Advances in Consumer Research
https://acr-journal.com/
Volume-2 | Issue-6 | December 2025

Original Researcher Article

Prioritizing Key Drivers Of Strategic Success: Integrating Technology, Sustainability, And Market Dynamics – AHP Analysis

Abhas Saxena[1], Dr. Mohit Rishi[2], Dr. Prasoom Dwivedi[3*]

[1]BBA Aviation Management, UPES
[2]Assistant Professor, School of Business, UPES
[3*]Professor, Symbiosis Centre for Research and Innovation, Symbiosis International (Deemed University), SIU-SCRI.
***Corresponding Author:**
Dr. Prasoom Dwivedi
* Symbiosis International (Deemed University), SIU-SCRI

ABSTRACT
This study presents a structured multi-criteria evaluation framework using the Analytic Hierarchy Process (AHP) to identify and prioritize the key drivers influencing e-commerce growth in complex business environments. The framework focuses on five critical dimensions: technological advancement, market responsiveness, environmental sustainability, strategic alignment, and economic viability. AHP is employed to conduct pairwise comparisons and derive weights for each criterion and its sub-components, allowing a quantitative assessment based on expert judgments. The analysis reveals that technological drivers—such as digital infrastructure, automation, and AI—play the most pivotal role in enhancing operational efficiency and customer engagement. Environmental sustainability emerges as a growing priority, with green logistics and eco-conscious practices becoming essential for consumer trust and regulatory compliance. Market responsiveness, driven by personalization, omnichannel strategies, and shifting customer preferences, demands agility and innovation. Strategic alignment ensures that e-commerce initiatives are guided by long-term vision and adaptability, while economic viability underscores the importance of financial sustainability. The hierarchical structure of the framework enables organizations to break down complex decision-making into manageable components, facilitating targeted resource allocation. By integrating AHP, this research offers a transparent, evidence-based approach that supports balanced and forward-looking strategic planning in the e-commerce sector. The findings emphasize that sustainable growth depends on harmonizing multiple drivers rather than focusing on a single aspect. Ultimately, the framework serves as a practical tool for practitioners and contributes to scholarly understanding of digital commerce dynamics, equipping stakeholders to navigate a rapidly evolving and competitive global marketplace with strategic clarity.

Keywords: E-commerce, Airport operations, Air cargo logistics, Geographical location, Analytic Hierarchy Process (AHP).

1.1 Introduction

E-Commerce, or electronic commerce, involves the sale of physical goods to individual consumers through digital platforms such as websites and mobile applications. It encompasses both online-only businesses and traditional retailers with integrated digital channels. The market is defined by B2C transactions, excluding C2C, B2B, and reCommerce, and tracks key metrics like revenue, user base, and device-based sales distribution. Data sources include industry reports, official filings, and digital trend analyses, with VAT included in revenue figures. Major global players include Amazon, JD.com, Taobao, Tmall, Apple, and Walmart, reflecting the sector's vast and growing influence.

E-commerce has rapidly evolved into a critical driver of transformation across industries, including aviation, significantly influencing airport operations and air cargo logistics. Over the past two decades, advancements in digitization, changing consumer behavior, and globalization have reshaped how airports function—transforming them from transit hubs into dynamic commercial ecosystems. The growth of global air cargo is closely tied to the expansion of cross-border e-commerce, rising consumer expectations for fast delivery, and the digitalization of logistics. According to the International Air Transport Association (IATA, 2023), air cargo demand rose by 6.9% in 2021 compared to pre-pandemic levels in 2019, generating nearly $140 billion in revenue, more than double the 2019 figure.

How to cite: Abhas Saxena, Dr. Mohit Rishi, Dr. Prasoom Dwivedi, Prioritizing Key Drivers Of Strategic Success: Integrating Technology, Sustainability, And Market Dynamics – AHP Analysis.. " Advances in Consumer Research, vol. 2,(6), 2025, 1232-1244.

Technologies such as e-air waybills, contactless operations, and real-time tracking have become central to these operations, enhancing efficiency and resilience. Airports are increasingly adopting digital retail platforms, smart kiosks, and mobile commerce applications to offer seamless passenger experiences and tap into non-aeronautical revenue streams. Leading airports such as Singapore Changi and Amsterdam Schiphol exemplify the Aerotropolis concept (Kasarda, 2011), where e-commerce plays a strategic role in regional economic growth, logistics connectivity, and retail innovation.

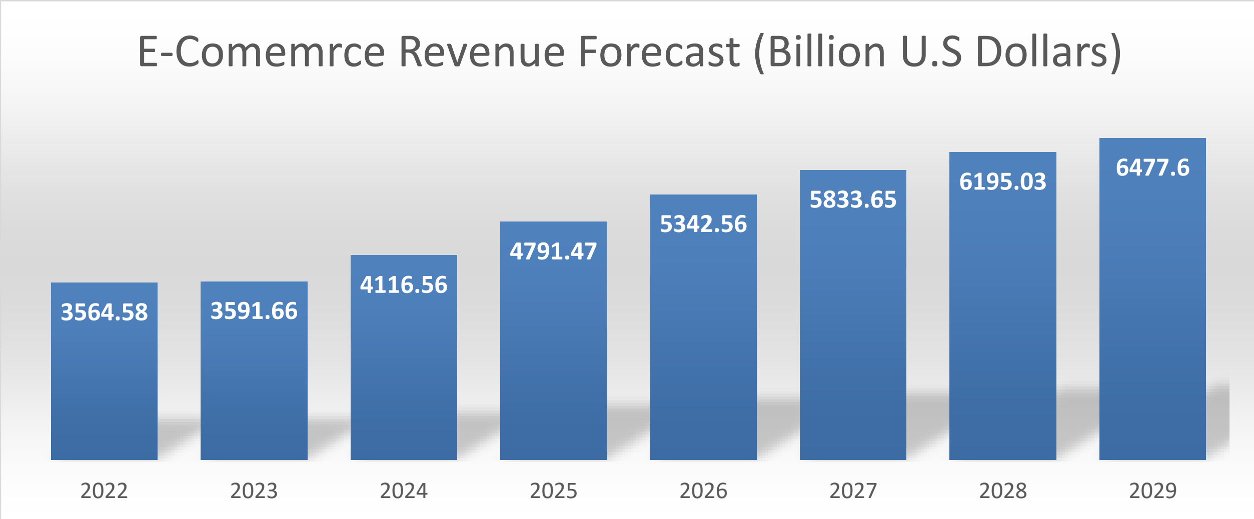

Figure 1.1 Global E-commerce Revenue Forecast 2022-2029; Source: Statista, 2024

Figure 1.1 highlights the projected growth of global eCommerce revenue, rising from **USD 3,564.58 billion in 2022** to approximately **USD 6,477.60 billion by 2029**. This steady upward trajectory reflects the sustained expansion of digital retail, driven by increased internet penetration, mobile commerce adoption, and evolving consumer preferences. Significant growth is observed particularly between 2024 and 2026, indicating a period of accelerated digital transformation and consumer shift toward online platforms. The data underscores the increasing economic significance of eCommerce and the strategic importance for businesses to strengthen their digital presence and customer engagement models.

