follow a hybrid approach in which analytical systems provide speed and data-driven insights, while managers complement these outputs with contextual knowledge, experiencia and qualitative information (Jarrahi, 2018; Raisch & Krakowski, 2021; Dellermann et al., 2021; Mikalef et al., 2023).

For this reason, pricing automation must also be analyzed as a technology governance issue. Tornatzky and Fleischer (1990) argue that the adoption of artificial intelligence and robotics in hotels depends on technological, organizational, and environmental factors, meaning that simply purchasing an advanced RMS system is insufficient if the company lacks an analytical culture, data quality, or mature interdepartmental processes. Added to this limitation are the challenges of acceptance and trust.

From this perspective, automated rate management is defined as a socio-technical decision-making system. It is technical because it processes large volumes of data and executes pricing at speeds exceeding human capacity; but it is also social because it depends on strategic criteria, ethical boundaries, organizational architecture, and trust in the system. A hotel´s maturity in this area is not measured solely by the number of daily rate changes, but by its ability to transform disparate data into coherent, profitable, and commercially defensible decisions.

Figure 33: Tariff management automation process in Revenue Management



Example

Suppose a 120-room city hotel has a confirmed occupancy rate of 62% for a Thursday in three weeks. The system detects three simultaneous signals: first, a booking rate 14% higher than the same period last year; second, a medical conference that will increase demand in the area; and third, price increases at competing hotels. Based on this data, the RMS recalculates unrestricted demand, estimates lower price elasticity for that day, and proposes raising the BAR rate from €135 to €1659, closing the lowest rate, and prioritizing direct sales with a non-refundable option of €152.

Two days later, the system observes a slowdown in pickup and an increase in cancellations in a corporate subsegment. Therefore, it runs a new forecast and corrects the recommendation, reducing the BAR to €149, reopening a closed mobile rate plan, and maintaining restricted inventory on OTAs to avoid eroding margins. The revenue manager validates the modification because, in addition to the data, they have relevant qualitative information indicating that one of the anticipated groups has not yet signed a contract and there is local uncertainty regarding final attendance at the event.

7.6. Chapter summary

This chapter examines the transformation of hotel Revenue Management through the incorporation of technological systems that have enabled its evolution from operational and descriptive frameworks to analytical, predictive, and prescriptive models. This evolution is based on the integration of different technological layers that, in an articulated manner, support business decision-making.

First, the Property Management System (PMS) is positioned as the structural foundation of hotel information. Its function transcends operational management to become a central data repository that captures demand behavior, booking patterns, and customer characteristics. The quality, consistency, and integration of this data determine the reliability of subsequent analytical processes, making the PMS a critical element for revenue management.

Building upon this foundation, the Revenue Management System (RMS) introduces an analytical layer that allows data to be transformed into decisions. Through forecasting and optimization techniques, the system supports the definition of prices, restrictions, and availability, considering the uncertainty of demand and the perishable nature of hotel inventory. Its application is not limited to large chains, but is adaptable to different sizes of operations, provided a reliable database exists.

The development of big data expands the scope of Revenue Management by incorporating external sources of information that allow for the detection of early market signals. Data from search engines, social networks, digital reputation, mobility, and competitive pricing enriches traditional analysis and facilitates more proactive management. This integration improves forecast accuracy, deepens segmentation, and allows for adjusting commercial strategy based on dynamic changes in demand.

Along the same lines, artificial intelligence applied to pricing provides the ability to model complex relationships between demand variables, customer behavior, and market conditions. Through machine learning algorithms, it is possible to estimate elasticities, anticipate cancellations, and generate more precise pricing recommendations. AI does not replace the principles of Revenue Management, but rather amplifies its reach by improving the quality of decisions in highly uncertain environments.

The automation of pricing management represents the operationalization of these technological advances. By integrating data, predictive models, and business rules, automated systems enable the rapid and consistent execution of pricing decisions across multiple channels. However, their effectiveness depends on organizational factors such as data culture, information quality, and strategic oversight capabilities, maintaining a hybrid approach that combines technology with human judgment.

CHAPTER VIII

REVENUE MANAGEMENT IN DIFFERENT CONTEXTS

8.1. Revenue Management in rural and community-based tourism

The application of Revenue Management in rural and community-based tourism requires a significant conceptual adaptation compared to its traditional use in urban hotels, airlines, or large resort complexes. In these settings, the tourism product is not limited to a bed or a nightly rate; it incorporates landscape, authenticity, local hospitality, cultural heritage, gastronomy, mobility, access times, and direct links with the host community. The review by Rosalina et al. (2021) indicates that rural tourism is recurrently defined by four characteristics: location, sustainability, community characteristics, and experience. Consequently, Revenue Management in this field cannot be understood solely as a price-maximization technique, but rather as a system for managing economic, social, and territorial value (Rosalina et al., 2021; López-Guzmán et al., 2023)

From this perspective, Revenue Management in rural and community-based tourism should not be limited to maximizing revenue per available unit, but rather to placing the right product in front of the right visitor, at the most convenient time, channel, and price, always within the social and ecological limits of the destination (Kunst, 2024; Pásková et al., 2021).

In these environments, decisions regarding pricing, capacity, and marketing must also incorporate the local distribution of benefits, community participation and representation in tourism governance, environmental protection, and the marked seasonality that affects the sustainability of rural households and operations (Dangi & Petrick, 2021; Giampiccoli et al., 2020; Su et al., 2022); therefore, in this segment revenue management should be understood as an optimization tool subordinate to criteria of sustainability, inclusion and territorial equity, and not as an extractive practice aimed solely at capturing the maximum willingness to pay (Giampiccoli et al., 2020; Pásková et al., 2021).

