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FinTech Applications in Aviation Finance: A Bibliometric and Scientometric Review (2000–2025)

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Abstract
Due to the increased use of financial technologies (FinTech) and digital financial systems, the transformation of the aviation sector is being accelerated. With the help of modern technologies such as blockchain, digital payment technologies, artificial intelligence, and data analytics, aviation finance is being redesigned. It will become more efficient, transparent, and financially sound. Despite increased attention to FinTech applications in the aviation sector, the available literature remains fragmented across multiple fields. In this paper, a bibliometric and scientometric review will be conducted to examine the growth of the literature on the use of FinTech in aviation finance. A dataset of 312 publications in the Scopus database (2000-2025) was analysed using VOSviewer to gain insight into the publications' tendencies, collaboration networks, and research areas. The lists are evaluated based on co-authorship, presence of keywords in databases, citation network, and bibliographic coupled network to identify influential authors, institutions, and research topics.

Keywords: FinTech; Aviation Finance; Bibliometric Analysis; Scientometric Analysis; Blockchain; Digital Finance; Sustainable Aviation; VOS viewer; Financial Innovation; Aviation Economics

Introduction

Aviation is a very important part of the global economy, helping to secure international trade, tourism, and regional connectivity. Air transport helps boost the economy by facilitating the free movement of people and goods within the global markets. Aviation has been identified as influencing economic production and job creation worldwide and constitutes the necessary infrastructure for globalisation and international business (Button & Taylor, 2000; Tretheway & Markhvida, 2014). However, the aviation industry is reputed to be among the most capital-intensive industries, which demand large investments in the purchase of aeroplanes, aviation facilities, maintenance procedures, and technological networks. The sustainability and growth of the aviation sector are therefore the most important issues for financial management and for entry into successful funding programs.Traditionally, aviation financing has been anchored in complex financial services such as aircraft leasing, bank financing, export credit financing, and capital market securities. The high cost of capitalising aircraft, operating an airline, and acquiring a fleet is funded by well-organised financing facilities offered by financial institutions, and airlines are dependent on leasing schemes (Belobaba et al., 2015; Gillen, 2011). Although the above financing structures have been effective in developing the industry, they are very complex due to contractual relations and intermediaries. Over the past years, FinTech has significantly changed the nature of financial services. One can understand FinTech as digital technology that offers efficiency, accessibility, and transparency in financial transactions within financial systems (Arner et al., 2015). Tremendous changes have occurred in financial operations, with in-house technologies such as blockchain, artificial intelligence, machine learning, big data analytics, and digital payment systems evolving rapidly. They enable real-time payments, decentralised financial services, more effective risk management, and data analytics.Over the last decade, the global financial ecosystem has been rapidly becoming digital through FinTech innovations. Digital financial solutions and services have helped make financial services more inclusive, reduce transaction costs, and increase efficiency across different fields (Kim & Park, 2020). Given the trend toward digital technologies and their increasing adoption across most industries, the aviation industry is no exception, and some operators have already implemented FinTech solutions to revamp their financial operations and enhance performance. For example, digital payment infrastructure has enhanced airline ticketing, and blockchain has been proposed as a secure environment for aircraft leasing deals, payment infrastructure, and aircraft insurance processes (Lee & Lee, 2021).The aviation finance industry has also been experiencing slow adoption of FinTech technologies, despite its intricate financial structure and worldwide distribution network. The aviation business involves several players, such as airlines, direct aeroplane manufacturers, aero leasing companies, financial institutions, and airline regulatory agencies, and emphasises transparency and low transaction costs. The implementation of FinTech, smart contracts, and blockchain can improve process transparency and reduce transaction costs by automating contract execution and reducing the number of intermediaries involved. Such technologies can also enhance financial auditing by enabling secure payments and global financial operations within aviation supply chains. The use of FinTech technologies is also the subject of research because it can help the aviation industry maintain operational performance. Environmental concerns have been among the issues in aviation, as aviation contributes to greenhouse gas emissions, which lead to climate change. It is also reported that the Aviation industry is a major contributor to global carbon emissions, which encourages policymakers and industry participants to focus on addressing the problem (Peeters, 2016; Gossling & Humpe, 2020). Sustainability fuels used in aviation, carbon offset initiatives, and environmental policy frameworks have emerged as major strategies to reduce aviation's environmental footprint.The financial technologies that emerged from Bitcoin and other sources can help finance sustainable green aviation and appreciate green aviation projects. It is possible to invest in the production of sustainable aviation fuel on digital financial platforms and enhance transparency in carbon trading markets and environmental reporting systems using blockchain technology. Research shows that it is also possible to sustain aviation by mixing these programs with digital technologies and using the digital financial system to enhance sustainability (Ng et al., 2021). To this end, close relationships between FinTech and aviation finance are increasingly