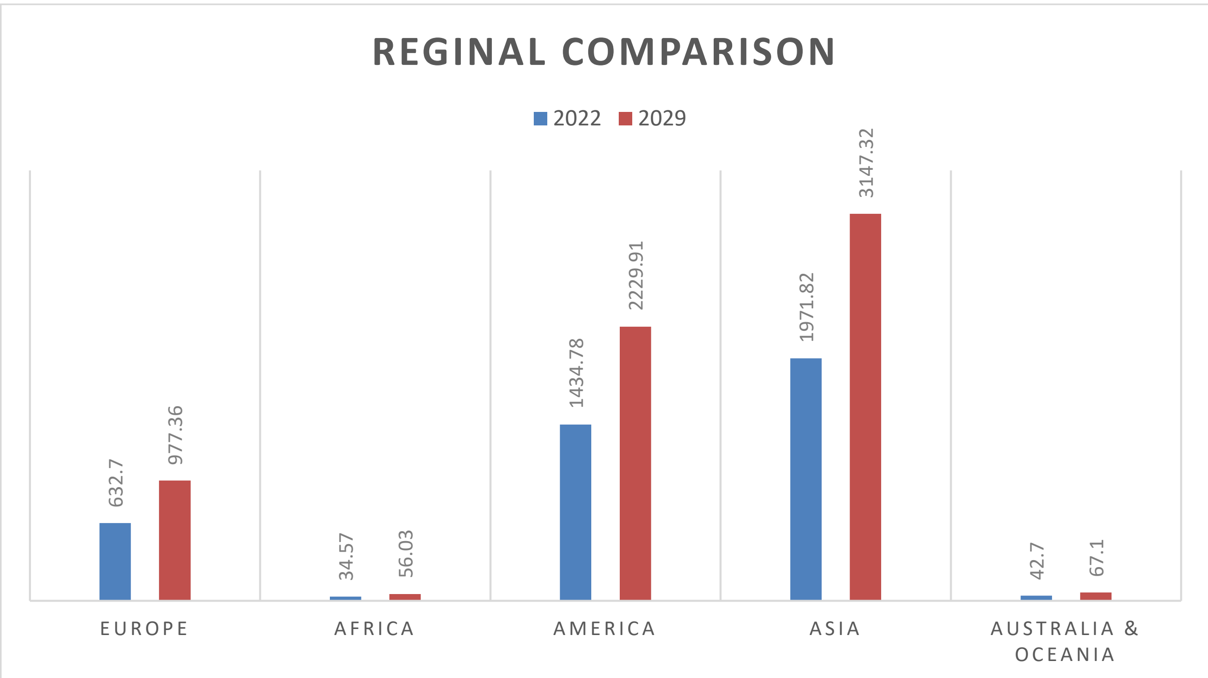

Figure 1.2 Market Size; Source: Statista 2024

Figure 1.2 shows outlines projected e-commerce revenues across five global regions—**Europe, Africa, America, Asia, and Australia & Oceania**—from 2024 to 2029. All regions show significant growth over the five-year period, reflecting the global expansion of digital commerce. **Asia** leads with the highest revenue, expected to rise from **USD 1,971.82 billion in 2024** to **USD 3,147.32 billion in 2029**, driven by a large consumer base and rapid digital adoption. **America** follows, increasing from **USD 1,434.78 billion to 2,229.91 billion**, highlighting strong e-commerce infrastructure and consumer spending. **Europe** also shows notable growth, from **USD 632.7 billion to 977.36 billion**, while **Africa**—though starting from a lower base—nearly doubles its revenue, signaling emerging digital market potential. **Australia & Oceania** grows steadily from **USD 42.7 billion to 67.1 billion**. This data illustrates the global acceleration of e-commerce, with the most rapid gains in developing regions and sustained dominance in Asia.

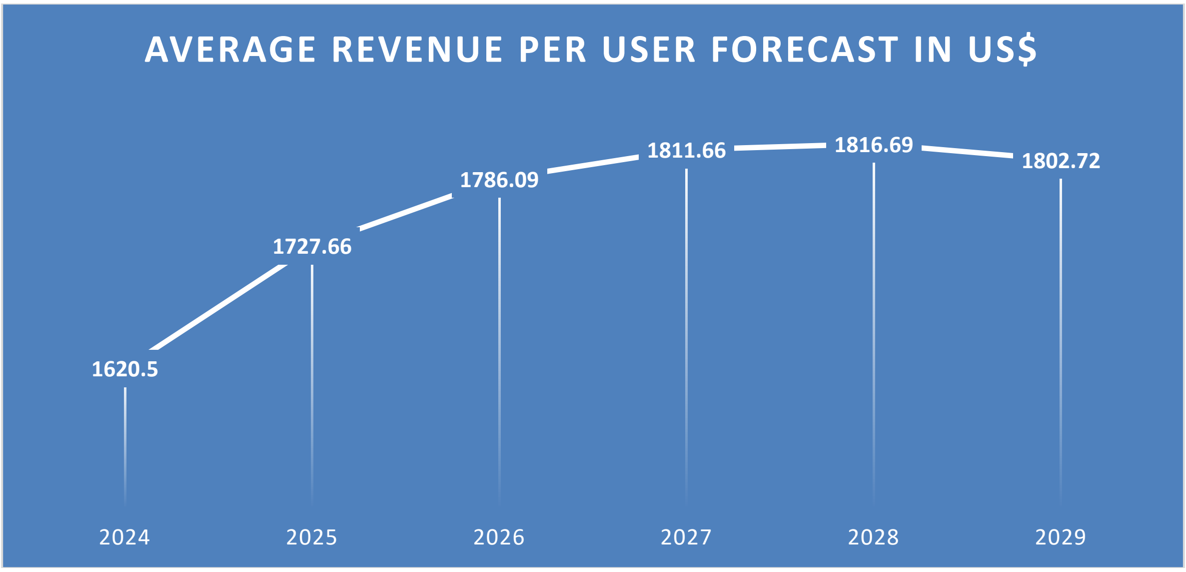

Figure 1.3 E-Commerce Average Revenue per User: Source: Statista, 2025

Figure 1.3 shows the average revenue per user (ARPU) in the eCommerce sector is projected to steadily rise, reflecting growing digital adoption and enhanced customer experiences. The ARPU is expected to increase from $1,620.50 in 2024 to a peak of $1,816.69 by 2028, driven by innovations in mobile commerce, personalization, and faster fulfillment. A slight decline to $1,802.72 is forecasted for 2029, indicating a potential market stabilization. Overall, the trend suggests strong consumer engagement and spending through online platforms, supported by technological advancements and strategic improvements in digital retail operations across the forecast period.

The drivers of e-commerce integration at airports are multifaceted, encompassing technological, economic, infrastructural, regulatory, and consumer-related domains. Technologically, AI, IoT, and big data analytics enable demand forecasting, dynamic pricing, and real-time personalization, as emphasized by Belobaba (2006) and Weatherford and Bodily (1992). These tools allow airports to deliver smarter services and improve inventory management and customer targeting. Economically, airports are under pressure to diversify revenue sources amid tight regulatory frameworks and heightened competition. E-commerce offers a scalable model for engaging passengers and even non-travelers through online pre-ordering and virtual duty-free services. Infrastructure also plays a critical role: digital terminals, bonded warehouses, and logistics parks enable seamless cargo handling and e-commerce fulfillment. In India, air cargo volumes rose from 2.7 million metric tonnes in FY 2015–16 to 3.6 million in FY 2022–23, aided by government initiatives like the National Logistics Policy and programs such as Digital India and PM Gati Shakti (Ministry of Civil Aviation, 2019). These developments, along with growing demand from e-commerce giants like Amazon and Flipkart, are positioning India as a major player in air cargo digitalization. This study adopts the Analytic Hierarchy Process (AHP) to rank the most influential factors driving e-commerce at airports, identifying geographical location as the most critical determinant. While digital readiness, infrastructure, and innovation remain vital, leveraging locational advantages is key to optimizing connectivity and logistics efficiency. These findings provide actionable insights for airport authorities, logistics firms, and policymakers to align with global trends and foster smart, sustainable, and revenue-optimized airport ecosystems.

