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THE ROLE OF AIRPORT RETAILING IN BUILDING RESILIENT AND SUSTAINABLE AIRPORT BUSINESSES

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Abstract:

Globally, airports are under growing pressure to enhance their resilience, foster growth, and ensure sustainability. In this context, non-aeronautical revenue has become vital in establishing prosperous airport businesses. This revenue encompasses income from activities outside core aviation operations, including retail activities, parking, and real estate. Through a thematic synthesis, this research integrates existing airport retailing literature by examining 19 selected studies published between 2021 and 2024. The study highlights key themes already explored and identifies areas that require further investigation. It was found that current research mainly focuses on food and beverage outlets and duty-free stores as primary retail revenue sources. Future studies should consider the impact of emerging technologies on airport retailing and examine passenger behaviour. This study aims to provide valuable insights into the evolving landscape of airport retailing amidst changing industry trends.

Keywords:

Airport Business, Airport Retailing, Non-Aeronautical Revenue, Resilience, Sustainability

Introduction

Airports, traditionally perceived as hubs for transportation, have evolved into multifaceted commercial enterprises, playing a pivotal role in the national economy by generating significant revenues through both aeronautical and non-aeronautical activities (Uzule & Kuzmina-Merlino, 2022). While aeronautical revenues stem from activities directly linked to

air transport, such as passenger charges and landing fees (Freitas et al., 2021; Wu et al., 2024), non-aeronautical revenues (NAR) have emerged as critical drivers of financial sustainability, encompassing rental fees for commercial facilities, parking, food and beverage outlets, and retail stores (Shin & Roh, 2021; Jiang et al., 2024). The growing importance of NAR highlights the strategic role of airport retailing in fostering resilient and sustainable airport businesses, particularly in an era marked by economic volatility and evolving passenger preferences.

Retail activities, which constitute a significant portion of non-aeronautical revenues, offer a promising avenue for airports to diversify their income streams, enhance passenger experiences, and contribute to local economic development (Han et al., 2021; Wattanacharoensil et al., 2022). The global airport retailing market exemplifies this trend, with its valuation projected to increase from US\$ 26.2 billion in 2023 to US\$ 67.0 billion by 2032, driven by a compound annual growth rate (CAGR) of 11.0% (Research and Markets, 2024). Such growth underscores the increasing reliance of airports on non-aeronautical sources to enhance financial security and mitigate risks associated with fluctuating aeronautical revenues (Akoodie & Cloete, 2020). Moreover, airport retailing contributes to local economic development by integrating local products and creating personalized passenger experiences, further amplifying its role in the broader tourism ecosystem (Mordor Intelligence, 2024). However, despite its potential, airport retailing faces challenges such as adapting to shifting passenger behaviours, technological advancements, and the need for long-term sustainability practices (Yerimou & Themistocleous, 2024).

The dependence of airports on aeronautical revenues has historically made them vulnerable to external shocks, such as economic downturns and global crises like the COVID-19 pandemic, which significantly disrupted air travel. Non-aeronautical revenues, particularly from retail activities, have become a critical buffer against financial vulnerabilities, providing airports with opportunities for diversification and stability (Han et al., 2021; Saut & song, 2022). Retailing contributes approximately 33% of non-aeronautical revenues, followed by parking facilities (23%) and vehicle rentals (8%). However, limited research has explored how specific passenger touchpoints, such as the "golden hour" following security clearance, influence spending patterns and passenger satisfaction (Halpern & Mwesiumo, 2021). Additionally, while technological advancements in retail operations are recognized, their long-term impact on sustainability and resilience remains uncertain (Yerimou & Themistocleous, 2024). The dynamics of airport retailing, including passenger behaviour dwell time elasticity, and terminal design, are still under-researched despite their growing significance (Wu et al., 2024). The projected expansion of the global airport retail market underscores the need for airports to adopt innovative and sustainable strategies to maintain competitiveness (Research and Markets, 2024; Mordor Intelligence, 2024).

This paper aims to bridge the identified research gaps by offering practical insights for airport authorities and stakeholders to enhance retail operations and align with strategic organizational goals. It examines the key themes explored over the past four years, highlighting their progression parallel to the airport industry's development. To achieve this, the scope of this thematic literature review is guided by two central research questions.