The first component of this adaptation is demand forecasting. In many rural and community-based initiatives, demand does not behave like that of a corporate city hotel; it tends to be concentrated on weekends, long weekends, school holidays, and weather-dependent or seasonal periods, while uncertainty remains high. Under these conditions, the forecast should not be limited to the expected number of visitors, but should also incorporate the purpose of travel, group composition, expected length of stay, propensity for additional spending, and booking or cancellation patterns. Recent research shows that tourism demand forecasting gains accuracy when it incorporates seasonality, calendar effects, and weather-related variables, all of which are particularly relevant in rural contexts (Huang & Zhang, 2024; Su et al., 2023).

The second component is demand segmentation. In rural and community-based tourism, segmentation does not simply mean separating clients by purchasing power; it involves recognizing distinct motivations and designing differentiated value propositions. The same destination can attract local day-trippers, urban families seeking relaxation, birdwatchers, students, cultural travelers, and wellness-oriented groups. Recent studies on rural tourism show that visitors respond to different motivational clusters and value combinations such as recreation, authenticity, food, architecture, heritage, comfort, and immersion in local life (Fu et al., 2025; Vujko et al., 2025). In addition, evidence from rural accommodation pricing indicates that location-specific and accommodation-specific attributes significantly influence prices, which means that rural tourism rates should not be set only on the basis of cost or intuitive comparison with competitors, but on the specific bundle of attributes each segment is willing to value and pay for (Gordan et al., 2024).

The third component is pricing management itself. In rural and community-based tourism, pricing must remain consistent with the product's identity and the visitor's perception of fairness. Excessive price increases during peak periods can generate short-term revenue, but they can also damage trust and weaken the relational logic that sustains community-based tourism. Recent evidence on tourism pricing shows that tourists' fairness perceptions are shaped not only by the final price, but also by how price changes are interpreted and attributed (Ying et al., 2024). Therefore, the most appropriate pricing strategy in this segment is not simply “dynamic pricing”, but rather a system of price tiers, packages, and smart restrictions, supported by the differentiated value that rural tourists assign to amenities, setting, and experience attributes (Gordan et al., 2024). For example, a base rate could be applied during the week, a peak rate on high-demand weekends, differentiated pricing for double, family, or group occupancy, and value-added packages that include local cuisine, guided activities, craft workshops, or local transportation.

A fourth crucial component is capacity management. In rural and community-based tourism, managing capacity does not mean only knowing how many beds are available, but rather how many visitors the area can absorb without negatively affecting the experience, the environment, or the daily life of the community. This aspect is central because the conventional logic of selling as much as possible can conflict with the destination's sustainability. Baños-Pino et al. (2024) show that in rural tourism there is a non-linear relationship between overnight stays and crowding, and that beyond certain thresholds negative externalities emerge from overcrowding. Along similar lines, Skiniti et al. (2024) propose a holistic approach to carrying capacity that integrates carrying-capacity indicators, environmental quality measurements, visitor perceptions, and the viewpoints of stakeholders and local communities.

In this context, a critical difference emerges between conventional Revenue Management and its application in community-based tourism, where success should not be measured only by occupancy or average revenue, but by the quality

of that revenue. A rural destination can be full and yet still be destroying value if the pressure on trails, water sources, community services, or social relationships exceeds acceptable limits. Therefore, indicators such as revenue per visitor, margin per experience, community spending, average length of stay, resident satisfaction, and level of pressure on resources should complement traditional metrics like ADR, RevPAR, or occupancy, especially in settings where sustainability and stakeholder participation are part of the management logic (Baños-Pino et al., 2024; Filice et al., 2026; Skiniti et al., 2024).

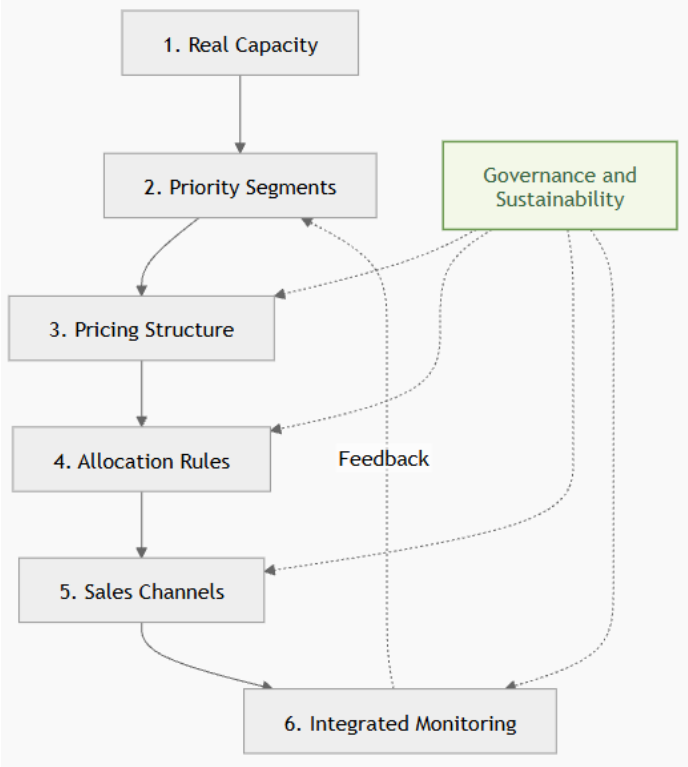
The fifth component is the governance of business decisions. In many rural and community-based tourism experiences, decisions about prices, quotas, channels, and revenue sharing are not made by an individual revenue manager, but rather by an association, cooperative, local board, or network of service providers. This means that Revenue Management must be integrated with participatory mechanisms and transparent agreements. Reina-Usuga et al. (2024) emphasize that collaborative governance is key to coordinating rural tourism stakeholders and that rural tourism is evolving from hierarchical toward more horizontal governance arrangements. Likewise, Filice et al. (2026) stress that sustainable tourism development requires more inclusive approaches, stronger information sharing, and more active local stakeholder participation.

