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International Tourism Logistics: The Role of Air and Maritime Transport in Shaping Global Trends and Accessibility

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ABSTRACT

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The article analyzes the complex relationship between air and maritime logistics and the development of international tourism. The author analyzes statistical data, including the volume of global air and sea traffic, the number of passengers, and annual growth rates with forecasts up to 2028. The author reveals the trends of steady growth in air and cruise traffic observed before the COVID-19 pandemic, which coincided with the expansion of global tourism. In 2020, the pandemic led to a sharp decline in both passenger demand and transportation operations, which revealed the vulnerability of both sectors. At the same time, the study demonstrates their ability to recover quickly in 2021–2023, thanks to the easing of travel restrictions, the resumption of tourist activity, and the expansion of cruise and ferry operations. The importance of well-developed logistics and transportation networks to ensure the accessibility of tourist destinations is identified. Key airports, as well as strategically located seaports, act as important hubs that facilitate the organization of global passenger flows. At the same time, managing the infrastructure and capacity of these centers is crucial to ensure the growth of transportation and maintain efficient logistics systems in the tourism sector. Further growth in air and sea transportation is predicted. The author emphasizes the need for systematic investment in the development of airport and port infrastructure, the digitalization of processes, and the implementation of sustainable practices to meet the growing needs of passengers and ensure the long-term viability of both sectors. It is summarized that the interdependence of aviation and maritime logistics with international tourism is key to the further development and growth of the global tourism industry. It is proven that efficient logistics systems contribute to increasing the accessibility of tourist destinations, while innovation and infrastructure development ensure the stable long-term development of the industry.

KEYWORDS

tourism, tourism industry, international tourism, sustainable development, air transport, aviation economics, shipping, seaborne trade, logistics, tourist destination, digitalization, COVID-19 pandemic.



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Логістика міжнародного туризму: роль авіа- та морського транспорту у формуванні глобальних тенденцій і транспортної доступності

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СТАТТЯ

АНОТАЦІЯ

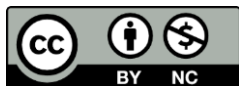
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У статті представлено аналіз комплексного взаємозв'язку між авіаційною й морською логістикою та розвитком міжнародного туризму. Здійснено аналіз статистичних даних, зокрема обсяг глобального повітряного та морського руху, кількість пасажирів, річні темпи зростання із прогнозами до 2028 року. Виявлено тенденції стійкого зростання авіаційних і круїзних перевезень, які спостерігалися до пандемії COVID-19, та співпадали з розширенням глобального туризму. У 2020 році пандемія призвела до різкого скорочення як пасажирського попиту, так і транспортних операцій, що виявило вразливість обох секторів. Водночас дослідження демонструє їхню здатність до швидкого відновлення у 2021–2023 роках, завдяки послабленню обмежень на подорожі, відновленню туристичної активності та розширенню круїзних і поромних операцій. Визначено важливість розвинених логістичних і транспортних мереж для забезпечення доступності туристичних напрямків. Ключові аеропорти, а також стратегічно розташовані морські порти, виступають у ролі важливих вузлів, що сприяють організації глобальних пасажирських потоків. При цьому управління інфраструктурою та потужностями цих центрів є вирішальним для забезпечення зростання перевезень і підтримки ефективних логістичних систем у туристичній сфері. Прогнозуються подальше зростання авіаційних і морських перевезень. Наголошується на необхідності системних інвестицій у розвиток інфраструктури аеропортів та портів, цифровізації процесів і впровадженні стійких практик для задоволення зростаючих потреб пасажирів та забезпечення довгострокової життєздатності обох секторів. Узагальнено, що взаємозалежність авіаційної та морської логістики з міжнародним туризмом є ключовою для подальшого розвитку та зростання глобальної туристичної індустрії. Доведено, що ефективні логістичні системи сприяють підвищенню доступності туристичних напрямків, а інновації та розвиток інфраструктури забезпечують стабільний довгостроковий розвиток галузі.

КЛЮЧОВІ СЛОВА

туризм, індустрія туризму, міжнародний туризм, сталий розвиток, економіка повітряного транспорту, судноплавство, морський транспорт, логістика, туристична дестинація, цифровізація, пандемія COVID-19.

1. Introduction

Logistics plays a vital role in the development of international tourism by ensuring the seamless movement of people, goods, and services across borders and within destinations. It encompasses various interconnected components, including transportation, warehousing, inventory management, and distribution, all of which enhance the efficiency and accessibility of tourist locations.