Research on airport competition in the air cargo sector particularly in relation to the e-commerce segment—remains limited or largely unexplored. In recent years, the cargo market has gained increased importance as passenger airlines seek alternative revenue streams, with air cargo emerging as a logical focus area. This shift is further supported by advancements in aircraft design, where modern passenger planes are now built to accommodate substantial belly cargo. As a result,

airlines can offer additional cargo capacity at relatively low marginal costs, enhancing their profitability (Amaruchkul & Lorchirachoonkul, 2011; Boonekamp & Burghouwt, 2017; Dewulf et al., 2014; Popescu, Keskinocak, & al Mutawaly, 2011).
Integrators, which initially specialized in the rapid transport of small parcels, have become key enablers of the expanding e-commerce sector (Bowen, 2004; Malighetti et al., 2016; Zhang & Zhang, 2002b). On the landside, the presence of last-mile delivery providers and trucking firms significantly influences an airport's appeal for air cargo operations. While these logistics companies do not need to be located directly within the airport premises, their accessibility in the nearby vicinity is essential to support efficient cargo movement and enhance the airport's competitiveness in the cargo market.

2.1 Literature Review

The literature on driving factors for ecommerce at an airport shows various aspect that affect development, which includes location, technology, market dynamics, strategic considerations, economic impact, and environmental issues. They emphasize that air cargo distribution is primarily influenced by spatial hierarchies, socioeconomic factors, and urban industrial mix. Furthermore, gavials Lam, H. Y., & Tang, V. (2023). discuss the integration of automation and robotics into cold chain management particularly in response to pandemic induced demand fluctuation. Furthermore, Mathew, D., Brintha, N. C., & Jappes, J. W. (2023). Investigate the impact of ai and automation, predictive expectations, and supply chain optimization. Block chain technology is also playing an important role in in improving inventory management Ho, G. T., Tang, Y. M., Tsang, K. Y., Tang, V., & Chau, K. Y. (2021**).** Proposes a distributed main book system to improve trace ability and data security in management of aviation sector**.** Nevala, E. (2023). Analysis the psychological aspect of online shopping and highlights how social impact and digital nudges influence purchasing decision. Nomikos, N. K., & Tsouknidis, D. A. (2023**.** Distinguish between providing demand and shoch to the transport market and provide insights into the impact oof these failure within the system. Furthermore, Zhong, Y., Lai, I. K. W., Guo, F., & Tang, H. (2020). Effects of partnership quality and information sharing on express delivery service performance in the E-commerce industry. Sustainability. Examine the importance of quality information exchange between e commerce companies and delivery service providers, this highlights the trust and commitment of supply chain partnership. Moldabekova, A., Philipp, R., Satybaldin, A. A., & Prause, G. (2021**).** Highlight the role of information technology and fleet management it reducing operational cost and maintaining high service standards. Chen, N. (2022). Examines the core relation between cross border e-commerce and economic growth. Mehmood, T. (2021**).** .this research paper analysis the role of fleet management in reducing the operational cost and maintaining higher service standards. Chen, N. (2022**).** It examines the correlation between cross border e-commerce and economic growth also showing the impact of the financial & ecological feasibility of electric vehicles in delivery within load miles and evidence of the benefits of longterm costs over traditional internal vehicles. Furthermore, Siragusa, C., Tumino, A., Mangiaracina, R., & Perego, A. (2022***).*** This research paper evaluates the financial and ecological feasibility of using electric vehicles for delivery within load miles, presenting evidence of their long- term cost advantages over traditional internal combustion vehicles**.** Zhang, W., Li, G., Uddin, M. K., & Guo, S. (2020**).** The combination of these factors is essential for enhancing the efficiency and sustainability of airport e-commerce operations. Geographical location plays a crucial role in shaping air cargo distribution. Alkaabi and Debbage (2011) emphasize that metropolitan economies significantly influence freight movement, as larger urban centers benefit from superior infrastructure, higher demand, and stronger economic connectivity, making them attractive locations for major logistics hubs due to their proximity to manufacturers, suppliers, and consumers. Similarly, Bergling and Engberg (2019) highlight the impact of e-commerce fulfilment centre placement on delivery efficiency, noting that hubs situated near key transportation nodes such as airports, highways, and seaports enable faster shipping times, lower costs for businesses, and improved customer satisfaction. López-Escolano (2023) further explains that air cargo hubs must also consider trade patterns, demand density, and regulatory factors to optimize operational efficiency. Additionally, the availability of skilled labor is another vital factor, as the integration of advanced technologies like automation and digital tracking in air cargo logistics increases the need for a workforce proficient in these systems. Airports with a well-trained local labour pool in logistics, IT, and warehouse management are better equipped to support the expanding e-commerce sector.
Also Technology has revolutionized air cargo logistics, making operations more efficient and cost- effective. The Automation & Robotics: Lam and Tang (2023) describe how robotic process automation (RPA) it reduces human error and speeds up shipment processing. For instance, automated conveyor systems, robotic sorting, and AI-powered tracking ensure accurate handling of packages, especially in high-demand sectors like cold chain logistics (e.g., pharmaceuticals, perishables). Also Artificial Intelligence (AI) & Predictive Analytics: Mathew et al. (2023) discusses the role of AI in optimizing routing, scheduling, and predictive maintenance. Also AI can analysee vast amounts of data to forecast demand, detect potential delays, and recommend the best logistical solutions, making operations more resilient to disruptions. More over Blockchain Technology: Ho et al. (2021) proposes a blockchain- based inventory system that enhances transparency, security, and data accuracy. By decentralizing record-keeping, blockchain reduces fraud and errors in inventory management, particularly in tracking aircraft spare parts and high-value shipments.

Gong et al. (2024) explore the competitive pressures within logistics, examine how e-commerce firms must balance delivery speed with environmental sustainability. As customers demand quicker deliveries, companies face pressure to invest in greener solutions like electric vehicles and optimized delivery networks to reduce carbon footprints.

Talking about the Strategic Consideration, Collaboration and innovation are essential for improving efficiency in airport-based e-commerce logistics. Zhong et al. (2020) highlight that strong partnerships between e-commerce firms, airlines, and logistics providers enhance service reliability. For example, Amazon's partnerships with airlines and local couriers enable faster deliveries and expanded reach. Moldabekova et al. (2021) suggest that logistics providers investing in Logistics 4.0 including IoT, cloud computing, and AI—gain a competitive edge by increasing efficiency and reducing costs. Furthermore Supply Chain Resilience: During crises like COVID-19, robust supply chains proved crucial. Companies that adapted quickly, such as by using predictive analytics to reroute shipments or stockpiling essential goods, were able to minimize disruptions. Mehmood (2021) highlights that cost efficiency and price sensitivity drive profitability, with efficient fleet management and IT adoption reduce operational costs. Chen (2022) explains that the expansion of e-commerce markets has fueled the need for enhanced airport infrastructure boost air cargo demand, particularly in cross-border trade. Investments in airport infrastructure, customs digitization, and free trade agreements further accelerate this growth. Ali et al. (2023) emphasize that sustainable practices, such as using energy-efficient warehouses and electric ground handling equipment, reduce logistics costs and emissions. Similarly, Perčić et al. (2020) advocate for alternative power systems in logistics, such as battery-operated cargo trucks and hydrogen-powered aircraft, as long-term solutions for eco- friendly air cargo.