The sixth component is digitization and channel management. Rural tourism has traditionally lagged behind in terms of systems, digital visibility, and data capture, but recent evidence indicates that this gap is beginning to close. Zhang et al. (2025) found that digitalization has a positive effect on rural tourism income and that this effect varies by regional context, suggesting that digital tools improve economic performance when adapted to local conditions. In parallel, Maquera et al. (2022) propose an intelligent digital platform for community-based rural tourism that integrates stakeholders, services, and experiences within a single architecture. For Revenue Management, this is crucial because without data on bookings, demand sources, channels, conversion rates, cancellations, and customer behavior, it is not possible to forecast, segment, or optimize rates effectively. Therefore, even in small projects, it is advisable to build a minimum information infrastructure that includes a demand calendar, booking history, segment registration, channel tracking, and capacity control for activities and accommodations.

Based on the above, a six-stage model for applying Revenue Management to rural and community-based tourism can be proposed. First, inventory the system’s current capacity (beds, experiences, guides, transportation, food, and environmental limits). Second, identify priority segments and their demand schedule. Third, design a simple pricing structure with price bands, minimum rates, and value packages. Fourth, defines rules for allocating quotas and distributing income among service providers and the community fund. Fifth, select channels based on criteria such as margin, data control, and commercial reach. Sixth, monitor economic, social, and environmental indicators simultaneously. This model is consistent with the recent evidence on carrying

capacity, collaborative governance, stakeholder participation, segmentation, and digitalization, and it allows Revenue Management theory to be translated into a context where the tourism product is inseparable from the territory and its inhabitants (Baños-Pino et al., 2024; Fu et al., 2025; Maquera et al., 2022; Reina-Usuga et al., 2024; Skiniti et al., 2024; Zhang et al., 2025).

Figure 34: revenue management applied to CBT



Example

Suppose a community tourism network made up of 8 host families, with a total offering of 12 rooms and a maximum physical capacity of 32 guests per night; however, after evaluating the kitchen capacity, the use of the ecological trail, the availability of water, the logistics of guiding and the desired experience for the visitor, the community establishes that its effective sustainable capacity is 24 guests per night.

1. **Determination of effective capacity**

The first key formula consists of the difference between physical capacity and effective capacity:

$$CE = \min(CF, CL)$$

Where

CE = sustainable effective capacity

maximum physical capacity

CL = operational and environmental limit capacity

In this case:

$$CE = \min(32.24) = 24$$

Therefore, although physically 32 people could be accommodated, the Revenue Management system must work with a commercial maximum of 24 guests.

2. Demand Segmentation

The community identifies three main segments for a holiday weekend:

Segment A. Urban families

- Expected demand: 12 guests
- Rate per person per night: USD 48
- Average additional consumption on food and activities: USD 22
- Total revenue per guest: USD 70

Segment B. University group

- Expected demand: 10 guests
- Rate per person per night: USD 35
- Average additional consumption: USD 10
- Total revenue per guest: USD 45

Segment C. International cultural travelers

- Expected demand: 8 guests
- Rate per person per night: USD 60
- Average additional consumption: USD 30
- Total revenue per guest: USD 90

The formula for total revenue per guest:

$$ITH = TA + IC$$

Where

ITH = Total revenue per guest

TA = accommodation fee

IC = supplementary income

For segment A:

$$ITH_A = 48 + 22 = 70$$

For segment B:

$$ITH_B = 35 + 10 = 45$$

For segment C:

$$ITH_C = 60 + 30 = 90$$

3. Demand for expected income

Instead of selling on a first-come, first-served basis, the unit prioritizes the segment with the highest revenue per guest.

Profitability ranking

- Segment C = USD 90 per guest
- Segment A = USD 70 per guest
- Segment B = USD 45 per guest

Therefore, the optimal allocation of capacity would be:

- Accept the 8 guests from segment C
- Accept the 12 guests from segment A
- The following are still available:

$$24 - (8 + 12) = 4$$

Therefore, only 4 guests are accepted from segment B.

The demand met is as follows:

- Segment C: 8
- Segment A: 12
- Segment B: 4

4. Calculating total revenue with Revenue Management

The general formula for total revenue is:

$$IT = \sum (Q_i \; x \; ITH_i)$$

Where

- Q_i = number of guests accepted from segment i.
- ITH_i = total revenue per guest of segment i.

So:

$$IT = (8\ x\ 90) + (12\ x\ 70) + (4\ x\ 45)$$

$$IT = 720 + 840 + 180$$

$$IT = 1{,}740$$

5. Comparison with an allocation without Revenue Management

Now suppose that the community does not apply segmentation criteria and accepts reservations on a first-come, first-served basis.

- 10 guests from segment B
- 10 guests from segment A
- 4 guests from segment C

Total 24 guests

The income would be:

$$IT_{noRM} = (10\ x\ 45) + (10\ x\ 70) + (4\ x\ 90)$$

$$IT_{noRM} = 450 + 700 + 360$$

$$IT_{noRM} = 1{,}510$$

The difference between applying Revenue Management and not applying it is:

$$1{,}740 - 1{,}510 = 230$$

Therefore, the Revenue Management application generates an additional USD 230 in a single night.

The percentage increase would be:

$$\%\ increase = \frac{230}{1{,}510}\ x\ 100$$

$$\%\ increase = 15.23\%$$

This means that, in this example, optimizing the demand mix increases revenue by 15.23%.