Air and maritime transport are key elements of the logistics system, influencing travel time, costs, reliability, and overall convenience. A well-developed air transport network facilitates the rapid movement of tourists across continents, while efficient maritime transport supports cruise tourism and the supply of essential goods for tourism infrastructure. Additionally, ground transportation – such as rail, road, and public transit networks – ensures smooth connectivity between airports, seaports, and major attractions.

Beyond transportation, logistics plays a crucial role in the tourism supply chain by enabling the timely delivery of food, beverages, hospitality supplies, and other essential resources. Hotels, restaurants, and entertainment venues rely on efficient logistics operations to maintain service quality and meet visitor expectations. Moreover, sustainable logistics practices, including green supply chains and eco-friendly transportation solutions, help minimize the environmental impact of tourism while supporting its long-term sustainability.

In a competitive global market, well-planned logistics infrastructure and strategies are essential for enhancing the appeal and competitiveness of tourist destinations. Investments in modern airports, high-speed rail networks, and smart mobility solutions improve accessibility and visitor satisfaction. Additionally, digital innovations – such as real-time tracking, automated customs processing, and integrated booking systems – enhance the travel experience by reducing delays and inefficiencies.

Ultimately, the synergy between logistics and tourism development strengthens the global tourism industry, drives economic growth, and boosts the attractiveness of destinations. A well-developed air and maritime transport network are crucial for the sustainable growth of tourism. As international travel expands, investing in airport and seaport infrastructure, expanding air and sea routes, and adopting modern transportation technologies are key to meeting growing demand. By improving these systems, destinations can enhance their appeal, foster economic development, and ensure long-term resilience in an evolving global landscape.

2. Literature Review

The relationship between logistics and international tourism has gained attention for its role in improving the efficiency and competitiveness of the tourism industry. Previous studies have explored aspects like the impact of transport infrastructure on tourist flows, supply chain management for tourism businesses, and the integration of digitalization into logistical processes, offering insights into how logistics enhances the accessibility and attractiveness of tourist destinations.

However, there remain gaps in the research, particularly in understanding the broader implications of logistics for the sustainable development of tourism. More attention is needed on how optimized logistics systems can boost the competitiveness of destinations in a globalized and digitally connected tourism market.

Further research is required to better understand the role of logistics in shaping the future of international tourism [1–2]. This would provide a more comprehensive perspective on the relationship between logistics, digitalization, and the evolving demands of the tourism industry.

Key works in the field highlight the importance of efficient logistics in supporting tourism. E. Mrnjavac (2002) examined the logistics of tourist destinations, emphasizing the need for strategic transportation planning [3]. N. Ivasyshyna (2024) focused on transport logistics in tourism, considering the role of digitalization and modern transport systems [4]. H. Akyurt (2019) explored logistics management in tourism, highlighting the integration of logistics solutions across transportation, accommodation, and customer service [5]. M. Ustenko (2015) discussed transport logistics within the context of European integration and cross-border tourism [6]. These studies underscore logistics' critical role in enhancing tourism operations and adapting to changing market demands.

3. Problem Statement

This article highlights the importance of the interrelationship of air and sea logistics to ensure the accessibility of tourist destinations and the development of international tourism.

4. Methods and Materials

The study was based on a comprehensive analysis of scientific publications and reports that emphasize the impact of the interconnection of aviation logistics and transport networks on the development of international tourism. During the work, the methods of data collection and processing, system analysis, synthesis, logical comparison, the method of comparative advantages, and the graphic method were used.

5. Results and Discussion

Efficient logistics systems, particularly in aviation and maritime transport, play a crucial role in shaping international tourism by enhancing destination accessibility, travel efficiency, and overall tourist experience. The development of airports, seaports, and transport networks directly influences the growth of global tourism flows, while advancements in digitalization and infrastructure further optimize logistics operations. This article discusses the key components of air and maritime logistics, their impact on international tourism, and the challenges and opportunities in ensuring sustainable and efficient transport connectivity for travelers worldwide (Figure 1).

