STUDY TO SUPPORT THE AFRICAN CIVIL AVIATION COMMISSION (AFCAC) ON AVIATION MARKET COMPETITION

Operationalisation of the Single African Air Transport Market (SAATM) – Support to the African Civil Aviation Commission (AFCAC)

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LIST OF ABBREVIATIONS

ACI - Airports Council International

ACTK - Available Cargo Tonne Kilometers ('000)

AFCAC - African Civil Aviation Commission

AfDB - African Development Bank

AFRAA - African Airlines Association

ARIMA - Autoregressive Integrated Moving Average

ARIMAX - Autoregressive Integrated Moving Average with Explanatory Variables

ASK - Available Seat Kilometre ('000)

ASK – Available Seat Kilometre

ATK - Available Tonne Kilometre ('000)

AU - African Union

AUC – African Union Commission

CAAs - Civil Aviation Authorities

CASK – Cost per Available Seat Kilometre

CCC - Common Market of East and Southern Africa COMESA – Common Market of East and Southern Africa Competition Commission

Central African Economic and Monetary Community - CEMAC

CLF - Cargo Load Factor (%)

CTK - Cargo Tonne Kilometres ('000)

EAS – East African Community

EASA - European Union Aviation Safety Agency

EA-SA-IO- Eastern Africa- Southern Africa-Indian Ocean

ECOWAS - Economic Community of West African States

FRT - Revenue Freight (tonne)

FTK - Freight Tonne Kilometres ('000)

GDP - Gross Domestic Product

HHI – Herfindahl Hirschman Index

IATA - International Air Transport Association

ICAO - International Civil Aviation Organisation

IGAD – Intergovernmental Authority on Development

LCCs - Low-Cost Carriers

MRO - Maintenance, Repair, and Overhaul

MTOW - Maximum Take-off Weight

OECD - Organisation for Economic Cooperation and Development

OTP – On Time Performance

PAX - Revenue Passengers

PLF – Passenger Load Factor

PLF -Passenger Load Factor (%)

RASK – Revenue Per Available Seat Kilometre

RECs – Regional Economic Communities

RPK - Revenue Passenger Kilometres ('000)

SAATM - Single African Air Transport Market

SAATM-PIP - Single African Air Transport Market Pilot Implementation Project

SADC – Southern African Development Community

SAF - Sustainable Aviation Fuel

UNCTAD - United Nations Conference on Trade and Development

UNECA – United Nations Commission for Africa

USD – United States Dollar

WB – World Bank

YD - Yamoussoukro Decision

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EXECUTIVE SUMMARY

The African aviation sector is at a pivotal moment, presenting substantial opportunities to drive regional integration, economic development, and enhanced connectivity across the continent. Initiatives such as the SAATM and the Yamoussoukro Decision (YD) have laid the foundation for a more liberalised and unified aviation market. However, significant structural, regulatory, and operational challenges persist, constraining the sector's ability to achieve its full potential and provide broader economic and social benefits.

This study, commissioned to support the African Civil Aviation Commission (AFCAC), critically examines the competitive dynamics within Africa's aviation market. The study highlights the barriers impeding fair competition, including fragmented regulatory frameworks, restrictive bilateral agreements, and the dominance of state-owned carriers. By addressing these challenges, the study seeks to foster a more equitable, liberalised aviation ecosystem that aligns with international standards and promotes sustainable growth.

The findings of the study underscore that despite the establishment of SAATM, its implementation remains inconsistent, with only 35 African states fully committing to its provisions. This uneven adoption has exacerbated issues such as market concentration, where dominant flag carriers control key routes, particularly at smaller airports. Protectionist policies in many countries continue to shield national airlines from competition, limiting the entry of private operators and low-cost carriers, which are critical for improving affordability and accessibility. Furthermore, outdated infrastructure, elevated operational costs, and monopolistic practices by service providers remain significant obstacles, particularly for smaller and emerging carriers.

External competition further compounds these challenges. Non-African airlines, often supported by government subsidies, dominate intercontinental and regional routes, marginalising African operators and undermining their competitiveness. These dynamics highlight the urgent need for harmonised policies, infrastructure investment, and strategic interventions to create a level playing field for all stakeholders.

This study provides a roadmap to address these pressing issues. It advocates for the harmonisation of competition regulations across the continent, ensuring alignment with international norms to reduce regulatory fragmentation and promote fair market practices. Strengthening the capacity of regulatory authorities through targeted training programmes is also recommended to enhance the enforcement and oversight of competition laws. Collaboration among governments, airlines, and industry stakeholders is essential to create an inclusive and sustainable aviation environment that supports innovation and competitiveness. Additionally, investments in infrastructure modernisation and policies encouraging the growth of low-cost carriers will play a vital role in reducing operational inefficiencies and expanding market access.

The insights and recommendations presented in this study highlight the transformative potential of a fully liberalised and harmonised aviation market in Africa. By addressing structural and regulatory barriers, AFCAC and its partners can position Africa's aviation sector as a cornerstone of regional economic integration, connectivity, and prosperity. These efforts, aligned with the AU Agenda 2063, will ensure that Africa's aviation industry becomes a driver of inclusive growth and sustainable development, delivering tangible benefits to both operators and consumers across the continent.

OBJECTIVES OF THE STUDY

The primary purpose of the study is to support the African Civil Aviation Commission (AFCAC) in improving the competitive landscape of the civil aviation sector across the African continent. This study aims to enhance the operationalisation of the SAATM under the YD by aligning policies and regulations with global best practices. Through this effort, the study will address the challenges posed by anti-competitive practices, improve market access, and ensure a level playing field for all African aviation operators. It will also provide key insights for stakeholders in the aviation sector on fostering fair competition and improving continental connectivity. The study conducted an analysis of aviation market competition across the African continent, underlying the overall objective to contribute to the development of the air transport sector in the continent. The specific objectives are as follows:

Examine and Strengthen Competition Laws and Policies: The study will critically assess the existing competition laws and policies within the African aviation industry, evaluating their alignment with Annex 5 of the Yamoussoukro Decision and global standards. It will identify gaps in current frameworks, focusing on how these laws support or hinder fair competition, and propose reforms to enhance their effectiveness.

Analyse Anti-competitive Practices and Market Dynamics: A comprehensive analysis of prevalent anti-competitive practices will be conducted, such as government subsidies to non-African airlines and market concentration. The study will assess how these practices affect supply, demand, and overall market dynamics, mapping out regions where entry barriers limit competition. This will provide insights into the competitive structure across different regions in Africa.

Evaluate the Role of External Competitors: The study will examine the competitive pressures exerted by non-African airlines, particularly those that benefit from government subsidies. It will assess the impact of these external competitors on the African aviation market and provide recommendations for strengthening the competitive position of African airlines.

Develop Tools for Competition Monitoring and Enforcement: The study will contribute to the creation of a comprehensive database for monitoring competition across the African aviation sector. This database will support AFCAC and other regulatory bodies in tracking market trends and identifying anti-competitive behaviours. The study will also recommend capacity-building initiatives, including training and workshops, to enhance the ability of competition authorities to enforce regulations effectively.

Foster Collaboration and Harmonisation of Regulatory Frameworks: The study will propose actionable recommendations for harmonising competition regulations across African countries and aligning them with international best practices. It will emphasise the need for collaboration between

AFCAC and international bodies such as UNCTAD and the OECD to foster cooperation and enhance regulatory enforcement across the continent.

This analysis will serve as a strategic tool for AFCAC and other key stakeholders, providing actionable insights and recommendations to advance regulatory reforms, promote economic growth, and enhance connectivity within the African aviation sector. By leveraging the study's findings, AFCAC can play a pivotal role in driving positive change and realising the full potential of air transport as a catalyst for sustainable development in Africa.

This study will provide valuable insights and recommendations to AFCAC and other key stakeholders in several ways:

Enhancing Regulatory Frameworks: By offering detailed analyses and recommendations for the refinement of competition regulations, the study will indirectly support AFCAC in its efforts to enhance and streamline regulatory frameworks across the continent. This will involve a critical review of Annex 5 of the Yamoussoukro Decision and other key regulations governing aviation competition in Africa. The study will provide recommendations that address existing gaps in the regulatory framework, such as the absence of guidelines for mergers and acquisitions, which are vital in maintaining a competitive landscape. The alignment of these regulations with international best practices—such as those established by the ICAO and other international competition bodies—will ensure that African aviation operators are equipped to compete on a global level. Furthermore, the study will offer strategies for harmonising national and regional regulations with continental frameworks to ensure consistency, reduce regulatory fragmentation, and promote a seamless, liberalised, and competitive aviation market throughout Africa. This alignment will be instrumental in fostering a more integrated market, encouraging fair competition, and driving the growth of African aviation.

Building Capacities for Competition Enforcement: The study's recommendations will serve as a foundation for AFCAC to build the capacities of its competition experts and other relevant staff, which are crucial to the successful enforcement of competition regulations. By outlining training programmes and workshops, the study will provide a structured plan for skill enhancement that will equip competition authorities with the necessary tools, knowledge, and methodologies to monitor and enforce fair competition across the aviation market. These programmes will cover vital areas such as competition law, market analysis, and anti-competitive practices—giving a comprehensive understanding of the competitive landscape and the ability to address infractions effectively. The workshops will also encourage knowledge sharing between regional competition authorities, airlines, and airport operators, fostering a collaborative environment that supports the enforcement of competition regulations. By enhancing enforcement capacities, AFCAC will be better positioned to ensure that the benefits of

liberalisation, such as increased consumer choice and lower fares, are fully realised in the African aviation market.

Fostering Regional and International Collaboration: One of the study's key insights is the importance of fostering collaboration between AFCAC and both regional and international competition authorities. By highlighting the critical need for cross-border cooperation, the study will support AFCAC in strengthening its partnerships with regional and international bodies. Such partnerships will enable AFCAC to gain valuable insights from global best practices in competition enforcement while also fostering a shared approach to tackling common challenges, such as monopolistic behaviour and unfair competition practices by non-African airlines. Furthermore, these partnerships will facilitate technical assistance, enabling AFCAC to leverage international expertise. By positioning AFCAC as a central figure in global aviation competition discourse, the study will help enhance its ability to enforce regulations that protect African aviation stakeholders and ensure a fair, competitive environment on the continent.

Developing Action Plans for Stakeholder Engagement: The study's strategic recommendations will assist AFCAC in formulating specific action plans aimed at engaging diverse stakeholder groups across the aviation sector, including airline operators, aerodrome authorities, ground handling services, and air traffic management organisations. These action plans will focus on fostering competitive practices, particularly addressing unique market challenges faced by stakeholders such as small and medium-sized African carriers that struggle to compete against larger, often subsidised, non-African airlines. The study will include recommendations on improving market entry conditions, reducing barriers to competition, and ensuring compliance with established competition regulations. By fostering a collaborative environment, AFCAC will be able to bring together diverse market participants to ensure the fair and efficient operation of the aviation sector, driving innovation and encouraging growth within the industry.

Addressing Specific Competition Issues at Continental and Regional Levels: Finally, the study will support AFCAC in identifying and addressing specific competition issues that may arise at both continental and regional levels. Through a comprehensive analysis of market dynamics, including market concentration, supply-demand mismatches, and entry barriers, the study will offer detailed insights into the competitive landscape across different regions of Africa. It will identify routes and market segments where competition is stifled due to high entry barriers, dominant players, or anti-competitive practices and will recommend targeted interventions to address these issues. The study will suggest measures to support fifth freedom traffic rights operations, enhancing inter-regional connectivity and reducing monopolistic tendencies in certain markets. AFCAC will be better equipped to promote equitable access to market opportunities for all players—especially smaller airlines—thus contributing to the overall growth and sustainability of the African aviation sector. By ensuring fair

competition at both continental and regional levels, the study will help AFCAC advance its goals of creating a dynamic, competitive, and liberalised air transport market that benefits operators and consumers alike.

The comprehensive study of aviation market competition across Africa will be an essential resource for policymakers, regulators, and stakeholders in the aviation industry. By identifying gaps and inconsistencies in the competitive landscape, the study will highlight the challenges African airlines face, including the influence of non-African competitors, barriers to entry, and anti-competitive practices. This understanding is vital for creating a level playing field and fostering a more transparent and fair aviation market that promotes innovation, efficiency, and growth.

The study will provide valuable insights into the impact of existing competition regulations on market dynamics, including how they affect airlines, passengers, and the broader aviation ecosystem. By examining the competitive pressures from non-African operators, market concentration, and barriers to entry, the analysis will underscore the importance of refining competition policies to encourage fair competition, reduce monopolistic behaviour, and enhance consumer choice. These findings will be pivotal for promoting greater market access, improving service quality, and driving down costs for consumers. As competition intensifies, African airlines will be better positioned to expand their networks, improve operational efficiency, and contribute to the broader goals of economic integration and development across the continent.

Furthermore, the study will provide a foundation for evidence-based decision-making among key stakeholders, including AFCAC, national governments, competition authorities, and industry associations. Equipped with a comprehensive understanding of the competitive environment and its implications, stakeholders will be empowered to develop targeted interventions and policy reforms that address identified challenges and enhance market efficiency. Whether through harmonisation of competition laws, enhanced regulatory enforcement, or collaboration with international competition bodies, the insights from the study will guide strategic actions to optimise competition practices and ensure a more robust and competitive aviation market. The competition laws in various African countries have been rapidly evolving, with some countries enacting new laws or proposing revisions while some African leaders are joining forces to develop antitrust policies. Africa is undergoing significant changes in antitrust regimes throughout the continent. The regulatory landscape is shifting rapidly with countries either significantly amending their competition laws or proposing new laws and regulations relating to merger control and anticompetitive conduct, among others. In addition, competition authorities have increased enforcement in a variety of sectors, and overlapping jurisdictional regimes remain the core challenge towards harmonised policy frameworks. In early 2024, the COMESA Competition Commission (CCC) announced proposed revisions to its Competition and Consumer Protection Regulation (Draft Regulation). It remains unclear when they will be implemented.

Perhaps the most impactful proposed change to date is the transformation of COMESA's merger control process to a suspensory regime. This means transactions that are filed in COMESA will be required to suspend implementation until they receive CCC clearance to ensure that no actions are taken prematurely, which could have a significant impact on deal timelines.

Against this backdrop, this study will act as a catalyst for systemic change, supporting efforts to strengthen continental air connectivity, boost competition, and ensure the long-term viability of the African aviation sector. By advancing the operationalisation of the SAATM and aligning competition policies with international best practices, the study will contribute to the realisation of AU Agenda 2063's vision for a more integrated, competitive, and prosperous African air transport market.

INTRODUCTION

The Yamoussoukro Decision (YD), ratified in July 2000, represents a pivotal moment in the evolution of African aviation. Formally endorsed by African Heads of State and Government in Lomé, Togo, the YD aimed to enhance continental connectivity and integration by liberalising air transport services across Africa. This ground-breaking initiative sought to eliminate restrictions on traffic rights, capacities, and frequencies, thereby allowing African airlines unrestricted access between city pairs. The ultimate goal was to foster a more interconnected Africa, reducing barriers and promoting economic growth through improved air connectivity.