3.1 Research Methodology

As per the structured and pragmatic approach outlined in Essentials of Research Design and Methodology (TEAM LinG – Live, Informative, Non-Cost and Genuine), research methodology is a systematic and scientific investigation of how research is undertaken. In line with this, the present study adopts a hybrid analytical framework to identify and evaluate the driving factors of e-commerce at airports. The study combines both qualitative and quantitative techniques to ensure a comprehensive understanding of the problem under investigation. The research begins with an extensive literature review, examining academic journals, industry reports and research papers related to airport e-commerce, digital retail trends, and consumer behavior in aviation environments. This review helps identify key variables, factors, and dimensions previously explored by researchers and industry experts. Based on the literature, a conceptual framework is developed to organize and define the potential driving factors of airport e-commerce. This framework classifies the factors into categories such as location, technological factors, markit factors, strategic factors, economic factors, environmental factor.

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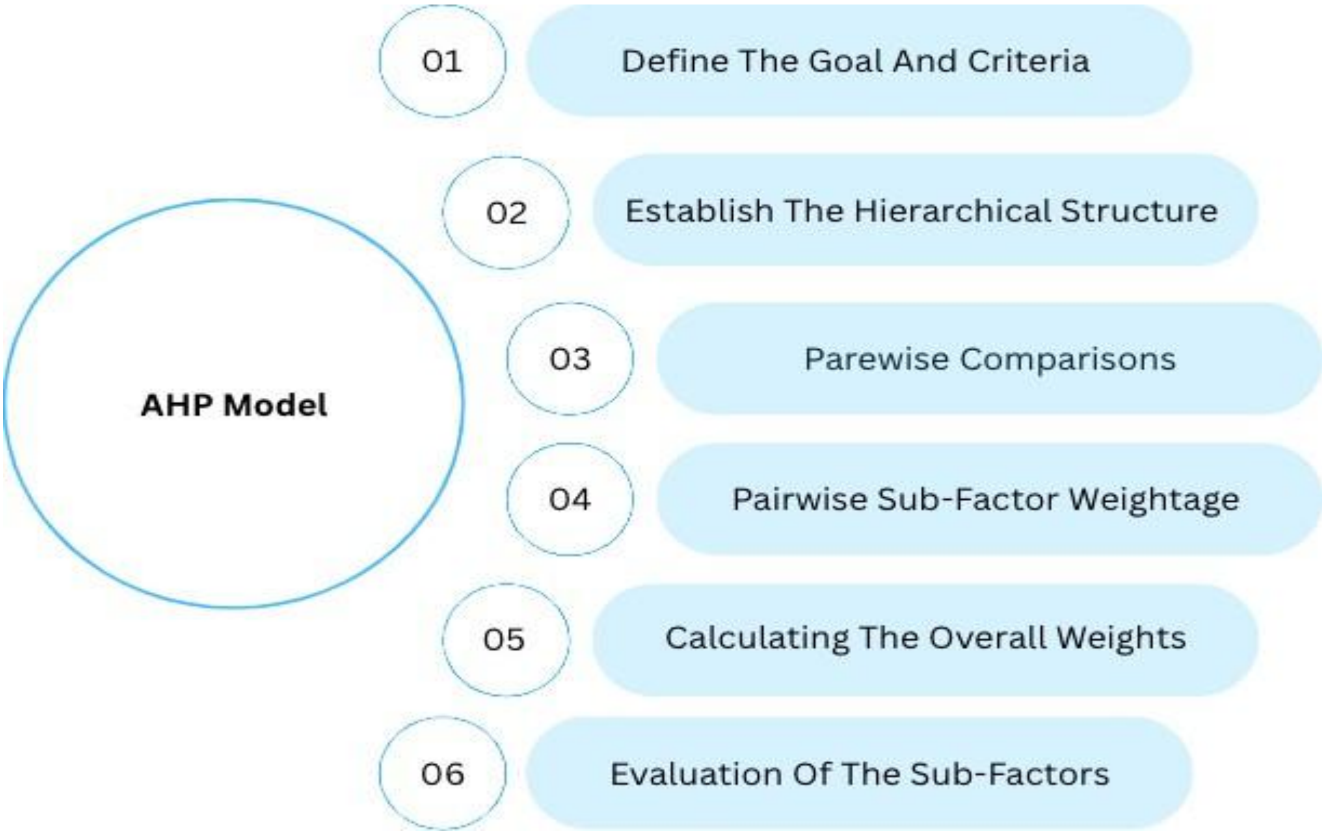

Figure 1.4 AHP Model Flow Chart

This study employs a quantitative approach to systematically identify, rank, and assess the principal factors driving the expansion of e-commerce within airport environments, utilizing the Analytic Hierarchy Process (AHP) alongside a consistency verification method. Drawing on insights from a thorough literature review, a detailed questionnaire was developed and distributed to a targeted group of industry professionals, including airline managers, logistics specialists, and e-commerce experts, to capture their evaluations of key dimensions such as geographic location, technological readiness, market conditions, strategic alliances, economic viability, and environmental sustainability. The research seeks to understand how airport infrastructure and locational advantages influence digital commerce activities while examining the impact of emerging technologies—such as mobile platforms, digital payment systems, and integrated data solutions—on improving operational performance and enhancing the passenger experience. Additionally, it explores consumer behavior trends, the role of collaboration among stakeholders, supportive policy frameworks, financial investment prospects, and eco-friendly practices, providing a comprehensive view of the multifaceted factors shaping e-commerce adoption in airports. The AHP method, recognized for its capability to handle complex decision-making scenarios by structuring criteria hierarchically, is applied here to deliver a rigorous prioritization of these influencing factors, enabling a balanced evaluation of qualitative and quantitative data within the evolving context of airport commerce.

3.3 Data Collection

This section implements the AHP (Analytic Hierarchy Process) method to analyze and prioritize the identified factors based on their relative importance. After defining the factors, a pairwise comparison was conducted using the comparison scale introduced by Saaty, T. L. (1980). Each factor was compared against the others, and judgments were made regarding their importance relative to one another. Following the development of the pairwise comparison matrix, the eigenvalue method was applied to derive the priority weights of each factor. Consistency of the comparisons was assessed by calculating the Consistency Ratio (CR); a CR value less than 0.1 indicates acceptable consistency. Table Y presents the normalized weights and final ranking of the factors as derived from the AHP process. The results provide a structured hierarchy of priorities, allowing for more informed decision-making based on the relative significance of each factor. The analysis that has been performed below is derived from the paper presented by, Mızrak, F., & Akkartal, G. R. (2023).