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becoming the focus of attention among researchers, policy-makers and industry participants.The second reason this role of FinTech in aviation finance is becoming increasingly important is that airlines are being exposed to the impacts of financial disruptions. The aviation industry has been exposed to economic shocks, fuel volatility, and geopolitical uncertainties. One such incident was the COVID-19 pandemic, which caused severe losses for airlines worldwide due to a disruption unlike anything previously experienced in global air transportation. Many airlines faced liquidity crises and had to rely on government bailouts and financial restructuring to survive (IATA, 2021). The vulnerabilities of financial systems and the need for new financial technologies to enhance financial planning, risk management, and operational flexibility in the aviation industry were vital in light of these threats.The experimental work on bibliometric and scientometric methods can be seen as effective tools for the systematic analysis of study areas, based on patterns of publications and citation correlations, as well as networks of collaboration among scholars. Bibliometric methods enable a researcher to identify influential publications, scholars of stature, large research organisations, and emerging trends in scientific fields. Bibliometric studies can identify how a field of research has developed over time by analysing large volumes of academic literature.Over the past several years, bibliometric techniques have become increasingly popular for studying new interdisciplinary fields such as sustainable aviation, digital transformation, and financial innovation. Nevertheless, only a few studies address how FinTech and aviation finance intersect, utilising bibliometrics. An extensive bibliometric study will assist in identifying essential research clusters and collaborations and in capitalising on new research directions in this dynamic area.Thus, the purpose of the present study will be to conduct a thorough bibliometric and scientometric review of aviation finance FinTech application research, based on information from the Scopus database. Reviewing a dataset of scholarly articles published worldwide between 2000 and 2025, this paper aims to provide a systematic review of the research landscape and identify the main intellectual sources shaping the field.Namely, this study aims to achieve four things. The study will focus on the development pattern of research on FinTech applications in aviation finance by analysing annual publications and citation patterns. Second, the research aims to identify the most active authors, institutions, and countries influencing the research area. Third, the research aims to examine the networks of collaboration between researchers and institutions using co-authorship analysis. Lastly, the research aims to establish key thematic clusters and new lines of research by analysing common keywords co-occurring and using citation network analysis.

LITERATURE REVIEW

History of Aviation Finance

In the 20 th century, aviation finance became popular and grew (Frazier, 2008). The aviation industry is a capital-intensive business with a long asset life cycle and is even geographically sensitive with respect to finances. The investments are also necessary for airlines to purchase aircraft and airport infrastructure, and to improve the efficiency of their operations. This has made aviation finance a professional discipline characterised by complex financial products and risk management techniques. Conventional financing sources in the aviation sector include aircraft leasing, bank financing, capital market funds, and export credit agency financing (Belobaba et al., 2015).

Aircraft leasing is one of the most popular types of financing models in the airline industry today. The leasing also allows airlines to obtain aircraft without paying huge sums of money as capital investments hence increasing liquidity and financial flexibility. Gillen (2011) states that leasing has been critical in helping airlines expand their flight operations without the burden of financing growth. The capital markets have also been actively used to finance aviation infrastructure and fleet acquisitions by issuing securities in 2004, e.g. asset-backed securities and airline bonds.

With all these financing methods, aviation finance is prone to economic shocks, fuel price fluctuations, and regulatory reforms. Global crises such as health epidemics, Geopolitical wars, and recessions have proven to be the most significant financial shocks in the global aviation industry. The COVID-19 shock has also revealed weaknesses in airline financial organisations, with travel restrictions and low passenger traffic leading to massive losses across the global aviation industry (IATA, 2021). Consequently, alternative financing models capable of improving the financial sustainability and functioning in the aviation sector are becoming increasingly popular.

The rise of Financial Technology (FinTech).

Financial technology, or FinTech, is the use of digital technology in the financial industry to enhance financial efficacy, access, and transparency. The novel FinTech discoveries have entirely reinvented traditional financial mechanisms by introducing frontier payment systems, blockchain technology, AI-driven financial evaluation, and decentralised financial networks (Arner et al., 2015).

Advances in information technology, data analytics, and mobile communication systems have supported FinTech. Kim and Park (2020) reported that the use of digital financial technologies significantly facilitated the delivery of financial services by expediting processes, reducing operational costs, and promoting financial inclusion. The locations of the FinTechs allow financial institutions to computerise financial processes, risk management systems and consumer and business financial products.

Blockchain technology is considered one of the greatest technological advances in the FinTech environment. Blockchain is a decentralised registry that can record financial interactions safely and transparently without centralised intermediaries. Tapscott and Tapscott (2017) state that blockchain technology can transform capital services by enhancing transaction security, minimising fraud risk, and promoting financial market transparency.

Financial systems based on blockchains could be used for applications such as digital payments, smart contracts, peer-to-peer lending, and asset tokenisation. Such technologies are making inroads in other industries like logistics, transport and aviation, whereby complex supply chains and financial transactions need efficient and transparent financial systems.

FinTech Applications of the Aviation Industry

The aviation industry is now adopting FinTech technologies to handle financial management, operational efficiency, and customer service. Another common application of FinTech in aviation is digital payments for airline ticketing and ancillary services. Digital payments will allow passengers to conduct transactions through online banks, mobile payment services, and cryptocurrency-based payment networks.

In addition to payment systems, blockchain technology has been proposed as a means to promote financial transparency and efficiency in aviation supply chains. A blockchain can be used to develop smart contracts that automate the contracts of leasing companies, aircraft manufacturers, maintenance providers, and airlines. These agreements allow financial transactions to be executed automatically when the set conditions are met, thereby minimising administrative costs and enhancing transaction efficiency (Lee & Lee, 2021).

Tokenisation of aviation assets is another application of FinTech in the aviation industry. Asset tokenisation is the process of transforming real-world assets into electronic tokens that can be exchanged on blockchain networks. In the aviation sector, tokenisation may enable fractional ownership of a spectrum of assets, allowing investors in aviation financing projects to invest with smaller amounts.

Aviation finance is related to green and sustainable finance, including sustainable funding for aviation and financing of the aerospace sector (aircraft).

One reason environmental sustainability has become critical in the aviation industry is its contribution to global greenhouse gas emissions. The aviation industry contributes to global carbon dioxide emissions with nearly 2-3 per cent. Moreover, it is, therefore, one of the most difficult industries to decarbonise (Peeters, 2016). With expanding global knowledge of climate change, governments and industry stakeholders are enacting policies to curtail aviation emissions.

