ACCOMMODATION INVENTORY SOURCES FOR STARTUP ONLINE TRAVEL AGENCIES

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Abstract

Purpose – The purpose of this study is to address the significant challenge faced by startup Online Travel Agencies (OTAs) in building a substantial accommodation inventory amid intense competition and limited brand recognition. The research aims to explore and analyze the various sources of accommodation inventory available to startup OTAs.
Methodology/Design/Approach – Data were collected through a series of in-depth interviews with 47 key industry players, spanning four stages, to investigate the process of onboarding new properties onto startup Online Travel Agencies (OTAs) and understand the synchronization of pricing and availability.
Findings – The study evaluates various connectivity methods, identifying two main methods including: direct contracting, or third party's connections, encompassing channel manager connection, API integration, affiliation program or white label solutions. In each method there are several sources. The pivotal decision for startup OTAs in selecting inventory sources revolves around factors such as cost, number of listed properties, technology, and reputation.
Originality of the research – These findings serve as a practical guide, allowing OTAs to make informed decisions, refine strategies, and optimize connectivity processes for a competitive edge in the dynamic online travel market.
Keywords Affiliate Program, Application Programming Interface (API), Channel manager, Inventory, Online Travel Agency (OTA), White label.

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INTRODUCTION

The new challenge in the tourism industry in the area of digital technology is how to provide tourism services directly to customers, rather than through third parties. Beyond cost concerns, intermediaries can lead to delays in problem-solving and reduced control over service quality. Given the rise of numerous intermediaries and platforms on the web, tourism and hospitality enterprises, including hotels, must develop efficient and selective channel strategies. An effective approach involves optimizing the mix of distribution channels by prioritizing the most advantageous online channels and carefully selecting among competing options (Angeloni & Rossi, 2021; Beritelli & Schegg, 2016). Direct connections enable businesses to address issues swiftly, improve service quality through direct feedback, and tailor offerings to customer preferences (Lee et al., 2013). This approach not only reduces expenses but also enhances operational efficiency, boosts customer satisfaction, and overall competitiveness in the tourism sector. The rise of the internet has significantly influenced the evolution of travel agencies and distribution channels, particularly after the 1990s (Kim et al., 2020). Currently, many actors within the tourism sector, including hotels, airlines, car rental services, and other tourism companies, have established contracts with Online Travel Agencies (OTAs) for distribution purposes. These OTAs serve an important role in the marketing and sales of accommodations, operating on a commission-based model for each transaction facilitated (Pinto & Castro, 2019).

With the rapid advancement and increasing competition among Online Travel Agencies (OTAs), certain factors become important determinants of an OTA's success. These determinants are extensively studied in the context of OTA efficiency and purchase decision-making, such as brand perception and customer behavior (Amaro & Duarte, 2015; Talwar et al., 2020). To achieve its objectives, a key factor to an online travel agency's success is the comprehensive use of digital technology in all its operations, including advertising, E-CRM, invoicing, and payment processing. Aggregating inventory from diverse suppliers, OTAs ensure travelers access a wide array of options (Ling et al., 2022; Scholl-Grissemann & Schnurr, 2016). A startup OTA requires an inventory to better serve its customers; and it depends on its market, niche, local or global market, and promoting destinations. Depending on the target market, it needs to establish connections with accommodation establishments or properties.

When customers visit an OTA, they typically conduct searches for available properties for specific dates. The OTA presents the search results, which include different prices. The same properties can be offered at varying prices depending on booking dates and other factors. When a customer books a specific room, that room becomes unavailable to prevent overbooking, which occurs when the same room is booked by multiple customers for the same dates. It is important to comprehend the mechanisms through which an OTA makes rooms available on its platform. This prompts the central research question of this study: How

can startup Online Travel Agencies (OTAs) efficiently acquire and expand their accommodation inventory to enhance service quality and maintain a competitive edge in the rapidly evolving digital tourism market?

There are few relevant studies that introduce the concept of inventory in OTAs as key element of research, primarily focusing on aspects such as robotic process automation, connectivity or distribution channels (Koo et al., 2011; O'Connor, 2022; Sharma & Guleria, 2021; Stangl et al., 2016; Thakran & Verma, 2013). There remains a noticeable gap concerning the source of inventory for OTAs. Venkateshwara Rao & Smith (2006) mention that OTAs obtain inventory from airlines, hotels, and car rental companies, but without a deep understanding of the channel or sources. Despite advancements in research on online travel agencies (OTAs), most studies have focused on established platforms, emphasizing areas such as consumer behavior, distribution channels, and digital marketing strategies. However, one of challenges faced by startup OTAs, particularly in acquiring and managing accommodation inventory, remains underexplored. Inventory acquisition is an important factor for startup OTAs, yet existing literature tends to overlook the strategies and decision-making processes involved in sourcing inventory in resource-constrained and competitive contexts. Unlike previous studies, this paper investigates the available sources of accommodation inventory for a startup OTA. This research addresses the critical question of how a startup OTA can effectively source and manage accommodation inventory to compete with established players. It explores innovative strategies and technologies that can level the playing field for new entrants in the market. By identifying and analyzing these sources, the study advances knowledge by providing a comprehensive framework that can be utilized by other startups and researchers in the field, thereby contributing to the broader understanding of competitive dynamics in the OTA industry. Subsequent research can leverage the categorization presented in this study, such as direct contracts, channel manager connections, API integrations, affiliate programs, and white label solutions, to investigate the impact of these sources on the performance of startup OTAs in different markets.

1. LITERATURE REVIEW

Online travel agencies (OTAs) are web-based platforms that allow travelers to search for and book a variety of travel-related products and services, including accommodations, flights, rental cars, and activities (Fu Tsang et al., 2010; Ray et al., 2021; X. Zheng & Guo, 2016). OTAs have become increasingly popular in recent years, as they offer travelers a suitable and efficient way to book their travel arrangements (Lee et al., 2013; Wei et al., 2023; Ye et al., 2018).