6. Calculation of sustainable occupancy

The occupancy rate should be calculated based on effective capacity, not physical capacity:

$$TO = \frac{guests\ staying}{effective\ capacity} x\ 100$$

$$TO = \frac{24}{24} x\ 100 = 100\%$$

If the physical capacity of 32 places had been used incorrectly:

$$TO_{physic} = \frac{24}{32} x\ 100 = 75\%$$

This point is very relevant since, from a community perspective, the destination is commercially full even though it has not reached its maximum physical capacity, because its relevant limit is the sustainability of the experience.

Average revenue per guest

The average revenue per guest is calculated as follows:

$$IPH = \frac{IT}{Number\ of\ guests}$$

$$IPH = \frac{1{,}740}{24} = 72.50$$

The average revenue per guest is USD 72.50

If Revenue Management had been:

$$IPH_{noRM} = \frac{1{,}510}{24} = 62.92$$

The difference is:

$$72{,}5 - 62.92 = 9.58$$

Each visitor generates an additional USD 9.58 when the segment mix is optimized.

7. Distribution to the community fund

Suppose the community decides to allocate 15% of total income to a common fund for trail maintenance, signage, guide training, and digital promotion.

The formula is:

$$FC = IT\ x\ 0.15$$

$$FC = 1{,}740\ x\ 0.15 = 261$$

The community fund receives USD 261

The net income distributable among families would be:

$$IND = IT - FC$$

$$IND = 1{,}740 - 261 = 1{,}479$$

Therefore

- Total income: USD 1,740
- Community Fund: USD 261
- Net income to be distributed: USD 1,479

If they are divided equally among the 8 families:

$$IF = \frac{1{,}479}{8} = 184.88$$

Each family would receive USD 184.88, in addition to the indirect benefit generated by the common fund.

8. RevPAR adapted to community-based tourism

If the network has 12 rooms, an indicator similar to RevPAR can be calculated.

$$RevPAR = \frac{Total\ accommodation\ revenue}{available\ rooms}$$

First, accommodation income is separated from supplementary income.

Accommodation check-in:

- Segment C: 8 x 60 = 480
- Segment A: 12 x 48 = 576
- Segment B: 4 x 35 = 140

$$IA = 480 + 576 + 140 = 1{,}196$$

So,

$$RevPAR = \frac{1{,}196}{12} = 99.67$$

The RevPAR is USD 99.67 per available room

A more relevant, expanded indicator for community tourism can also be calculated, including supplementary income.

$$RevPAT = \frac{total\ income}{Effective\ capacity}$$

$$RevPAT = \frac{1{,}740}{24} = 72.50$$

This indicator can be interpreted as revenue per tourist served.

This exercise demonstrates that, in community-based and rural tourism, revenue management is not about filling capacity at the lowest cost or indiscriminately raising prices, but rather about selecting a mix of demand that maximizes income within the territory´s sustainability limits. The community doesn´t sell 24 beds to just any visitor, but prioritizes those segments that generate the greatest overall economic value, combining accommodation, activities, and local consumption.

In the example, the decision to first accept international cultural travelers and urban families allows the total income to be raised from USD 1,510 to USD 1,740; in addition, the model integrates a redistributive logic, since a part of the income becomes a community fund, demonstrating that Revenue Management can be compatible with the principles of community and rural tourism: profitability, local equity and sustainability.

8.2. Application of Revenue Management in airlines and tourist transport

In airlines and tourism, Revenue Management is applied to a clearly perishable inventory: once a seat on a flight, train, or scheduled service departs unsold, the revenue opportunity disappears. For this reason, transport remains one of the classic fields of Revenue Management, combining pricing decisions, booking control, and capacity allocation by segment and purchase moment. Recent literature confirms that, in airlines, the traditional pillars still revolve around controlling the booking process, determining the right fare at the right time, and allocating capacity across fare products; However, newer models increasingly integrate pricing and allocation decisions instead of treating them as separate problems (Ahn et al., 2020; Buyruk & Güner, 2022).

The major recent transformation in this sector is the shift from a Revenue Management model centered on fare classes to one based on more personalized

and dynamic offers. Touraine (2021) explains that industry standards such as NDC are part of a broader transition toward dynamic offering, giving airlines more direct control over offer creation and pricing. In the same direction, Wang et al. (2021) show that dynamic offer generation is no longer limited to airline seats, but also incorporates ancillary services and bundled offers, while Mumbower (2025) identifies customer segmentation, offer relevance, willingness-to-pay estimation, competitive positioning, and performance monitoring as key themes in this evolution. In other words, contemporary tourism revenue management no longer optimizes only tickets, but increasingly optimizes integrated flight-and-ancillary offers.

From an operational standpoint, this evolution demands a substantial improvement in demand forecasting and control. In the airline industry, recent literature continues to regard reservation forecasting, overbooking, origin-destination control, availability management, and differentiation by customer or trip value as the core of the system; the novelty lies in the fact that these decisions are now informed by larger volumes of data, personalization logic, and continuous-pricing possibilities (Buyruk & Güner, 2022; Long & Belobaba, 2024). Ahn et al. (2020) add that price and demand interact, so changing a fare affects not only expected unit revenue but also the redistribution of demand among related products. On leisure and tourist routes, where highly price-sensitive passengers coexist with others who purchase because of urgency, specific dates, or convenience, this interaction is crucial for protecting higher-value demand without unnecessarily sacrificing load factor.