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Sustainable aviation fuels (SAFs)

Sustainable aviation fuels (SAFs) have become possible, making them one of the most efficient aviation emissions-reduction solutions. Examples of renewable feedstocks used to produce SAFs include biomass, waste materials, and synthetic fuels produced with renewable energy. Such fuels have the potential to cut carbon emissions by a large margin when compared to traditional jet fuels. Nevertheless, the large-scale production and implementation of SAFs demand significant investment in research and in the build-up of infrastructure and supply chain networks (Ng et al., 2021).

Green aviation programs may also use financial technologies to fund the projects. Digitised financial markets may help finance the sustainable development of the aviation sector by facilitating crowdfunding programs, green bonds, and blockchain-based carbon trading systems. These technologies should help increase transparency in the environmental reporting process and provide opportunities to monitor and verify sustainability investments.Gossling and Humpe (2020) believe that the aviation industry requires innovative financial solutions to secure substantial funding for green technologies. FinTech can help bridge the financing gap between investors and sustainable aviation projects and improve the transparency of environmental investment programs.

Digital Change and Aviation Finance Systems.

In recent years, aviation systems have been digitalised even faster as more digital technologies are being deployed across the aviation value chain. Digital transformation refers to the application of new technologies to business processes to improve effectiveness and competitiveness, such as cloud computing, artificial intelligence, blockchain, and big data analytics.

Digital transformation has occurred across many aspects of the aviation industry, including airline ticketing systems, local airport operations, airline maintenance systems, and financial management systems. Digital financial systems help airlines automate their financial processes, monitor their financial performance in real time and enhance their financial planning.

According to Di Vaio and colleagues (2019), digital transformation is reshaping the governance and financial decision-making processes within aviation organisations. Digital technologies can help enhance transparency in financial reporting and risk management systems, and improve communication between stakeholders. The innovations can be used to enhance financial accountability and corporate governance in aviation companies.

Research Gap and Bibliometric Analysis Requirement.

Although recent years have seen a rise in scholarly work in aviation finance and fintech, the literature remains disjointed, spanning fields such as finance, the economics of transportation, sustainability research, and information technology. Research on the intersection of FinTech and aviation finance has been examined at the individual level on specific topics. However, few studies have provided a thorough overview of the literature on the subject.

Bibliometric and scientometric analyses are systematic approaches to studying the temporal dynamics of scientific knowledge by examining publication patterns, citations, and collaboration networks among researchers. Such techniques can help a researcher identify influential publications, key research themes, and emerging trends in a scientific field.

Past bibliometric research has examined trends in research on aviation sustainability, transportation economics, and digital transformation. Nevertheless, there is a lack of studies that analyse the implementation of FinTech in aviation finance, particularly using bibliometric methods. A bibliometric analysis of FinTech applications in the aviation finance sector will help deepen understanding of the field's intellectual organisation and the locus of future research.

Research Framework

The paper will follow a bibliometric, scientometric paradigm for the literature review and examine how research on FinTech applications in aviation finance has emerged. The paper investigates publication patterns, citation networks, collaboration patterns, and thematic groups in the field of research using advanced bibliometric tools.

The study will provide a strong background of the intellectual frameworks behind the use of FinTech in aviation finance by a review of academic papers obtained through the Scopus database, and identify new research opportunities to continue to develop digital financial systems in the aviation field.

METHODOLOGY

Research Design

This paper employs a bibliometric and scientometric research design and aims to review the emergence of academic literature on FinTech applications in aviation finance. The bibliometric analysis is largely applicable for assessing scientific publications using quantitative measures such as publication counts, citation patterns, author productivity, and collaboration networks. Scientometric techniques build on bibliometric analysis, in which associations among publications are analysed using network visualisation methods.

Due to the systematic analysis of massive amounts of academic literature and their ability to establish an intellectual framework for a field of research, bibliometric studies have gained momentum in emerging interdisciplinary research fields. Bibliometric analysis can be used to identify influential publications, leading scholars, and emerging research patterns in a scientific field by analysing citation patterns, keyword patterns, and collaboration networks.

This study reviewed transitions in research on FinTech applications in aviation finance through a 25-year bibliometric analysis of FinTech application development in 2025. These analytical issues aim to determine the general trends in publications, the collaboration patterns among researchers and institutions, and the key thematic clusters in the research field.

This study has a methodological framework that has four large analytical elements:

1. **Co-authorship analysis**
2. **Keyword co-occurrence analysis**
3. **Citation analysis**

Data Source and Database Selection

The bibliometric data were obtained by running a search in the Scopus Database, one of the largest and most comprehensive databases of peer-reviewed scholarly works, to gather bibliometric evidence for this research. The Scopus database covers journals, conference papers, and book chapters across many areas, including finance, economics, engineering, and transportation research.

Scopus was chosen as the primary data source for several reasons. One, Scopus is superior in terms of coverage of high-quality peer-reviewed journals and provides good citation data for the bibliometric analysis. Second, the database has enhanced search capabilities that allow researchers on a particular topic to retrieve publications using specific keywords, subjects of interest, and publication years. Third, Scopus provides export formats that can be analysed using bibliometric software such as VOSviewer.

Scopus, the primary data source, has also been shown to be the primary source for bibliometric research in transportation economics, aviation management, and financial technology due to its broad scope and strong citation indexing. Therefore, by using Scopus, the accuracy and reliability of the bibliometric dataset used in this study are ensured.