1.1. OTAs Marketing

OTAs serve as a distribution channel for the tourism sectors. They provide hotels and other tourism providers with a way to reach a global audience and sell their products and services (Ye et al., 2018) by aggregating inventory from a variety of suppliers, such as hotels, airlines, and car rental companies (Venkateshwara Rao & Smith, 2006). This allows OTAs to offer travelers a wide range of options and competitive prices (Marzo-Navarro et al., 2019; Pinto & Castro, 2019). OTAs also make it easier for travelers to book their travel arrangements, which can lead to increased tourist spending (Pinto & Castro, 2019). Travelers can typically search for and book travel products and services on OTAs' websites or through their mobile apps (MAs) (Rodríguez-Torrico et al., 2020).

The OTA industry has undergone significant development in recent years. One of the biggest trends has been the rise of mobile bookings (Aamir & Atsan, 2020; Kang et al., 2020). More and more travelers are using their mobile devices to book their travel arrangements, and OTAs have adapted to this trend by investing in their MAs (Maryam et al., 2016; Masrury et al., 2019; Talwar et al., 2020). With all these services offered by OTA, customers are increasingly comfortable booking their travel through OTAs (Albayrak et al., 2020), especially with the low price (Kim et al., 2007). This is likely due to the convenience and ease of use that OTAs offer (Kourtesopoulou et al., 2019). Mior Shariffuddin et al. (2023) highlight the important need to improve both technology adoption and user experience, aiming to make tourists feel more comfortable and confident when using OTAs. On the other hand, customer ratings and reviews of properties play an important role in the OTA booking process (Wen et al., 2021). Many travelers rely on these ratings and reviews to help them choose the right property that meets their needs (Nie et al., 2020). Positive ratings and reviews can help increase a property's visibility on OTAs and attract more bookings (Yacouel & Fleischer, 2012). Customer ratings and reviews of properties on OTAs can be seen as a form of electronic word-of-mouth (eWOM) (Sotiriadis & van Zyl, 2013). E-WOM is the sharing of information and opinions about products and services online (Kareem & Venugopal, 2023). It can be a powerful marketing tool, as it can influence the purchase decisions of other consumers (Indrawati et al., 2023; Sim et al., 2021; Taylor, 2018). Positive reviews can help to increase a property's visibility on OTAs and attract more bookings (Torres et al., 2015). It can also help to build trust and credibility with potential guests (J. Lee & Hong, 2019; López & Sicilia, 2014). Negative rating, on the other hand, can harm a property's reputation and discourage potential guests from making a booking (Rose & Blodgett, 2016; Sparks & Browning, 2011; Tsao et al., 2015; Zhao et al., 2015). Furthermore, if there are numerous complaints, the property could be removed from the OTA's inventory (Talwar et al., 2020). All these advanced features of OTAs hold the potential to enhance hotels' occupancy rates by attracting a substantial number of customers (Ling et al., 2015). Another trend in the OTA industry is the increasing focus on personalization (Badouch & Boutaounte, 2023; Ivanova & Vovchanska, 2023; Yang et al., 2023). OTAs are using data and AI analytics tool to better understand their customers' needs and preferences (Samara et al., 2020). This allows them to offer more personalized recommendations and experiences (Kolahkaj et al., 2020), which include the right proprieties on the top of the search list.

OTAs play an important role in the travel industry. They can help to increase competition in the tourism industry (Guo et al., 2013; Hien et al., 2024). This can lead to lower prices and better products and services for travelers (Pinto & Castro, 2019). Also, they provide travelers with a convenient and efficient way to book their travel arrangements (Talwar et al., 2020), and they help suppliers to reach a wider audience (Chang et al., 2019; Pinto & Castro, 2019). OTAs are also a major source of revenue for the travel industry (Statista, 2023). One of the key areas that OTAs focus on is marketing channels (Köchling, 2021; Sharma et al., 2020). They need to attract new customers and encourage existing customers to book again (Albayrak et al., 2020; Y.-W. Chang et al., 2019). To do this, OTAs invest in a variety of marketing channels, such as search engine optimization (SEO), paid advertising, and social media marketing (Angeloni & Rossi, 2021; Dronova & Trygub, 2020; Tooke-Marchant, 2015; Xiang & Gretzel, 2010; Y.-H. Zheng et al., 2023). Another key area that OTAs focus on is providing a good selection of products and services. This includes having a wide range of accommodations to choose from (J. Kim et al., 2009). OTAs need to ensure that they have the right inventory to meet the needs of their customers. They also need to make sure that their inventory is up-to-date and accurate (Bouchareb, 2023). The success of online travel agencies (OTAs) largely depends on their ability to offer a wide range of accommodation options to their customers. Startup OTAs, in particular, face the challenge of building a diverse and competitive inventory of accommodations, especially when they lack the brand recognition and negotiating power of established OTAs, where brand attitude is an important factor in purchase intention (Priester et al., 2004; Ray et al., 2021).

An emerging aspect of OTA research focuses on the behavioral patterns of online travel purchasers. Unlike traditional booking methods, online travel purchases are heavily influenced by digital marketing strategies and user interface design. Recent research on online travel purchases reveals several critical factors influencing consumer behavior and decision-making. The findings of Talwar et al. (2020) indicate that purchase intentions toward OTAs are influenced by several factors, including quality-of-benefits, monetary value, social status, preference, and information value. Notably, the quality-of-benefits value emerges as the most significant predictor, with preference value being the next most influential factor. Considering OTAs as an efficient distribution channel, Carlson et al. (2015) and Lu & Hsiao (2010) mention that perceived value, including price advantage, efficiency, system quality, and convenience, plays an important role in attracting customers. Trust in OTAs and the perceived security of their platforms are significant determinants of purchase decisions, reducing perceived risk and enhancing confidence (Mior Shariffuddin et al., 2023). Advanced technologies like AI and machine learning can really enhance personalization and user experience, increasing purchase intentions by providing tailored recommendations and real-time support (Chang et al., 2023). According to Mior Shariffuddin et al. (2023), technology readiness and online travel site affordances significantly impact tourists' online purchase intentions, with interactivity and site stickiness being particularly influential. This is why several OTAs have adopted MAs to offer a better user experience and capture mobile shoppers, as user-friendly interfaces improve online travel purchases. These findings underscore the need for OTAs to continuously innovate and adapt to meet evolving consumer expectations, enhancing operational efficiency, customer satisfaction, and overall competitiveness in the digital tourism market. However, there is a notable gap in the literature concerning OTAs inventory and its influence on online travel purchase intentions. While numerous studies have examined various factors influencing online travel purchases, the role of OTAs inventory in shaping consumer decisions remains underexplored. This is a critical area that warrants further studies.