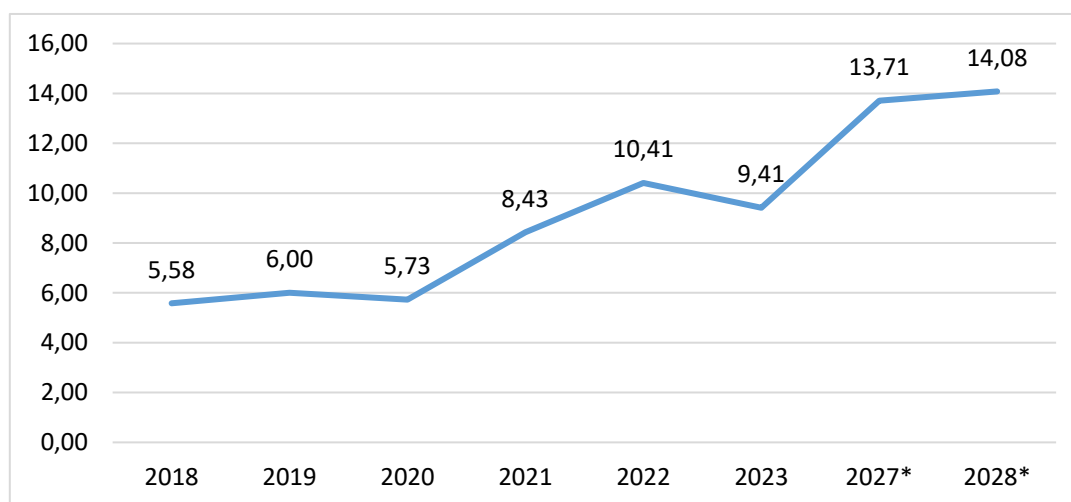


Figure 1. Size of the market global logistics industry from 2018 to 2023, with forecasts until 2028 (in trillion US dollars)

Source: Compiled by the author based on the data from [7].

The data on the size of the global logistics industry from 2018 to 2023, with forecasts up to 2028, shows a dynamic trend marked by fluctuations and growth. The industry grew from \$5.58 trillion in 2018 to \$6.00 trillion in 2019, reflecting steady expansion. The dip to \$5.73 trillion in 2020 is likely due to the impact of the COVID-19 pandemic, which disrupted global supply chains and logistics operations.

A strong recovery occurred in 2021, reaching \$8.43 trillion, and further growth in 2022 to \$10.41 trillion, likely fueled by the post-pandemic economic recovery, increased demand for goods, and advancements in logistics technology and infrastructure. The slight decrease to \$9.41 trillion in 2023 might reflect some economic uncertainty or market adjustments after the rapid recovery period.

The forecasts predict continued growth, with the market expected to reach \$13.71 trillion by 2027 and \$14.08 trillion by 2028, indicating long-term positive growth driven by expanding global trade, technological advancements, and increasing e-commerce demand. Overall, the global logistics industry has demonstrated resilience, experiencing a strong recovery after 2020, and is expected to sustain its growth in the years ahead (Figure 2).