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Search Strategy

To conduct a search of the Scopus database for publications on FinTech use in aviation finance, a systematised search was performed. The search query was programmed to include literature on financial technology ideas and aviation-related issues.

The search query in this research was as follows:

AND TITLE-ABS-KEY (fintech" OR financial technology" OR blockchain OR digital finance).

AND

TITLE-ABS-KEY (aviation) or airline or air transport

The search was conducted on titles, abstracts, and author keywords to include relevant publications in the data set.

The search was restricted to the publications since 2000. The time frame was the year 2000, since the beginning of the 2000s was the period when digital financial technologies emerged, and the online financial system started to be used more and more.

The search was performed in 2026, and the sources that covered publications included in Scopus up to the end of 2025 were considered in the dataset.

Data Screening and Selection Process

The first search query gave many publications on financial technologies and aviation systems. Not every single published work, however, became relevant to the research objectives of this study directly. Thus, a method of systematic screening was utilized in order to clean up the data.

The management of the screening process took the following steps:

Step 1: Identifying the primary stakeholders

The first search was done through all publications that had the chosen keywords in their titles, abstracts or keywords.

Step 2: Duplicate Removal

Overlapping records were eliminated in the dataset to make sure that any publication could be counted only once.

Step 3: Relevance Screening

Titles and abstracts of the publications obtained were gone through by hand to narrow down the results to those that were directly connected to FinTech applications in aviation or air transport systems.

Step 4: Final Dataset Selection

Following the screening criteria, a final dataset of 312 publications was left to be analysed by bibliometrics.

Figure 1 is a PRISMA-style flow diagram showing the steps undertaken in the process of data screening.

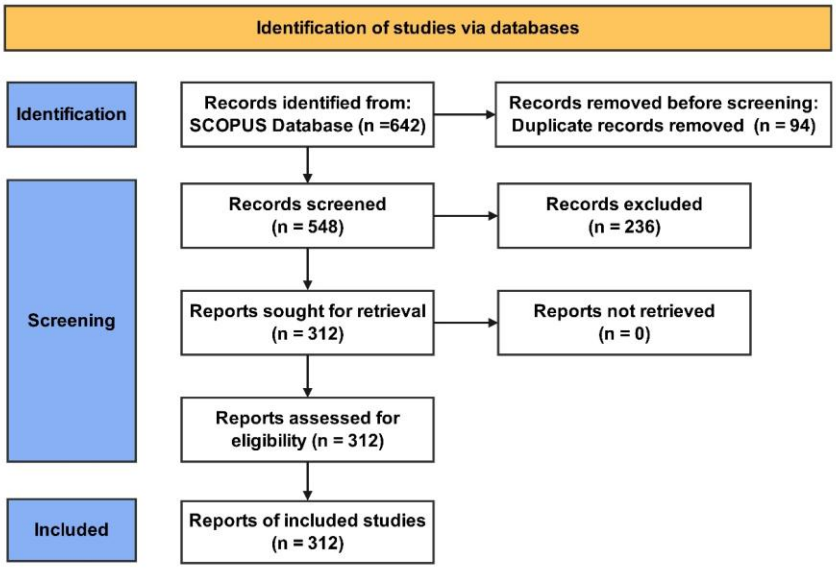

Figure 1: PRISMA Flow Diagram for Literature Selection

Data Analysis Tools

VOS viewer was used to perform network visualisation and scientometric mapping. VOS viewer is widely used to construct and visualise bibliometric networks, including co-authorship networks, citation networks, and keyword co-occurrence maps.

The software uses a mapping technique based on similarity measures to create visual representations of relationships among bibliometric entities.

In VOS viewer maps:

Nodes represent items (authors, institutions, countries, keywords, or documents)

Node size represents influence or frequency

Links represent relationships between nodes

Colours represent clusters of related items

These visualisations help identify collaboration patterns and thematic research clusters within the dataset.

Co-Authorship Analysis

Co-authorship analysis examines collaborative relationships among authors, institutions, and countries based on joint publications. Collaboration networks are important indicators of knowledge production and research partnerships within a scientific field.

In this study, co-authorship analysis was conducted at three levels:

Author level – to identify leading researchers and collaboration clusters.

Institution level – to examine partnerships among universities and research organisations.

Country level – to analyse international research collaboration.

The co-authorship networks were generated using VOSviewer and visualised as network maps. Nodes represent authors, institutions, or countries, while links represent collaborative relationships.

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Keyword Co-Occurrence Analysis

The co-occurrence analysis of keywords was done in order to define key themes of research in the data. In this method, the frequency of the use of keywords in scholarly works is considered.The most recurring keywords are then clustered into forms of major themes described in the field of research.This paper takes author keywords of Scopus and analyses them using VOSviewer in order to obtain co-occurrence networks of keywords.The clusters thus obtained give the conceptual layout of the aviation FinTech applications research.

Citation Analysis

The citation analysis was performed to identify influential publications, authors, and journals in the research area. Publications with high citation counts can be considered among the most recognised works on which scientific knowledge is developed.

VOSviewer was used to create citation networks between publications and analyse the ground between publications.

Citation analysis provides insight into the intellectual principles of the research field and identifies where major studies have had an impact on future research.

Analytical Framework

The steps that were used in the analysis were as follows (Figure 2):

Data retrieval from Scopus

Data cleaning and screening

VOS viewer visualisation of the network.

Collaboration networks and thematic clusters interpretation.

The proposed multifaceted bibliometric and scientometric analysis approach allows for a clear and thorough picture of how studies on FinTech implementation in aviation finance have evolved over time and of their structure.