Despite its ambitious goals, the implementation of the Yamoussoukro Decision faced significant hurdles, particularly due to the absence of necessary institutional and regulatory frameworks. To address these obstacles and reinvigorate the liberalisation agenda, the AU, during its 24th Ordinary Session in Addis Ababa in January 2015, resolved to establish the SAATM. Officially launched in January 2018, SAATM marked a substantial step forward in liberalising the African aviation market, supported by key regulatory provisions from the YD, including the Competition Regulation (Annex 5) and Consumer Protection Regulation.

Annex 5 introduced a framework to address competition-related challenges arising from the newly liberalised market. Its purpose was to ensure fair competition among African aviation operators, protect them from unfair practices, and drive innovation and efficiency for the benefit of consumers. However, the implementation of Annex 5 has not fully met expectations, highlighting the need for a comprehensive review to align it with global best practices. Key areas for improvement include addressing mergers and acquisitions as well as managing the competitive pressures posed by non-African airlines.

The project titled "Operationalisation of the Single African Air Transport Market (SAATM) - Support to the African Civil Aviation Commission (AFCAC)" is part of a broader effort to enable AFCAC to achieve its objectives related to enhancing continental connectivity and creating a more competitive market. Additionally, initiatives such as the AfCFTA, the African Passport, and the Free Movement of People are critical components in realising the AU´s Agenda 2063, which envisions continental integration and economic prosperity. A significant milestone in this endeavour was the SAATM Pilot Implementation Project (PIP), launched in November 2022, with the goal of substantially increasing fifth freedom traffic rights and promoting cross-sectoral collaboration.

Understanding the intricacies of market competition in African aviation is essential for creating a competitive and protective environment for operators. A comprehensive understanding of competition enables businesses to make informed strategic decisions, develop effective marketing and pricing strategies, and identify growth opportunities. It also allows regulators to formulate and enforce policies that nurture competition and protect consumer welfare.

Considering these challenges and opportunities, one of AFCAC's key priorities is to ensure the effective implementation of the competition regulation (Annex 5), benefiting the entire aviation industry, operators, and consumers. This requires an in-depth examination of competition within the African aviation industry, aligning policies and regulations with global best practices, and establishing a comprehensive database to monitor and analyse competition trends across the sector.

Industry Background

The African aviation market is marked by a legacy of fragmentation and regulatory protectionism driven by historical, political, and economic factors. Many African nations, following independence, established state-owned airlines that were heavily protected by regulatory frameworks aimed at safeguarding national interests. These airlines became symbols of national pride but operated in environments with limited competition due to restrictive regulations. As a result, the region's aviation market has struggled to develop a competitive landscape, and many African airlines continue to face operational inefficiencies and limited market opportunities.

Despite the introduction of the YD in 2000, aimed at liberalising air transport services within Africa, the implementation of these reforms has been slow and inconsistent. The SAATM, launched in 2018, was designed to reinvigorate the YD by eliminating restrictions on traffic rights, frequencies, and capacities between African countries. However, many African states have hesitated to fully implement these measures, fearing the potential impact on their national carriers.

Consequently, competition within the continent remains uneven, and many African airlines continue to operate under protectionist policies that limit market access and stifle innovation.

A key challenge to competition in Africa's aviation sector is the high level of market concentration, particularly at smaller airports. The Herfindahl-Hirschman Index (HHI), used to measure market concentration, shows that many African markets are dominated by a few large national carriers, particularly at smaller regional airports where competition is almost non-existent (Tolcha, 2024).

While competition is somewhat stronger at larger hub airports like Cairo International Airport, O.R. Thambo, Bole International, Mohammed V, and Jomo Kenyatta, and those near tourist destinations, smaller airports are dominated by flag carriers, often protected by national regulations. This limited competition is a significant barrier to the growth of the aviation industry in Africa, as it restricts the entry of new players, particularly smaller and low-cost carriers (LCCs), which are crucial for fostering a competitive market.

Africa represents the last frontier for aviation development, but impotent government transport strategies and ongoing protectionism practices have continued to limit its success. There is a mild hope of regulatory progress, while perhaps the greatest optimism attaches to some very persistent attempts to expand LCC

operations in the region. There is continued determination to overcome the challenges facing the air transport industry, but growing links with carriers in the Middle East are not seen by all as being in the best interests of Africa´s fragile aviation sector.

Today in Africa, some well-established LCCs are attempting to reconfigure the aviation landscape through aggressive airfare pricing structures, and these include Jambojet, a subsidiary of Kenya Airways, and Fastjet, an ambitious carrier that commenced operations in 2011, primarily serving domestic routes within Tanzania. Over the subsequent years, it has expanded its footprint to encompass four other countries. Notably, it has targeted the lucrative South African domestic markets, and it operates predominantly in South Africa, Zimbabwe, and Botswana, with destinations including Johannesburg, Nelspruit, Victoria Falls, Harare, Bulawayo, Hwange, Kariba, and Maun.

FlySafair, a relatively new player in the South African airline market, has been making strides to establish itself against established rivals such as Kulula and Mango. It is a subsidiary of Safair, a well-known air freight service provider with nearly 50 years of aviation experience. This heritage adds credibility to FlySafair's commitment to safety and reliability.

The aviation industry has experienced a revolution in air transportation in many regions of the world due to the disruptive presence of low-cost carriers. Moreover, the evolution of the low-cost business strategy has seen air travel become accessible and economically affordable, resulting in increased passenger volumes and revenue earnings for the carriers. Globally, the growth of the LCC business strategy has been ascribed to market liberalisation, which has regionally resulted in the emergence of LCCs that compete enormously for market share.

While the LCC model might, in theory, be thought ideal for the African growth environment due to the beneficial socio-demographic developments and high tourism growth, local market characteristics, political and regulatory intervention and external competition have all presented tough challenges for new operators of this model. Moreover, a host of additional challenges that their counterparts face around the globe make it even more difficult to operate a truly low-cost model.

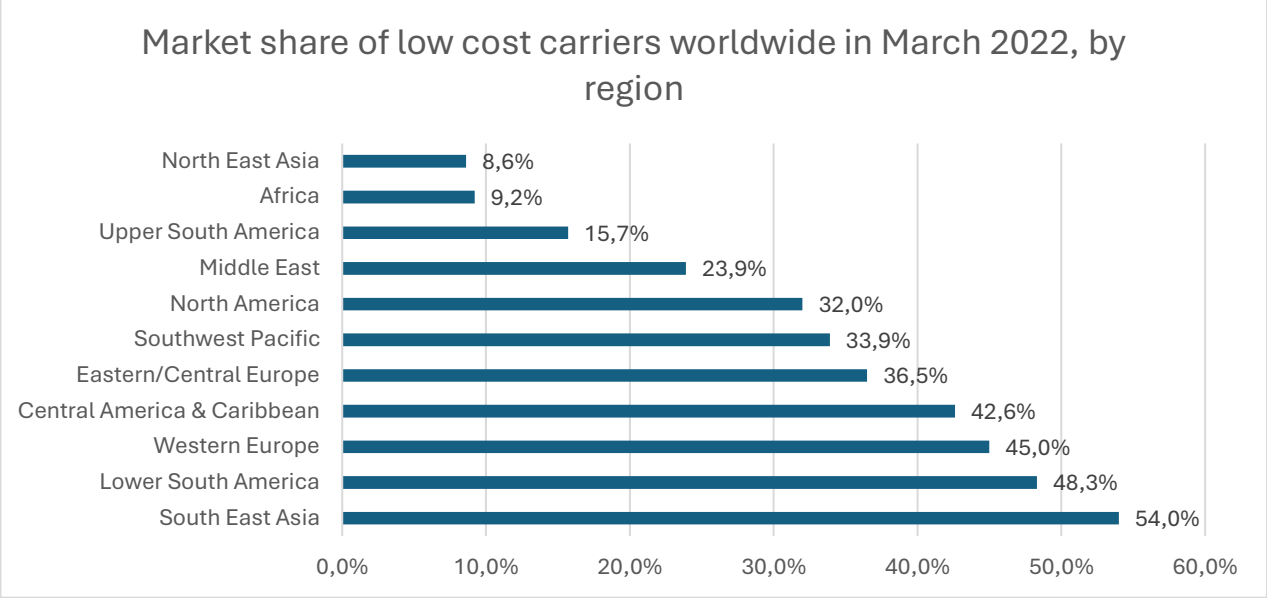


Figure 1 Market share of low-cost carriers worldwide in March 2022, by region; Source: OAG, 2022

Despite the presence of some LCCs in the African market, their overall impact remains limited. The expansion of LCCs is hindered by infrastructure challenges, high operating costs, and the dominance of national carriers on key routes. This limits the ability of LCCs to expand their networks and provide affordable alternatives to consumers.

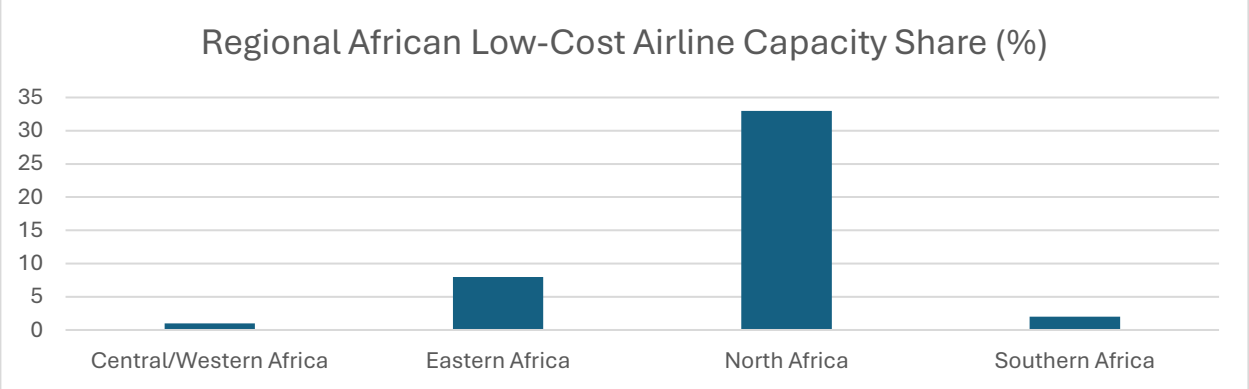


Figure 2 Regional African Low-Cost Airline Capacity Share (%); Source: OAG, 2024

The global LCC market is anticipated to exceed USD 254 billion by 2027 (see Figure 3). The main drivers of growth in this market are the increase in air passenger traffic and investments made by major airlines in this business model. Amid the COVID-19 crisis, the global market for LCCs, estimated at USD 156. 2 billion in the year 2020, is projected to reach a revised size of USD 254 billion. African market needs to exploit this growth trajectory, but only when a viable and open-air transport market system is established.

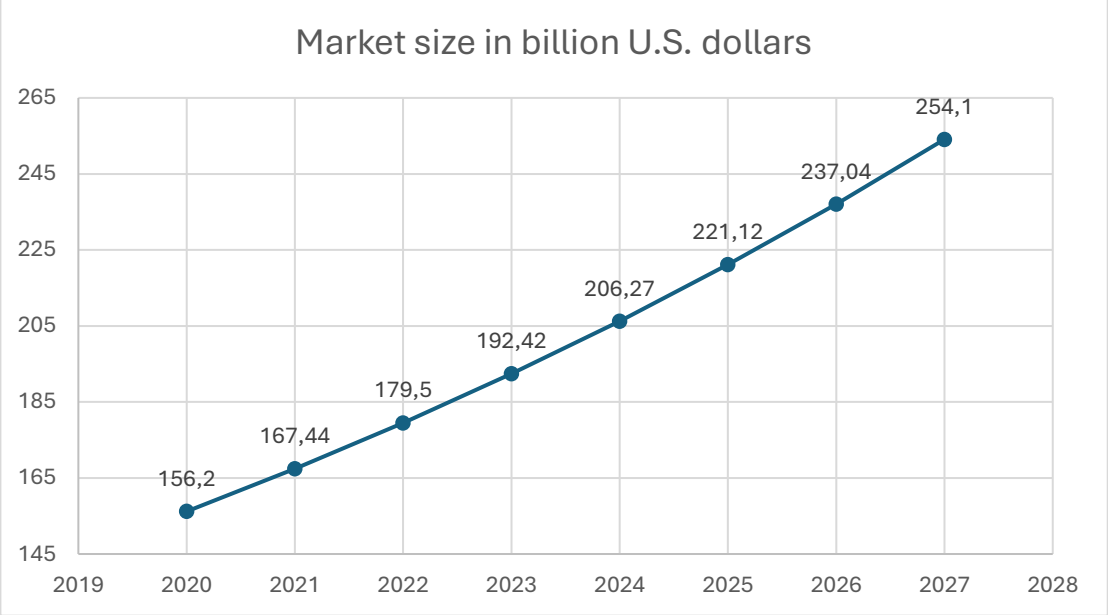


Figure 3 Projected size of the low-cost carrier market worldwide from 2020 to 2027 (in billion U.S. dollars); Source: Statista, 2021

Another major factor affecting competition in Africa is the increasing dominance of non-African airlines on international and intercontinental routes. Carriers such as Emirates, British Airways, and Turkish Airlines have aggressively expanded their networks in Africa, capturing significant market share, especially on long-haul routes (Tolcha, 2024). With a substantial number of African flag carriers experiencing financial distress, key carriers like Emirates, Qatar Airways, Etihad, to name a few, are gaining traction in terms of increased intra-African network expansion. Figure 4 below illustrates the prominent Middle East carriers servicing African route networks.

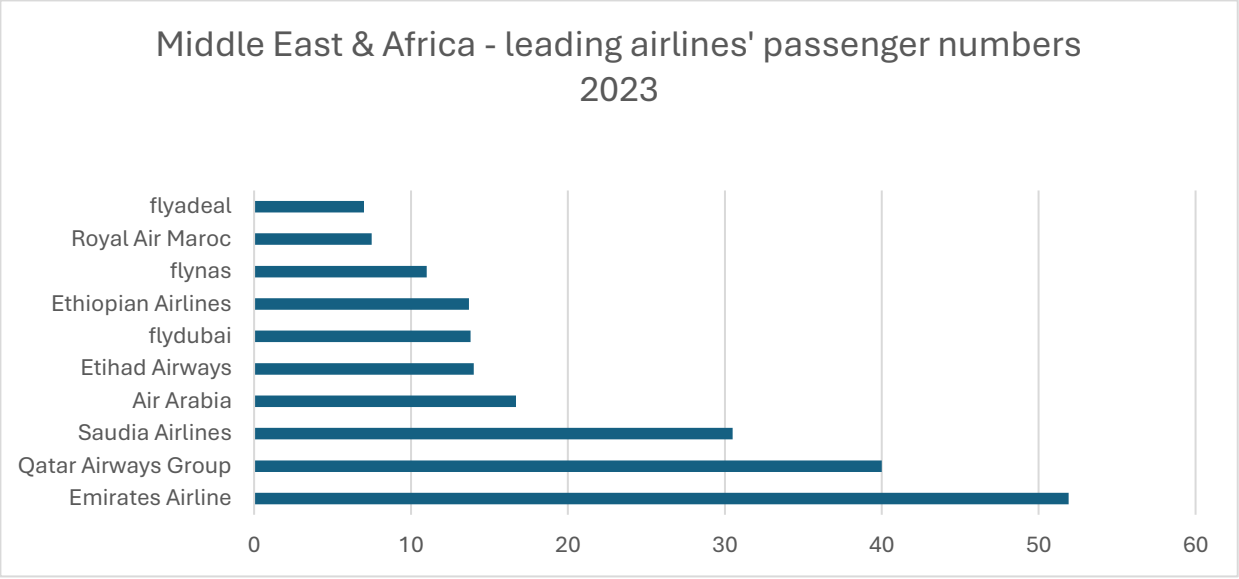


Figure 4 Middle East & Africa - leading airlines' passenger numbers 2023; Source: CarTrawler, 2024

AFRAA estimates a 15% growth in passenger traffic for African airlines in 2024 compared to 2023. AFRAA predicts a capacity split of 50.1% on international routes for African carriers and 49.9% for non-African carriers. On intercontinental routes, Africa holds 37.1% of the capacity, with non-African carriers dominating with 62.9%.