The application of Revenue Management is not limited to air transportation. In passenger rail, recent studies show a clear convergence with airline logic through dynamic pricing, capacity allocation, and the use of historical data to improve profitability. Kamandanipour et al. (2024) propose an intelligent decision-support system for rail networks that integrates dynamic pricing, fleet management, and capacity allocation using historical sales data, while Cao et al. (2024) show that dynamic pricing combined with passenger-flow assignment can improve both competitiveness and transport-resource allocation in high-speed rail. Likewise, Manchiraju et al. (2024) argue that railway revenue management increasingly requires the joint optimization of pricing and capacity, including static or dynamic pricing and fixed or flexible capacity decisions. This suggests that Revenue Management in tourism transport should be understood as a cross-cutting architecture applicable to airlines, trains, ferries, or scheduled ground services whenever there is fixed or quasi-fixed capacity per departure, variable demand, and the possibility of segmenting the market.

Example

Consider a flight with 120 seats on a holiday route. The airline identifies three segments:

Segment A: early leisure

- Expected demand: 70 passengers
- Base fare: USD 90
- Average ancillary income: USD 10
- Total revenue per passenger:

$$ITP_A = 90 + 10 = 100$$

Segment B: standard tourist

- Expected demand: 35 passengers
- Base fare: USD 140
- Average ancillary income: USD 15
- Total revenue per passenger:

$$ITP_B = 140 + 15 = 155$$

Segment C: last minute / greater willingness to pay

- Expected demand: 25 passengers
- Base fare: USD 220
- Average ancillary income: USD 25
- Total revenue per passenger:

$$ITP_C = 220 + 25 = 245$$

The total projected demand is:

$$DT = 70 + 35 + 25 = 130$$

Since the capacity is 120 seats, there is an excess demand of:

$$ED = 130 - 120 = 10$$

If the airline applies Revenue Management, it protects capacity for the highest value segment and sells:

- 60 seats to the A segment
- 35 seats to segment B
- 25 seats to the C segment

Therefore, the total revenue would be:

$$IT_{RM} = (60\ x\ 100) + (35\ x\ 155) + (25\ x\ 245)$$

$$IT_{RM} = 6{,}000 + 5{,}425 + 6{,}125 = 17{,}550$$

If I didn´t implement Revenue Management and sold on a first-come, first-served basis, I could end up with this mix:

- 70 seats to segment A
- 35 seats to segment B
- 15 seats to the C segment

The income would be:

$$IT_{RM} = (70\ x\ 100) + (35\ x\ 155) + (15\ x\ 245)$$

$$IT_{RM} = 7{,}000 + 5{,}425 + 3{,}675 = 16{,}100$$

The profit attributable to Revenue Management would be:

$$17{,}550 - 16{,}100 = 1{,}450$$

The percentage increase in income:

$$\%\ Increase = \frac{1{,}450}{16{,}100} x\ 100 = 9.01\%$$

Furthermore, the average revenue per seat sold increases from:

$$\frac{16{,}100}{120} = 134.17$$

TO

$$\frac{17{,}550}{120} = 146.25$$

This example summarizes the logic of Revenue Management in airlines and tourist transport, where it is not enough to fill capacity; the decisive factor is to protect space for higher total value demand, including ancillary revenues.

8.3. Revenue Management in tourist destinations

At the destination level, Revenue Management shifts its focus from the individual firm to the territorial coordination of value. This means managing not only prices, but also visitor flows, available capacity, the spatial distribution of demand, seasonality, sustainability, and governance. Recent destination-management literature shows that both research and practice are increasingly moving toward sustainable development models led by DMOs/DMMOs, with an integrated perspective that combines competitiveness, governance, sustainability, technology, and data as central drivers of decision making (d'Angella et al., 2025; Laesser et al., 2025). In this context, Revenue Management in tourist destinations can be understood as the set of decisions aimed at attracting the right demand, at the right time, to the right areas of the destination, maximizing overall economic value without exceeding the social and environmental limits of the territory.

The first requirement for implementing Revenue Management in a destination is the existence of robust demand-forecasting systems. Unlike a single business, a destination receives interdependent flows across attractions, zones, seasons, and visitor segments, so forecasting should incorporate spatial effects, seasonality, and digital or market signals generated by visitor and platform behavior. Pan et al. (2025) show that tourism demand forecasting improves when dynamic spatial dependencies and spatial heterogeneity between attractions are incorporated, while Guizzardi et al. (2021) demonstrate that data generated through dynamic pricing can feed smarter forecasting models. From a destination perspective, this means that anticipating demand is useful not only for estimating arrivals, but also for planning capacity thresholds, schedules, access systems, mobility, and temporal or geographic redistribution strategies.

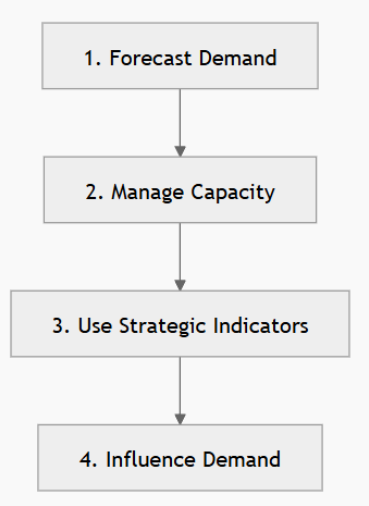
The second component is capacity management. In tourist destinations, revenue should not be maximized against an abstract physical capacity, but rather against an effective or sustainable capacity. Zekan et al. (2022) warn that there is no single magic number to define carrying capacity, because it depends on ecological, social, and economic limits, as well as on tolerance thresholds among residents and visitors. Along the same lines, Baños-Pino et al. (2024) show that the relationship between overnight stays and congestion is non-linear: beyond certain thresholds, an excess of visitors generates negative externalities due to overcrowding and quality deterioration. Therefore, in tourist destinations, Revenue Management cannot be reduced to attracting more visitors; it must also select, time, and redistribute demand in ways that protect the experience, reduce crowding, and preserve the long-term value of the destination.