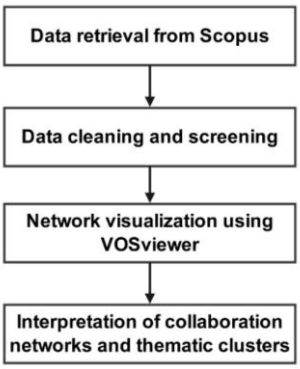

Figure 2: The methodological framework used in the study

DESCRIPTIVE BIBLIOMETRIC ANALYSIS

The selection of literature done by PRISMA

A systematic literature selection process was used to ensure that the publications included in the bibliometric dataset were relevant. The data screening process was supported by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.The initial Scopus database search provided numerous results about financial technologies and aviation systems. This search has been carried out using a common set of keywords in the fields of financial technology and aviation, such as FinTech, blockchain, digital finance, aviation, airline, and air transport.During the first stage of the screening process, duplicate records were eliminated from the dataset. The second stage involved reviewing titles and abstracts to narrow down to articles directly related to FinTech applications in aviation or air transport systems. Articles that were not written on aviation finance or digital financial technologies were not considered.

Annual Scientific Production

Firstly, the annual publication analysis is popular for analysing how research on the use of FinTech in aviation finance has evolved. The results indicate that the field of study has experienced significant developments over the past two decades. The limited number of publications that came up during the first few years of the study (2000-2010) was limited to this portion of the analysis. The key research topics of the time were the classical model of the aviation finance system, airline economics, and transportation policy.The number of publications was rising; however, in 2011-2016, the situation accelerated, and interest in digital financial systems and their role in the transportation industry rose. A rise in research output was noted post-2017 and was directly linked to the fast-growing blockchain infrastructure, digital payments, and the application of artificial intelligence in the financial services sector. The highest number of publications was witnessed in 2021 - 2025, which shows that in recent years, the use of FinTech in aviation finance has gained more importance in terms of research topics. (Table 1)

Table 1: Annual Publication Distribution

Period	Number of Publications
2000–2005	8
2006–2010	15
2011–2015	36
2016–2020	97
2021–2025	156

Most Productive Authors

The authors' productivity was analysed to identify leading researchers in the field. Table 2 presents the most productive authors, ranked by the number of publications in the dataset.

Table 2: Top Contributing Authors

Rank	Author	Publications
1	Chunan Wang	12
2	Yahua Zhang	10
3	Kun Wang	9
4	Xiaoqian Sun	8
5	Xiaowen Fu	7
6	Qing Ji	6
7	Shuai Yue	5

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These authors have made significant contributions to research on aviation economics, sustainability financing, and digital transformation in aviation systems.

Leading Journals

The distribution of publications across journals indicates the leading avenue for research in the area. Table 3 lists the top journals with the most publications on the application of FinTech in aviation finance.

Table 3: Most Productive Journals

Rank	Journal	Publications
1	Journal of Air Transport Management	38
2	Transport Policy	29
3	Energy	24
4	Renewable & Sustainable Energy Reviews	20
5	Transportation Research Part D	17

These journals primarily focus on transportation economics, sustainability, and aviation management.

Country Productivity Analysis

The analysis was conducted at the country level to examine the geographical distribution of research activity. The findings indicate that the study of FinTech use in aviation finance is highly international. (Table 4)

Table 4: Top Contributing Countries

Rank	Country	Publications
1	China	72
2	United States	65
3	United Kingdom	49
4	Australia	32
5	Germany	28
6	Netherlands	21

China is the top contributor, indicating rapid growth in aviation infrastructure and technological advancement. Research output in the United States and the United Kingdom is also strong, owing to the two countries' developed aviation industries and research facilities.

Citation Impact AnalysisA citation analysis was conducted to identify influential papers in the discipline. Published works that are frequently cited reveal the seminal articles that guide future research.

Table 5: Most Cited Publications

Author	Year	Citations	Research Focus
Dube	2021	120	Aviation sustainability
Di Vaio	2019	105	Digital transformation
Peeters	2016	95	Climate impacts
Ng	2021	80	Sustainable aviation fuels

The fact that these publications mention sustainability and digital transformation as increasingly important in aviation finance research.

Important Descriptive Bibliometric Analysis Findings.The descriptive bibliometric analysis reveals significant trends in the evolution of research on FinTech applications in aviation finance.To begin with, the sphere has seen rapid development since 2017, which can be seen as an indicator of growing interest in digital financial technologies and sustainability issues in the aviation sector.Second, the focus of research activity lies in transportation and sustainability journals, which demonstrates the field's interdisciplinary nature.Third, China, the United States and the United Kingdom have become major contributors to research in the field.Lastly, citation analysis reveals that studies on aviation sustainability and digital transformation have had the greatest impact on the field's development.

NETWORK ANALYSIS OF FINTECH APPLICATIONS IN AVIATION FINANCE

Several scientometric methods were used to understand the factual framework and patterns of cooperation in FinTech applications in the context of aviation finance. The analyses performed with VOSviewer included four types of networks: co-authorship, keyword co-occurrence, and citation. These studies offer information on how research collaboration trends, thematic growth, intellectual impact and knowledge organisation operate in the field.

Co-Authorship Analysis: The patterns of collaboration between scholars, institutions, and countries are analysed by co-authorship. This analysis would help locate the power brokers in the research, important research institutions, and international co-operation networks.

The co-authorship analysis was carried out on three levels in this work:

Authors, Organisations, Countries

The results are presented in **Figures 3–5**.