According to OAG (2024), in Central/Western Africa, two-thirds of all capacity is operated within the region, and there is more capacity operated to other points outside of Africa (19.7%) than 14% to the rest of Africa.

North Africa: Less than 3% of all capacity operated is to other regions of Africa, and nearly four out of five seats are operated in other regions outside of the continent. See Figure 5 below.

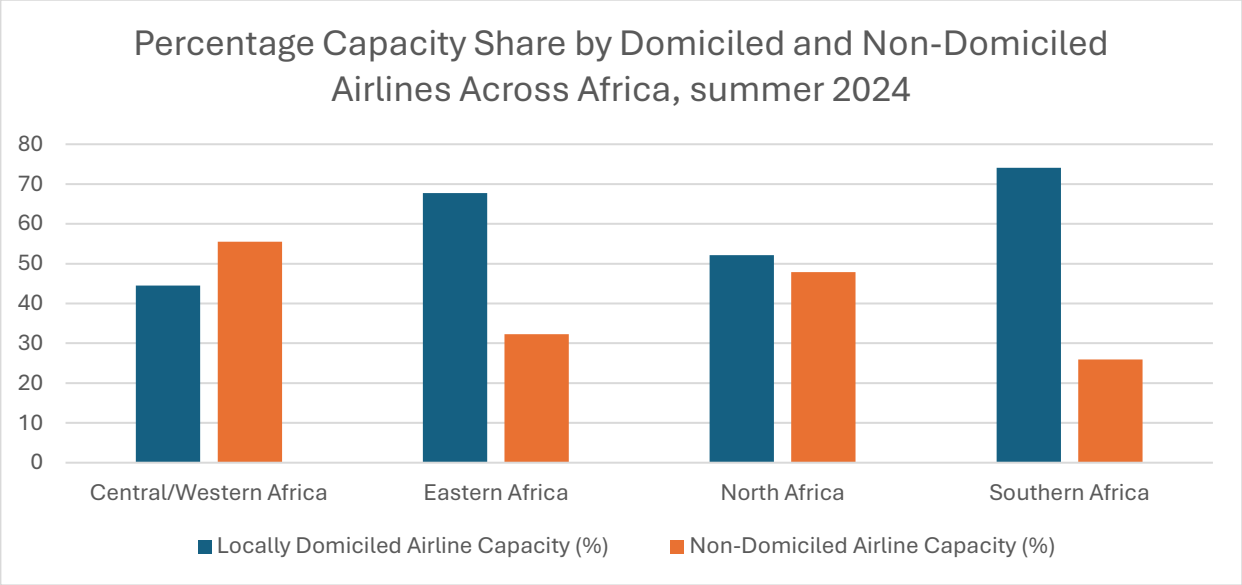


Figure 5 Percentage Capacity Share by Domiciled and Non-Domiciled Airlines Across Africa, 2024; Source: OAG, 2024

The regulatory landscape in Africa has also played a significant role in shaping the competition dynamics within the aviation market. The Yamoussoukro Decision and its accompanying Annex 5—which provides a framework for managing competition—have yet to be fully implemented across the continent. Many countries are reluctant to adopt liberalisation measures, preferring to protect their national carriers from external competition. This has resulted in a fragmented regulatory environment, where different countries enforce varying levels of liberalisation, further complicating efforts to create a unified and competitive aviation market.

The SAATM was intended to address many of these challenges by creating a unified air transport market across the continent. SAATM aims to promote competition by allowing African airlines unrestricted access to markets within participating countries, reducing fares, and improving service quality. However, its implementation has been slow, with only 35 countries having fully committed to its provisions (World Bank, 2022).

The uneven adoption of SAATM has limited its potential to transform the competitive landscape, leaving many African airlines struggling to compete against both regional and international players.

To foster a more competitive environment, it is essential for African countries to harmonise their competition policies and fully implement the provisions of SAATM. The inconsistent application of bilateral air service agreements (BASAs), coupled with the dominance of state-owned airlines, continues to distort the competitive landscape. For instance, while some countries have liberalised their markets to allow for greater competition, others maintain protectionist policies that restrict market access and capacity.

This fragmented regulatory framework has created an uneven playing field, making it difficult for African airlines to expand their networks and compete effectively. This market continues to be fragmented, with limited cooperation among countries due to inconsistent regulations and bureaucratic challenges which complicate operations. African airlines are being impacted by this lack of cooperation, which is making it difficult for them to compete with international players. However, the pattern of liberalisation continues to be uneven, but member states of the East African Community (EAC) have benefitted from liberalising their air transport sector and are realising gains in flights and reduced airfares, enhancing regional travel and economic integration.

One of the key areas requiring reform is the regulation of state-owned airlines, many of which operate at a loss and rely on government subsidies to remain operational. These state benefits or subsidies distort the market, resulting in competitive market disequilibrium, furthermore, allowing inefficient airlines to continue operating, often at the expense of more competitive private carriers. It is visible that the growth of the African carriers hinges on better governance and strong leadership to tap into capital funding to support operations. This will call for a complete shift towards redefining ownership and control structure, hence restructuring. Since most of these carriers are state entities, the national governments should work towards implementing policies that foster strong governance and leadership in the aviation sector. Financial institutions and investors, on the other hand, play a crucial role by providing the necessary funding and support to those airlines demonstrating good governance and leadership. This, in turn, will drive the socio-economic development that is essential for the continent’s overall progress.

While efforts have been made to liberalise Africa's aviation market, significant challenges remain. The slow implementation of SAATM, coupled with the dominance of non-African airlines and the protectionist policies of many African states, continues to limit competition. To unlock the full potential of the African aviation sector, it is essential to harmonise regulatory frameworks, reduce barriers to entry, and promote a level playing field for all market participants. Despite the numerous initiatives and good efforts to drive continental cohesion of policy frameworks, overall success has been too little and too slow, mainly because of a lack of political will as well as institutional and procedural constraints. The initiatives are generally not well coordinated and usually have differing perspectives and objectives, which present attendant

insurmountable implementation challenges. To formulate well-thought-out and implementable policies, the African Civil Aviation Policy (AFCAP) will act as a coherent overarching policy framework that, inter alia, outlines and solicits the necessary political commitment. This will further promote the harmonisation of aviation policies, regulations, and procedures, integrating aviation systems and optimising limited resources. By addressing these challenges, Africa can create a more competitive and integrated aviation market that supports economic growth and enhances connectivity across the continent.

The Scope of African Aviation

The African air transport sector is marked by significant contradictions. While Africa's population of 1.1 billion and a vast landmass of 30.2 million square kilometres creates the potential for the aviation industry, factors such as economic stagnation and low per-capita incomes have hindered its development (Abate, 2016). Despite favourable geographic conditions—like 16 landlocked countries and underdeveloped alternative transport modes—Africa's commercial aviation remains underdeveloped, handling only 3% of global air traffic. Most African nations rely on a few local and foreign airlines, with approximately 65% of Africa's air traffic controlled by foreign carriers, highlighting capacity limitations among African airlines. In 2023, African airlines operated 645 aircraft, fewer than many single European or American airlines (AFRAA, 2024). According to the Lufthansa Group Annual Report 2023, the fleet comprised 721 aircraft (Lufthansa Group, 2024).

Intercontinental routes account for 31.7% of passenger flows, compared to only 30.5% within Africa, reflecting Africa's stronger trade links with the rest of the world (AFRAA, 2023). African airlines have historically focused more on international routes, mainly to Europe, rather than developing regional connections. This lack of intra-African traffic contributes to the difficulties in maintaining multiple airlines on the same route. However, the future of African aviation looks promising, with Boeing projecting annual international passenger growth of 6.6% from 2011 to 2031, spurred by sustained GDP growth, rising middle-class populations, and urbanisation. For this growth to be realised, the right regulatory frameworks must be established to ensure the effective participation of African airlines in the industry (Abate, 2016).

Intra-Africa connectivity can be enhanced by the granting of traffic rights to African airlines, especially Fifth Freedom traffic rights. Cost containment for airlines will result in affordable airfares that stimulate travel, thereby increasing the load factors and making the operations sustainable and profitable.

The airline industry presents significant challenges for competition authorities due to its complex history and economic structure. A key issue is the presence of regulatory barriers to entry and expansion, particularly across international routes governed by BASAs. These agreements often restrict the number of airlines that can operate on a route, the frequency of services, and the types of aircraft permitted. Despite liberalising efforts, many countries still adhere to restrictive frameworks that limit competition by prioritising national airlines. These barriers also affect traffic rights, such as the fifth freedom, which allows airlines to

pick up and drop off passengers in third countries. Without full liberalisation, the competitive environment remains constrained.

Another challenge is the ongoing state support provided to national airlines. In many African countries, these airlines are seen as strategic assets that fulfil non-market functions, such as connecting underserved regions and promoting national integration. To sustain these objectives, governments frequently provide subsidies or bailouts to national carriers, which distort competition by giving them an unfair advantage over other airlines. This support may take various forms, including preferential treatment for airport fees and financial assistance to offset the high costs of operating less profitable routes. While these interventions may serve national interests, they hinder competition by creating unequal conditions between national and private airlines.

Dominant national airlines further complicate the competitive landscape. Historically monopolies, these airlines continue to maintain significant market power even in more liberalised environments. Their dominance is often bolstered by historical advantages, such as exclusive international route rights, hub status at major airports, and loyalty schemes that tie consumers to their services. This market position allows them to engage in exclusionary practices that limit competition, including predatory pricing, to drive new entrants out of the market. Such practices are particularly common in low-demand periods or when faced with new competition, allowing the incumbent airline to maintain control over critical routes. These strategies undermine the development of new business models, such as low-cost carriers (LCCs)**,** which have struggled to gain traction in African markets.

The issue of horizontal alliances and cartels is another significant concern in the airline industry. Cooperative agreements such as code-sharing and alliances between airlines are often justified on the grounds that they improve connectivity and consumer choice. However, these alliances can also limit competition by enabling airlines to coordinate schedules, fares, and services, which may lead to higher prices or reduced service diversity. Moreover, the volatile nature of the airline industry—characterised by cycles of boom and bust—has led to instances of cartel behaviour, including price-fixing and route-sharing. In some cases, airlines have colluded on additional charges, such as fuel surcharges, further distorting the competitive landscape.

The establishment of national flag airlines in African countries was historically motivated by dual ambitions: to serve as engines of economic growth and as symbols of national sovereignty (Doganis, 2006). For instance, in the immediate aftermath of colonial rule, Ghana Airways was perceived as not only a facilitator of economic development but also a representation of both national and continental African sovereignty. However, as time progressed, the emphasis on its role as a symbol of sovereignty began to overshadow its potential as a driver of economic advancement. This shift exemplifies a broader trend seen across many

African nations, where national airlines have increasingly been protected from market competition and viewed more as emblematic institutions of national pride than as economically viable entities.

This environment of state protection and subsidisation led many of these flag carriers to adopt a competitive strategy largely based on state intervention. Consequently, national airlines developed advantages primarily through subsidies and state-imposed barriers to market liberalisation, which shielded them from both global and regional competitors. Such artificial advantages, however, came at the cost of true competitive development. Rather than innovating or investing in enhanced customer experiences, technological advancements, and operational efficiency, these airlines focused on maintaining the status quo, often at the expense of growth and sustainability.

The inability to innovate and improve service quality had significant repercussions on the competitiveness of African carriers. Failed national airlines like Ghana Airways, Nigeria Airways, and Air Afrique provide stark examples of how governmental policies, including the tolerance of ongoing losses and the provision of extensive subsidies, prevented these airlines from adapting to changing market dynamics. The heavy reliance on state aid not only stifled innovation but also diminished any urgency for performance improvement. The broader issue was compounded by the fact that a large proportion of African airlines remained state-owned, benefiting from preferential treatment that insulated them from the pressures of a free market environment.

Considering these challenges, a renewed push towards market liberalisation is increasingly seen as essential to reforming the African aviation sector. Such reforms are likely to render obsolete the traditional operational models that many African airlines still follow. Indeed, Africa remained one of the few regions globally where airlines continued to incur substantial losses, largely because they were ill-equipped to compete effectively amidst growing competition from European carriers like KLM, Air France, and British Airways. These European airlines, along with former colonial powers, have long maintained a dominant presence in African skies, further underscoring the competitive weaknesses of African carriers. Moreover, in recent years, the emergence of airlines from the East, particularly from China, has posed an additional challenge to African airlines, intensifying competition along key routes and placing further strain on their already limited resources.

Over the past two decades, a key factor limiting the competitiveness of many African airlines has been their inability to achieve economies of scale. Within the airline industry, scale and achieving a critical mass are essential components for attaining a sustainable competitive advantage. Most of the leading global airlines are part of large-scale airline alliances, which leaves many African airlines operating at the periphery of the global market. These airlines often operate point-to-point route networks, which are traditionally associated with LCCs; therefore, these African national flag carriers lack the broader connectivity and associated benefits that arise from economies of scale.

Among the numerous African airlines, only a few—such as Ethiopian Airlines, Kenya Airways, and South African Airways—are members of major global airline alliances. According to Morris and Edmond (2012), this membership has allowed them to reach a "stable and economically efficient scale of operation." Membership in these alliances offers significant benefits, such as the ability to spread risks and the costs associated with operating a large number of routes using the same fleet, which enhances overall competitiveness.

Beyond cost-sharing, global airline alliances provide synergistic advantages, including shared resources and joint marketing efforts, which contribute to cost reduction and enhanced efficiency. Unfortunately, African airlines that are not part of these alliances are unable to access such benefits, which further widens the competitive gap. Airlines belonging to these alliances are better positioned to take advantage of the opportunities provided by resource sharing, which strengthens their competitiveness relative to non-member airlines. This also indicates one major limitation constraint (loss of passenger volume access) of African airlines that are not affiliated with the major global airline networks like Star Alliance, Oneworld Alliance and SkyTeam Alliance. See Figure 6 below on how the big three alliance groups are dominating global skies.