Table 1.1 Criteria and Sub-Criteria

Criteria	Criteria Code	Sub-Criteria	Sub-Criteria Code
Technology Factors	TF	Automation and Robotics	TFS1

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		Artificial Intelligence and Machine Learning	TFS2
		Blockchain Technology	TFS3
		E-commerce Platforms	TFS4
		Drones and Autonomous Vehicles	TFS5
Market Factors	MF	Geographical location	MFS1
		Consumer Behaviour	MFS2
		Market demand	MFS3
		Competition	MFS4
		Availability of Local Skilled Labour	MFS5
Strategic Factors	SF	Partnerships and Alliances	SFS1
		Innovation and R&D	SFS2
		Supply Chain Management	SFS3
Economic Factors	EF	Cost Efficiency	EFS1
		Economic growth	EFS2
		Price Sensitivity	EFS3
Environmental Factors	EV	Sustainability Initiatives	EVS1
		Carbon Footprint	EVS2
		Regulations on Emissions	EVS3

Construction of the Pairwise Comparison Matrix

In the initial phase of the AHP methodology, a square pairwise comparison matrix, denoted as A, with dimensions N × N, was constructed, where N corresponds to the total number of strategic criteria identified. Within this matrix, each element *a-ij* represents the comparative importance of criterion *i* relative to criterion *j*, as evaluated according to Saaty's fundamental 1–9 scale of relative importance. The matrix adheres to two essential conditions: first, when *I = j*, *aij = 1*, signifying that a criterion holds equal importance to itself; second, the reciprocal property is maintained, meaning that *aji=1/aija* ensuring consistency in expert judgments.

- **Derivation of Normalized Weights**

To compute the priority weights assigned to each strategic criterion, the following steps were undertaken

1. **Calculation of the Geometric Mean (GM)**:

For each row of the pairwise comparison matrix, the geometric mean was calculated using the formula:

$$GM_i = \left(\prod_{j=1}^{N} A_{ij}\right)^{1/N}$$

where Aij represents the element in the i-th row and j-th column, and N is the total number of criteria.

2. **Normalization of the Geometric Means**:

Each geometric mean was then normalized to determine the final priority weight Wi by applying the formula:

$$W_i = \frac{GM_i}{\sum_{j=1}^{N} GM_j}$$

The resulting normalized weights express the relative importance of each strategic criterion within the overall decision-making framework. This process ensures that the priorities are consistent, mathematically robust, and reflective of expert judgment.

- **Maximum Eigenvalue (λ_{max})**

The maximum eigenvalue (λ max) of the comparison matrix was determined by calculating the average of all the elements contained in matrix A4. This is mathematically expressed as:

λmax = Average(A4)

The value of λmax is crucial, as it forms the basis for further consistency analysis, enabling the calculation of the Consistency Index (CI) and the Consistency Ratio (CR), which assess the degree of logical coherence in the expert judgments.

- **Consistency Index (CI)**

The Consistency Index (CI) was computed to evaluate the degree of consistency in the expert judgments. The CI is calculated using the formula:

$$CI = \frac{(\lambda_{max} - N)}{(N - 1)}$$

where λmax is the maximum eigen value obtained earlier, and N represents the number of criteria or factors compared.

A lower value of CI signifies that the pairwise comparisons made by the experts are more consistent and dependable, thereby enhancing the credibility of the analysis.

- **Consistency Ratio (CR)**

The **Consistency Ratio (CR)** was determined to validate the reliability of the pairwise comparison matrix. The CR is calculated by comparing the Consistency Index (CI) with the Random Index (RI), derived from Saaty's standard table:

$$CR = \frac{CI}{RI}$$

The Random Index values, based on the number of criteria (N), are provided in below Table 1.2

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N (Number of Criteria)	1	2	3	4	5	6	7	8	9
RI (Random Index)	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45

A CR value less than 0.10 is considered acceptable, indicating that the expert judgments are consistent and the results are statistically reliable. By applying this systematic AHP procedure, the study successfully prioritized the relevant strategies, emphasizing the most critical driving factors for e-commerce at an airport.

4.1 Data Analysis

Technological Factors (TF) hold the highest priority (weight: 0.4345), followed by Environmental Factors (EV) at 0.4278. Market Factors (MF), Strategic Factors (SF), and Economic Factors (EF) follow in decreasing order of importance. The overall ranking is: **TF > EV > MF > SF > EF** as shown in Table 1.3.

Table 1.3 Main Criteria Weight & Rank

Criteria	Criteria Weight	Criteria Ranking
TF	0.4345	1
MF	0.2764	3
SF	0.1744	4
EF	0.0720	5
EV	0.4278	2

Among the technological sub-criteria, **TFS1** is the most significant with a weight of 0.4543, followed by **TFS2** (0.2643) and **TFS3** (0.1668). **TFS4** and **TFS5** rank lower with weights of 0.0753 and 0.0428 respectively (Table 1.4).

The priority order is: **TFS1 > TFS2 > TFS3 > TFS4 > TFS5**.

Table 1.4 Technological Sub-Criteria

Sub Criteria	**Sub-criteria Weight**	**Rank**
TFS1	0.4543	1
TFS2	0.2643	2
TFS3	0.1668	3
TFS4	0.0753	4
TFS5	0.0428	5

Table 1.5 shows the market-related sub-criteria, **MFS1** holds the highest importance with a weight of **0.4345**, followed by **MFS2** (**0.2528**) and **MFS3** (**0.1574**). The lower-ranked factors are **MFS4** (**0.0834**) and **MFS5** (**0.0447**). Thus, the priority order is: **MFS1 > MFS2 > MFS3 > MFS4 > MFS5**.

Table 1.5 Market Sub-Criteria

Sub Criteria	**Sub-criteria Weight**	**Rank**
MFS1	0.4345	1
MFS2	0.2528	2
MFS3	0.1574	3
MFS4	0.0834	4
MFS5	0.0447	5

Table 1.6 shows the strategic sub-criteria, **SFS1** emerges as the most influential factor, commanding a substantial weight of **0.5469**. This is followed by **SFS2** with a moderate influence (**0.3445**) and **SFS3** with the least impact (**0.1085**). The resulting priority sequence is: **SFS1 > SFS2 > SFS3**.

Table 1.6 Strategic Sub-Criteria

Sub Criteria	**Sub-criteria Weight**	**Rank**
SFS1	0.5469	1
SFS2	0.3445	2
SFS3	0.1085	3

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Table 1.7 shows the analysis of economic sub-criteria reveals that EFS1 holds dominant importance with a substantial weight of 0.7423, signifying its critical role in the overall evaluation. This is followed by EFS2, which carries moderate significance with a weight of 0.2735. EFS3, with the lowest weight of 0.1007, is considered the least influential among the economic sub-factors. The prioritization is thus established as EFS1 > EFS2 > EFS3.

Table 1.7 Economic Sub-Criteria

Sub Criteria	Sub-criteria Weight	Rank
EFS1	0.7423	1
EFS2	0.2735	2
EFS3	0.1007	3

The evaluation of sub-criteria reveals a clear prioritization based on their weighted significance. For the EFS category, EFS1 dominates with a substantial weight of 0.7423, securing the top rank, followed by EFS2 which holds a moderate weight of 0.2735 and is positioned second, while EFS3 registers the lowest weight at 0.1007, placing it third. In parallel, the EVS sub-criteria exhibit a similar pattern where EVS1 leads with a prominent weight of 0.7423, ranking first, EVS2 follows with a weight of 0.2485 in second place, and EVS3 is ranked third with a comparatively lower weight of 0.1109. This weighted ranking underscores the dominant influence of the first sub-criteria within each category in driving the overall assessment outcomes (Table 1.8).