Author Collaboration Network

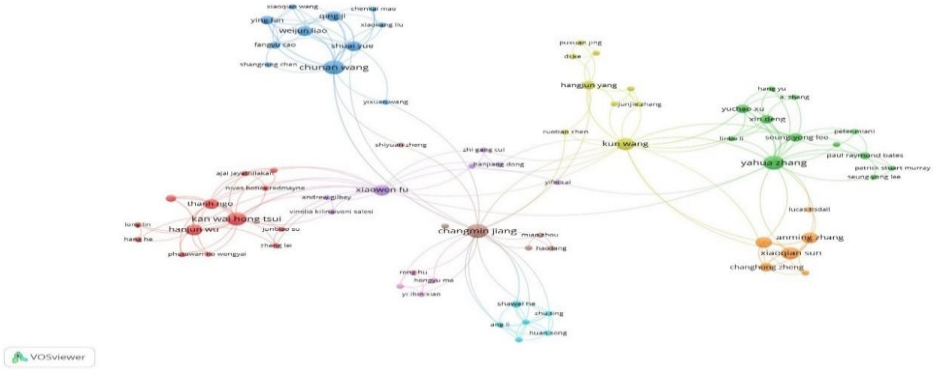

Figure 3: Co-Authorship network among authors contributing to the field

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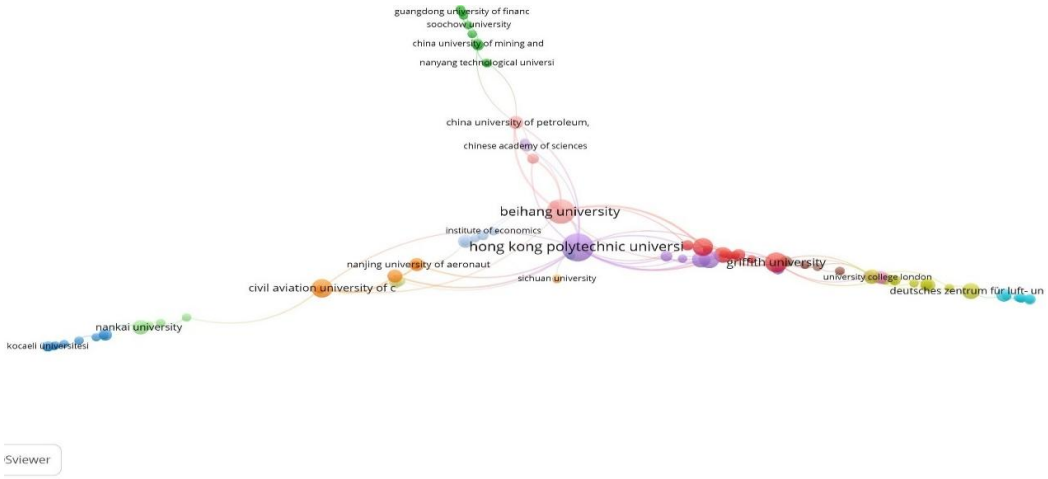
Some of the notable groups of working researchers are identified in the network (Figure 3). Chunan Wang, Yahua Zhang, Kun Wang, Xiaoqian Sun, and Xiaowen Fu are among the strongest representatives of the network and seem to be at the centre of the web. The dimensions of the nodes represent the authors' productive research and collaborative influence. The cluster in which Chunyan Wang was also located demonstrates excellent working relations with authors such as Qing Ji, Shuai Yue, Weijun Liao, and Ying Fan. This sector seems to prioritise aviation economics, energy markets and environmental sustainability in aviation.The other major group of scholars focuses on Yahua Zhang and collaborates with scholars such as Linbo Li, Xin Deng, Hang Yu, and Seung-Yong Lee. The majority of research activities in this cluster concern aviation policy, aviation sustainability financing and regulation of the airline industry.

On the same note, another powerful collaboration is between Xiaoqian Sun and Anming Zhang, focusing on airline economics, airport management, and aviation policy analysis.The presence of several interconnected clusters indicates that the research environment is active and collaborative. Nevertheless, some clusters are rather detached, suggesting that greater interdisciplinary cooperation would help the research field grow even stronger.

Institutional Collaboration Network

Figure 4: The institutional cooperation network

As demonstrated in the visualisation (Figure 4), Hong Kong Polytechnic University is one of the most central entities in the collaborative network. The institution has strong research collaborations with several universities, including Griffith University, Beihang University, the University of British Columbia, and the Civil Aviation University of China.



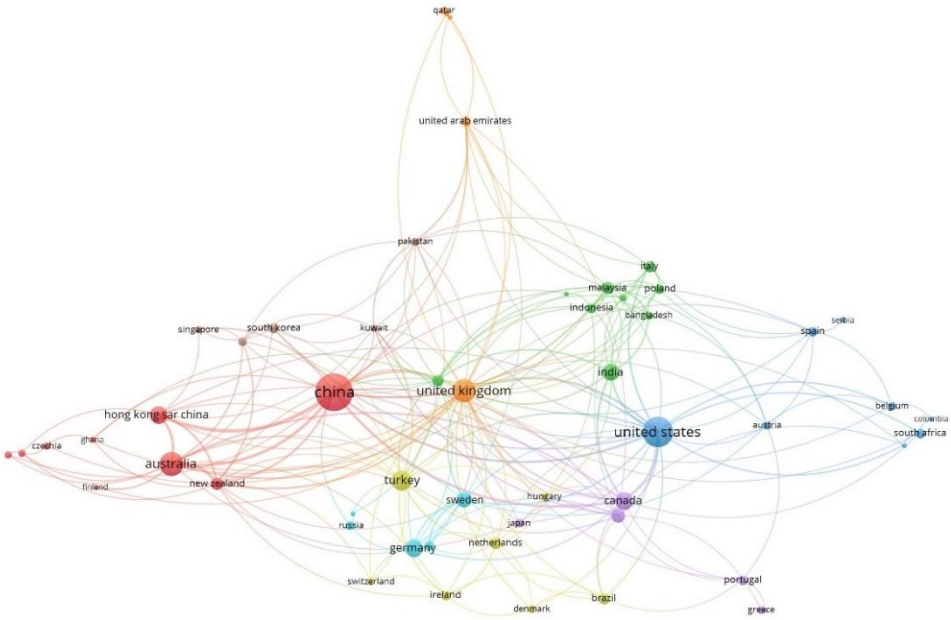
The other significant institutions found in the network are:

a. Embry-Riddle Aeronautical University.
b. University of Oxford
c. Imperial College London
d. Delft University of Technology.

These schools are well known for their contributions to aviation management in the fields of aviation, aerospace engineering, transportation economics, and sustainability studies.

Country Collaboration Network

Figure 5: The country collaboration network



As shown in the network (Figure 5), the most important countries are China, the United States, and the United Kingdom, as they conduct research on FinTech applications in aviation finance. These countries are depicted as the largest nodes in the network, indicating high research productivity and numerous partnerships with other countries.

Other countries China has strong ties with include Australia, Singapore, South Korea, and Malaysia, and the trend shows a high rate of aviation research and development in Asia.

The US has also been central to the international system of cooperation, with which it enjoys good relations with European nations like Germany, France, Sweden and the Netherlands.

It is also evident that European countries play an active role in research, particularly in the study of aviation sustainability and environmental policy in Italy, Spain, and Poland.

Overall, the network of collaboration in the country reflects the interdisciplinary and international nature of aviation finance studies.

Keyword Co-Occurrence Analysis.

The keywords co-occurrence analysis (Figure 6) allows for the identification of the most important research topics and the conceptual framework of a science. The frequency of the keywords in the scholarly publications is also discussed herein.

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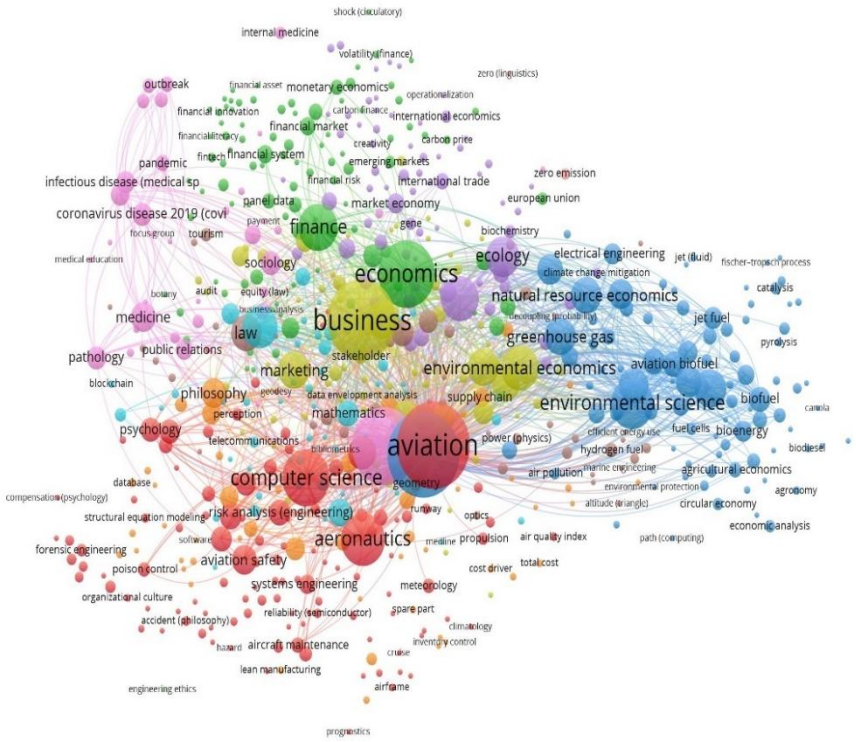


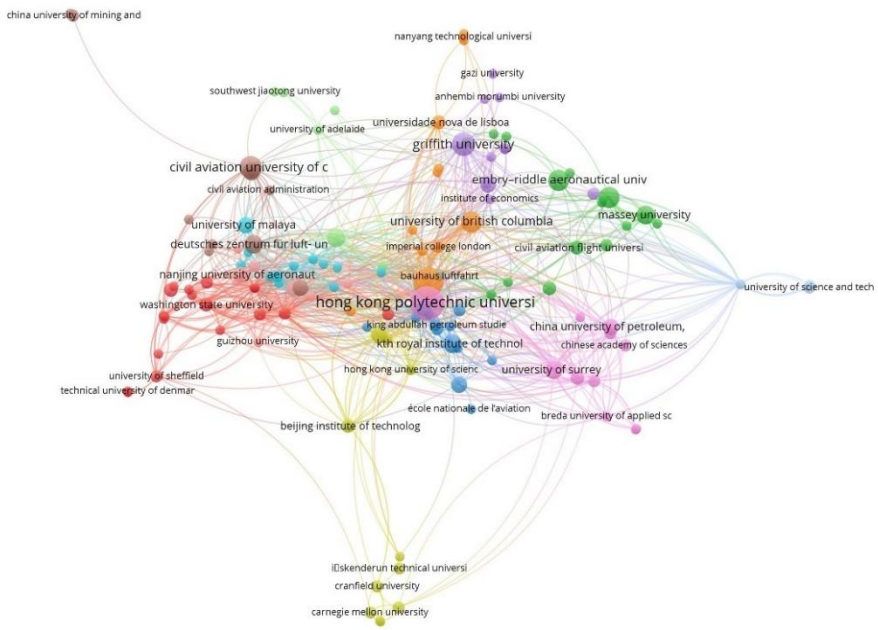
Figure 6: The findings of the co-occurrence analysis of keywords

The network shows several large clusters of research across different thematic areas.