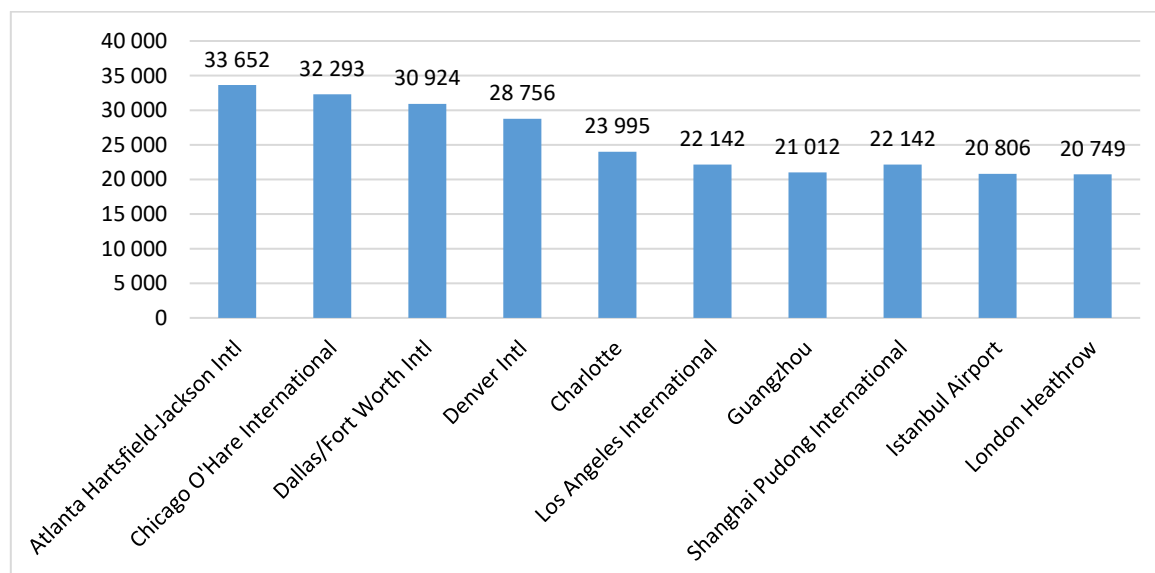


Figure 2. Leading airports worldwide in May 2024 by number of departures

Source: Calculated by the author based on the data from [8].

The data on leading airports by departures in May 2024 reveals key global aviation trends. Atlanta Hartsfield-Jackson leads with 33,652 departures, followed by Chicago O'Hare with 32,293, and Dallas/Fort Worth and Denver International with 30,924 and 28,756, respectively. These U.S. airports are crucial hubs for both domestic and international flights.

Chinese airports like Guangzhou and Shanghai Pudong, with 21,012 and 22,142 departures, reflect the growing importance of Asia in global air travel. Istanbul Airport (20,806 departures) and London Heathrow (20,749) remain vital international hubs connecting Europe, Asia, and beyond.

The dominance of U.S. airports highlights the strength of the domestic aviation network, while China's airports signify rising travel demand in Asia. Istanbul and Heathrow remain relevant as major hubs, supporting global tourism flows.

The high number of departures indicates strong connectivity, which is essential for international tourism development. However, infrastructure and air traffic management challenges remain. Continued investment is needed to accommodate growing demand and ensure smooth travel experiences (Figure 3).

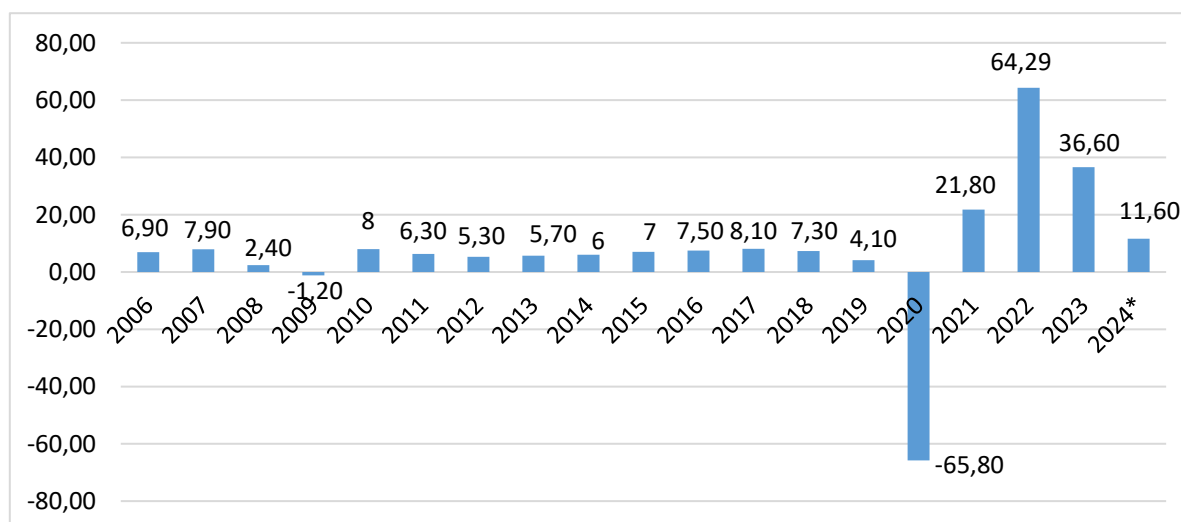


Figure 3. Annual growth in global air traffic passenger demand from 2006 to 2024, %

Source: Compiled by the author based on data from [9].

From 2006 to 2019, global air passenger traffic grew steadily, with average annual growth rates of 6–8%, peaking in 2010 (8%) and 2017 (8.1%). Growth slowed during economic downturns, such as the 2008–2009 financial crisis, with negative growth in 2009 (–1.2%).

In 2020, the COVID-19 pandemic caused a 65.8% drop in passenger demand, the largest decline in history, due to lockdowns, travel restrictions, and economic uncertainty. The industry began recovering in 2021, with a 21.8% growth, followed by 64.29% in 2022, driven by easing restrictions and a surge in tourism. By 2023, growth will have stabilized at 36.6%.