Table 1.8 Environmental Sub-Criteria

Sub Criteria	Sub-criteria Weight	Rank
EVS1	0.7423	1
EVS2	0.2485	2
EVS3	0.1109	3

Table 1.9 presents a comprehensive evaluation of five key criteria, each assigned a specific weight to indicate its relative significance in the decision-making framework. Among these, Environmental Factors (EV) stand out with a weight of 0.4278, earning the highest overall rank due to the dominant influence of its sub-criterion EVS1, which holds a global weight of 0.3176. Technology Factors (TF), with a close criteria weight of 0.4345, follow closely in importance, with sub-criterion TFS1 ranked second globally and contributing substantially to its overall weight. Market Factors (MF), weighted at 0.2764, rank third overall, led by MFS1, while Strategic Factors (SF) and Economic Factors (EF), with weights of 0.1744 and 0.0720 respectively, have a moderate but relevant impact, occupying the fourth and tenth positions in the ranking. The sub-criteria within each main factor show a varied distribution of weights and ranks, spanning from the top rank to the nineteenth, highlighting the nuanced prioritization across the factors as detailed.

Table 1.9 Global Weights & Rank

	Criteria	Criteria Weight	Sub Criteria	Sub-criteria Weight	Global Weight	Criteria Ranking	Global Rank
Technology Factors	TF	0.4345	TFS1	0.4543	0.1974	1	2
			TFS2	0.2643	0.1148		4
			TFS3	0.1668	0.0725		7
			TFS4	0.0753	0.0327		13
			TFS5	0.0428	0.0186		17
Market Factors	MF	0.2764	MFS1	0.4345	0.1201	3	3
			MFS2	0.2528	0.0699		8
			MFS3	0.1574	0.0435		12
			MFS4	0.0834	0.0230		14
			MFS5	0.0447	0.0124		18
Strategic Factors	SF	0.1744	SFS1	0.5469	0.0954	4	6
			SFS2	0.3445	0.0601		9
			SFS3	0.1085	0.0189		16
Economic Factors	EF	0.0720	EFS1	0.7423	0.0534	5	10
			EFS2	0.2735	0.0197		15
			EFS3	0.1007	0.0073		19

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Environmental Factors	EV	0.4278	EVS1	0.7423	0.3176	2	1
			EVS2	0.2485	0.1063		5
			EVS3	0.1109	0.0474		11

Conclusion

The analysis establishes a clear hierarchy among the core criteria shaping strategic priorities. Technology Factors (TF) hold the highest overall weight (0.4345) and are ranked first, underscoring the pivotal role of technological capabilities in driving organizational performance. Environmental Factors (EV), ranked second with a close weight of 0.4278, dominate through their leading sub-criterion EVS1, which alone commands a substantial global weight of 0.3176, highlighting sustainability as a paramount concern. Market Factors (MF), with a moderate weight of 0.2764 and third rank, emphasize the importance of understanding and responding to evolving consumer and industry dynamics, led by sub-criterion MFS1 (0.1201). Strategic Factors (SF) and Economic Factors (EF), though lower in weight at 0.1744 and 0.0720 respectively, provide essential contributions that ensure strategic alignment and financial viability.

The granular breakdown of sub-criteria further refines this framework, revealing the uneven but meaningful distribution of influence within each category—from the dominant technological sub-factors like TFS1 (0.1974) and TFS2 (0.1148) to key environmental components EVS2 (0.1063) and EVS3 (0.0474). This layered insight equips decision-makers with a nuanced understanding of where to focus resources and efforts, balancing innovation, sustainability, market agility, strategic foresight, and economic considerations. Collectively, this data-driven prioritization forms a comprehensive roadmap, enabling informed, balanced, and forward-looking strategies to address complex challenges in dynamic environments.

The variation in the weights of the strategies highlights the diverse range of factors that contribute to the broader goals of the initiative. Strategies with higher weights should be prioritized in the decision- making process, as they are likely to have the most significant impact on achieving the desired outcomes. They are integral to the formulation and execution of the plan. Meanwhile, strategies with lower weights might either need to be further developed or reconsidered to ensure they align more closely with the goals. It is essential for stakeholders to continuously assess these strategies and make data-driven decisions to optimize their impact.

In conclusion, the ranking provided by the AHP analysis serves as a useful guide in prioritizing and fine-tuning the strategies. The clear distinction between high-ranking strategies like S11, S41, S51, and S61, and the lower-ranking ones like S25 and S35, provides decision-makers with a roadmap for strategic focus. The higher-weighted strategies should be given more attention and resources, while those with lower weights may either be refined or reallocated to better align with the overall objectives. This approach ensures that the most influential factors are adequately addressed while optimizing the overall strategic framework.

References

1. Liu, J., Zhang, H., & Zhen, L. (2023). Blockchain technology in maritime supply chains: applications, architecture and challenges. International Journal of Production Research, 61(11), 3547-3563.
2. Kasaei, A., & Albadvi, A. (2023). Cargo chain: Cargo Management in port logistics with blockchain technology.
3. Gulati, H. (2023). Digital Optimization Potential Using Blockchain Technology in Air Cargo Logistics (Doctoral dissertation, Alpen-Adria-Universität Klagenfurt).
4. Lau, C. W., Liu, J., & Ma, X. (2023). Blockchain-Based Messaging and Information Sharing Systems for Air Cargo Supply Chains. IEEE Transactions on Engineering Management.
5. Andrei, N., Scarlat, C., & Ioanid, A. (2024). Transforming E-Commerce Logistics: Sustainable Practices through Autonomous Maritime and Last-Mile Transportation Solutions. Logistics, 8(3), 71.
6. Qi, Y., Wang, X., Zhang, M., & Wang, Q. (2023). Developing supply chain resilience through integration: An empirical study on an e-commerce platform. Journal of Operations Management, 69(3), 477-496.
7. Fried, T., & Goodchild, A. (2023). E-commerce and logistics sprawl: A spatial exploration of last-mile logistics platforms. Journal of Transport Geography, 112, 103692.
8. Dabic-Miletic, S. (2023). Autonomous vehicles as an essential component of industry 4.0 for meeting last-mile logistics requirements. Journal of Industrial Intelligence, 1(1), 55-62.
9. Nurgaliev, I., Eskander, Y., & Lis, K. (2023). The Use of Drones and Autonomous Vehicles in Logistics and Delivery. Logistics and Transport, 57.
10. Straubinger, A., de Groot, H. L., & Verhoef, E. T. (2023). E-commerce, delivery drones and their impact on cities. Transportation Research Part A: Policy and Practice, 178, 103841.
11. Alverhed, E., Hellgren, S., Isaksson, H., Olsson, L., Palmqvist, H., & Flodén, J. (2024). Autonomous last-mile delivery robots: a literature review. European Transport Research Review, 16(1), 4.
12. Nevala, E. (2023). " Just let me buy my thing!": A survey study on consumers' perceptions of social influence in E-Commerce.
13. Togkousidou, A. (2024). The influence of social networking on online purchasing behavior of consumers.
14. Kuikka, A., Hallikainen, H., Tuominen, S., & Laukkanen, T. (2024). What drives customer loyalty in a pandemic? Semantic analysis of grocery retailers. Electronic Commerce Research, 1-36.