RQ1: What are the current practices in airport retail operations and their influence on passenger behaviour and purchasing decisions?

RQ2: What challenges and opportunities exist to enhance airport retail operations' effectiveness, resilience, and sustainability?

The paper begins with an introduction and research questions, followed by a review of the literature methodology. It then analyzes trends in the selected studies, such as journal types, geographical distribution, and applied theories. The themes and constructs related to airport retailing are explored, and a detailed discussion of historical research trends is provided, offering a basis for future studies. The paper concludes by summarizing the findings and acknowledging the study's limitations.

Methodology

The research methodology describes the approach researchers should follow in conducting their studies, including identifying the theoretical and philosophical assumptions that underpin the research and examining how these assumptions influence the chosen methods (Saunders et al., 2009). Literature reviews have traditionally been used to summarize and provide an overview of current and historical knowledge derived from relevant literature (Aromataris & Pearson, 2014). A literature review investigates existing works in a specific area, often concentrating on a particular topic or period. The chosen research subject's needs determine the research approach's selection. Research methods can be mixed, qualitative, or quantitative, depending on the data collection and analysis required for the study (Mulisa, 2022).

This research requires a thematic analysis of the airport retailing process, trends, and demand to assess its role in enhancing the resilience and sustainability of airport businesses. Drawing on the methodology outlined by Perego et al. (2011) for theme identification, our initial literature review focused on identifying crucial elements of airport retailing based on the research questions. Subsequently, we structured our analysis around four central themes:

- Retail Operations at Airports
- Passenger Drivers and Buying Intentions in Airport Retail
- Challenges in Airport Retailing
- Future Prospects of Airport Retailing

Keywords

"Airport retailing," "Airport shopping," and "Non-aeronautical revenue".

Short Listing

Eliminated duplicate papers, those with inaccessible full texts, conference proceedings, book reviews, white papers, and similar sources.

Thematic Analysis

Excluded the papers that did not address the identified themes.

Discussion

Analyzed each article based on the identified themes.

42 papers (English Language).

29 papers related to the Airport retailing subject.

19 papers were focused on the identified themes.

Figure 1: Methodology for Performing Thematic Analysis

Thematic analysis is a qualitative research technique used to identify, examine, and report patterns or themes within a dataset. It involves organizing and describing data in detail while identifying and analyzing recurring themes (Braun & Clarke, 2006). This approach is valuable for gathering data from various studies conducted across different contexts and periods, offering a framework based on the identified themes. Given the study objective, which aimed to thoroughly investigate specific questions about knowledge concealment and integrate existing literature to help scholars and practitioners better understand this field's historical, current, and future aspects, a thematic review was considered the most appropriate method.

The study focused on targeted searches using specific keywords within a single database, Scopus, restricting the selection of research that met predefined criteria. Scopus was chosen due to its intuitive interface, extensive coverage, and access to STM journal articles and their references, allowing for both forward and backward searches (Burnham, 2006). By using Scopus, the authors streamlined the literature selection process. Additionally, applying

multiple exclusion criteria ensured that the thematic literature review resulted in a comprehensive and representative collection of research outcomes (see Figures 1 and 2).