Forecasts for 2024 predict an 11.6% growth, indicating a return to pre-pandemic growth rates. This recovery is closely tied to the revival of international tourism, with air travel playing a central role in regaining momentum (Figure 4).

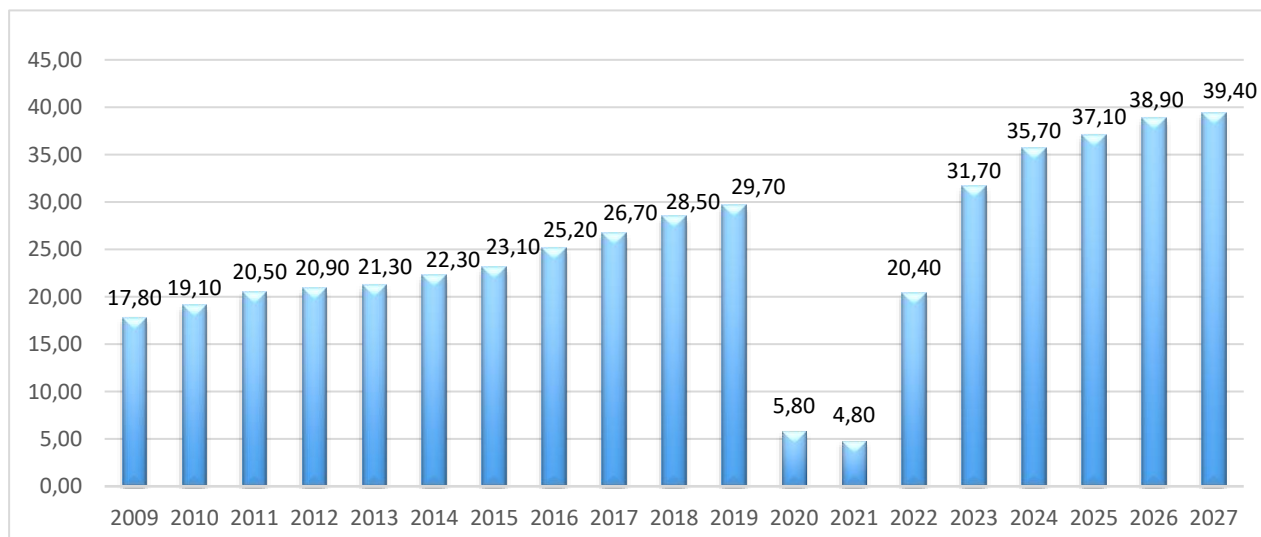


Figure 4. Global Ocean cruise passenger numbers from 2009 to 2023, with a forecast until 2027 (in millions)

Source: Compiled by the author based on data from [10].

The global cruise tourism market experienced steady growth from 2009 to 2019, reflecting its increasing popularity. During this period, the number of passengers rose from 17.8 million to 29.7 million, driven by market expansion, the introduction of new cruise ships, and rising demand for luxury and adventure travel.

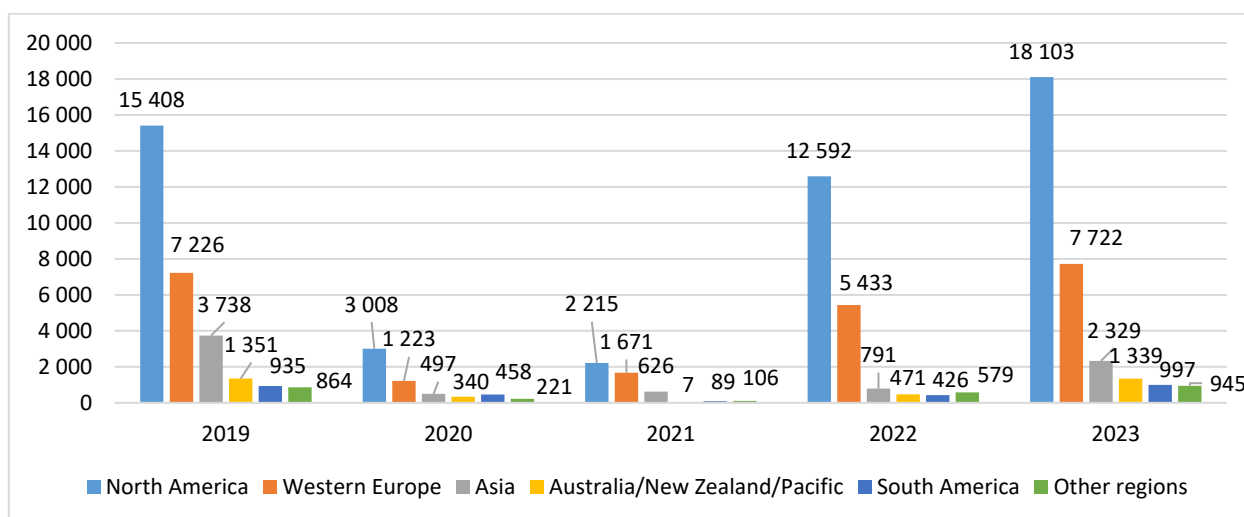
In 2020, the industry faced a sharp decline due to the COVID-19 pandemic, with passenger numbers dropping to 5.8 million – nearly 80% less than in 2019. The downturn continued in 2021, with only 4.8 million passengers, as travel restrictions, port closures, and safety concerns limited recovery.