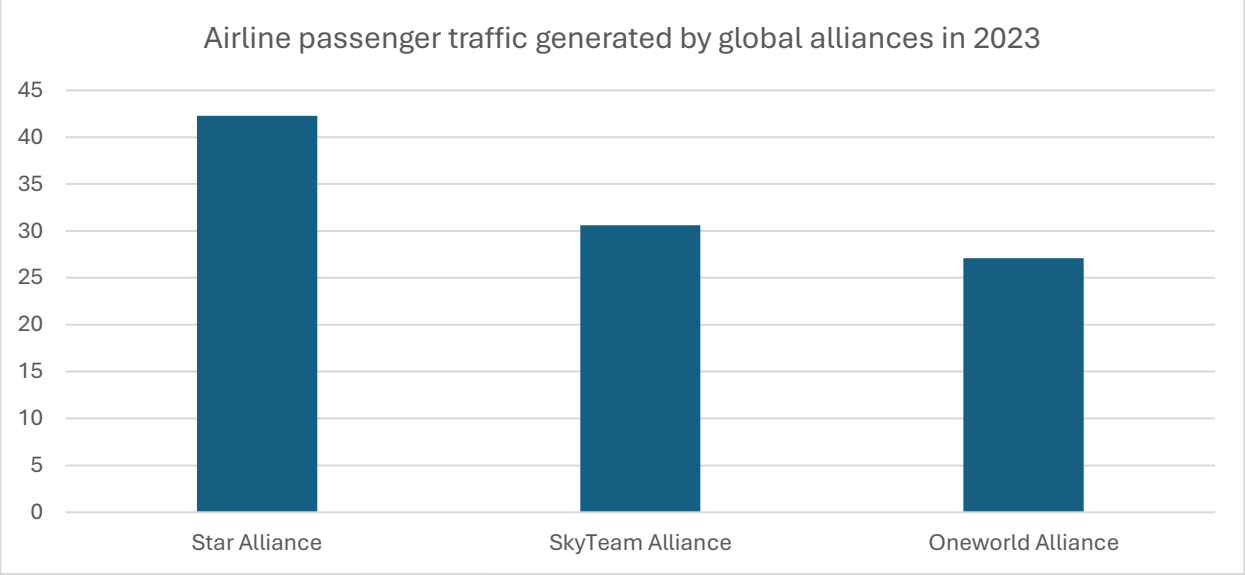


Figure 6 Airline passenger traffic generated by global alliances in 2023; Source: Lufthansa, 2024

One of the key issues is that many African airlines are significantly smaller in comparison to their European and American counterparts. This disparity limits their ability to achieve economies of scale and establish extensive route networks, both of which are crucial for competing effectively in the global aviation market. Moreover, the lack of participation in global airline alliances, combined with the fragmented nature of the African market, has led to the emergence of numerous small-scale airlines with limited international competitiveness. The absence of large-scale operations and alliance participation hampers their ability to

withstand competition from larger, better-resourced airlines and restricts their potential for growth and innovation.

Table 1 illustrates the 3 major global alliance networks. A notable distinction among the three alliances is the limited representation of African carriers. Star Alliance includes a few key African members, such as EgyptAir, Ethiopian Airlines, and South African Airways, providing substantial coverage on the continent. SkyTeam has only one major African member, Kenya Airways, which is offering more limited access. In contrast, Oneworld lacks any prominent African airline, leaving a significant gap in its network across Africa. This absence highlights an opportunity for Oneworld, in particular, to expand into a growing aviation market, and for all alliances to improve connectivity and service across underrepresented regions in Africa.

Features	Star Alliance	SkyTeam Airline Alliance	Oneworld Alliance
Formation	In 1997, it became the first global airline alliance	It was founded in 2000	It was launched in 1999 and the founding members included American Airlines, British Airways, Cathay Pacific and Qantas
Members and Network	Star Alliance has 28 member airlines including EgyptAir (joined in Jul 2008), Ethiopian Airlines (joined in Dec 2011) and South African Airways (joined in Apr 2006). It operates in 98% of the world's countries and 330 airports.	It has 20 member airlines including Kenya Airways (Africa). Access to 1057 destinations worldwide. Annual passengers of 665.4 million to 179 countries.	It includes 15 of the world's leading airlines with 30 associate carriers. Operates more than 14,000 daily flights to around 1000 destinations across the globe.

Table 1 Airline alliances groupings and features; Source: Amankwah-Amoah, 2018

The passenger traffic data highlights in Table 2 how competition in African aviation is highly concentrated among a few dominant players. Ethiopian Airlines leads by a wide margin, with over 15.8 million passengers, demonstrating its balanced strength across domestic, regional, and intercontinental markets. EgyptAir and Safair also show strong performances, though Safair is almost entirely focused on domestic operations within South Africa. Royal Air Maroc and Air Algerie illustrate the importance of robust regional and intercontinental strategies, while airlines like Kenya Airways and Air Link balance both domestic and regional connectivity. Notably, smaller carriers such as Jambojet, IBOM Airways, and Rwandair operate mostly within limited geographic ranges, indicating fragmented competition in secondary markets. The data also reveals underdeveloped intercontinental capabilities among many African airlines, highlighting opportunities and risks for external competitors to dominate long-haul African travel if regional players do not scale up.

Airline Name	Domestic Passengers (000)	Regional Passengers (000)	Intercontinental Passengers (000)	Total (000)
Ethiopian Airlines	3271	6142	6443	15856
EgyptAir	1649	1201	7044	9894
Safair	8975		16	8990
Royal Air Maroc	1106	4507	1511	7124
Air Algerie	2292	351	4228	6871
Kenya Airways	623	2114	1083	3820
Air Link	2195	1536	0	3732
Tunisair			2460	2460
Air Mauritius	236	595	673	1504
TAAG Angola	621	271	430	1322
Nile Air	192	0	1019	1211
Jambojet	1194	15	0	1209
Air Tanzania	807	184	79	1070
Rwandair	22	634	248	904
IBOM Airways	862	8	0	870
Berniq Airways	224	253	70	547
Precision Air	266	216	0	482
Camair-Co	304	28	0	332
Air Madagascar	286	0	29	315
Tassili Airlines	51	0	124	176
Air Botswana	63	109	0	172
Overland	111	0	0	111
Afrijet Business Service	0	0	99	99
Air Djibouti	0	36	7	43
Eswatini	0	29	0	29
Medsky Airways	0	3	18	20
Z. Boskovic Air Charters	NA	NA	NA	NA
Astral Aviation Limited	NA	NA	NA	NA

Table 2 Total passengers carried by 28 AFRAA member airlines in 2023; Source: AFRAA, 2024

Gilbert and Njuguna (2022) conducted a study on the operational strategies and competitive advantages of African airlines. The findings indicated that operational efficiency, innovation in products and services, continuous process improvement, and customer orientation were key factors influencing Kenya Airways' competitive advantage. To achieve a sustainable competitive advantage, the study concluded that the airline must concentrate on reducing flight delays and minimising operational costs. Moreover, it should adhere strictly to its operational charter and align with the overall corporate strategy, which emphasises cost-efficient products, reliable services, and consistent service delivery.

Regarding innovation, the study highlighted that for airlines to maintain a competitive edge, they must continually strive to offer superior products and services, explore new flight routes, introduce modern

aircraft, and provide attractive offerings to meet customer preferences. Such innovative measures help airlines distinguish themselves from their competitors, thereby enhancing their competitiveness.

To sustain long-term competitive advantage, the airlines must adhere to industry best practices, respond proactively to market demands, deliver a niche in quality customer service, and cultivate a culture of continuous improvement and learning. This culture is critical for maintaining agility and responsiveness in an increasingly dynamic aviation environment. Furthermore, airlines need to develop products and services tailored to meet customer needs and enhance overall satisfaction, ensuring a personalised and positive travel experience for all passengers.

In terms of sustainable business models for African airlines, the operational costs are significantly higher compared to their global counterparts. This is largely due to the logistics of transporting fuel over long distances, particularly for landlocked countries, and exacerbated by inadequate infrastructure. Furthermore, African airlines typically lack the fleet size needed to negotiate competitive rates with fuel suppliers, and the absence of fuel hedging strategies leaves them vulnerable to fluctuations in fuel prices. From a regional perspective, in Africa, a significant number of airlines tend to operate some of the oldest fleets globally, which exerts pressure on operating costs such as maintenance repairs and overhauls (MROs). This figure is shaped by financial constraints, limited access to capital, and reliance on older, second-hand aircraft. The main reason for replacing aircraft is not because planes become less safe as they age, but because newer planes are cheaper to operate. For example, newer aircraft are generally more fuel efficient – an important factor given the volatility in the price of aircraft fuel and its current upward trend. On average, aircraft are retired after around 25 years. See Figure 7 for a regional picture of average fleet age.

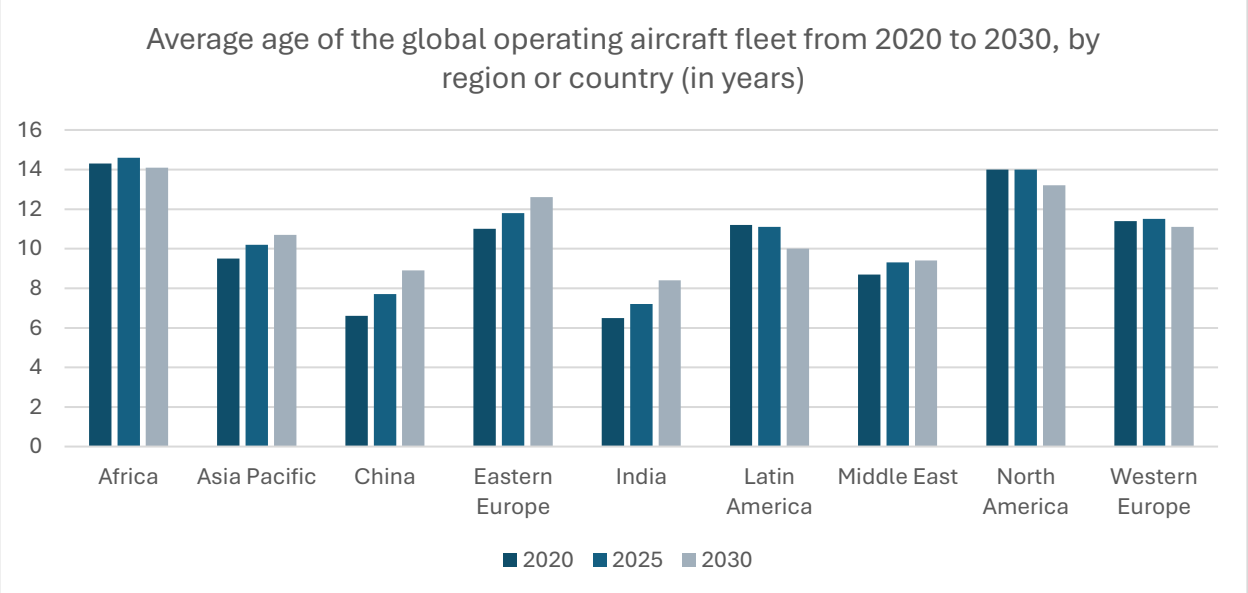


Figure 7 Average age of the global operating aircraft fleet from 2020 to 2030, by region or country (in years); Source: Oliver Wyman, 2020

Aircraft utilisation rates in Africa are among the lowest globally, averaging just 6.9 hours per day compared to 9.9 hours in Europe (World Bank, 2022b). This poor utilisation is attributed to inefficient scheduling, night flight restrictions, ageing aircraft downtime, and a shortage of skilled flight and maintenance personnel.

According to Oliver Wyman's MRO Report (2020), another distinctive feature of the African fleet is its preponderance of turboprops, which currently make up almost 30 % of the region's aircraft. No other region has this type of concentration of turboprops; Asia Pacific has the next highest concentration at just 15 %. The large share of turboprops, with an average age of 16.9, contributes to the fleet´s high average age.

Another challenge is the distribution constraint arising from low internet and credit card penetration across Africa. As a result, airlines rely heavily on travel agents, offering commissions that often amount to around 7% of the ticket price (Chingosho, 2009).

Additionally, African airlines tend to serve numerous destinations per aircraft compared to their global counterparts. This overextension reflects suboptimal fleet utilisation driven by state-owned airlines' desire to maintain market presence for national prestige. Sparse demand, particularly on intra-African routes, exacerbates the problem, driven by high fares, limited competition, and income disparity across the continent. Air travel remains a luxury for many, with even leisure travel demonstrating low elasticity.

This low demand is evident in Africa's average load factor of 76% in September 2024, which lags behind the global average of 83,6% (IATA, 2024). Despite these challenges, the African aviation market holds significant potential. As articulated by Titus Naikuni, CEO of Kenya Airways, Africa is the world's second-largest continent with a population comparable to that of China or India. Given the inadequacies in road and rail infrastructure, air transport is essential for connectivity.

The African Aviation Deregulation Policy

Strengthen Competition Laws and Policies

As mentioned earlier in this study, the expansion and improvement of air transport on the continent has been hampered by a restrictive and protectionist intra-African regulatory regime. While many air markets between Africa and countries outside of Africa have been liberalised to a significant extent, most intra-African aviation markets remain largely closed, subject to restrictive bilateral agreements which limit the growth and development of air services. This has limited the potential for aviation to be an engine of growth and development.

The role of the RECs plays a pivotal in the quest to strengthen competition laws and policies. Thus, the YD promotes sub-regional and regional organisations to seek policy implementation in recognition of Africa's diverse continent, which has a variety of economic and political organisations. The RECs, thus, enhance the development of YD implementation and offer member states the opportunity to reach

agreements on protocols relating to air transport cooperation. The following provides an overview of the EA-SA-IO Region's current regional implementation.

COMESA - Legal Notice No. 2 outlines the full liberalisation that has been agreed upon, but application and execution are still delayed until a joint Competition authority has been constituted. According to Legal Notice No. 2, Member States must: make air transportation services safe, effective, and affordable; harmonise their policies and regulations; consider ways to develop, maintain, and coordinate in common their navigational, communications, and meteorological facilities for the provision of safe air navigation; and take common actions for the control and protection of the common market air space.

EAC - The EAC Council issued a directive requiring the bilateral agreements between EAC States to be modified to comply with the YD. By removing all restrictions on traffic rights under the third, fourth, and fifth freedoms, frequencies, fares, and capacity, the EAC is in the process of adopting regulations to help its partner states fully liberalise their air transport services. This will lead to improved service efficiencies, increased capacity, and ultimately lower air transportation costs in the region.

SADC - Although the gradual liberalisation of air services within SADC is a part of SADC's Civil Aviation policy, no binding actions towards implementation have been implemented.

IGAD - There are no regional frameworks and/or directives in place which support implementation. Due to the overlapping of regions, some of the IGAD States are affected by COMESA and EAC resolutions.

IOC - There are no regional frameworks and/or directives in place to support implementation. Due to the overlapping of regions, some IOC states are affected by COMESA, EAC, and SADC resolutions.

The BASA framework has often been used to restrict new entrants and allocate market share arbitrarily, usually favouring state-owned airlines based on the preferences of regulators. This has led to protectionist measures and limited services. As a result, Africa has faced persistent challenges in achieving genuine interconnectivity, with limited growth in domestic and regional aviation. Airline service offerings in Africa remain constrained by factors such as a lack of competition, high travel costs, government intervention, low demand, and inadequate infrastructure, particularly in a largely landlocked continent. Furthermore, African airlines struggle to achieve sufficient scale to negotiate favourable fuel prices, contributing to the perception that air travel in Africa is a luxury.