The third component is indicator-based governance. Torres-Delgado and Font (2024) argue that the challenge lies not only in producing sustainability indicators, but in ensuring that destination marketing and management organizations have the absorptive capacity to use those indicators to inform policy. In turn, Crotts et al. (2022) propose a four-pillar framework for evaluating destination performance based on visitor economy, resident support, workforce satisfaction, and environmental health. Complementarily, d'Angella et al. (2025) identify four stages in the maturity of sustainable destination strategies: awareness, agenda setting, action, and monitoring. Applied to Revenue Management, this means that decisions about pricing, capacity, access, events, tourist passes, or visitor-flow redistribution should be supported by dashboards that combine revenue, territorial pressure, social acceptance, and environmental performance.

The fourth component is commercial intervention in demand. In a tourist destination, Revenue Management can be operationalized through instruments such as seasonal pricing, timed reservations, integrated passes, capacity limits at critical points, incentives to visit secondary areas, event pricing, and territorial dispersion strategies. Recent evidence on overtourism shows that congestion, rising perceived costs, and environmental degradation undermine visitor satisfaction and destination sustainability. In addition, analysis of user-generated content makes it possible to identify zones and experiences associated with

dissatisfaction and overload. Consequently, the appropriate objective is not to attract the largest possible number of visitors, but to optimize value per visitor and per time period, redirecting part of demand toward times, areas, or products with lower pressure and greater social profitability.

Figure 35: Revenue management in tourist destinations



Example

Suppose a heritage destination manages a visitor pass for the historic center and three main attractions. For a Saturday during peak season, the destination sets a sustainable effective capacity of 1000 visitors per day.

Expected demand is divided into three segments:

- *Segment A: Day hikers*
  Demand: 700 visitors
  Average revenue per visitor to the destination: USD 18
- *Segment B: overnight visitors*
  Demand: 350 visitors
  Average revenue per visitor to the destination: USD 32
- *Segment C: Premium visitors with guided tour and comprehensive pass*
  Demand: 150 visitors
  Average revenue per visitor to the destination: USD 55

The total projected demand is:

$$DT = 700 + 350 + 150 = 1{,}200$$

Given that the sustainable capacity is 1000 visitors, there is an excess demand for:

$$ED = 1{,}200 - 1{,}000 = 200$$

Potential pressure index:

$$IP = \frac{1{,}200}{1{,}000}\ x\ 100 = 120\%$$

This indicates that demand exceeds the destination's sustainable capacity by 20%.

Scenario without Revenue Management

Without implementing Revenue Management strategies, the destination could accept visitors on a first-come, first-served basis, resulting in the following mix:

- 700 of the A segment
- 250 of segment B
- 50 of segment C

Total income without RM

$$IT_{\boldsymbol{noRM}} = (700\ x\ 18) + (250\ x\ 32) + (50\ x\ 55)$$

$$IT_{\boldsymbol{noRM}} = 12{,}600 + 8{,}000 + 2{,}750 = 23{,}350$$

Scenario with Revenue Management

Applying Revenue Management. The destination protects capacity for the highest-value segments and redistributes part of segment A to other times or dates. The optimal mix is:

- 500 of the A segment
- 350 of segment B
- 150 of segment C

Total income with RM

$$IT_{\boldsymbol{RM}} = (500\ x\ 18) + (350\ x\ 32) + (150\ x\ 55)$$

$$IT_{\boldsymbol{RM}} = 9{,}000 + 11{,}200 + 8{,}250 = 28{,}450$$

Improves income

$$28{,}450 - 23{,}350 = 5{,}100$$

Percentage increase

$$\%Increase = \frac{5{,}100}{23{,}350}\ x\ 100 = 21.84\%$$

Average revenue per visitor

Without Revenue Management

$$IPV_{noRM} = \frac{23{,}350}{1{,}000} = 23.35$$

With Revenue Management

$$IPV_{RM} = \frac{28{,}450}{1{,}000} = 28.45$$

Interpretation

In this case, the destination maintains pressure at 100% of its sustainable capacity, avoiding overloading the territory; at the same time, it increases total revenue by 21.84%, which demonstrates that in tourist destinations, Revenue Management is not about receiving more visitors, but about better managing the demand mix, maximizing the value per visitor, and controlling territorial pressure.

8.4. Revenue management in restaurant industry

In the restaurant industry, Revenue Management should not be understood as a simple price-raising technique, but rather as a discipline focused on managing perishable capacity—that is, seats available for a limited time that, if not sold, are lost forever. Unlike other tourism businesses, restaurants operate with a particularly sensitive combination of limited capacity, viable consumption duration, demand uncertainty, and customer perception of fairness. Therefore, the logic of Revenue Management in this sector requires integrating decisions about capacity, time, price, reservations, channels, and customer experience (Tyagi & Bolia, 2022).

Revenue management in restaurants has evolved from a model focused on three classic levers (capacity, price, and meal duration) to a broader approach that also incorporates information management and business management. This shift responds to the increasing digitalization of the business, the availability of real-time data, and the use of advanced analytics to anticipate demand and inform business decisions. In this sense, modern revenue management in the restaurant industry no longer depends only on the manager's operational judgment, but rather on the ability to transform data into profitable and sustainable decisions (Bujalance-López et al., 2025; Tyagi & Bolia, 2022).

One of the first strategic dimensions is capacity management. It is not enough to know the total number of seats; It is also necessary to understand how they are distributed across different table sizes, how they are allocated to reservations and walk-ins, and the level of flexibility offered by the dining room layout. Poor allocation can lead to gaps in occupancy, underutilization of tables, and lost

revenue, even during periods of high demand. Recent reviews agree that practices such as table mix, monitoring of key performance indicators, and managing service duration are essential for improving a restaurant's financial performance (Malheiros et al., 2025; Tyagi & Bolia, 2022).