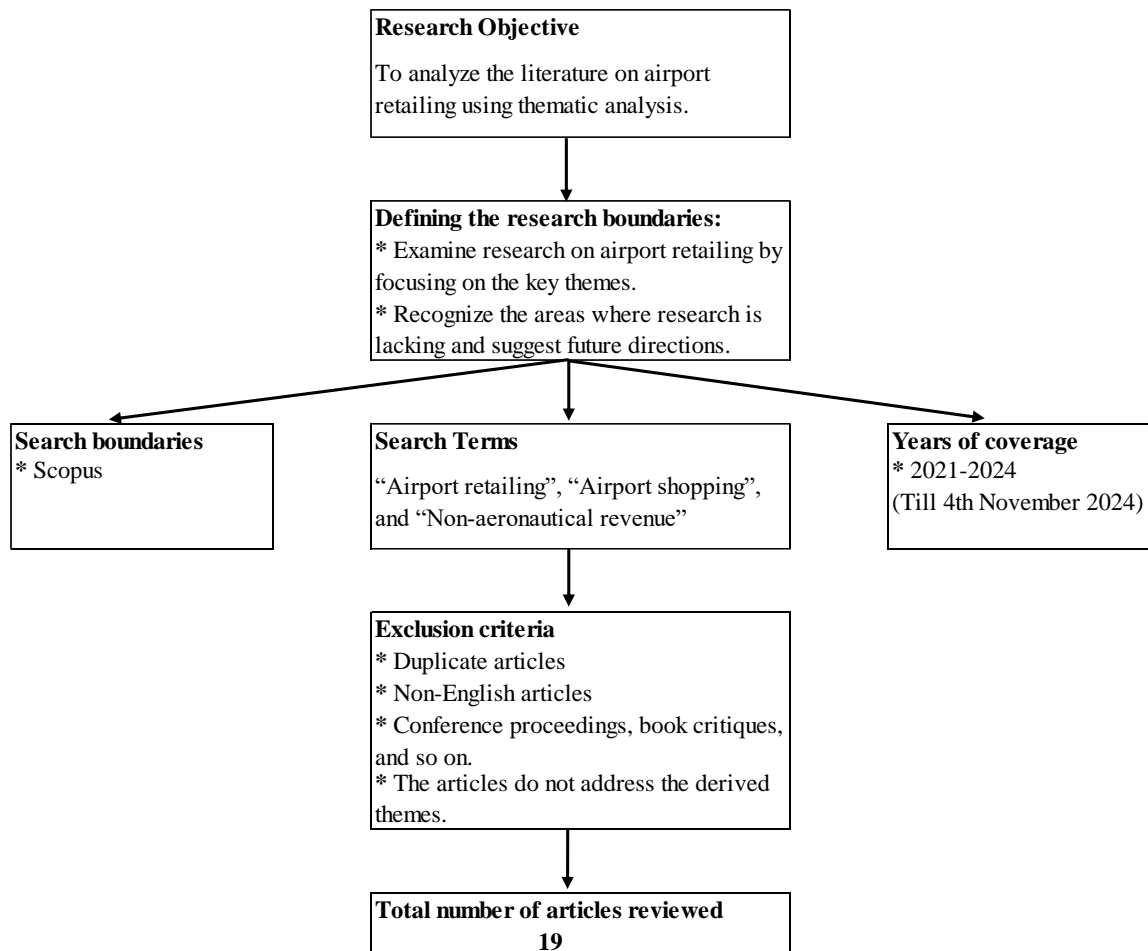


Figure 2: The article selection process

The article selection process began by searching for relevant publications through the Scopus database using carefully chosen keywords. A predefined set of keywords and search phrases guided the search, forming the core search criteria. Terms like "Airport retailing," "Airport shopping," and "Non-aeronautical revenue" were applied to identify pertinent articles (refer to Figure 2).

The authors employed three specific criteria during the article selection process to ensure comprehensive coverage of relevant literature.

Table 1: Inclusion /Exclusion Criteria

Inclusion	Exclusion
Published between 2021 and November 4, 2024.	Published prior to 2021 and subsequent to November 4, 2024.
Papers published in Journals.	Conference proceedings, book reviews, and similar materials.
Only published in English.	Other languages.

After the initial selection of articles, the authors reviewed the abstracts to assess their relevance to the study's main objectives and inclusion criteria. A comprehensive evaluation of the full papers followed to confirm their alignment with the research focus. Articles that did not meet the inclusion criteria were excluded, with each exclusion carefully verified and justified. As a result of this thorough process, 19 research papers were ultimately included in the final list. The complete article reviews and selection procedure is illustrated in Figure 2 for the readers' reference.

Key Insights from the Literature

An analysis of the articles revealed that airport retailing is still in its developmental stages. The 19 papers included in this study were published across 14 different journals, covering various topics such as transportation, aviation, hospitality, and sustainability (refer to Table 2).

Table 2: Compilation of Journals Featuring Articles on Airport Retailing

Journal	Number Publications	Percentage (%)
Journal of Air Transport Management	5	26.3
Research in Transportation Business and Management	2	10.5
Aerospace	1	5.3
Applied Sciences (Switzerland)	1	5.3
Aviation	1	5.3
Case Studies on Transport Policy	1	5.3
International Journal of Contemporary Hospitality Management	1	5.3
International Journal of Economics and Finance Studies	1	5.3
International Journal of Transport Development and Integration	1	5.3
Social Sciences and Humanities Open	1	5.3
Sustainability (Switzerland)	1	5.3
Transportation Research Record	1	5.3
Transport Policy	1	5.3
Utilities Policy	1	5.3
Grand Total	19	100.0

Figure 3 displays the global distribution of articles according to the first author's affiliation, showcasing contributions from a range of countries.