1.2. Inventory Automation

The OTA's platform, website, or app serves as the front-end interface for users to search for, browse, and book travel services. This interface typically includes search filters, pricing information, and booking options. OTAs use advanced search algorithms like AI to provide users with real-time information on available properties, matching user preferences with available inventory. An important aspect of OTA operations is the management of large amounts of data, particularly from hotels, for processing (Bhawna et al., 2023). OTAs need to perform operations in an optimized, fast, and accurate manner as they handle real-time data. The hotel inventory, which is the real-time data obtained from various hotels, needs to be updated on the platform of OTAs (Pan & Yang, 2017; Suzuki, 2020). Therefore, a robust and efficient Hotel Inventory Management system is required (Melián-González & Bulchand-Gidumal, 2016).

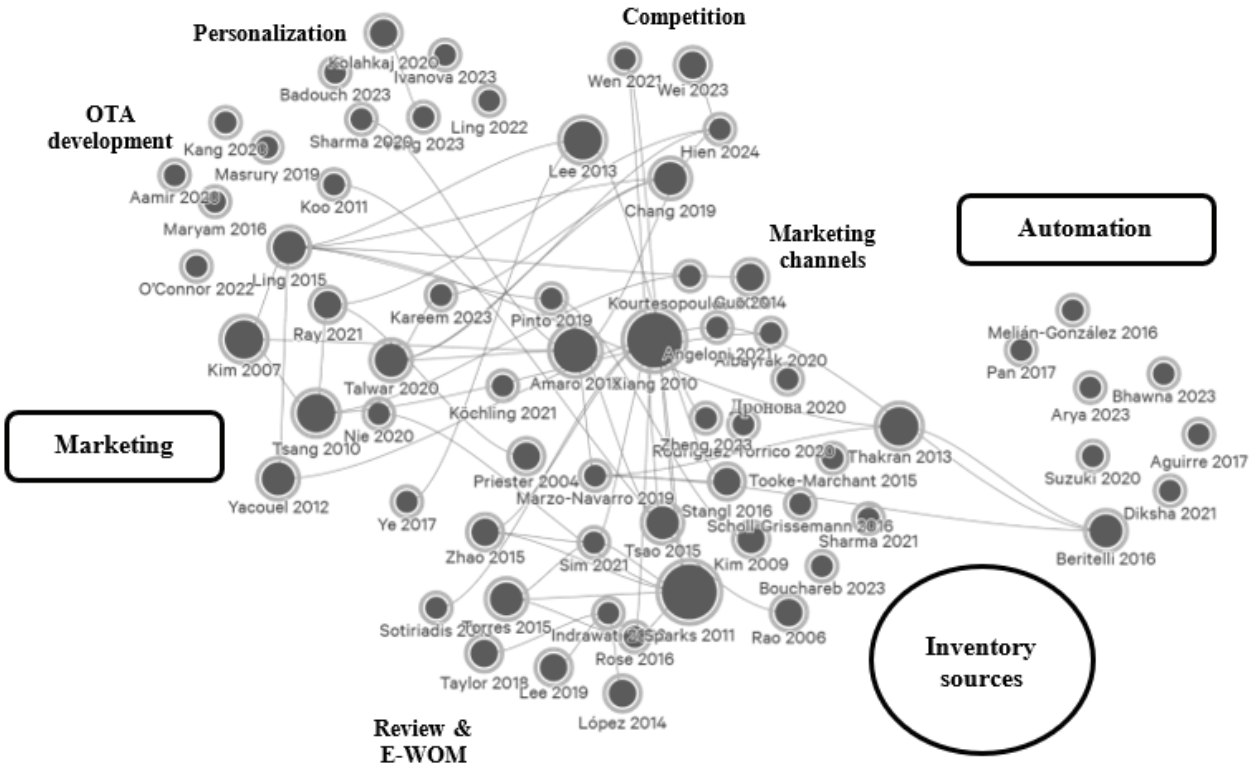
Robotic Process Automation (RPA) has emerged as a solution to automate repetitive, rule-based, error-prone, and time-consuming tasks (Aguirre & Rodriguez, 2017). Besides the automation of financial operations in OTA (Diksha & Kaur Sandhu, 2021), the automation of the Hotel Inventory Management system using RPA can transform the infrastructure, reduce the cost, optimize the processing time, and enhance the customer experience (Arya et al., 2023; Sharma & Guleria, 2021). With specialized inventory management software, OTAs can manage their own and contracted inventory all from a single platform. They can bring their offline suppliers online by easily adding their offers to the inventory (Beritelli & Schegg, 2016; Stangl et al., 2016). This not only boosts productivity but also extends their sales channels globally.

OTAs leverage automation to analyze the big data derived from customer reviews and feedback. This process involves applying data mining techniques and sentiment analysis tools, which together yield valuable insights into the strengths and weaknesses of various properties (K. Kim et al., 2017; Kirilenko et al., 2021). Such a data-driven approach guides OTAs in making informed decisions about their inventory. OTAs have integrated automation into their retargeting advertising, which facilitates the presentation of room options to prospective customers, tailored to their historical navigating data. This process is guided by machine learning algorithms that process the data and employ sophisticated predictive models (Candra et al., 2022; Lambrecht & Tucker, 2013; Lu et al., 2015). These models can anticipate a user's potential interest in specific properties.

Existing research has primarily focused on identifying the marketing aspects of online travel agencies (OTAs), including purchase intention, word of mouth, website structure and attractiveness, distribution channels, and the adoption of modern technologies and AI to automate various OTA operations to enhance efficiency and competitiveness. However, studies specifically addressing the sources of accommodation inventory for OTAs are still limited. Unlike previous studies, the main purpose of this study is to investigate the available sources of accommodation inventory for a startup OTA, and analyze the advantages and disadvantages of each source. The study aims to present insights and a comprehensive guide for new OTAs on acquiring, expanding, and managing their accommodation inventory efficiently and cost-effectively. This effort could empower the brand and enhance the service quality of these OTAs. This identified gap underscores the necessity for a more in-depth examination of this aspect from various angles, highlighting the need for further research in this domain.