Liberalisation of African aviation has seen gradual progress through key initiatives like the Yamoussoukro Decision and the SAATM. These efforts aim to open skies across the continent, enhance competition, and improve connectivity. While the legal frameworks are in place, implementation has been uneven due to political reluctance, protectionist policies, and inadequate infrastructure. Nonetheless, SAATM represents

a major step forward, signalling a growing commitment to integrating African air transport and unlocking its economic potential. Table 3 below highlights the key initiatives that are shaping Africa´s aviation landscape.

Initiative	Initiative in Summary	Airline Focus
Yaoundé Treaty (1961)	Formation of Air Afrique	Airline formed by and owned by multiple states therefore known as a multinational carrier. Could be strategised by countries and, as such implement their liberalisation strategy through their operations.
Lagos Plan of Action and the Final Act of Lagos (1980)	Integration and coordination of transport infrastructure and services; Intra-Africa trade; Air access to inland states and secluded regions; Mobilise technical and financial resources	Develop a strategy that provided economic and political support for aviation development, resulting in a unified and single international airline for Africa.
Mbabane Declaration on Air Transport in Africa (Mbabane Declaration) (1984)	Establishment of a technical committee; Broaden traffic rights; Joint financing mechanisms; Coordinated schedules and services; Sub-regional carriers; Knowledge sharing	Framework for regulating traffic rights and freedoms of the air in the African aviation context, which would be implemented and operated by airlines.
Declaration of Yamoussoukro on a New African Air Transport Policy (YD) (1988)	Global alignment of air transport liberalisation efforts; A liberal exchange of traffic rights between African states; Encourage financing of the aviation sector; Financial independence of airlines from state resources; Development of leadership, management and technical cooperation; Neutral reservation marketing technology; Renewal of the obsolete fleet	Signatories to the YD were to force their airlines to cooperate on international operations and commercial negotiations in order to create a path for an integrated Pan African Airlines.
Abuja Treaty (1991 Adopted 1994)	Establishment of the African Economic Community (AEC).	Development, integration and harmonisation of air transport regulations and policies.
Banjul Accord for an Accelerated Implementation of the YD (Accord) (1997)	Recognition of the west African region as a unified commercial air transport operations area.	Cooperation in air traffic services, safety oversight procedures, traffic rights regulations, commercial activities, technical activities and acquisitions.
Decision Relating to the Implementation of the Yamoussoukro Declaration on the Liberalisation of Access to Air Transport Markets in Africa (YD Decision) (1999 Signed 2000 Enforced 2002)	Stimulating and open capital in the industry by liberalising scheduled and non-scheduled intra-Africa cargo and passenger services; Offering multiple designations; Unrestricted capacity and frequencies; non-restricted tariffs; Exchanging traffic rights and third, fourth and fifth freedoms; Compliance with international safety standards; Cooperation between African carriers; Precedence over BASAs; Respond to the use of obsolete and noisy aircraft on the continent	Creates a common air transport policy which removes the fragmented regulatory regimes thus allowing for equal opportunities for airlines.

Initiative	Initiative in Summary	Airline Focus
Amendment of Abuja Treaty (2002)	Legal grounds for YD Decision	N/A
SAATM (Launched 2018)	A crucial aviation facilitator for the implementation of the AfCFTA; Considered as a solemn commitment to the liberalisation of African skies. A single version and legislation for air transport; A stronger legal obligation for airlines when exercising first to fifth freedoms of the air; Eradication of BASA regime; Creation of an aviation area; Reduction of emissions by YD resolutions	

Table 3 Liberalisation legal initiatives; Source: Tshetu, Luke & Walters, 2023

The implementation of open-skied policies in Africa has been highly uneven, reflecting a complex mix of political, economic, and infrastructural challenges. While over 37 countries have committed to the SAATM, actual enforcement varies significantly. Leading countries like Ethiopia, Rwanda, and Kenya have made considerable progress, liberalising their skies and supporting regional connectivity through strong national carriers. In contrast, others remain hesitant, often due to fears of exposing struggling national airlines to competitive pressure or losing sovereignty over airspace management. Some governments continue to rely heavily on restrictive bilateral Air Service Agreements (ASAs), which limit frequency, capacity, and designated carriers. Additionally, disparities in regulatory frameworks, visa policies, and airport infrastructure further hamper uniform implementation. As a result, while the legal groundwork for open skies exists, its practical realisation is fragmented, undermining the potential benefits of greater intra-African connectivity, lower airfares, and increased trade and tourism. Accelerated political will, harmonised regulations, and investment in aviation infrastructure are crucial for bridging this implementation gap (See Table 4).

Article	SADC	AMU	ECCAS	ECOWAS	COMESA
Granting of rights	Reciprocal	Three liberalised and Mauritania liberalised on fifth freedoms.	Rely on BASA.	Reciprocal on third and fourth freedoms with other states; however, there is an intra-Banjul and intra-WAEMU fifth freedoms method of liberalisation, as well as in general, on all other articles.	Freely granted except Angola and DRC.
Tariffs	Fully liberalised.	Only Mauritania is liberalised.	Rely on BASA.	Reciprocal on third and fourth freedoms with other states; however, there is an intra-Banjul and intra-WAEMU fifth freedoms method of liberalisation, as well as in general, on all other articles.	Fully liberalised.
Capacity and frequency	MOU restricted	Mauritania fully liberalised; Egypt liberalised via COMESA.	Liberalised through BASA.	Reciprocal on third and fourth freedoms with other states; however, there is an intra-Banjul and intra-WAEMU fifth freedoms method of liberalisation, as well as in general, on all other articles.	Use of BASA to eliminate restrictions.
Cooperative arrangements	In general terms.	No arrangements.	In general terms.	Intra-Banjul & Intra WAEMU arrangements.	Code-sharing arrangements inside and outside YD.
Ownership and control	In accordance with Article 6 of the YD an airline must have its PSB and operations in the state in which it is registered and regulated.	In accordance with Article 6 of the YD an airline must have its PSB and operations in the state in which it is registered and regulated.	In accordance with Article 6 of the YD an airline must have its PSB and operations in the state in which it is registered and regulated.	Only where there is an independent CAA.	More restrictive than YD.
Designation	Multi-designation practised within the frameworks of BASAs and provisions of the YD decision across the continent.	Multi-designation practised within the frameworks of BASAs and provisions of the YD decision across the continent.	Multi-designation practised within the frameworks of BASAs and provisions of the YD decision across the continent.	Multi-designation practised within the frameworks of BASAs and provisions of the YD decision across the continent.	Multi-designation practised within the frameworks of BASAs and provisions of the YD decision across the continent.

Table 4 Varying levels of implementation; Source: Tshetu, Luke & Walters, 2023

The regulation of the global airline industry has increasingly shifted toward liberalisation, a trend that began with the U.S. deregulation of its domestic market in the late 1970s, followed by its liberal "Open Skies" policy in international air transport negotiations. Similarly, the European Union created a single aviation market in 1993, allowing freedom of establishment and market access for airlines across member states. In Africa, the Yamoussoukro Decision (YD), adopted in 1999, aimed to liberalise air transport by eliminating non-physical barriers related to traffic rights, capacity, and fare regulation. The YD was intended to take precedence over prior BASAs and establish a more open aviation market across the continent. However, its implementation has been slow, with many countries continuing to negotiate bilaterally based on the YD's principles, maintaining control over market openness and limiting the extent of liberalisation.

Abeyratne (2003) highlights that the YD has resulted in a "limited open skies regime," with many nations hesitating to grant full fifth freedom rights, thereby restricting the growth of a fully liberalised market. Most air transport services in Africa continue to operate under bilateral agreements, which impose restrictions on entry, capacity, traffic rights, and airline ownership. These agreements often reflect a reciprocal exchange of rights but maintain significant regulatory control over air transport services.

Comparing the YD to traditional and liberalised BASAs reveals that, while the YD is more open regarding fare and capacity regulation, it remains more restrictive in terms of ownership flexibility (Table 5). The YD allows for airline ownership by third-party states if they are signatories, making it more liberal than traditional BASAs, but still less flexible than fully liberalised bilateral agreements. Despite the YD's potential to revolutionise air transport in Africa, its impact has been limited by the absence of institutional and legal frameworks necessary for its enforcement, such as competition regulations and dispute settlement mechanisms (AFCAC, 2013).

Concerns from countries with smaller airlines further impede the YD's full implementation, as they fear that liberalisation may lead to the dominance of larger airlines and potentially eliminate their own national carriers. This reluctance to embrace open policies in aviation mirrors similar apprehensions regarding broader regional integration efforts in Africa (Geda & Haile, 2008).

Provisions	Traditional bilateral	Liberalised bilateral	YD
Airline designation	One from each contracting state.	Multiple	At least one.
Traffic right	Limited 3rd, 4th, and 5th (only specified routes in the BASA).	Full 5th Freedom (open market access that allows flying on any route between two states).	Full 5th freedom in Africa, as of 2002.
Capacity	Equally shared among both designated airlines.	Free choice of aircraft capacity and frequency.	Free choice of aircraft capacity and frequency.

Provisions	Traditional bilateral	Liberalised bilateral	YD
Ownership	Substantially and effectively owned by nationals or the government of the contracting states.	More liberal provisions on foreign ownership.	Substantially and effectively owned by nationals or government of the contracting states, or state parties to the YD.
Fares	Double Approval	Double Disapproval	Double Disapproval

Table 5 Comparisons of the Yamoussoukro Decision (YD); Source: Abate, 2016

The empirical findings from Abate (2016) provide a nuanced perspective on two conflicting hypotheses regarding the impact of air transport liberalisation in Africa. Some countries resist liberalisation due to fears of market dominance by larger African airlines, while others, supported by institutions like the UNECA and AU advocate for liberalisation, arguing that competition enhances service quality and lowers fares.

Aviation policies in Africa, much like trade policies, have historically prioritised protecting national airlines over consumer interests. This protectionism contrasts with global trends where liberalisation has shifted focus toward consumers. However, changes in the African aviation landscape, driven by a growing middle class and a bright economic outlook, challenge this status quo.

The aim was to provide safe, efficient, reliable, and affordable air services to consumers. Specifically, the Yamoussoukro Decision called for (Figure 8):

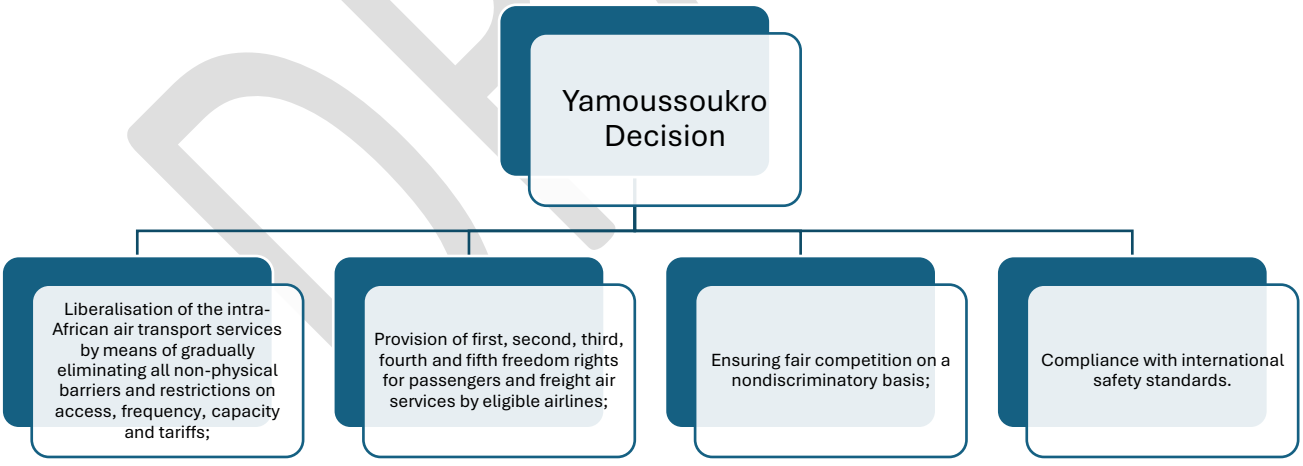


Figure 8 Objectives of Yamoussoukro Decision; Source: Compiled by the Author

The decision deals only with intra-African air transport domestic air services, and relations with third countries continue to be governed by intergovernmental bilateral air service agreements negotiated with such third countries (ECA, 2005). The initiative unfolded within a broader, decades-long sequence of continental aviation activities (Figure 9). The timeline traces the path from the 1988 Yamoussoukro Declaration to the 2007 appointment of AFCAC as executing agency, underscoring the steady maturation of Africa's single air transport market.

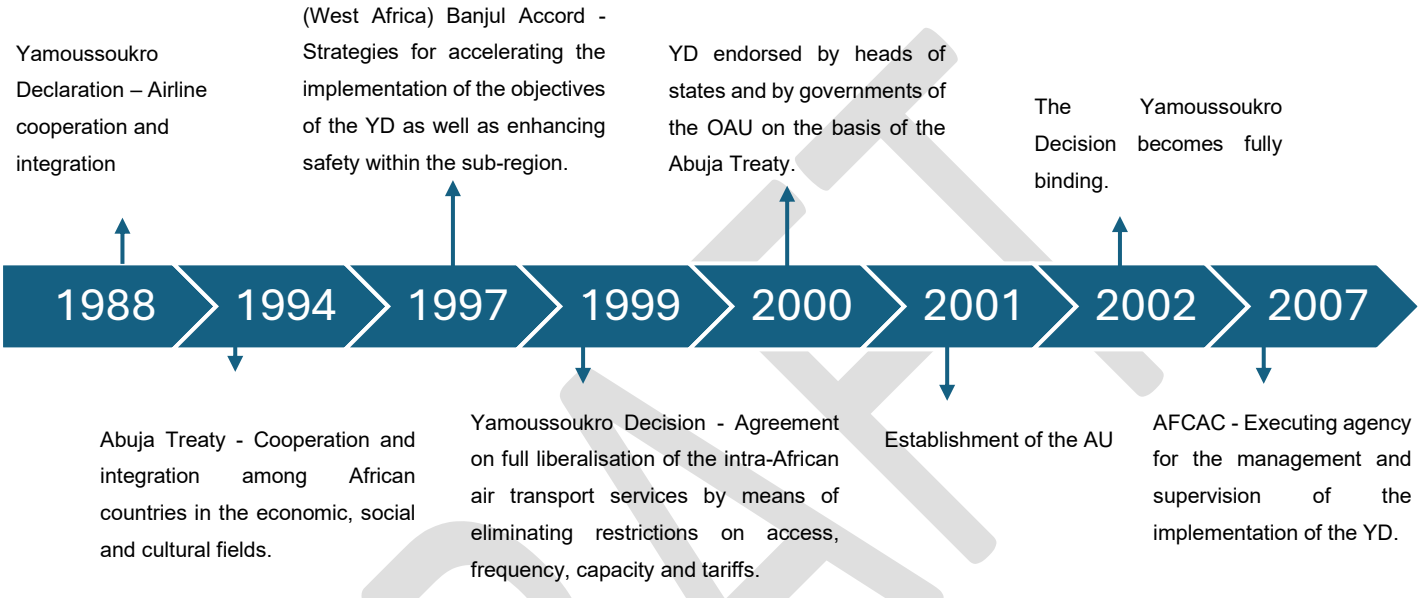


Figure 9 Progress toward liberalisation of air transport in Africa; Source: Njoya, 2016

In 2005, the establishment of the Tripartite Task Force (TTF) by three Regional Economic Communities (COMESA, EAC, and SADC) marked an essential step toward creating harmonised frameworks for cooperation in air transport services across East and Southern Africa. The 2008 Tripartite Summit in Kampala formalised this collaboration through a Memorandum of Understanding (MoU) and introduced an institutional structure comprising a Tripartite Summit, Council, and Sectoral Ministers to oversee implementation.