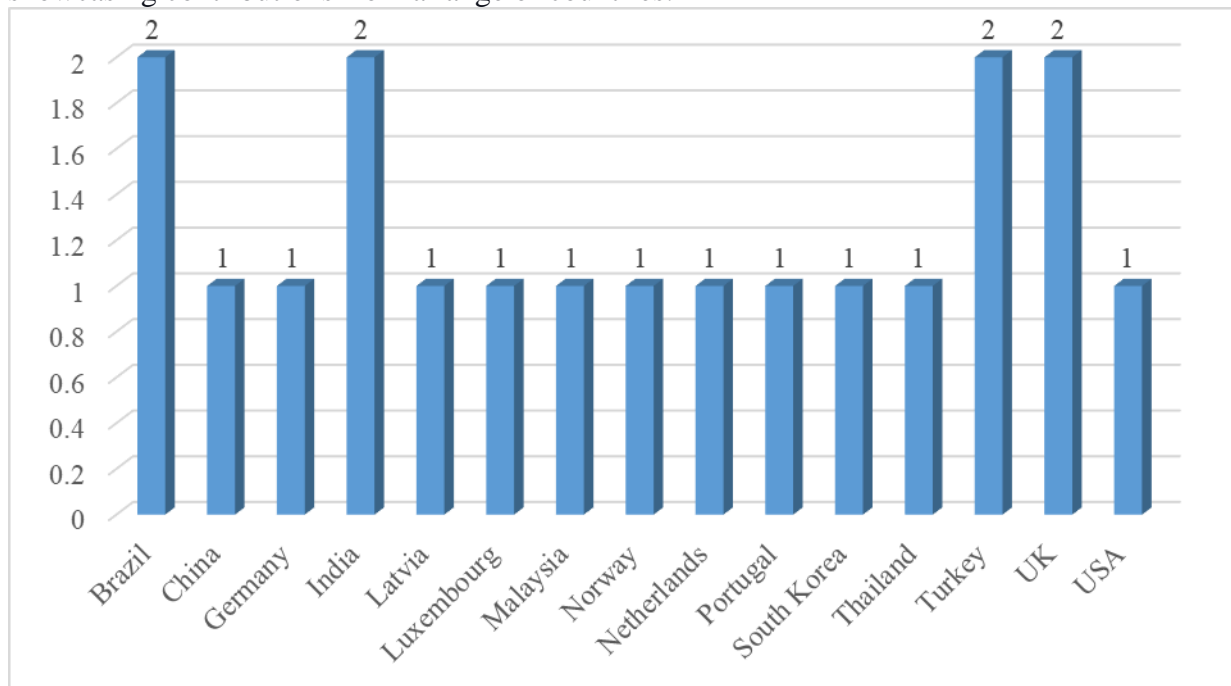


Figure 3: Distribution Of Publications Among The Reviewed Articles.

Airport retail research utilizes a variety of theories (Table 3). Notably, 73.7% of the studies lack alignment with a distinct guiding theory.

Table 3: Theories Applied in Airport Retail Research.

Journal	Number of Publications	Percentage (%)
Experience Economy Theory	1	5.3
Theory elaboration approach	1	5.3
Economic Theory	1	5.3
Possibility theory	1	5.3
Simulation theory	1	5.3
No guiding theory	14	73.7
Grand Total	19	100.0

The corresponding author took on this responsibility in this study, offering insights that helped the research team reach a consensus. The later sections of the paper explore the thematic analysis results and present final reflections.

Thematic Analysis

Retail Operations at Airports

Several factors influence airports' operational and financial performance, including traffic volume, catchment area, GDP, non-aeronautical revenue, and diverse retail outlets. These retail operations, categorized into segments like duty-free shops, food and beverages (F&B),

speciality retail, and general services, are pivotal in generating significant airport revenue streams (Piratla & Singh, 2023; Li et al., 2024). ACI's (2019) data highlights that retail revenue constitutes over 30.2% of airport income, prompting airports to adopt innovative strategies to optimize these streams (Lim-u-sanno et al., 2023).