Cluster 1: Aviation Economics and Business Management
The founder cluster specialises in the keywords of Aviation, Business, Economics, Finance, and Marketing.

It is this group that has become the hub for economic and managerial studies in aviation finance. The studies in this category concern the financial performance of airlines, the market structure of the aviation industry, and strategic management in the aviation industry.

Cluster 2: Green Aviation and Environmental Sustainability.
The second cluster involves keywords such as Environmental science, Greenhouse gas, Climate change, Aviation biofuel, and Hydrogen fuel.
Such a cluster underscores the growing importance of sustainability and the environment in aviation finance. The works in this cluster focus on financing systems to support the production of sustainable aviation fuel and carbon control.
Cluster 3: Computational Approach and Digital Technology
The keywords contained in the third group include Computer science, Risk analysis, Systems, Engineering, and Data analytics.
The papers discuss how digital technologies, including FinTech applications, artificial intelligence, and data analytics, can improve aviation financial systems.
Cluster 4: Policy and Governance
The fourth cluster deals with aviation policy, the regulatory framework, and international aviation governance. The keywords in this category are market or search term keywords: Transport policy, International trade, Economic regulation.
In total, the co-occurrence network keyword shows the interdisciplinarity of the research direction, as knowledge from finance, environmental science, engineering, and transportation policy is combined.
Citation Analysis: One can use citation analysis to find out influential publications and the intellectual history of a research field. With high citation rates, one is likely to point to fundamental research that would provide future research with a path to follow.



Figures 7: The citation network created with the help of VOS viewer

The review provides several authoritative sources that can serve as references in the field. Among the most frequently mentioned works of art are Kaitano Dube (2021), Assunta Di Vaio (2019), and Paul Peeters (2016).
The journals mainly focus on aviation sustainability, environmental governance, and the impacts of climate change on aviation systems.
The literature on sustainability also suggests that sustainability issues have become the dominant theme in aviation finance. Many scientific works are well-cited and focus on the cost-effectiveness of carbon-reduction policies and sustainable flight fuel. Moreover, as recent studies, such as those by Kok Siew Ng (2021) and Federico Afonso (2023), indicate, there is growing interest in digital technologies and the integration of financial innovation into the aviation environment. (Figure 7)

DISCUSSION
The results of the bibliometric and scientometric analyses are an excellent source of information on the evolution of studies on FinTech utilisation in aviation finance.First of all, the number of publications in 2017 and the subsequent period is increasing at a tremendous rate, which means that the use of digital financial technologies in aviation systems is a comparatively recent but dynamically evolving area of inquiry. This increases with the global acceptance of FinTech systems, such as blockchain-based payment systems, online financial systems, and artificial intelligence-based financial analytics.

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Second, the co-authorship analysis demonstrates that there are several powerful clusters of researchers in aviation economics, environmental policy, and digital transformation, led by scholars. The interconnected systems of institutional partnerships across Asia, Europe, and North America demonstrate that the study of aviation finance is a worldwide phenomenon.Third, the search query to locate a co-occurrence analysis is sustainability-related research; we can note that such research has become an essential focus in the field. The growing interest in green aviation fuel, carbon reduction initiatives, and green finance technologies implies a new environmental awareness within the aviation sector.Such results indicate that aviation financial systems can be significantly reformed through FinTech technologies, thereby contributing to improved transparency, greater transactional efficiency, and the creation of sustainable aviation programs.

RESEARCH IMPLICATIONS

Such studies have several implications for practitioners in the industry, researchers, and policymakers.At the research level, the paper provides a comprehensive analysis of the intellectual framework for FinTech applications in the aircraft financing industry. It identifies new research areas that warrant further research.The policy implications include providing insights into the need to implement regulatory frameworks that enable the adoption of digital financial technologies without compromising financial stability and cybersecurity.FinTech solutions applied in the industry have the potential to make airlines, among other aviation participants, more financially effective, reduce operational costs, and devise more sustainable and efficient aviation technologies.

LIMITATIONS AND FUTURE RESEARCH

In addition to its contribution, this study has several limitations.

To begin with, only publications indexed in the Scopus database will be analysed. Scopus offers extensive coverage of scholarly literature; however, certain relevant documents in other databases might not be included.econd, the bibliometric techniques emphasise publication and citation trends and might be inadequate in reflecting the qualitative impact of specific studies.Further research can build upon this review by drawing on additional databases, including Web of Science, and employing future methods such as thematic evolution analysis and topic modelling.

CONCLUSION

A journalistic and scientific review of FinTech research in the aviation finance sector was conducted using a dataset of 312 articles retrieved from the Scopus database for the period 2000-2025.The findings demonstrate that the sector has experienced steep growth in recent years, driven by technological innovation and sustainability issues in the aviation industry.The review concluded by identifying several influential writers, organisations, and nations that have contributed to the field of research, along with significant clusters of themes in aviation sustainability financing, digital financial technology, and airline economic valuation.

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