Article 7 of the Joint Competition Authority (JCA) focuses on ensuring member states comply with the 2004 Joint Competition Regulations for air transport services within COMESA, EAC, and SADC. These regulations were approved by the governing authorities in 2004 and aimed to promote free and fair competition across the regions. However, the lack of an active monitoring institution has delayed the operationalisation and effective implementation of these regulations, which has limited progress in regional air transport liberalisation.

If one assumes that Article 7 concerns air services between the territories of two or, in the case of fifth freedom flights, three state parties, the Yamoussoukro Decision calls upon the concerned state parties to ensure fair competition among and non-discrimination against the designated airlines operating between those states. This conclusion would steer away from the condition precedent of establishing general competition rules that are applicable to air transport services and put the burden of regulating competition on the bilateral relationship between state parties.

If this interpretation were correct, the application of the Yamoussoukro Decision would be possible if the concerned state parties of a given segment under the decision assure fair competition. If one applies modern principles of competition regulation, this will mainly imply that anti-competitive agreements between the different designated carriers would be sanctioned.

However, the question remains: does the absence of any guidelines or regulations on competition hinder the application of the Yamoussoukro Decision? The answer lies in the fact that air transport in Africa has been, and mainly still is, regulated on a bilateral basis. While certain RECs have recently adopted competition regulations that apply to air transport, most new bilateral that were negotiated on the basis of the principles of the Yamoussoukro Decision did not benefit from any competition regulation.

The case of Ethiopian Airlines illustrates that the Yamoussoukro Decision can be applied on a bilateral basis even in the absence of competition regulation or an executing agency that could intervene and arbitrate in case of a dispute. The establishment of competition rules can, therefore, be considered a condition subsequent that does not hinder the application of the Yamoussoukro Decision.

Implementation of the Yamoussoukro Decision depends mainly on regional initiatives that are to be carried out by regional economic groupings (e.g., Arab Maghreb Union (AMU) COMESA, SADC, ECOWAS, EAC and the Central African Economic and Monetary Community (CEMAC)).

A key observation is that the Maghreb region is confronted with the growing reality of needing to move decisively toward liberalising air services by both the consequences of an opening of and participation in the European market and the important market potential in Sub-Sahara Africa. Because most AMU countries are bound to the Yamoussoukro Decision, which eventually will exert pressure for implementation on the region, the AMU is well advised to continue the path of liberalising air services among its member states first. This would also provide additional leverage, for example, when negotiating with a supranational body such as the AU about the terms of implementation of the Yamoussoukro Decision in the region.

The launch of the SAATM in January 2018, during the AU Heads of State Summit, represented a significant step forward in the continent's air transport liberalisation efforts. SAATM is based on open skies principles, which call for deregulating the commercial aviation industry to create a free-market

environment, allowing airlines to operate more flexibly within Africa. The initiative is designed to establish a single, unified air transport market that promotes seamless air connectivity across African countries, facilitating the broader economic integration goals of the AU´s Agenda 2063.

Although the term "open skies" is used rather loosely in the industry, the U.S. government defines it as granting carriers from the two countries the freedom to operate any route between them without limitations on capacity, frequency, or cost, as well as the ability to provide 5th and 6th freedom services. Additionally, it permits cooperative marketing plans like code-sharing and open all-cargo operations (e.g., seventh freedom operations). Although other definitions of "open skies" do (for example, the European Union considers cabotage to be part of open skies), the U.S. definition of "open skies" does not include 7th freedom passenger services, cabotage, or liberalisation of ownership and control constraints.

Multilateral accords between groups of countries have gained momentum in recent years, and this includes the ASEAN Agreement in Asia, MALIAT Agreement spanning the Pacific nations and, of course, the Yamoussoukro Decision. The European Union's single aviation market has been the most notable of these (EU). The EU deregulated the EU air market almost entirely between 1987 and 1993 with the implementation of three reform packages.

For example, carriers from the EU are now free to operate any route inside the EU without limitations on cost or capacity, including cabotage (i.e., domestic air travel within a member state), which has been allowed since 1997. Additionally, there are no longer any restrictions on who can own an airline for EU residents (for example, German investors can acquire 100% of an Italian-based airline; non-EU investors are only allowed to buy 49% of an airline). Additionally, the EU is negotiating bloc-level bilateral open skies agreements with other nations.

The European side has long made clear its objective for the second stage of negotiations: the completion of an Open Aviation Area encompassing the EU and the US. This would include the reciprocal removal of limits on the ownership of airlines by investors from the European Union and the United States. In addition, it would allow companies based on either side of the Atlantic to carry passengers on domestic air services in the territory of the other party.

SAATM, with its focus on liberalising air transport, provides a crucial impetus for achieving continental economic integration by improving connectivity, reducing airfares, and boosting trade and tourism. The initiative is seen as a cornerstone for enhancing competition within the African aviation sector, allowing African airlines to operate more competitively in the global aviation market. Although the initiative is ambitious, its success depends on the full and consistent implementation of liberalised policies by all member states.

The delay in executing previous air transport agreements, such as the Yamoussoukro Decision**,** highlights the challenge of realising these goals. Smaller nations, in particular, express concerns about the potential dominance of larger, more established airlines, fearing that fully opening up the market may lead to anti-competitive behaviours and the marginalisation of smaller, national carriers. However, SAATM is structured to address these concerns by creating regulatory mechanisms that foster competition while ensuring equitable participation from all member states, regardless of the size of their airlines.

However, it is imperative to note some of the challenging impediments that will constrain a fully operational single air transport market on the continent. This includes the following constraint dimension issues:

- Air carrier ownership and control – Alternative criteria for designation and authorisation; inward foreign) investment, right of establishment, and nationality of aircraft.
- Market access – Traffic rights primarily beyond Third and Fourth Freedoms but including, for example, routing, operational flexibility, capacity/frequency, airport access and slot allocation, airline alliances, code sharing, franchising, leasing, specific aspects relating to air cargo and express services and to intermodal transport.
- Fair competition and safeguards – Safeguards against anti-competitive practices (such as pricing, capacity provisions, sales and marketing, and application of competition laws/policies, including implications of air service carriers and of services (including the provision of state aid).
- Consumer welfare – Consumer rights and obligations (including condition of carriage), measures to safeguard consumer interests.
- Product Distribution – Commercial presence, electronic business-to-customer (B2C) commerce, including computer reservation systems and the Internet.
- Dispute Resolution – Alternative dispute settlement mechanisms and their inter-relationship in the context of bilateral, regional or multilateral arrangements.
- Transparency – Registration of agreements/arrangements, including obligations under Article 83 of the Convention on International Civil Aviation and access to information.

However, market liberalisation has allowed airlines to enter more markets and operate with fewer restrictions on routes, pricing, and operational decisions. This flexibility has fostered a more competitive environment, where airlines can optimise their routes and adjust capacities in response to demand, ultimately lowering ticket prices and improving service quality. For example, studies have shown that liberalisation leads to network optimisation, enabling airlines to create more efficient route structures,

such as the hub-and-spoke system. This network optimisation increases route accessibility and connectivity, linking smaller markets to larger hubs and encouraging growth in passenger traffic due to the increased availability and frequency of flights (Oum, Zhang, & Fu, 2021).

Benefits for the Market

1. **Economic Growth and Tourism**: The liberalisation stimulates tourism and trade, both essential drivers of economic growth. By increasing the affordability and accessibility of air travel, more regions become reachable for tourists and businesses alike, supporting local economies. Countries with liberalised agreements have experienced significant traffic growth, boosted tourism-related industries and created jobs.
2. **Growth of Low-Cost Carriers (LCCs)**: Liberalised air markets provide fertile ground for low-cost carriers, which are crucial for enhancing competition. LCCs typically operate with lower costs and offer affordable ticket prices, which makes air travel more accessible to a broader population. This increase in competition due to LCCs not only benefits consumers through price reductions but also pressures traditional carriers to improve their efficiency and service offerings.
3. **Enhanced Regional Connectivity**: Liberalisation has allowed airlines to expand their operations regionally, supporting intra-African connectivity that was previously limited due to restrictive policies. This improved connectivity fosters economic integration within the continent, helping businesses operate more smoothly across borders and facilitating the movement of goods and services within the AU´s free trade area framework.

The dynamics of competition in multiple geographic markets, particularly focusing on multimarket contact and its effects on competitive behaviour. This framework can be applied to understand airline competition in liberalised African markets, where airlines increasingly operate across multiple countries and routes within the continent. Key benefits are:

1. **Multimarket Contact and Mutual Forbearance**: When airlines compete across several routes or markets, they may adopt "mutual forbearance," where each competitor avoids aggressive actions against rivals in certain markets to prevent retaliatory actions in others. In Africa, this could manifest as airlines opting not to aggressively reduce fares on certain routes, expecting rivals to reciprocate this restraint across other routes. This effect encourages stability in competition, benefiting airlines and maintaining a level of service quality and pricing for consumers (Haveman & Nonnemaker, 2000).
2. **Growth and Market Entry**: The research suggests that multimarket competition shapes both growth within existing markets and expansion into new ones. In liberalised African markets, where airlines can expand across borders, the presence of competitors on multiple routes can either

encourage or deter expansion, depending on the competitive strategies employed. Airlines may prefer to solidify their presence in current markets with high competitor overlap, enhancing service frequency and reliability, or choose new markets with limited competitor presence to establish dominance (Haveman & Nonnemaker, 2000).

3. **Impact on Market Dominance and Competition**: In markets dominated by a few large firms, like certain regional hubs in Africa, multimarket competition can lead to high entry barriers, deterring smaller carriers from entering. For established airlines, however, market dominance provides a competitive advantage, allowing them to control pricing, capacity, and strategic positioning on specific routes. These dynamic benefits African consumers by potentially stabilising fare prices in markets where competition is regulated by the presence of dominant players.

These elements highlight how liberalisation and the ensuing multimarket contact among African airlines could foster a more competitive environment while encouraging stability through mutual forbearance and strategic market entry.

EVALUATING COMPETITION

Early research has made notable efforts to develop various models that explain how firms adapt to their environment through different strategies and behaviours. For example, Bell (2010) argued that a firm's managerial assets are crucial for competition, while Chen et al. (2013) emphasised the importance of market competition and internal governance for assessing competitiveness in Taiwan. Sanjo (2014) suggested that a firm's capital base and business location are critical factors in competition. Moreover, the firm's orientation is essential to navigating dynamic and uncertain business environments (Chin, Lo & Ramayah, 2014).

Recent research attributes the consistent failure and poor performance of businesses globally to poor management practices and a lack of organisational culture (Chen et al., 2018). Chen et al. (2018) reasoned that poor management capacity and organisational issues hinder firms from maintaining competitiveness within their industries. Luo et al. (2006) observed that both organisational culture and management attitudes toward competition are key factors that influence the success or failure of a firm. Additionally, long-term strategic management has been highlighted as a driver of competition among firms (Fey & Furu, 2008). According to Fey et al. (2008), organisations with strong knowledge-sharing practices and well-trained managers are more likely to withstand competitive pressures. Dorn, Schweiger & Albers (2016) emphasised that organisational structure, strategy, and policy are factors that shape a company's competitive behaviour. Further, other scholars have highlighted interpersonal relationships

and corporate identity as major influences on competition, especially in the aviation sector (Hahn & Kim, 2016; Noel, 2018).

Several studies focused on specific regions and industries, illustrating variations in competitive pressures. For example, Barry and Nienhueser (2010) reported that in Germany's low-cost airline sector, competitive pressures stemmed from rising demand for affordable travel. In the USA, Velu (2016) found that innovation is a significant factor determining competition, while in Poland, Klimas (2016) identified that organisational culture drives competition in the aviation industry. Singh (2016) noted that competitive service quality in the Indian aviation sector is driven by passenger rates, with the liberalisation of the sector leading to increased costs, narrow profit margins, and rising competition. Park, Lee & Know (2015) explored how service quality and corporate social responsibility influenced customer behaviour in South Korea's aviation industry and concluded that economic, social, and environmental responsibilities, along with in-flight quality, significantly influence customer satisfaction.

Adler and Hanany (2015) compared different competition models, such as code-sharing and anti-trust alliances, and used a game-theoretic framework to demonstrate that stronger inter-airline cooperation leads to increased producer surplus. Alderighi, Cento & Nijkamp (2012) analysed pricing behaviour among full-service airlines in Europe, concluding that price-setting behaviours are major drivers of competition. Overall, a consistent assumption in the literature is that competition is critical for firms to thrive in challenging environments. However, there is no consensus regarding whether pricing strategies or demand uncertainty drive competition, which motivates further research on this link.

In the context of evaluating competition within Africa's liberalised aviation market, it is essential to employ effective methodologies that capture the nuances of competitive intensity. The paper by Lijesen, Nijkamp, and Rietveld (2002) provides a valuable framework for this evaluation, offering insights into various competition metrics, each suited to different aspects of market structure and concentration. The authors discuss multiple indicators and analyse how these measurements can reveal the underlying dynamics in civil aviation competition, a particularly relevant approach for assessing Africa's changing market.

One of the primary indicators discussed is the number of competitors on specific routes. This straightforward method provides an initial look at competition levels by simply counting the active airlines on a given route. While intuitive, this measure does not account for market share differences, which can be misleading. For example, a route with several small carriers and a single dominant airline may appear competitive based on the number of competitors alone. However, in practice, the dominant airline can exert significant influence, limiting the smaller carriers' ability to compete effectively. This limitation makes the "number of competitors" indicator more suitable for broad assessments rather than precise evaluations of market power (Lijesen et al., 2002).

The concentration indices, notably the C4-Index and the Herfindahl-Hirschman Index (HHI), offer a more refined analysis of competition. The C4-Index measures the collective market share of the top four firms, thus giving insight into the market's concentration among leading players. However, its fixed focus on only the four largest players limits its flexibility, potentially missing competitive dynamics involving smaller carriers. In contrast, the HHI considers the square of each firm's market share, placing greater emphasis on the influence of dominant firms. This makes it especially useful for evaluating markets with clear leaders, as it can reveal the extent to which large carriers dominate. For African aviation, the HHI could help illustrate how liberalisation has affected the distribution of market power, potentially shifting it away from traditional monopolistic national carriers to a broader set of competitors, leading to a more balanced and competitive market (Lijesen et al., 2002).

By evaluating the competition, it is important to explore the effects of various competitive changes, such as increased flight frequency, new market entrants, and mergers. Frequency increases, for instance, enhance competition by giving consumers more options, although larger airlines benefit most due to their ability to adjust frequencies more flexibly than smaller carriers. This capacity for rapid adjustment can increase concentration if dominant airlines are able to outpace smaller competitors. In contrast, new entrants bring direct competition, challenging established players, and often lead to improved service quality and reduced fares. In Africa, where liberalisation has opened markets to new airlines, these entrants help break down the strongholds of previously dominant national carriers, driving prices down and expanding options for travellers.