The segmentation of airport retail operations reflects the variety of passenger needs, encompassing duty-free products, luxury boutiques, gadgets, and food outlets such as Starbucks and McDonald's. Non-retail services, including lounges, wellness centres, and speciality facilities like cinemas and golf courses, also contribute to passenger spending. These activities are strategically located across terminals before and after security checkpoints to maximize convenience and revenue generation. Non-aeronautical activities account for approximately 40% of an airport's total revenue, with retail alone contributing over 30% (Yong et al., 2023; Lim-u-sanno et al., 2023). Duty-free retail remains the most lucrative segment of airport revenue, followed by F&B, which constitutes around 6% of non-aeronautical income. Airports like Incheon International exemplify this model, with commercial facility rentals from duty-free shops, F&B outlets, and other businesses serving as primary non-aeronautical revenue sources (Freitas et al., 2021; Shin & Roh, 2021).

Both airports and airlines benefit from these revenue streams. Airports derive profits from terminal retail activities, while airlines gain from onboard retail markets, which include ancillary services such as food sales, duty-free shopping, and frequent flyer program partnerships. These integrated revenue strategies underscore the importance of retail in enhancing financial performance for all stakeholders (Li et al., 2024).

The strategic importance of retail operations is evident in airports' consistent efforts to innovate and expand their offerings. From traditional retail to experiential services like spas and wellness centres, these operations cater to passenger preferences and increase spending potential, solidifying retail as a cornerstone of airport revenue (Lim-u-sanno et al., 2023).

Passenger Drivers and Buying Intentions in Airport Retail

Passenger behaviour and buying intentions in airport retail are influenced by a combination of terminal design, passenger satisfaction, waiting time, and service quality. Research highlights that terminal layouts significantly affect passenger activities. For instance, linear terminals give passengers greater confidence to reach boarding gates on time, encouraging them to dine away from the gate area, thus optimizing space for retail (Wu et al., 2024). Conversely, concourse layouts necessitate the placement of restaurants closer to gates to alleviate perceived risks of missing flights, thereby increasing dining activity (Wu et al., 2024).

The forced dwell time in terminals positions airports as attractive retail hubs, where shopping becomes a primary activity for passengers awaiting flights (Li et al., 2024). Studies emphasize that passenger satisfaction and waiting times are pivotal in enhancing retail revenue. Passengers with higher satisfaction levels and longer waiting times are more likely to shop (Silva et al., 2024). Moreover, diverse retail and dining options, including local and authentic offerings, significantly boost spending by providing cultural experiences and perceived value (Yong et al., 2023).

Customer experience remains a critical factor in driving non-aeronautical revenue. An analysis of Brazilian airports reveals that passenger satisfaction varies based on factors such as flight

type, travel frequency, and whether passengers are accompanied. Frequent flyers report lower satisfaction with commercial services, while solo travellers express higher satisfaction with food and beverage options (Freitas et al., 2021). Additionally, discretionary activities, including retail and dining, flourish when passengers are afforded extended dwell times. Call-to-gate strategies that maximize free time and minimize security checkpoint queues significantly enhance passenger spending (Mekić et al., 2021).

Service quality and combined service attributes also play a substantial role in shaping passenger buying intentions. Cleanliness, terminal signage, and the quality of food, beverages, and shopping facilities are integral to positive passenger experiences. However, some service combinations, such as food and beverages, warrant further exploration due to their negative impact on recommendations (Alanazi et al., 2024). Failures in airport staff performance and queue management have the most detrimental effects on passenger promotion while shopping and Wi-Fi service failures have lesser impacts (Halpern & Mwesiumo, 2021).