Using "Litmap.com" AI tool, a detailed mapping exercise was conducted to understand the landscape of inventory sources within the travel industry based on the literature review. The utilization of this tool facilitated the creation of a conceptual map, streamlining the identification of research gaps by consolidating and correlating studies relevant to this area. This mapping exercise categorized studies according to their topics and proximity to the current study, allowing for a comprehensive view of the studies' concentration and their relevance to the research topic. This process revealed a significant gap, especially concerning accommodation inventory sources. Despite thorough research, no relevant studies specifically addressing this area were discovered. This identified gap emphasizes the necessity for further research in this domain. The figure below shows the gap.

Figure 1: **Gap in literature review**



The figure highlights the concentration of research in certain areas such as marketing, personalization, and automation while revealing a significant gap in studies related to inventory sources for OTAs. This oversight is important because inventory management is a foundational aspect that directly impacts the operational efficiency and competitiveness of startup OTAs. This visualization underscores the necessity for further research focused on understanding and improving the sources of accommodation inventory for OTAs, particularly for new or startup OTAs seeking to build a competitive edge in the market. The uniqueness of this study lies in its focused approach on startup OTAs and the practical insights it provides for these emerging businesses to navigate the complex landscape of inventory acquisition and management. In this paper, an examination of various sources of accommodation inventory that startup OTAs can explore to build their offerings and compete effectively in the market will be conducted. To make this process, the OTAs need a Connectivity system with properties.

2. METHOD

The research starts by examining how big OTAs add new properties to their inventory. The question was: How is a property added to an OTA? Typically, online travel agency (OTA) platforms, whether websites or mobile applications, include a dedicated interface for listing new properties. After a property is listed, the OTA must implement a system to synchronize its pricing and

availability. This can be accomplished manually through the OTA's platform or automatically via a Channel Manager. This research investigates the process of onboarding new properties onto startup Online Travel Agencies (OTAs). The study focuses on how properties are added to OTAs, with particular emphasis on the synchronization of pricing and availability. The research is conducted in several stages:

Stage 1: An exploratory study of established OTAs, including their websites and MAs, is conducted to understand the standard procedures for listing new properties. This initial assessment provides the foundation for the subsequent stages of the research (Hallingberg et al., 2018; Mason et al., 2010). The exploratory study involved a systematic review of the property listing processes of major OTAs, selected based on their market reputation in the industry.

Stage 2: Third-party data collection companies that specialize in gathering essential data on hospitality businesses are engaged to evaluate the availability and pricing of their data services (Haynes, 2016). The primary goal is to identify sources of data that can be used to make a direct contact with new properties.

Stage 3: In-depth interviews were conducted with key third-party connectivity system providers in the hospitality sector (Boyce & Neale, 2006), including Channel Manager software developers, wholesalers, and Bedbanks. The purpose of these interviews was to gather insights into the resources OTAs can access when onboarding new properties, including data related to location, pricing, and availability. An extensive attempt was made to contact the maximum number of key third-party connectivity system providers in the hospitality sector. To ensure that the research was comprehensive and representative of the industry, invitations were extended to more than 150 tourism service providers spanning various categories, including OTAs, Channel Managers, Wholesalers, Bedbanks, Tour Operators, Destination Management Companies (DMCs), and Global Distribution Systems (GDSs). However, only 47 of these service providers agreed to participate in the interview process. The 47 interviews were conducted, reaching a point of data saturation where additional interviews were unlikely to provide new insights. Participant recruitment was conducted using a combination of search engines, which identified prominent providers, and deep research in industry forums. The snowball sampling method was found to be highly effective, as many interviewees referred their competitors and other relevant contacts, further expanding the participant list. Initially, the interviews focused on two core areas: primary sources for the startup OTA and pricing models for each source. However, as the interviews progressed, it became evident that the payment plan was an important factor, leading to its inclusion in the study. Given the complexity of the topic and the novelty of the research area, a flexible questioning approach was employed. Instead of adhering to a semi-structured format, this method allowed for dynamic exchanges, adapting questions based on the expertise and experiences of the participants. this approach was essential for gathering focused yet comprehensive information, especially in light of the limited existing literature. The interviews centered on a primary question, which enabled respondents to offer detailed insights into the inventory sources they used, as well as alternative solutions available in the market. Additionally, participants shared their experiences with technical solutions and offered critical opinions on both existing and alternative options, enriching the research with valuable practical perspectives.

Stage 4: The data collected from in-depth interviews underwent rigorous evaluation and analysis to develop a comprehensive understanding of the inventory resources accessible to OTAs. The data were analyzed manually through thematic analysis, identifying and categorizing key themes based on a thorough review of the interview transcripts without the use of software tools. To ensure the validity and reliability of the finding, data triangulation was employed by collecting and comparing data from multiple respondents across various categories of tourism service providers. A thematic approach was employed to analyze the data, allowing for the grouping of raw information into thematic categories based on recurring patterns, such as primary inventory sources, pricing frameworks, and payment methods. Respondents contributed varying amounts of information, with some providing comprehensive insights while others shared more specific details. Contributions were weighted according to the depth of responses to ensure a balanced representation. Additionally, the interview process facilitated the collection of supplementary data that helped elucidate the nature of the inventory sources offered by providers. This methodology is designed to provide a thorough and informed overview of the complex process of onboarding new properties onto startup OTAs, culminating in the synthesis of diverse perspectives into cohesive findings presented in the results section.