Mergers and alliances, however, tend to have the opposite effect, consolidating market power and reducing competitive pressures. The merger between Air France and Virgin revealed a decrease in competition due to the formation of a larger, more powerful carrier. This finding is particularly relevant in the African context, where regional and global alliances among airlines have become increasingly common. Without regulatory safeguards, these alliances could limit competition, reduce consumer choice, and lead to higher prices (Lijesen, Nijkamp & Rietveld, 2002).

For Africa's aviation sector, selecting the right competition indicators and adjusting to specific regional factors are essential steps in capturing a clear picture of market dynamics.

Another essential tool for analysing competition in the African aviation market is Rosé-Panzar Model because it provides a quantitative approach to understanding how market forces influence airline behaviour and industry dynamics. This model calculates the "H-statistic," which is derived from the relationship between a firm's revenue and input prices. A high H-statistic (close to 1) indicates a highly competitive market, while a value closer to zero or negative suggests a monopolistic or oligopolistic market structure. This allows researchers and policymakers to assess the degree of competition without

needing extensive cost and pricing data, making it particularly useful in regions where detailed financial information might be scarce or inconsistent.

In the African aviation sector, where market conditions are shaped by unique challenges such as limited infrastructure, regulatory complexities, and varying levels of liberalisation, the Panzar-Rosse Model is particularly relevant however, due to unavailability of the required dataset, this cannot be employed within the context of this study (Panzar & Rosse, 1987). By evaluating how airlines' revenues respond to changes in input costs, such as fuel or labour, the model helps identify whether markets are dominated by a few players or exhibit healthy competitive dynamics. This insight is critical for fostering fair competition, enhancing service quality, and promoting industry growth across the continent. Additionally, the model's ability to differentiate between short-run and long-run equilibrium conditions provides a nuanced understanding of market stability and the effectiveness of competition-related policies.

Another method to evaluate the competition dynamics is through Structure-Conduct-Performance (SCP) (Bain, 1951). The model framework provides a structured lens to analyse competition in industries, including aviation. This model explains how the structure of a market—characterised by factors such as the number of firms, market concentration, barriers to entry, and product differentiation—shapes firm behaviour (conduct), which in turn influences industry outcomes (performance). Conduct covers strategic actions by firms, such as pricing, marketing, and innovation, while performance reflects outcomes like profitability, efficiency, and growth. Applying the SCP model to the African aviation sector allows for an in-depth understanding of how market structures and airline behaviours affect overall industry performance. For instance, market concentration metrics like the Herfindahl-Hirschman Index (HHI) or concentration ratios (CR4) help identify whether the market operates as a monopoly, oligopoly, or in a competitive setting.

This insight is critical in assessing competition levels and identifying barriers that may hinder new entrants or disrupt healthy competition. The SCP model is particularly relevant for regions like Africa, where aviation markets vary widely in terms of liberalisation, infrastructure, and regulatory frameworks, making it essential to understand how these dynamics influence airline strategies and sector performance.

Additionally, the spatial econometric models are essential for analysing competition in the African aviation sector because they account for spatial interdependencies—how economic activities in one region influence and are influenced by those in neighbouring regions. This is particularly relevant in aviation, where factors like airport locations, route networks, and regional economic conditions are interconnected.

By incorporating spatial econometrics, it could assess how the presence or performance of an airline in one market affects neighbouring markets, providing a more comprehensive understanding of competitive dynamics. For example, the entry of a low-cost carrier on a specific route may impact not only that route

but also adjacent routes and airports, influencing pricing strategies and passenger demand across the region. Traditional econometric models might overlook these spatial spillover effects, leading to incomplete or biased conclusions.

In the context of African aviation, where markets are diverse and often segmented, spatial econometric models help identify patterns of competition and cooperation among airlines and regions. They enable the evaluation of policies like the SAATM by analysing how liberalisation in one area affects air traffic and competition continent-wide. This approach supports the development of strategies that promote fair competition, enhance connectivity, and stimulate economic growth across Africa.

These tools allow policymakers and stakeholders to assess how effectively liberalisation is working to enhance competition, benefit consumers, and support the overall growth of Africa's aviation industry.

METHODOLOGY ANALYSIS

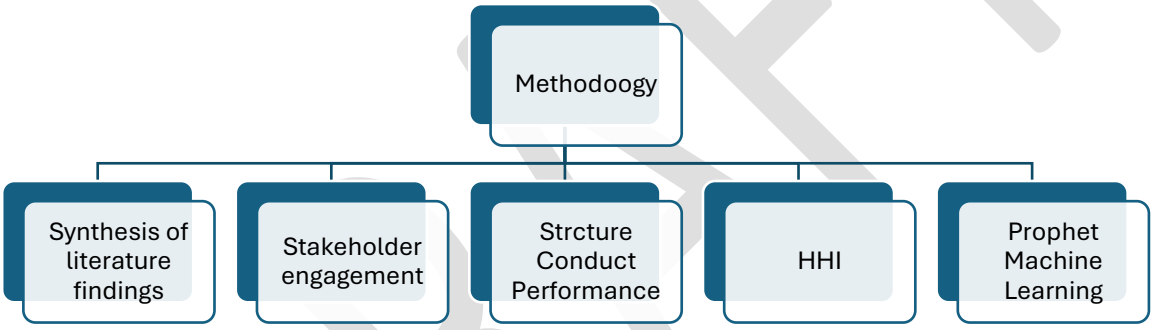


Figure 10: Methodology Structure; Source: Author

In the methodology structure, the integration of synthesis of literature, stakeholder engagement, Structure-Conduct-Performance (SCP), Herfindahl-Hirschman Index (HHI), and Prophet forecasting model provides a robust, multi-layered approach to analysing the African aviation sector (Figure 10):

1. *Synthesis of Literature*: Academic and policy-based literature is reviewed to establish a theoretical foundation, identify gaps in previous studies, and contextualise the liberalisation efforts and market dynamics in African aviation.
2. *Stakeholder Engagement*: Qualitative data is gathered through interviews, surveys, or focus groups with regulators, airline executives, airport authorities, and passengers. This step grounds the study in practical realities and adds depth to the interpretation of market behaviours and policy impacts.

3. *Structure-Conduct-Performance (SCP) Framework*: This model is used to evaluate how the market structure (e.g., number and size of airlines), affects firm behaviour (e.g., pricing, route decisions), and leads to certain market outcomes (e.g., efficiency, consumer choice).
4. *Herfindahl-Hirschman Index (HHI):* Incorporated as a quantitative tool under the structure element of the SCP framework, HHI measures market concentration. It helps assess the competitiveness of specific routes or regional markets, indicating whether monopolistic or competitive conditions exist.
5. *Prophet Forecasting Model*: Prophet, a time series forecasting tool developed by Facebook, is used to project trends in passenger traffic, route expansion, or market share. This adds a forward-looking dimension to the analysis, supporting strategic and policy recommendations.

Together, these elements form a comprehensive methodology that blends qualitative insights, economic theory, statistical measurement, and predictive analytics.

The use of rigorous methodologies in evaluating competition in African aviation is crucial for providing accurate, actionable insights into market dynamics. Without structured analytical tools, such as the SCP, HHI, route-level concentration analysis, or cabin class segmentation—assessments risk being anecdotal, superficial, and misleading. Africa's aviation landscape is uniquely complex, characterised by uneven market liberalisation, dominance of state-owned carriers, infrastructural gaps, and wide variations in route profitability. Robust methodologies help quantify these disparities, revealing hidden monopolies, pricing power imbalances, and barriers to market entry that might otherwise go unnoticed. They also support evidence-based policymaking, enabling governments, regulators, and regional bodies like the AFCAC to craft targeted interventions that genuinely promote competition, connectivity, and affordability. Furthermore, standardised evaluation approaches ensure that comparisons across countries and time periods are consistent and meaningful, helping track the real progress of initiatives like the SAATM. In essence, applying rigorous methodologies is not just a technical exercise; it is fundamental to building a transparent, competitive, and consumer-centred African aviation sector capable of driving economic growth and regional integration.

The African aviation sector, when analysed through the SCP framework, reveals a market characterised by high concentration, moderate competition, and variable efficiency. A few dominant carriers, such as Ethiopian Airlines, EgyptAir, and Royal Air Maroc, control a large share of the market, while barriers to entry remain high due to elevated costs, regulatory hurdles, and limited infrastructure. Product differentiation is minimal, with most airlines offering basic economic services and only a few developing cargo and premium segments. Conduct within the sector shows increasingly competitive pricing strategies and growing adoption of dynamic pricing models, yet regulatory compliance with liberalisation

frameworks like SAATM remains inconsistent across countries. Alliances and codeshare agreements are emerging, although true integration is still limited. In terms of performance, the sector struggles with low cost-efficiency, volatile profitability, and only modest innovation, particularly in digital services and sustainability initiatives. Consumer welfare is constrained by high ticket prices, limited route options, and uneven service quality. Overall, African aviation reflects structural concentration, moderate conduct dynamism, and underwhelming performance, emphasising the need for regulatory harmonisation, investment in infrastructure, and greater private sector participation to achieve sustainable growth.

Data Sources

The source of the data used for this study is IATA World Air Transport Statistics (WATS) and the observation period was 2014 to 2024 as the cut-off period. The data includes metrics such as Revenue Passenger Kilometres (RPK), Available Seat Kilometres (ASK), Passenger Load Factor (PLF), Cargo Tonne Kilometres (CTK), Available Cargo Tonne Kilometres (ACTK), Cargo Load Factor (CLF), Freight Tonnes (FRT), and total passenger counts (PAX), all disaggregated by airline, traffic type (international vs domestic), cabin class (economy vs premium), and route area (e.g., Africa-Europe, Africa-Far East). This granularity allows for both aggregate-level analysis and detailed dissection of market structure and airline performance.

The data was modelled using time series structures to detect trends, shocks, and recovery patterns and was processed into KPIs and calculated shares to measure market concentration, demand-supply dynamics, and competition. Performance indicators such as market share, load factors, Herfindahl-Hirschman Index (HHI), and growth rates were computed to provide insights into airline efficiency, route-level competitiveness, and capacity utilisation.

Time series analysis is essential in evaluating aviation data because it allows stakeholders to track and interpret the dynamic, seasonal, and often volatile nature of the industry. By analysing data over time, it becomes possible to identify long-term growth or decline trends in critical indicators such as passenger numbers, cargo volumes, and fleet capacity, providing a foundation for strategic planning and investment. Time series analysis also captures seasonality, helping airlines and airports optimise schedules, staffing, and pricing around predictable demand fluctuations. Furthermore, it plays a critical role in measuring the impact of external shocks, such as the COVID-19 pandemic, by isolating their effects on aviation performance metrics like Revenue Passenger Kilometres (RPK) and Available Seat Kilometres (ASK). This analysis supports forecasting future demand, enabling better capacity planning and financial projections. Regulatory bodies rely on time series data to draft informed policies, while airlines and airports use it to benchmark performance against competitors. In short, time series analysis transforms evolving aviation dynamics into actionable insights, empowering better operational, strategic, and policy decisions across the sector.

As part of reinforcing the study analysis, data derived from AFRAA allowed the author to model air traffic demand using *Facebook Prophet*.

Structure, Conduct, and Performance (SCP) Analysis

The SCP framework is a powerful tool used to understand how the organisation of a market influences the behaviour of firms operating within it and how that behaviour impacts overall market outcomes. In aviation and broader industries, SCP analysis helps explain competition dynamics, efficiency, innovation, and consumer welfare.

Purpose of SCP Analysis

1. Assess Market Dynamics and Competition:
    - Understand the level of concentration or fragmentation in a market.
    - Identify potential abuse of market power or monopolistic behaviour.
    - Evaluate the level of effective competition and market fairness.
2. Diagnose Industry Health and Efficiency:
    - Determine if resources are being used productively.
    - Detect inefficiencies, over-capacities, or duplication of services.
3. Guide Policy and Regulation:
    - Support governments and regulators in designing pro-competitive and corrective policies.
    - Identify when intervention is necessary to prevent market failure.
4. Support Strategic Decision-Making:
    - Assist firms in strategic planning, market entry, mergers, or alliances.
    - Forecast the likely effects of regulatory or technological changes.
5. Protect Consumer Welfare:
    - Ensure markets deliver lower prices, improved service quality, and greater choice for consumers.
    - Safeguard against practices that reduce consumer benefits or accessibility.

The SCP model provides a logical and structured method to analyse industries, predict firm behaviour, measure outcomes, and guide interventions. It remains a critical tool for regulators, policymakers, businesses, and economists aiming to ensure markets operate efficiently and fairly.

The Herfindahl-Hirschman Index (HHI)

The Herfindahl-Hirschman Index (HHI) (Herfindahl, 1950) (Hirschman, 1945) plays a crucial role in assessing African aviation markets by providing a clear, quantitative measure of market concentration

and competitive dynamics. Given the structure of African aviation, where a few dominant airlines like Ethiopian Airlines, EgyptAir, and Royal Air Maroc control significant portions of the market. HHI is vital for objectively evaluating how power is distributed across operators. A high HHI value indicates a concentrated market, suggesting potential risks such as limited consumer choice, higher prices, or abuse of market dominance, while a low HHI reflects a more competitive environment with greater airline diversity. HHI is especially useful for policymakers and regulators, enabling them to monitor how market liberalisation initiatives like SAATM impact competitive balance, assess merger proposals, and determine where regulatory intervention may be necessary to prevent monopolistic practices. Additionally, tracking HHI trends over time allows stakeholders to gauge the effectiveness of open skies agreements and identify whether markets are becoming more competitive or increasingly consolidated. By benchmarking different regions and route segments, such as comparing intra-African travel with Africa-Europe corridors, HHI offers a detailed snapshot of competitive health, making it an indispensable tool for promoting fair and sustainable growth in African aviation.

Facebook Prophet

Facebook Prophet is a highly practical, resilient, and powerful tool for medium-complexity air traffic demand forecasting, particularly when seasonality, event-driven peaks, and uncertainty are important (Oswal et al., 2022; Samunderu, 2025) However, for highly volatile, multi-factorial, or competition-heavy markets, more complex ML models may achieve greater precision.

1. Strengths of Prophet in Aviation Demand Forecasting

a) Handles seasonality automatically

- Prophet is specifically designed to capture strong seasonal effects (e.g., annual travel peaks in December or summer vacations).
- Aviation demand is highly seasonal (holiday surges, religious events like Hajj), and Prophet models this very well without needing manual seasonality coding.

b) Robust to missing data and outliers

- Aviation datasets often have gaps (missing months) or shocks (COVID-19 disruptions).
- Prophet is resilient to missing data and can smooth over anomalies, maintaining credible trend estimations.

c) Event-Based Forecasting

- Prophet allows you to add special events or public holidays (e.g., national independence days, tourism festivals) into the model.
- This feature enhances accuracy when forecasting air traffic for event-heavy markets like Africa.

d) Simple to deploy and interpret

- Prophet requires relatively little expertise compared to deep learning models.
- Forecasts include upper and lower uncertainty bounds, which is essential for strategic planning in volatile environments like aviation.