Challenges in Airport Retailing

The global aviation industry has faced significant challenges in recent years, mainly due to the COVID-19 pandemic, which drastically reduced passenger volumes and grounded over two-thirds of global flights (Lim-u-sanno et al., 2023). The pandemic further underscored the vulnerabilities in airport revenue structures. Malaysian airports reported a 65% drop in retail concessions, translating to billions in losses, a pattern mirrored globally (Yong et al., 2023). This crisis led to a severe decline in both aeronautical and non-aeronautical revenues, highlighting the need for airports to diversify revenue streams through innovative non-aviation activities. The two-sided market structure of airports further complicates revenue generation, as the demand for passenger services is intrinsically linked to aircraft movements. A decline in airline activities directly impacts aeronautical and retail revenues, necessitating strategies to retain airlines and attract new clients through competitive pricing and enhanced commercial offerings (Karanki, 2024).

Passenger behaviour and airport design play a crucial role in shaping retail revenue. Dwell time, or the time passengers spend at airports, significantly affects terminal-related revenues, such as food and beverage sales and retail purchases, although the impact varies depending on terminal design (Wu et al., 2024). However, disruptions such as the pandemic have altered consumer habits, reducing reliance on traditional retail and food services due to heightened concerns about safety and hygiene (Bakır et al., 2022).

Financial performance is another critical area of concern. Non-aeronautical revenue growth depends on factors like passenger traffic, consumption penetration rates, and commercial contract terms (Wang et al., 2023). Despite these opportunities, inefficiencies in resource utilization, such as suboptimal gate assignments and limited revenue generation from commercial leases, present significant hurdles (Silva et al., 2023; Piratla & Singh, 2023). For example, small airports in India demonstrate weak revenue contributions from terminal retail and parking areas due to inadequate data and limited scale (Piratla & Singh, 2023). Similarly, though proficient in aeronautical revenue generation, Turkish airports struggle with creating attractive non-aeronautical revenue opportunities, such as passenger services and commercial advertisements (Güner & Seçkin Codal, 2022). This underscores the need for strategic shifts to balance revenue structures, as airports with higher proportions of non-aeronautical income are less sensitive to crises (Uzule & Kuzmina-Merlino, 2022).

Emerging challenges include managing operational inefficiencies and addressing uncertainties in passenger demand. Gate assignment issues, fluctuating passenger volumes, and evolving customer preferences demand flexible and data-driven solutions to enhance retail performance (Silva et al., 2023; Rengarajan et al., 2021). Moreover, consumer habits have shifted post-pandemic, with diminished reliance on traditional shopping and dining services, necessitating innovative approaches to maintain passenger satisfaction and engagement (Bakır et al., 2022).

Future Prospects of Airport Retailing

The evolving landscape of airport retailing is marked by an increasing focus on flexibility, personalization, and integration of digital tools to enhance passenger experience and drive non-aeronautical revenue. Li et al. (2024) highlight the importance of providing better pre-flight product information and tailoring offers to passenger preferences. Flexibility in retail operations, such as optimizing locations, extending operating hours, and incorporating diverse sales channels, is critical to improving shopping convenience. Moreover, adopting digital tools and passenger data analytics can significantly boost retail revenue. However, the study also underscores the environmental challenges associated with airport retailing, such as increased aircraft payload for onboard sales and resource consumption at airports. While initiatives like pre-flight ordering show promise, further research is required to balance enhanced passenger experience and expenditure with mitigating environmental impacts (Li et al., 2024).

Yong et al. (2023) emphasize the potential of enriching passenger experiences through cultural and business branding elements that reflect local and regional identities. These initiatives attract passenger attention and encourage spending, thereby enhancing non-aeronautical revenues. The study advocates for innovative approaches to creating immersive experiences in airport retail spaces to capitalize on passenger engagement opportunities fully.

Silva et al. (2023) underscore the importance of understanding passenger characteristics, behaviours, and purchasing patterns to tailor retail offerings. Differentiating retail strategies based on passenger types—departing, arriving, or transferring—can maximize revenue potential. Passenger movements are key to aeronautical revenues and significant contributors to non-aeronautical revenues through spending on retail, food, and beverages during free time before boarding. These behaviours, however, vary based on the origins and destinations of passengers, requiring nuanced strategies for revenue optimization (Silva et al., 2023).

Shin and Roh (2021) argue for a strategic shift in airport management to reduce aeronautical charges by promoting commercial activities. Establishing and expanding duty-free shops, parking facilities, and other commercial ventures can enhance financial stability while maintaining competitive airport charges. This approach aligns with the broader goal of reinforcing non-aeronautical revenue streams to ensure the economic viability of airports in an increasingly competitive market (Shin & Roh, 2021).