Managing meal duration is another critical lever. In the restaurant industry, it is not just a table that is sold, but a table for a period of time, so profitability depends heavily on effective inventory turnover. Reducing the average service time does not mean rushing the customer, but rather eliminating unproductive time through smoother order taking, better kitchen sequencing, pre-busing, digital payment, and operational simplification. From a Revenue Management perspective, every idle minute between occupancies represents wasted capacity and, therefore, uncaptured potential revenue (Tyagi & Bolia, 2022; Malheiros et al., 2025).

Price and sales mix management has also become more sophisticated. In a restaurant, the optimal price cannot be defined solely by food cost or a standard margin; it must consider elasticity by time of day, willingness to pay, contribution margin per dish, menu structure, and the substitution effect between products. Along these lines, the menu should be reviewed as a tool of commercial engineering, not just gastronomy. Furthermore, recent evidence suggests that dynamic pricing does not necessarily worsen customers' perceptions or price sentiment when implemented coherently, although price changes still need to be aligned with customer expectations and value communication (Gómez-Talal et al., 2025; Lai & Karim, 2023).

Another crucial aspect is the management of reservations, cancellations, and no-shows, especially in restaurants highly dependent on reservations. An empty seat during peak hours represents not only a loss of occupancy but also an irreversible loss of revenue. Recent evidence shows that cancellation policies can affect customer evaluation, but also that a moderate policy, well explained and supported by fairness criteria, can improve perceived fairness and increase the likelihood that the customer will honor the reservation. Consequently, Revenue Management in the restaurant industry should view reservation policies not as a punishment but as a mechanism to protect scarce inventory and reduce operational volatility (Kim & Tang, 2024).

Demand analytics and forecasting have become a core competitive advantage. Combining historical sales data with external data improves forecast quality and, consequently, decision-making regarding purchasing, staffing, promotions, and pricing. For example, it has been shown that models integrating online reviews and sales data facilitate business decision support; more recent research also demonstrates the value of machine learning and deep learning for forecasting in restaurant chains, as well as the usefulness of models based on historical sales and weather variables for predicting demand per item with good statistical performance (Fernandes et al., 2021; Chae et al., 2024; Kim, 2025).

In addition, the importance of business digitization—online sales, delivery, and a strong digital presence—not only expands commercial reach but can also

improve business resilience and provide key data on customer behavior. In the context studied by González Morales and Cavero Rubio (2023), restaurants with websites, online ordering, and delivery tools showed lower profitability losses, reinforcing the idea that channel strategy is part of the contemporary logic of Revenue Management.

In terms of measurement, the most widely used indicator in the restaurant industry continues to be RevPASH (Revenue per available seat hour), calculated as the period's revenue divided by the number of available seats multiplied by the hours of service. However, recent literature warns that this indicator, when viewed in isolation, can obscure the true drivers of the result. An increase in RevPASH can be due to a higher average check, better capacity utilization, or both simultaneously. Therefore, it is advisable to complement it with metrics such as average visit duration, seat utilization per hour, average check, no-show rate, and contribution margin (Kalan, 2024).

In summary, Revenue Management in the restaurant industry consists of maximizing revenue without compromising the customer experience, harmonizing operational efficiency, perceived fairness, and intelligent demand capture. Its current maturity requires restaurants to move beyond simply managing covers and begin managing seat-hours, customer behavior, and value per transaction; this shift in focus is what distinguishes a busy operation from a truly profitable one (Tyagi & Bolia, 2022; Bujalance-López et al., 2025).

Example

Consider a restaurant with 80 available seats and a 4-hour dinner service. The goal is to measure its current performance and quantify the impact of an intervention aimed at improving its profitability. In this context, RevPASH is defined as the revenue generated per available seat per hour and is one of the key indicators of Revenue Management in restaurants. The following variables are used for this purpose:

- S = number of available seats
- H = duration of service in hours
- C = number of customers served or covered
- TM = average ticket per customer
- D = average customer stay duration in hours
- I = total income
- AHD = available seat-hours
- AHO = occupied seats-hour
- U = capacity utilization
- RevPASH = revenue per available seat per hour
- CV = percentage of variable cost on sales
- MC = contribution margin

Scenarioa1. Baseline situation

Data:

- S = seats
- H = 4 hours
- C = 120 customer
- TM = 24 um
- Average service duration = 95 minutes
- CV = 38% = 0.38

First, the average duration must be converted to hours:

$$D = \frac{95}{60} = 1.5833\ hours$$

Calculation of available seat-hours

The available seat-hours represent the total capacity of the restaurant during the analyzed period.

$$AHD = S\ x\ H$$

Replacing

$$AHD = 80\ x\ 4 = 320\ seats - hour$$

Interpretation: During that service, the restaurant has 320 units of temporary saleable inventory.

Calculation of total income

Total revenue is calculated by multiplying the number of customers served by the average ticket price.

$$I = C\ x\ TM$$

$$I = 120\ x\ 24 = 2{,}880\ u.m$$

Interpretation: the restaurant billed 2,880 monetary units for that service.

Calculation of occupied seats-hours

Occupied seat-hours measure how much capacity was actually consumed by customers.

$$AHO = C\ x\ D$$

$$AHO = 120\ x\ 1.5833 = 189{,}996 \approx 190\ seats - hour$$

Interpretation: Although the restaurant had 320 seat-hours available, it only used 190.

Calculation of the percentage of utilization

Capacity utilization measures what percentage of total inventory was actually used:

$$U = \frac{AHO}{AHD} x\ 100$$

$$U = \frac{190}{320} x\ 100 = 59{,}375\%$$

$$U \approx 59{,}4\%$$

Interpretation: The restaurant used approximately 59.4% of its available temporary capacity.