However, by 2022, the sector showed strong signs of rebound, reaching 20.4 million passengers, fueled by the resumption of cruise operations, high travel demand, and improved health measures. In 2023, the number of passengers surpassed pre-pandemic levels, reaching 31.7 million, demonstrating the industry's resilience.

Forecasts for 2027 suggest continued expansion, with passenger numbers expected to reach 39.4 million by 2027. This growth is attributed to fleet expansion, enhanced onboard experiences, and increasing demand in emerging markets (Figure 5).

Before the pandemic, North America led the global cruise market with 15.4 million passengers in 2019, followed by Western Europe (7.2 million) and Asia (3.7 million). Australia/New Zealand, South America, and other regions contributed smaller numbers. However, the COVID-19 pandemic caused a dramatic decline in 2020, with all regions experiencing drops of over 80%. By 2021, recovery remained slow, particularly in Asia (626,000 passengers) and Australia/New Zealand (only 7,000), due to stricter travel restrictions. In 2022, North America (12.6 million) and Western Europe (5.4 million) rebounded significantly, while other regions showed more gradual improvement. By 2023, North America (18.1 million) and Western Europe (7.7 million) will surpass pre-pandemic levels, while Asia (2.3 million) will lag, reflecting ongoing travel challenges. Australia/New Zealand (1.3 million) and South America (997,000) nearly regained their 2019 numbers. Overall, the global cruise industry demonstrated a strong post-pandemic recovery, with North America and Western Europe leading the resurgence, while Asia faced the slowest rebound.

While global growth is evident, recovery may vary by region, depending on the speed of reopening and economic resilience. For example, regions reliant on long-haul travel may have experienced slower rebounds than those with strong domestic travel networks.



Note: Other regions include Eastern Europe, the Middle East, Scandinavia/Iceland, Africa, the Caribbean, and Central America.

Figure 5. Global Ocean cruise passenger numbers by source region from 2019 to 2023 (in thousands)

Source: Compiled by the author based on data from [11].

Both sectors face common challenges, such as rising fuel costs, labor shortages, and the imperative to reduce carbon emissions. For the aviation industry, these challenges are driving a shift toward sustainable aviation fuels and green technologies. In maritime transport, the adoption of cleaner propulsion systems, energy-efficient ship designs, and alternative fuels is crucial to mitigate environmental impacts.

The annual growth data illustrates the resilience of both industries in overcoming external shocks – such as the pandemic – and returning to a growth trajectory. The robust recovery highlights the vital roles that air travel and sea transport play in supporting global tourism, trade, and economic recovery. As both sectors stabilize in 2024, continued investments in logistics, infrastructure, and sustainability will be critical to ensuring long-term growth and resilience across global transportation networks.

6. Conclusions

From the early 2000s to 2019, both air and maritime transport experienced steady growth, driven by increasing international travel demand, expanding tourism markets, and technological advancements. Aviation benefitted from growing airline networks and airport capacity, while maritime transport saw continuous improvements in port infrastructure and cruise tourism, ensuring efficient passenger and cargo movement.

The COVID-19 pandemic in 2020 caused an unprecedented decline in both sectors, with a sharp reduction in flights, cruise suspensions, and disruptions in global supply chains. However, since 2021, both air and maritime transport have demonstrated resilience, adapting to new operational challenges and shifting travel patterns. The demand surge between 2021 and 2023 signals the revival of international tourism and underscores the need for modern, adaptive logistics systems that span both air and maritime networks.