Discussion and Recommendations for Future Studies

The findings from the literature on airport retail operations highlight the crucial role that non-aeronautical revenues, particularly retail, play in airport financial performance. Retail operations, including duty-free shops, food and beverage outlets, and speciality services, account for over 30% of airport income, with non-aeronautical activities collectively contributing around 40%. Factors such as terminal design, passenger satisfaction, and dwell time significantly influence buying behaviour, with passengers more likely to shop when

waiting for flights, particularly in terminals with optimized layouts. Diverse retail offerings, including local and authentic experiences, boost spending by adding perceived value.

Challenges in airport retailing, exacerbated by the COVID-19 pandemic, have underscored vulnerabilities in airport revenue models. The reduction in passenger traffic led to substantial losses, revealing the need for airports to diversify and innovate their non-aeronautical offerings. Despite the potential for non-aeronautical revenue growth, issues like inefficient resource utilization, fluctuating passenger demand, and evolving consumer preferences hinder performance.

Looking ahead, the future of airport retailing lies in flexibility, personalization, and the integration of digital tools. Tailoring retail experiences to passenger preferences and incorporating local cultural elements can enhance engagement and spending. Strategic shifts to reduce aeronautical charges by expanding commercial activities are also essential for financial stability. Ultimately, airports that embrace adaptive, passenger-centric strategies while balancing environmental impacts will likely unlock significant revenue potential, ensuring their long-term resilience and sustainability.

Emerging trends in airport retailing indicate that passenger behaviour has shifted towards digital and contactless shopping experiences. With increased health and safety concerns, passengers are more inclined to use mobile apps for pre-flight orders, click-and-collect services, and contactless payment methods. Airports can capitalize on this trend by enhancing their digital platforms, offering a seamless and safe shopping experience. Future studies should explore the integration of these technologies and assess their impact on passenger satisfaction and revenue generation.

Given the dynamic nature of airport retailing, future research should focus on several key areas to ensure airport businesses' long-term resilience and sustainability. Firstly, integrating emerging technologies such as AI, IoT, and blockchain should be explored in greater depth, focusing on how these technologies can enhance operational efficiency, customer experience, and revenue generation. Additionally, further studies should examine the environmental implications of airport retailing, specifically regarding resource consumption and waste generation, and propose strategies for more sustainable retail operations.

Moreover, research should investigate the impact of different terminal layouts on passenger behaviour and retail revenue, particularly in post-pandemic recovery. Understanding how terminal designs affect dwell time and purchasing behaviour will help airports optimize their retail spaces. Similarly, passenger segmentation studies should be expanded to explore how different passenger profiles (e.g., business vs. leisure travelers) influence buying intentions and preferences.

Lastly, airports should be encouraged to invest in data-driven decision-making processes, utilizing passenger data analytics to optimize product offerings, store placements, and promotional strategies. Research should focus on developing models that predict passenger behaviour and tailor retail experiences accordingly, helping airports stay competitive in an increasingly digital and personalized marketplace.

Conclusion and Limitations

In conclusion, airport retailing is essential for fostering resilient and sustainable airport businesses. The study successfully bridges the identified research gaps by providing actionable insights for airport authorities and stakeholders to optimize retail operations while aligning with strategic organizational objectives, addressing the key themes and their progression within the evolving airport industry. By embracing technological innovations, improving customer experiences, and diversifying retail offerings, airports can strengthen their financial resilience and adapt to evolving passenger needs. The role of retailing in airports has significantly transformed due to factors such as changes in passenger behaviour, advancements in technology, and the effects of global disruptions like the COVID-19 pandemic.

This literature review covers various aspects of airport retailing, including retail operations, passenger drivers and buying intentions, challenges faced, and prospects. It highlights that successful airports take a comprehensive approach to optimize their retail strategies. A deeper understanding of these elements is vital for stakeholders to overcome challenges and promote sustainability in the dynamic aviation sector.

However, this study has some limitations. It relies solely on a single scientific publication database, which limits its scope. Future research could explore additional databases and incorporate non-English publications, conference papers, and other sources not included in this review. Furthermore, restricted access to full-text papers hindered the inclusion of some relevant studies.

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