15. Nomikos, N. K., & Tsouknidis, D. A. (2023). Disentangling demand and supply shocks in the shipping freight market: their impact on shipping investments. Maritime Policy & Management, 50(5), 563-581.
16. Park, S., Kim, H., & Kwon, J. (2023). The impacts of demand and supply shocks in the dry bulk shipping market. The Asian Journal of shipping and logistics, 39(1), 13-22.
17. Choi, J. H. (2023). A study on the change in the significance of GDP as a determinant of air demand-Discussions on brand-new air transport items. Transport Policy, 133, 186-197.
18. Karunathilake, A. N., & Fernando, A. (2024). Identifying the key influencing factors for the growth of air cargo demand. Journal of Global Operations and Strategic Sourcing, 17(2), 368- 383.
19. Gong, C., Song, H., Chen, D., Day, S. J., & Ignatius, J. (2024). Logistics sourcing of e-commerce firms considering promised delivery time and environmental sustainability. European Journal of Operational Research, 317(1), 60-75.
20. Du, S. (2023). Symbiosis Evolution of E-commerce Platform Ecosystem with Cooperative and Competitive Effect: An Extended Population Density Logistic Model-Based Simulation. Modelling and Simulation in Engineering, 2023(1), 2472618.
21. Chen, L., Dong, T., Nan, G., Xiao, Q., Xu, M., & Ming, J. (2023). Impact of the introduction of marketplace channel on e-tailer's logistics service strategy. Managerial and Decision Economics, 44(5), 2835-2855.
22. Ahmed, K., & Joshi, V. (2024). E-Commerce expansion in Indian retail: a strategic analysis of market penetration and competitive dynamics. Frontiers in Management Science, 3(1), 12-20.
23. Chenyu, L. (2024). Research on the application and development of air logistics in cross-border e-commerce.
24. Han, J., & Zhu, W. (2024). Research on the change and development of international trade under the environment of electronic commerce. Academic Journal of Business & Management, 6(4), 168-177.
25. Madlenak, R., Madlenakova, L., Toth, T., & Neszmelyi, G. I. (2023). GLOBAL POSTAL E-COMMERCE DELIVERY NETWORK-TRADE SOLUTION FOR SMALL AND MEDIUM
a. ENTERPRISES TO ENTER GLOBAL MARKET. Engineering for Rural Development, 22, 777-783.
26. Kučera, J., & Zhang, Y. (2023). Research on the development path of China's cross-border e-commerce industry under the COVID epidemic. In SHS Web of Conferences (Vol. 160, p. 01009). EDP Sciences.
27. Aslan, C., Derindag, O. F., & Parmaksiz, S. (2023). Effects of cross-border E-commerce customs declaration ceiling increase on export performance under COVID-19 conditions. Kybernetes.
28. Qian, L. (2024). The global imperative: Chinese cross-border e-commerce and its political- economic implications in a deglobalising world. Asian Studies Review, 1-19.
29. Sarifah, Z., Lestariningsih, M., & Satrio, B. (2023). The Effect of Service Quality and Delivery Accuracy on Customer Loyalty Through Customer Satisfaction (Case Study CV. Sarana Utama Cargo. International Journal of Business, Law, and Education, 4(2).
30. Cui, R., Lu, Z., Sun, T., & Golden, J. M. (2024). Sooner or later? Promising delivery speed in online retail. Manufacturing & Service Operations Management, 26(1), 233-251.
31. Rane, N. L., Achari, A., & Choudhary, S. P. (2023). Enhancing customer loyalty through quality of service: Effective strategies to improve customer satisfaction, experience, relationship, and engagement. International Research Journal of Modernization in Engineering Technology and Science, 5(5), 427-452.
32. Loh, H. S., Lee, J. L., Gu, Y., Chen, H. S., & Tay, H. L. (2024). The effects of digital platforms on customers' satisfaction in international shipping business. Review of International Business and Strategy, 34(2), 231-244.
33. Ahmed, A., Deokar, A., Lee, H. C. B., & Summerfield, N. (2024). The role of commitment in online reputation systems: An empirical study of express delivery promise in an E-commerce platform. Decision Support Systems, 176, 114061.
34. Zhong, Y., Lai, I. K. W., Guo, F., & Tang, H. (2020). Effects of partnership quality and information sharing on express delivery service performance in the E-commerce industry. Sustainability, 12(20), 8293.
35. Stinson, M., & Mohammadian, A. K. (2022). Introducing CRISTAL: A model of collaborative, informed, strategic trade agents with logistics. Transportation Research Interdisciplinary Perspectives, 13, 100539.
36. Zhao, W. X., & Fang, L. (2021). Collaborative strategy optimization of cross-border e-commerce coordination along the belt and road initiative. Journal of Frontiers in Engineering Technology, 1(1), 71-78.
37. Bergling, T., & Engberg, L. (2019). Geographical location of warehouses and its impact on delivery time-A study of e-commerce companies in Sweden.
38. López-Escolano, C. (2023). A Geographical Approach to European Cargo Airports. In Young Geographers: Showcasing Research Contributions in Geography (pp. 159-178). Cham: Springer Nature Switzerland.
39. Fried, T., & Goodchild, A. (2023). E-commerce and logistics sprawl: A spatial exploration of last-mile logistics platforms. Journal of Transport Geography, 112, 103692.
40. Türk, A., & Yavuz, V. A. (2023). Determination of location selection criteria and their importance levels for air cargo companies: a case from Turkiye. Journal of Aviation, 7(1), 100- 109.
41. Gavalas, D., Syriopoulos, T. & Roumpis, E. Digital adoption and efficiency in the maritime industry. J.