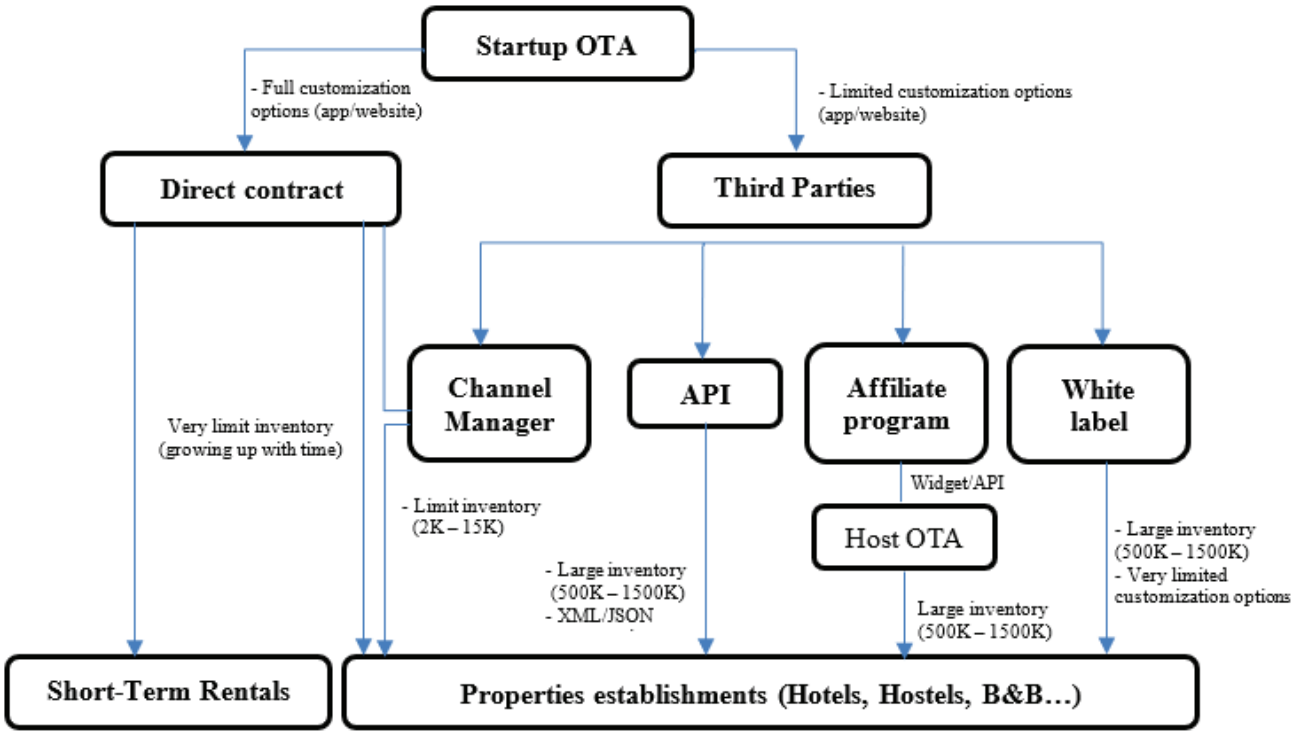
3. FINDINGS AND DISCUSSION

Through the in-depth interviews with different actors in the field of Connectivity system of OTAs, the following results were obtained:

3.1. Findings

There are many sources for accommodation inventory for a startup OTA, but each source has its advantages, disadvantages and pricing model. Which could be regrouped in two categories: Direct contract; Third-party sources. The results can be summarized in the figure below.

Figure 2: **Inventory sources**



3.1.1. Direct contract

To establish a direct contract with a property, the OTA should identify a communication channel with the property manager. This could be achieved through methods such as: (1) Emailing campaigns; or (2) Paid advertising, which are two practical tools that a new OTA could use to reach a maximum number of properties. Alternatively, the OTA could charge agents to directly connect with the properties and make arrangements with them. However, this alternative can be quite expensive.

3.1.1.1. Emailing

In order to establish direct connections with properties, OTAs can reach out to them through email. However, this requires the OTA to have access to email data targeting the desired market. There are a number of companies, Data Brokers, that specialize in data collection and sell such data at reasonable prices (Gu et al., 2018). While the email method has advantages, such as being a cost-effective way to contact large numbers of potential partners quickly (Gu et al., 2018), it also has its disadvantages. For example, the use of email for outreach can result in spam messages that are not well-received by recipients (Bouchareb & Morad, 2024). Additionally, the data collected can quickly become obsolete, and customers may not always respond to emails, making this method less efficient than others.

To encourage properties to subscribe and sign the contract, the OTA should offer competitive commission rates. Properties may be more likely to sign direct contracts with the OTA if it offers competitive commission rates that are lower than the competitors. However, the OTA is more likely to be sought out for partnerships by properties with lower occupancy rates looking to improve their profits (Ling et al., 2014). When a property agrees to subscribe to an OTA's inventory and enters into a contractual agreement, it must then ensure that the inventory and pricing information remain synchronized with the OTA's platform. Given that property managers cannot realistically access the OTA's website for each update in availability and pricing, it becomes imperative to automate this process. To achieve this, it is essential to use a Property Management System (PMS) in conjunction with a Channel Manager (Bouchareb, 2023; Dyshkantiuk et al., 2020). Although it is possible that the Channel Manager may not be integrated with the PMS; in such cases, it would need to be separately integrated. This automation is essential to maintain the accuracy of information and prevent issues such as double bookings, which can be costly for both the property and the OTA (Melián-González & Bulchand-Gidumal, 2016).

3.1.1.2. Advertising

OTAs can use targeted advertising campaigns (ADS), particularly on social media platforms (Gao et al., 2018; Li et al., 2021), to attract properties to list their inventory on the OTA's platform (Li et al., 2021). These ADS can highlight the benefits of

partnering with the OTA, such as increased exposure to potential guests and access to the OTA's booking system. To make these ADS effective, the OTA can target specific audiences based on factors like geographic location and property type (Anagnostopoulos et al., 2018). The advertising content should be compelling and clearly communicate the value proposition of partnering with the OTA (de Haan et al., 2016). Once a property expresses interest in listing their inventory on the OTA, the OTA can provide information about the listing or subscription process, any associated fees, and the types of inventory that are eligible for listing. From there, the OTA can work with the property to ensure that their inventory is accurately listed and maintained on the OTA's platform.

Targeted advertising can be an effective way for an OTA to attract properties to list their inventory, but it also has some notable disadvantages. For example, advertising can be expensive, especially if the OTA wants to reach a large audience to cover all potential managers. Furthermore, given the highly competitive nature of the hospitality industry (Anderson & Cheng, 2017; Singal, 2015), an OTA may need to invest in ongoing advertising campaigns to maintain a steady stream of new properties, which can be costly in the long run. Another challenge is that it can be difficult to reach all property managers, as not all may be receptive to advertising messages or easily reachable through social media or other advertising channels. Despite precise targeting, it remains challenging to ensure that the right people are seeing the Ads, and some property managers may not be persuaded to list their inventory with the OTA.