RevPASH Calculation

RevPASH is calculated as:

$$RevPASH = \frac{I}{AHD}$$

Replacing:

$$RevPASH = \frac{2{,}880}{320} = 9.00\ u.m.$$

Interpretation: Each available seat per hour generated 9.00 units of revenue. This is the main revenue indicator for restaurants, as it links income to temporary sellable capacity.

Calculation of the contribution margin

The contribution margin is calculated as:

$$MC = I\ x\ (1 - CV)$$

$$MC = 2{,}880\ x\ (1 - 0.38)$$

$$MC = 2{,}880\ x\ 0.62 = 1{,}785.6\ u.m$$

After covering variable costs, the restaurant retains 1,785.6 um to cover fixed costs and profit.

Scenario 2. After the application of Revenue Management

Three restrictions apply:

1. Reduction of no-shows through reminders and a moderate cancellation policy;
2. Operational improvement to reduce average service duration;
3. Menu reengineering to increase average ticket and contribution

These measures are consistent with the levers of capacity, duration, and price described in recent literature (Kim & Tang, 2024; Lai & Karim, 2023; Malheiros et al., 2025).

New data

- S = 80
- H = 4
- C = 150 customers
- TM = 26.5 um
- Average duration = 82 minutes
- CV = 36% = 0.36

Converting duration to hours:

$$D = \frac{82}{60} = 1.3667\ hours$$

Available seats/hours

The installed capacity did not change:

$$AHD = S\ x\ H$$

$$AHD = 80\ x\ 4 = 320\ seats - hour$$

Total new income

$$I = C\ x\ TM$$

$$I = 150\ x\ 26.5 = 3{,}975\ u.m.$$

New calculation of occupied seat-hours

$$AHO = C\ x\ D$$

$$AHO = 150\ x\ 1.3667 = 205{,}005 \approx 205\ seats - hour$$

new utilization of capacity

$$U = \frac{AHO}{AHD}\ x\ 100$$

$$U = \frac{205}{320}\ x\ 100 = 64.0625\%$$

$$U \approx 64.10\%$$

The restaurant increased its temporary capacity utilization from 59.4% to 64.1%.

New RevPASH

$$RevPASH = \frac{I}{AHD}$$

$$RevPASH = \frac{3{,}975}{320} = 12.421875$$

$$RevPASH \approx 12.42\ u.m.$$

Each available seat per hour now generates 12.42 um compared to 9 u.m. in the baseline scenario.

New contribution margin

$$MC = I\ x\ (1 - CV)$$

$$MC = 3{,}975\ x\ (1 - 0{,}36)$$

$$MC = 2{,}544\ u.m.$$

Comparison between scenarios

Variation in total income

$$\Delta \mathrm{I} = I_1 - I_0$$

$$\Delta \mathrm{I} = 3{,}975 - 2{,}880 = 1{,}095\ u.m.$$

Income growth rate:

$$\%\Delta \mathrm{I} = \frac{1{,}095}{2{,}880} x\ 100 = 38.02\%$$

RevPASH Variation

$$\Delta RevPASH = 12.42 - 9.00 = 3.42\ u.m$$

Growth rate

$$\%\ \Delta \mathrm{RevPASH} = \frac{3.42}{9.00} x\ 100 = 38\%$$

Contribution margin variation

$$2{,}544 - 1{,}785.6 = 758.4\ u.m.$$

Margin growth rate:

$$\%\Delta \text{MC} = \frac{758.4}{1{,}785.6} x\ 100 = 42.47\%$$

Technical interpretation of the result

This example clearly demonstrates that improved performance does not stem from a single variable. The revenue increase arises from three simultaneous effects:

a) Volume effect

The number of customers increases from 120 to 150.

b) Price or average ticket effect

The average ticket increases from 24 to 26.5 um

c) Duration effect

The average duration decreases from 95 to 82 minutes

This frees up temporary capacity and allows more customers to be served without increasing the number of seats.

8.5. Chapter Summary

Chapter VIII addresses the application of Revenue Management in rural and community tourism contexts, where its central idea of focus cannot be mechanically transferred from traditional hotel industry, but requires a profound adaptation both conceptually and operationally.

Unlike urban or large-scale environments, here the tourism product is not just a room or an isolated service, but a comprehensive experience that combines territory, culture, community and sustainability; this completely changes the management logic, since the value is not measured solely in revenue per unit, but also in social impact, conservation of the environment and balance with the host community.

In this context, Revenue Management maintains its basic principle of selling to the right customer, at the right time and through the right channel, and at the optimal price, but introduces a key restriction: it cannot compromise the carrying capacity of the destination or the social legitimacy of tourism; that is, it does not seek to maximize volume, but to optimize the value generated per visitor, maintaining a balance between profitability and territorial sustainability.

The chapter also makes it clear that in these environments, variables appear that have less weight in traditional hotels, such as the equitable distribution of benefits within the community, shared governance among local actors, and strong seasonality with a small operational scale; this forces more comprehensive decisions to be made, where pricing, capacity, and segmentation must be aligned with social and environmental objectives, not just financial ones.

In short, this chapter redefines Revenue Management as a tool for managing the total value of a destination. It's not about attracting more tourists, but about better managing the demand mix, controlling the pressure on the territory, and maximizing profit without harming the environment or the visitor experience. It's a more strategic and responsible approach, where profitability is built in balance with sustainability and local development.

This chapter thus develops a vision of Revenue Management as a socio-technical system in which value creation depends on the interaction between technological infrastructure, analytical capabilities, and strategic decision-making, emphasizing that competitive advantage stems not only from adopting tools but also from the ability to integrate them into a coherent revenue management process.

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