shipp. trd. 7, 11 (2022).
42. Kalejaiye, P.O. Addressing shortage of skilled technical workers in the USA: A glimpse for training service providers. Futur Bus J 9, 50 (2023).
43. Kumar, A., Hooda, Y. (2024). A Case Study on the Shortage of Availability of Skilled Labour in Faridabad, Delhi—NCR. In: Nehdi, M., Hung, M.K., Venkataramana, K., Antony, J., Kavitha, P.E., Beena B R (eds) Proceedings of SECON'23. SECON 2023. Lecture Notes in Civil Engineering, vol 381. Springer, Cham. https://doi.org/10.1007/978-3-031-39663-2_5
44. Lam, H. Y., & Tang, V. (2023). Digital transformation for cold chain management in freight forwarding industry. International Journal of Engineering Business Management, 15, 18479790231160857.
45. Carlan, V., Ceulemans, D., van Hassel, E., Derammelaere, S., & Vanelslander, T. (2023). Automation in cargo loading/unloading processes: do unmanned loading technologies bring benefits when both purchase and operational cost are considered?. Journal of Shipping and Trade, 8(1), 20.
46. Majoral, G., Reyes, A., & Saurí, S. (2024). Lessons from reality on automated container terminals: What can be expected from future technological developments?. Transportation Research Record, 2678(2), 401-415.
47. Kalkha, H., Khiat, A., Bahnasse, A., & Ouajji, H. (2023). The rising trends of smart e-commerce logistics. IEEE Access, 11, 33839-33857.
48. Mathew, D., Brintha, N. C., & Jappes, J. W. (2023). Artificial intelligence powered automation for industry 4.0. In New Horizons for Industry 4.0 in Modern Business (pp. 1-28). Cham: Springer International Publishing.
49. Mhlanga, D. (2023). Artificial intelligence and machine learning in making transport, safer, cleaner, more reliable, and efficient in emerging markets. FinTech and Artificial Intelligence for Sustainable Development: The Role of Smart Technologies in Achieving Development Goals, 193-211.
50. Abduljabbar, R., Dia, H., Liyanage, S., & Bagloee, S. A. (2019). Applications of artificial intelligence in transport: An overview. Sustainability, 11(1), 189.
51. Tang, Y. M., Chau, K. Y., Lau, Y. Y., & Zheng, Z. (2023). Data-intensive inventory forecasting with artificial intelligence models for cross-border e-commerce service automation. Applied Sciences, 13(5), 3051.
52. Ho, G. T., Tang, Y. M., Tsang, K. Y., Tang, V., & Chau, K. Y. (2021). A blockchain-based system to enhance aircraft parts traceability and trackability for inventory management. Expert Systems with Applications, 179, 115101.
53. Agatić, A., Jugović, T. P., Tijan, E., & Jugović, A. (2020, September). Digital business models in the logistics services. In 2020 43rd International Convention on Information, Communication and Electronic Technology (MIPRO) (pp. 1416-1421). IEEE.
54. Moldabekova, A., Philipp, R., Satybaldin, A. A., & Prause, G. (2021). Technological readiness and innovation as drivers for logistics 4.0. The Journal of Asian Finance, Economics and Business, 8(1), 145-156.
55. Lagorio, A., Zenezini, G., Mangano, G., & Pinto, R. (2022). A systematic literature review of innovative technologies adopted in logistics management. International Journal of Logistics Research and Applications, 25(7), 1043-1066.
56. Pan, X., Guo, S., & Chu, J. (2021). P2P supply chain financing, R&D investment and companies' innovation efficiency. Journal of Enterprise Information Management, 34(1), 578-597.
57. Pan, X., Guo, S., Li, M., & Song, J. (2021). The effect of technology infrastructure investment on technological innovation——A study based on spatial durbin model. Technovation, 107, 102315.
58. Sodhi, M. S., & Tang, C. S. (2021). Supply chain management for extreme conditions: Research opportunities. Journal of Supply Chain Management, 57(1), 7-16.
59. Lahkani, M. J., Wang, S., Urbański, M., & Egorova, M. (2020). Sustainable B2B E-commerce and blockchain-based supply chain finance. Sustainability, 12(10), 3968.
60. Saragih, J., Tarigan, A., Silalahi, E. F., Wardati, J., & Pratama, I. (2020). Supply chain operational capability and supply chain operational performance: Does the supply chain management and supply chain integration matters. Int. J Sup. Chain. Mgt Vol, 9(4), 1222-1229.
61. Wang, Y., Jia, F., Schoenherr, T., Gong, Y., & Chen, L. (2020). Cross-border e-commerce firms as supply chain integrators: The management of three flows. Industrial Marketing Management, 89, 72-88.
62. Mehmood, T. (2021). Does information technology competencies and fleet management practices lead to effective service delivery? Empirical evidence from e-commerce industry. International Journal of Technology, Innovation and Management (IJTIM), 1(2), 14-41.
63. Dutta, P., Mishra, A., Khandelwal, S., & Katthawala, I. (2020). A multiobjective optimization model for sustainable reverse logistics in Indian E-commerce market. Journal of Cleaner Production, 249, 119348.
64. Shramenko, N., Muzylyov, D., & Shramenko, V. (2020). Service costs in operational planning of transportation with small batches of cargo in city. In Design, Simulation, Manufacturing: The Innovation Exchange (pp. 201-209). Cham: Springer International Publishing.
65. Carlan, V., Ceulemans, D., van Hassel, E., Derammelaere, S., & Vanelslander, T. (2023). Automation in cargo loading/unloading processes: do unmanned loading technologies bring benefits when both purchase and operational cost are considered?. Journal of Shipping and Trade, 8(1), 20.
66. Chen, N. (2022). Analysis of the Correlation between Cross-Border E-Commerce and Economic Growth Based on Hierarchical Multilevel Gray Evaluation

Model. Journal of Mathematics, 2022(1), 8455404.

67. Tang, X., & Wang, G. (2020). Design and analysis of e-commerce and modern logistics for regional economic integration in wireless networks. EURASIP Journal on Wireless Communications and Networking, 2020, 1-15.
68. Volkova, N., Kuzmuk, I., Oliinyk, N., Klymenko, I., & Dankanych, A. (2021). Development trends of the digital economy: E-business, e-commerce.
69. Siragusa, C., Tumino, A., Mangiaracina, R., & Perego, A. (2022). Electric vehicles performing last-mile delivery in B2C e-commerce: An economic and environmental assessment. International Journal of Sustainable Transportation, 16(1), 22-33.
70. Pahwa, A., & Jaller, M. (2022). A cost-based comparative analysis of different last-mile strategies for e-commerce delivery. Transportation Research Part E: Logistics and Transportation Review, 164, 102783.
71. Hofmann, E., Solakivi, T., Töyli, J., & Zinn, M. (2018). Oil price shocks and the financial performance patterns of logistics service providers. Energy Economics, 72, 290-306.
72. Ali, S. S., Kaur, R., & Khan, S. (2023). Evaluating sustainability initiatives in warehouse for measuring sustainability performance: an emerging economy perspective. Annals of Operations Research, 324(1), 461-500.
73. Bartle, J. R., Lutte, R. K., & Leuenberger, D. Z. (2021). Sustainability and air freight transportation: Lessons from the global pandemic. Sustainability, 13(7), 3738.
74. Karaman, A. S., Kilic, M., & Uyar, A. (2020). Green logistics performance and sustainability reporting practices of the logistics sector: The moderating effect of corporate governance. Journal of Cleaner Production, 258, 120718.
75. Cano, J. A., Londoño-Pineda, A., & Rodas, C. (2022). Sustainable logistics for e-commerce: A literature review and bibliometric analysis. Sustainability, 14(19), 12247.
76. Jiang, Y., Lai, P., Chang, C. H., Yuen, K. F., Li, S., & Wang, X. (2021). Sustainable management for fresh food E-commerce logistics services. Sustainability, 13(6), 3456.
77. Perčić, M., Ančić, I., & Vladimir, N. (2020). Life-cycle cost assessments of different power system configurations to reduce the carbon footprint in the Croatian short-sea shipping sector. Renewable and Sustainable Energy Reviews, 131, 110028.
78. Shaik, S., Kuruppuarachchi, L. N., & Franchetti, M. J. (2022). CARBON FOOTPRINT IMPACT OF HOLIDAY e-COMMERCE: A CASE STUDY OF SAO PAULO, BRAZIL. Environmental
   a. Engineering & Management Journal (EEMJ), 21(4).
79. Wasilewski, A., & Kołaczek, G. (2024, June). Sustainability in the Digital Age: Assessing the Carbon Footprint of E-commerce Platforms. In International Conference on Computational Science (pp. 154-161). Cham: Springer Nature Switzerland.
80. Chatti, W. (2021). Moving towards environmental sustainability: information and communication technology (ICT), freight transport, and CO2 emissions. Heliyon, 7(10).
81. Zhang, W., Li, G., Uddin, M. K., & Guo, S. (2020). Environmental regulation, foreign investment behavior, and carbon emissions for 30 provinces in China. Journal of Cleaner Production, 248, 119208.
82. Guo, R., & Yuan, Y. (2020). Different types of environmental regulations and heterogeneous influence on energy efficiency in the industrial sector: Evidence from Chinese provincial data. Energy policy, 145, 111747.
83. Xu, B., & Xu, R. (2022). Assessing the role of environmental regulations in improving energy efficiency and reducing CO2 emissions: Evidence from the logistics industry. Environmental Impact Assessment Review, 96, 106831.
84. Qiu, Y., Ding, S., & Pardalos, P. M. (2024). Routing a mixed fleet of electric and conventional vehicles under regulations of carbon emissions. International Journal of Production Research, 62(16),5720-5736.