3.1.2. Third-party sources.

3.1.2.1. Channel Manager

A channel manager is a software solution that assists travel and accommodation companies in organizing and distributing their available inventory across various distribution channels and online booking systems (Pilepic et al., 2015). It serves as an intermediary between an OTA and a hotel (O'Connor & Frew, 2002).It synchronizes the availability of rooms by regularly sending a request to check for new bookings. ensuring that the availability of rooms is updated in OTAs and hotels (Revello et al., 2012). In fact, many Channel Manager software providers are constantly looking for new partnerships and connections with different OTAs to expand their offerings and reach a wider audience. The OTA and the Channel Manager would need to work together to ensure that their systems are compatible and can exchange information seamlessly. This may involve some technical integration and testing to ensure that the integration is successful and that inventory information is accurately and reliably transmitted between the systems.

Adding inventory for a new OTA through Channel Manager software developers is one potential option. While this approach provides the benefit of a direct connection to the source of inventory, there are several considerations to keep in mind. For example, Channel Managers often have a limited number of properties compared to wholesalers or Bedbanks. Additionally, the integration cost for adding inventory through a Channel Manager can be high, with a one-time payment required for the integration and an expensive pricing model that involves paying a monthly fee for each room at every property. Furthermore, some Channel Managers may require the OTA to invite properties that are not already using a Channel Manager to integrate their own Channel Manager, which can add an additional level of complexity to the process. When an OTA is focused on hotels, it is likely that they will need to connect with a Channel Manager. However, if an OTA focuses on vacation rentals, they may not need a Channel Manager as vacation rentals usually have a smaller inventory and may not require as much distribution and synchronization as hotels.

3.1.2.2. API integration

An API, or Application Programming Interface, is a set of protocols, routines, and tools for building software applications (Sweeney, 2001). It defines how different software components should interact with each other, allowing developers to create applications that can interface with other software systems and platforms (IBM, 2023; Ofoeda et al., 2019). It functions as an intermediary that facilitates the exchange of data and functionality between applications. To access a large inventory of accommodations through API integration, an OTA needs to connect with a provider that offers an API for accommodation data (Pujadas et al., 2024). This provider could be a Bedbank, wholesaler, consolidator, GDS or any provider aggregator that aggregates inventory from multiple suppliers, or it could be an individual supplier that offers their own API. That help OTA to accede to the inventory and complete the reservation.

The OTA would then need to integrate the API into their system to retrieve inventory data (Pujadas et al., 2024). Once the API is integrated, the OTA would be able to access a large inventory of accommodations without needing to manually enter each property into their system. API integration can provide many benefits to an OTA, including the ability to access a wider range of properties, faster updates to inventory data, and automated booking processes. However, it can also involve significant technical work and ongoing maintenance to ensure that the integration remains functional and up-to-date with any. These APIs offer a variety of information including geolocation, address, and user rates. Additionally, they provide OTAs with the ability to search for properties by location, region, country, and cities. Other key pieces of information that can be accessed through real estate APIs include brief details about properties, their amenities, pricing, quality, and availability.

Utilizing the API typically incurs costs. There are pricing systems that that vary depending on the supplier and the nature of the use (development or production). Real estate API pricing structures often include two types of costs. The first is a one-time price that covers the installation process and provision of private keys that allow the OTA to use the contents of the API. This cost can be significant. The second type is the ongoing or running costs, for maintaining the system. API integration with suppliers can be divided into two main categories: free and paid.

Table 1: **Commercial API categories**

API	One-time payment	Running costs	Commission
Paid model	Yes	Monthly / annually (3% - 6%)	NET RATE
Free model	No	No	NET RATE
Commission-based model	No	No	1%

Paid model: With a paid integration, the OTA needs to pay an upfront (one-time payment) amount for the API programming costs. The supplier will then provide the OTA with keys that enable them to access various updated data (prices, availability, rating, etc.) and allow for the booking confirmation of properties. The key preparation process can take anywhere from 1 to 4 weeks, depending on the nature and form of the API. After the one-time payment and the provision of the keys, the supplier will assist the OTA during the integration process until it is successful. The OTA will then be required to pay ongoing or running costs for the continued use of the API. These costs are mainly related to the maintenance and upkeep of the API. After that, two types of running costs can be distinguished as follows:

Form 1: Monthly or annual maintenance costs range from 3% to 6% of the initial integration fee as defined in the terms of the agreement. This provides the OTA with access to an unlimited number of updated data points via the API. Form 2: Limited to a certain number of free requests, (i.e. 5,000 requests per month). These requests are not dependent on whether a reservation is confirmed or not. Once the allotted number of requests has been exceeded, the OTA is required to pay an additional fee for each subsequent request. Most providers of accommodation APIs use the monthly or annual maintenance cost model, as presented in Form 1.

Free model: It is quite rare, as there is neither a one-time payment nor a monthly payment, that means the OTA uses the API for free.

Both the paid and free models have advantages and disadvantages. In a paid model, the providers use running costs to ensure that the OTA will book as many rooms as possible to cover these costs. This pricing model enables the provider to generate greater profit by first covering the fixed running costs and subsequently benefiting from selling rooms at a markup. It should be noted that the price of rooms presented by each provider varies. In both models, the providers offer the NET RATE, which refers to the selling price This is typically the lowest price the provider will offer, and it does not include any markup or commission from the OTA or reseller. The OTA will add its markup or commission to this price. However, the Net Rate varies among providers. Generally, the selling price of Paid Model is lower and more competitive than Free Model. The net rate price is an important factor in determining the profitability of the OTAs, and it is an essential consideration for them before signing any agreement.

Commission-based model: Although rare, this model is particularly suitable for new OTAs. It is based on creating a direct connection between the OTA and hotels through API integration, which allows the OTA to sell rooms at the net rate defined by the hotel; in exchange, the API provider takes a commission (i.e. 1%) for each confirmed booking. Unlike previous models, The OTA don't need to pay a one-time payment neither monthly payment, and can benefit from a Net Rate price of hotel which is competitive because it doesn't include any markup, however the OTA have to pay a commission for the API provider.

In the Paid and Free models, the OTA should have a deposit, which means a prepaid amount, in order to book future reservations. However, the Commission-based model introduces a new payment method, known as the Wallet system, which allows the OTA to pay the provider with the exact amount of the booking without the need for a deposit. This system is advantageous because the OTA does not have to maintain a deposit balance, and can avoid the risk of losing any remaining deposit balance in case of any sudden shutdown of the OTA's business. An OTA can use one or more APIs from different sources at the same time. Nevertheless, it is possible that different providers may use different names for the same property in their APIs. As a result, what looks to be two separate properties in the research results may in reality be the same property. To address this challenge, OTAs must implement result Mapping procedures to merge and eliminate duplicate property entries. Currently, AI facilitates inventory mapping processes.