In aviation, investments in airport infrastructure, digitalized processes, and innovative logistics solutions have enhanced operational efficiency and passenger experience. In maritime transport, the modernization of port facilities, smart logistics adoption, and the integration of digital technologies are equally crucial to accommodate growing passenger volumes and freight movement. The substantial growth projected for 2027–2028 further reinforces the importance of efficient and interconnected air and sea transport networks, which are essential for improving accessibility to tourist destinations and supporting the long-term expansion of the global tourism industry.

While both aviation and maritime transport play indispensable roles in global tourism, their continued development faces several challenges:

- *Sustainability*: The adoption of green technologies, alternative fuels, and energy-efficient transport solutions in both air and sea travel is critical for reducing environmental impact;
- *Digital transformation*: Advancements in AI, automation, and smart infrastructure at airports and seaports can improve efficiency, reduce costs, and enhance the passenger experience;
- *Post-pandemic recovery*: Understanding the long-term effects of COVID-19 on travel behavior, cruise tourism, and international mobility will be essential for future planning;
- *Infrastructure and capacity*: Investment in airport expansions, port modernization, and integrated transport hubs will be required to accommodate growing tourism flows;
- *Geopolitical and economic factors*: Economic fluctuations, geopolitical instability, and trade policies continue to impact travel demand and logistics stability in both aviation and maritime transport.

The recovery and growth of the tourism industry depend on well-integrated aviation and maritime logistics systems that balance efficiency, sustainability, and innovation. Ongoing research into green transport solutions, digital transformation, and capacity management will be vital for ensuring the long-term resilience and competitiveness of global tourism.

References

1. Lomachynska, I., Andrushchenko, O., & Arestov, S. (2024). European Union as a tourist destination: Analysis of attractiveness factors of attractiveness and competitiveness of the EU tourism industry. *Economies' Horizons*, 4(29), 134–144. [https://doi.org/10.31499/2616-5236.4\(29\).2024.316312](https://doi.org/10.31499/2616-5236.4(29).2024.316312)
2. Lomachynska, I. (2024). Dynamics of international tourism in the world economy: Sustainability of development under conditions of uncertainty, overcoming global challenges and new trends. *International Humanitarian University Herald. Economics and Management*, (61), 46–53. <https://doi.org/10.32782/2413-2675/2024-61-7>
3. Mrnjavac, E. (2002). Logistics of tourist destination. *Promet (Zagreb)*, (14), 97–102. <https://doi.org/10.7307/ptt.v14i2.853>
4. Ivasyshyna, N. (2024). Development of transport logistics in tourism. *E3S Web of Conferences*, (508), Article 08010. <https://doi.org/10.1051/e3sconf/202450808010>
5. Akyurt, H., & Ergün, M. (2019). Logistics management in tourism. In E. Dinçer, S. Sönmez, M. Bostancı, & E. Özçoban (Eds.), *Research & Reviews in Social, Human and Administrative Sciences* (pp. 105–114). Ankara: Gece Kitaplığı. https://www.academia.edu/45179865/LOGISTICS_MANAGEMENT_IN_TOURISM
6. Ustenko, M. (2015). Aktualnist formuvannia transportno-lohistychnykh system v umovakh yevropeiskoi intehratsii [Actuality of transport and logistic systems formation in Euro integration]. *Visnyk ekonomiky transportu i promyslovosti – The Bulletin of Transport and Industry Economics*, (50), 207–210. <https://doi.org/10.18664/338.47:338.45.v0i50.52987> (in Ukraine)
7. Statista. (2024). *Logistics industry – market size 2028*. <https://www.statista.com/statistics/943517/logistics-industry-global-cagr>
8. Statista. (2025). *Leading airports worldwide, by departures 2024*. <https://www.statista.com/statistics/1482833/leading-airports-worldwide-by-departures>
9. Statista. (2025). *Airline industry – passenger traffic worldwide 2024*. <https://www.statista.com/statistics/564717/airline-industry-passenger-traffic-globally/>
10. Statista. (2025). *Number of cruise passengers worldwide 2009–2027*. <https://www.statista.com/statistics/385445/number-of-passengers-of-the-cruise-industry-worldwide/>
11. Statista. (2025). *Number of global cruise passengers by region 2023*. <https://www.statista.com/statistics/287111/cruise-passengers-by-source-country/>