3.1.2.3. Affiliation program

In an affiliate program, the OTA could utilize the inventory of a Host OTA that offers an affiliate program. In exchange, it takes a commission for each confirmed booking (Gregori et al., 2014; Rolim et al., 2020), which can be up to 50%. This means that the OTA earns a marginal profit for a significant marketing effort. The affiliate program can be made with just using a widget provided by the Host OTA. In an affiliate program, visitors search on the OTA's platform, and the results display all available inventory. However, when a visitor selects a specific property, they will be redirected to the platform of the Host OTA where the

reservation is completed. While this method is easy to adopt with just a widget of a few lines of code, it can have consequences for new OTAs, which may lose customers or prospects. Customers may remember the host OTA because they completed the reservation on its platform. Additionally, the Host OTA could retarget them through email or advertising.

3.1.2.4. White label

Some providers in tourism industry can offer a ready Travel Portal (OTA), B2C or B2B or both. Without name or logo or domain (Ekin, 2021). It could be a solution to skip all pain in collecting and mapping inventory form different resource and it only requires small investment. This kind of Travel Portal include a huge Inventory, not only for accommodation but also all travel services. The provider offers the possibility to customize the theme of White label Travel Portal and some few options. However; it not possible to make great changing in the structure of Travel Portal. It is a pre-designed OTA platform with limited customization options. However, The Travel Portal could add new properties not included in the inventory via extranet services.

3.2. Discussion and Conclusion

Direct Contracting is an effective way for an OTA to establish a direct connection with properties. The main advantage of this method is that it allows the OTA to have full control over the pricing and inventory information (Ye et al., 2019). This allows for greater flexibility and can result in lower costs for the OTA. However, direct contracting also requires a significant investment of time and resources to establish and maintain relationships with properties. Furthermore, it can be challenging to maintain synchronization of inventory and pricing information with the OTA's platform, particularly for larger properties with many rooms.

Targeted advertising campaigns can be a useful tool for OTAs to attract properties to list their inventory on their platform (Chen, 2024). Advertising fees can improve channel coordination between properties and online travel agencies, resulting in higher profitability and addressing the lack of incentives in cooperative decentralization. The main advantage of this method is that it can quickly attract new properties to the OTA's platform (Chen, 2024; Glagoleva et al., 2023). However, it can be expensive and may require ongoing investment to maintain a steady stream of new properties. Additionally, it can be challenging to reach all property managers, particularly those who may not be receptive to advertising messages or not easily reachable through social media or other advertising channels.

Channel Manager connection is a popular method for OTAs to connect with properties. The main advantage of this method is that it provides a single point of access to multiple properties, which can save time and resources for the OTA (Ling et al., 2015; Raab et al., 2018). This system allows OTAs to efficiently manage room availability and pricing across various hotels, streamlining operations and potentially increasing bookings (Beritelli & Schegg, 2016; Ye et al., 2018). Additionally, the channel manager takes care of the synchronization and distribution of inventory information, making it easier for the OTA to manage their platform. This is important for optimizing the partnership and ensuring mutual benefits (Ling et al., 2015; Raab et al., 2018). However, the cost of integration and the pricing model can be expensive, particularly for smaller OTAs. Furthermore, not all properties may be using a channel manager, which can limit the amount of inventory available to the OTA.

API integration is another effective method for an OTA to access a large inventory of accommodations. Dubey et al., (2024) explore the transformative potential of integrating Inventory Management APIs. The main advantage of this method is that it provides direct access to a large pool of inventory. Additionally, it allows the OTA to customize the user interface and manage inventory and pricing information more effectively. The implementation of Robotic Process Automation (RPA) and API in hotel inventory management systems can optimize processing time, reduce costs, and improve overall efficiency for OTAs (Bhawna et al., 2023). However, API integration can be technically challenging and requires significant investment in software development and maintenance. Furthermore, the use of APIs can be expensive, particularly for smaller OTAs. APIs are important not only for inventory, but also for important data for OTA like maps, prices comparison, analytics, booking engine, and AI (Pujadas et al., 2024).

The Commission-based model – strongly recommended - offers advantages for new OTAs, particularly those with limited initial capital. It eliminates the need for upfront one-time payments or recurring monthly fees, helping OTAs manage their initial operational costs. Moreover, OTAs operating under this model can provide customers with competitive net rates for hotel rooms due to the absence of added markups. Transparent and cost-effective pricing can attract travelers looking for affordability, employing both explicit and hidden affordances to influence impulsive buying. This may lead to post-purchase discomfort and regret, with regulatory focus orientation moderating these effects (Jo et al., 2022). However, this model is not without limitations. One notable constraint is its potential to provide a limited inventory. API providers offering the Commission-based model may have partnerships with only a finite number of properties, restricting OTAs' access to a broad spectrum of accommodations. Additionally, the cumulative impact of ongoing commission payments may affect an OTA's profitability as it expands (Shi & Hu, 2021; Tudorica, 2022). Moreover, this model results in a significant dependency on the API provider's inventory and commission structure, making OTAs vulnerable to any alterations in the provider's terms or potential discontinuation of services.

The affiliate Marketing Program offers a cost-effective alternative for OTAs to access a large inventory through partnerships with host OTAs (Gregori et al., 2014; Rolim et al., 2020). By integrating a widget supplied by the host (Piñeiro-Otero and Martínez-Rolán, 2016), they can utilize its inventory while paying a commission for each confirmed booking. This approach is advantageous for new OTAs that may not have the resources to acquire extensive inventory independently. However, it comes with challenges. When customers search for accommodations on the OTA's platform, they are redirected to the host OTA's platform to finalize their bookings. This can lead to customers associating their reservations with the host OTA, potentially causing retention issues for new OTAs. Additionally, the host OTA can retarget these customers through email or advertising, increasing competition.

On the other hand, White Label solutions offer ready-made travel portals that OTAs can adopt without extensive customization; they serve as good alternatives for integrating large-scale systems (Ekin, 2021; Gede & Fajar, 2023). This approach is appealing to OTAs looking to minimize the complexities of acquiring and mapping inventory. The white label portal often includes a wide variety of travel services. OTAs can make some theme customizations but cannot make significant structural changes, especially with the use of microservice architecture on the White Label solutions (Gede & Fajar, 2023). The complexity level of the codes in OTA systems has increased, making it more challenging to integrate third-party systems and develop new features without causing errors in other parts of the system. White Label solutions help mitigate these risks by providing pre-integrated and thoroughly tested systems (Gede & Fajar, 2023). The advantage of this approach is its efficiency, enabling OTAs to launch quickly with a broad inventory. However, it does come with certain limitations. OTAs using white label solutions may struggle to differentiate themselves from competitors who also use the same provider. Their branding and customization options are restricted, which can affect brand identity.

Each method for connectivity has its own distinct advantages and disadvantages, and there is no one-size-fits-all solution. The choice of method will depend on the size and specific focus of the OTA, as well as their budget constraints and technical capabilities. It is crucial for OTAs to carefully evaluate their various options and choose the method that best aligns with their unique needs and long-term strategic goals. When choosing accommodation inventory sources, startup OTAs should consider the following key factors:

- Cost: OTAs should choose inventory sources that offer competitive rates and do not impose high fees.
- Selection: OTAs should choose inventory sources that offer a wide selection of accommodation options, including different types of properties, locations, and price points.
- Technology: OTAs should choose inventory sources that are easy to integrate with their booking system and that provide real-time inventory and rates.
- Reputation: OTAs should choose inventory sources that have a good reputation and that are reliable.

In the tourism industry, the principle of *'Technology first'* prevails. However, technology is not free; it comes at a cost. It should be selected to serve the OTA, improving the quality of its services, raising the satisfaction of its customers, and also recovering its initial costs. In line with this principle, this study has explored the process of adding new properties onto startup OTAs, emphasizing the synchronization of pricing and availability. The methodology employed involved in-depth interviews with key third-party in the connectivity system of OTAs. The results of the study reveal various sources of accommodation inventory for startup OTAs; each has its advantages and challenges. Direct contracting offers control over pricing and inventory but demands considerable time and resources. Targeted advertising campaigns quickly attract properties, yet ongoing costs and challenges in reaching all property managers are considerations. Channel Manager connection provides direct access but with high costs and limited number of properties. API integration, one of the best choices, offers direct access to a vast inventory but involves technical challenges and potential high costs. The Affiliation Program offers a cost-effective means to access diverse inventory but effect the Brand of OTA and the possibility of losing the loyalty of customer. White Label solutions provide an efficient, ready-made option but may face limitations in customizing the platform and differentiation. The decision on the connectivity method is a challenge for startup OTAs, and considerations such as cost, selection, technology, and reputation must be carefully weighed. The findings of this study contribute to refining strategies and optimizing connectivity processes for startup OTAs, allowing them to thrive in a competitive market.

3.2.1. Theoretical Implications

This study provides contributions to the academic discourse on startup OTAs by focusing on an often-overlooked area of sources of accommodation inventory and the challenges of inventory acquisition in resource-constrained contexts. Unlike existing literature that primarily addresses established OTAs or broader tourism dynamics such as customer behavior, distribution channels, or marketing strategies, this research introduces a structured framework categorizing inventory sources. By delineating these sources—direct contracting, channel managers, API integration, affiliate programs, and white-label solutions—this study establishes a foundational model for evaluating and comparing connectivity strategies. Moreover, the study the findings highlight technological advancements, such as API-driven automation and inventory synchronization, into the broader conversation about operational efficiency in OTAs. This contributes to bridging a critical gap in understanding how startups can leverage innovative technologies and partnerships to compete against established players. Furthermore, the findings extend the applicability of inventory acquisition strategies by emphasizing scalability, flexibility, and customization, providing a robust framework for further research into OTA competitiveness and differentiation.

3.2.2. Practical Implications

For practitioners, this study offers actionable insights that can significantly enhance the operational and strategic capabilities of startup OTAs. First, the research highlights the need to balance cost, inventory diversity, and technological compatibility when choosing connectivity methods. Startups with limited resources can adopt commission-based APIs to access inventory without incurring high upfront costs, while those seeking to differentiate their offerings might invest in direct contracting for greater control over pricing and inventory. Additionally, the study underscores the importance of automation tools, such as property management systems (PMS) and channel managers, to streamline inventory management, reduce errors, and ensure real-time updates for customers. Real-life applications of this research include guiding startups in selecting the most effective inventory source based on their target markets and budgets. For instance, small OTAs targeting niche markets can prioritize direct contracting or API integrations tailored to their specific audience, while startups aiming for quick scalability may benefit from white-label solutions or affiliate programs. Another critical takeaway is the focus on leveraging emerging AI tools to personalize customer experiences, such as dynamic inventory recommendations and real-time price adjustments, to improve booking rates and customer satisfaction. Policymakers and industry leaders can also draw on these findings to support smaller operators and startups by developing standardized, cost-effective API models or incentivizing partnerships between established OTAs and new entrants. Ultimately, this research equips startup OTAs with a strategic roadmap to navigate the complex inventory acquisition process and drive innovation in the competitive travel industry.

3.2.3. Limitations and Areas for Future Research:

The study is limited by its relatively small sample size of 47 tourism service providers, which may not fully represent the broader spectrum of the more than 150 companies contacted. Additionally, its focus on the process of adding properties to OTAs restricts generalizability to other segments of the travel industry, such as airlines, car rentals, or rail services, as well as to related operational aspects like marketing, branding, and customer acquisition. Furthermore, the study does not explore the nuanced challenges faced by smaller businesses and independent operators, a critical area for understanding inclusivity and accessibility in OTA integration. Future research should address these gaps by conducting studies with larger and more diverse samples, examining different industry verticals, and analyzing the impact of cutting-edge technologies such as AI-driven inventory automation and dynamic personalization on operational efficiency. Additionally, comparative studies on the integration processes across large and small enterprises, along with longitudinal analyses capturing technological evolutions in OTAs, can provide actionable insights into fostering innovation and equity in the rapidly evolving travel ecosystem.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS:

During the preparation of this work the author used “Litmap.com” AI tool in order to generate a map for literature review, and he used LLMs tools in order to improve the language and readability of the article. After using these tools, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.

DECLARATION OF COMPETING INTEREST

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