Table 6 summarises where Facebook Prophet is best suited for aviation demand forecasting tasks based on typical industry applications and data complexity:

Scenario	Suitability
Aggregate passenger demand forecasting	Excellent
Forecasting for a single airline or route	Good
Short-term disruption handling (COVID recovery)	Very Good
High-frequency forecasting (daily/hourly data)	Fair
Multi-factor demand forecasting (economic + political factors)	Needs enhancement

Table 6 Recommended use of Prophet in Aviation; Source: Author

2. Limitations to Consider

a) Assumes additive or multiplicative structure

- Prophet is best when time series have clear trends and seasonality.
- It may underperform if air traffic patterns are extremely volatile without consistent seasonality (e.g., political instability-driven markets).

b) Less adaptive for complex interactions

- Prophet doesn't naturally handle complex interactions between variables like:
- GDP growth
- Airline competition dynamics
- Policy changes
- More sophisticated machine learning models (like XGBoost, LSTM) may outperform Prophet when many external features must be modelled simultaneously.

c) Not optimised for highly competitive, multi-airline networks

- Prophet forecasts aggregate traffic well, but detailed airline-level competition effects (e.g., route cannibalisation, new entrants) require more granular models.

The dataset used for predicting passenger demand, consisted of intra-African passenger demand data spanning from January 2019 to December 2023. This dataset allowed the author to deduce a demand forecasting model framework employing Machine Learning techniques.

Machine Learning Techniques

Machine Learning Techniques are highly robust for predicting air travel demand in Africa due to their ability to manage the complexity, variability, and fragmented nature of the continent's aviation markets. Unlike traditional forecasting models, machine learning methods can capture nonlinear relationships among diverse factors such as economic growth, political stability, tourism trends, and infrastructure development, all of which significantly impact demand across different African regions. These models are also well-suited for handling sparse, noisy, and incomplete data, which is a common challenge in African aviation datasets. Machine Learning allows for the integration of real-time and external variables like GDP shifts, airline schedules, and health crises, resulting in more accurate and dynamic forecasts. Moreover, machine learning models can adapt quickly during periods of disruption, such as pandemics or political instability and are capable of running scenario analyses to assist in strategic planning. Techniques such as Random Forests, XGBoost, and Neural Networks outperform traditional statistical models by learning complex patterns and adjusting to evolving market conditions, making them an indispensable tool for demand forecasting in Africa's rapidly changing aviation landscape.

Now below a detailed methodology approach will be explained.

Proposition 1: Structure Conduct Performance Analysis

Market Structure Analysis

The African aviation sector is experiencing a dynamic transformation with the rise of competing airline network business models. The traditional hub-and-spoke model and the emerging point-to-point model are influencing route structures, market accessibility, and economic integration across the continent. This section provides a scientific analysis of these models, their performance metrics, and the implications for Africa's air transport.

Market Entry and Exit Behaviour in the African Aviation Industry

The African aviation industry, as elaborated in this study, is characterised by a volatile landscape of frequent market entries and abrupt exits, shaped by a combination of high operational risks, regulatory complexities, capital intensity, and fragile market conditions. Over the past few decades, numerous national carriers, regional airlines, and private start-ups have entered the market with great promise, only to falter under the weight of unsustainable business models, political interference, or poor regulatory environments. Understanding the dynamics of entry and exit in African aviation offers crucial insights into the resilience, risk, and structural inefficiencies of the sector.

Multiple measures can be adopted by airline carriers to deter entry. Below are some entry deterrent measures prevalent within the context of the airline industry:

1. Incumbents can be able to utilise their hub and spoke network structure to deter entry. This means the carrier operating from its hub can successfully threaten to continue operating in a spoke even though it may operate at a loss due to the increased level of competitive rivalry. The carriers that will meet the full brunt of such competitive behaviour will be the regional carriers such as Airlink, FlySafair, etc. Since these carriers operate as feeder carriers, unless they have a cost advantage, they will be ultimately forced to exit the market whilst entry is deterred.

2. *The use of Frequent Flyer Programs [FFP]* can be used as marketing devices to strategically lock in customers, hence increasing the cost of switching due to the fact that FFPs are deemed as loyalty tools which are rewarded to customers who show consistency in using the airlines utilising such reward programmes. For the competitors, this means making attempts to encourage consumers to switch to competing carriers.

3. At the route level, carriers that engage in *code-sharing agreements* can exploit the cooperation by side-lining competitors. This is because passengers are provided with code-sharing partners after booking a flight, which includes the advantage of seamless travel (especially when it comes to baggage transfer). They are able to collect their baggage at the end of their destination, which again brings travelling convenience. This means that passengers regard code-sharing flights as online flights which they prefer to interline-line connections.

4. Increased *flight frequency* after entry to squeeze competitors. The volume of increased flight frequency is also popular with business travellers who prefer flexible departure times and tickets.

5. Adopting *predatory pricing behaviour* after entry by new competitors can also be an effective deterrent.

Therefore, analysing industry competition can be conducted from multiple lenses in order to capture the dynamics that underline the African market air transport market. This includes a rigorous analysis of existing literature pertaining to aviation competition, insights gathered through various stakeholder engagements, SCP analysis and econometric modelling techniques employing statistical applications. Since the airline industry is characterised by an oligopoly market structure, it is a form of imperfect competition in which a limited number of airlines dominate the African market. Therefore, the standard measure of analysis of measuring oligopoly market power is the industry concentration ratio. This ratio relates to the market share of the largest airline carriers to the size of the entire market.

Market Entry: Opportunities and Barriers

Entering the African aviation market is appealing due to the continent's untapped potential, expanding middle class, and growing demand for air connectivity driven by trade, tourism, and regional integration. However, the pathway to market entry is riddled with obstacles. New entrants must contend with high capital requirements, including the cost of aircraft acquisition or leasing, maintenance, personnel training,

insurance, and compliance with international safety standards. In many cases, start-up airlines struggle to secure sustainable financing, often relying on state funding or politically influenced investors, which can undermine operational independence.

Regulatory hurdles also present a major challenge. In some countries, bureaucratic licensing procedures, corruption, and lack of transparency in route allocations deter potential investors. Airlines must also navigate BASAs that can restrict access to lucrative markets, particularly when protectionist policies favour national carriers. Additionally, infrastructure limitations at secondary airports—such as inadequate runway lengths, limited refuelling capacity, or absence of ground handling services—can inhibit the development of efficient route networks for new entrants.

Despite these challenges, there have been successful entries. Airlines like Ibom Air (Nigeria), Uganda Airlines, and Air Senegal are recent examples of national carriers being revived or established to address connectivity gaps. Meanwhile, private carriers such as FlySafair and Jambojet have emerged as strong contenders in the low-cost segment, capitalising on liberalised markets and high demand for affordable travel.

In the African aviation sector, state intervention plays a pivotal and often controversial role, particularly in the protection and promotion of national carriers. Governments across the continent have historically viewed airlines as strategic national assets, symbols of sovereignty, economic development, and regional influence (Samunderu, 2023). As a result, many African states continue to exert significant influence over their flag carriers, ranging from financial support and regulatory shielding to diplomatic leverage and market protection. While this intervention often helps sustain operations in challenging environments, it also distorts market competition, discourages private investment, and can lead to inefficiencies.

African governments employ a variety of mechanisms to protect and sustain their national carriers, often driven by motives of national pride, strategic connectivity, and economic symbolism. One of the most prominent forms of protection is direct financial support**,** which includes start-up capital, subsidies, loan guarantees, and repeated bailouts to cover operational deficits. For example, South African Airways has received billions of dollars in state aid over the years, while Camair-Co in Cameroon and Air Zimbabwe have remained operational largely due to government funding despite chronic losses. Another common approach is the use of restrictive BASAs**,** which limit foreign airline access to certain routes or restrict frequencies, effectively shielding the national carrier from competition. This is particularly evident in countries like Ethiopia**,** where BASAs are structured to protect Ethiopian Airlines' market dominance. Governments also offer preferential access to routes, airport slots, and infrastructure, ensuring that national carriers are prioritised in scheduling, gate assignment, and ground handling services. In many cases, regulatory bodies exhibit institutional favouritism, expediting approvals for state-owned airlines while delaying or denying applications from private competitors. Additionally, debt forbearance is often

extended to national carriers, allowing them to accumulate arrears in airport fees or fuel payments without penalty and privileges that private airlines rarely enjoy. These forms of state protection, while designed to sustain national airlines, often distort competition, reduce efficiency, and deter private sector participation, leading to imbalanced aviation ecosystems across the continent.

Below is a summary of different forms of financial bailouts African carriers have been exposed to.

Forms of State Protection for National Carriers

1. Financial Subsidies and Bailouts

One of the most direct ways African governments support their national carriers is through financial injections, including start-up capital, operating subsidies, and debt bailouts. For example:

- South African Airways (SAA) received over USD 3 billion in government bailouts over the past decade before entering business rescue in 2020. Despite ongoing losses, the government prioritised maintaining national ownership.
- Air Zimbabwe has been repeatedly bailed out by the Zimbabwean government, including a reported USD 300 million debt assumption, in efforts to preserve a struggling state-owned airline.
- Cameroon Airlines Corporation (Camair-Co), established in 2006 to replace defunct Cameroon Airlines, has consistently operated at a loss but is maintained through government funding.

2. Restrictive Bilateral Agreements

Governments often negotiate BASAs that favour their national airlines. These agreements can:

- Limit foreign carriers' access to certain city pairs or frequencies.
- Withhold or delay fifth freedom rights (the ability to carry passengers between two foreign countries as part of a route).
- Reserve lucrative routes exclusively for national carriers.

For instance, Ethiopia often conditions foreign access to Addis Ababa's Bole International Airport on reciprocal rights that protect Ethiopian Airlines' dominance.

3. Slot and Route Allocation Privileges

State-owned carriers are often given priority access to airport slots, gates, and routes, especially high-yield or monopoly routes, at the expense of private or foreign competitors. This discourages competition and perpetuates national carrier dominance. In some cases, private airlines have been denied domestic routes or faced delays in licensing due to protectionist regulations aimed at shielding the national carrier.

4. Regulatory Favouritism

National aviation authorities may regulate in favour of state-owned airlines, for instance, by:

- Speeding up certification or licensing processes for flag carriers while slowing them for competitors.
- Failing to enforce competition laws.
- Allowing national carriers to accumulate debts to airport or fuel suppliers without penalties.

In Nigeria, for example, domestic private airlines have long argued that they operate at a disadvantage compared to government-backed competitors due to fuel allocation priorities and regulatory leniency for public entities.

How Bailouts Stifle Competition in African Aviation

Government bailouts of national carriers, while often justified on grounds of strategic importance or job preservation, can significantly distort competition in the aviation sector. These bailouts provide financial lifelines to state-owned airlines, allowing them to operate despite inefficiencies, mismanagement, or chronic unprofitability. In contrast, private airlines, which lack access to such state support, must operate under strict financial discipline or risk market exit.

First, bailouts enable artificially low pricing strategies. Subsidised carriers can afford to undercut ticket prices on competitive routes, even at a loss, knowing that government support will cushion financial shortfalls. This creates an uneven market dynamic where private competitors, who rely on market-based revenue, cannot match these prices without incurring unsustainable losses.

Second, continuous state support often results in excess capacity, where national carriers operate more routes or frequencies than market demand would naturally sustain. This crowding-out effect prevents private or new entrants from establishing viable footholds, especially on high-demand routes. In some cases, state carriers use their privileged access to slots and subsidies to dominate strategically important routes, effectively blocking more efficient or innovative competitors from entering.

Third, bailouts often come with preferential treatment in regulatory and operational spheres. For instance, state-owned airlines may be allowed to delay payments for airport fees, fuel charges, or ground handling services, giving them a cash flow advantage over competitors. They may also receive priority in aircraft parking, maintenance, or route licensing, further disadvantaging private-sector players.

Impact of Protectionism on Market Dynamics in African Aviation: A Regional Perspective

Protectionism remains a defining feature of many African aviation markets, where governments continue to favour national carriers through policies that restrict foreign competition, impose regulatory barriers, and tightly control access to profitable routes. While often justified on the grounds of national sovereignty,

strategic interest, or industry preservation, protectionist behaviour has led to market inefficiencies, higher airfares, limited connectivity, and uneven competitive environments across the continent. A closer look at regional blocs ´´ECOWAS, EAC ECCAS, SADC and AMU, reveals how protectionism manifests and what its consequences are for aviation development.

ECOWAS: Fragmentation and Missed Integration

Despite being home to SAATM signatories and the Yamoussoukro Decision, West Africa remains one of the most protectionist regions in terms of air transport. Many countries continue to shield their national carriers by limiting foreign access to key domestic and regional routes. For example:

- Air Côte d'Ivoire benefits from state-sanctioned dominance in Abidjan, where access to strategic routes is tightly controlled.
- Nigeria, Africa's largest economy, has historically maintained a restrictive regulatory regime favouring its national carrier initiatives and domestic airlines like Air Peace, often denying or delaying foreign airline applications for lucrative routes.

This protectionism leads to route fragmentation, as regional carriers like ASKY Airlines or Africa World Airlines are limited in expanding pan-regional networks. As a result, passengers often face high fares and limited direct flights, needing to connect through non-African hubs like Paris or Dubai for intra-African journeys.

East Africa (EAC): Competition Meets Cautious Control

East Africa presents a more liberalised but still guarded market. Countries like Kenya and Rwanda have taken bold steps to open their skies and attract foreign carriers, yet signs of protectionism persist. For instance:

- Kenya Airways, a partially state-owned flag carrier, has benefited from favourable slot allocation and government lobbying to protect its routes from increasing competition by foreign and local airlines.
- Rwanda, while positioning RwandAir as a regional hub carrier, has used strategic partnerships (e.g., with Qatar Airways) to expand its influence but has also tightly controlled competitor access to Kigali to preserve its growing aviation ambitions.

Overall, EAC's competitive landscape is healthier, with Fly540, Jambojet, and Uganda Airlines adding variety, but inter-state politics and regulatory asymmetry still hamper deeper liberalisation.

Central Africa (ECCAS): Stagnation Through Control

In Central Africa, protectionist policies are often compounded by weak institutions, limited infrastructure, and state monopolies. National airlines like Camair-Co (Cameroon) and Equatorial Congo Airlines (ECAir) have struggled to maintain viable operations but continue to receive government support and protection. Foreign entrants face considerable red tape and political obstacles when attempting to access these markets.

This region has very low intra-African connectivity, and flights between Central African states are often routed via foreign countries. Protectionism in this block has stifled competition and investor interest, leaving the aviation sector underdeveloped and heavily dependent on foreign carriers for international travel.

SADC: Dual Trends of Liberalisation and Defence

Southern Africa exhibits a split dynamic: South Africa is relatively liberal, with strong domestic competition and multiple private operators, while its neighbours maintain strong protectionist practices.

- SAA and FlySafair operate in a competitive domestic environment, with multiple LCCs and transparent regulations. However, the state has historically shielded SAA through bailouts and political lobbying, leading to a distortion in fair competition.
- In contrast, countries like Namibia and Zimbabwe have protected national carriers like Air Zimbabwe and FlyNamibia, often subsidising unprofitable routes and restricting market access to regional operators.

This duality results in an unbalanced playing field, where some SADC nations benefit from liberal aviation policies while others inhibit market growth through protectionist interventions.

AMU: State Control Under Market Liberalisation Pressure

North African countries, Morocco, Egypt, Algeria, Tunisia, and Libya, have traditionally maintained strong government control over aviation. However, Morocco and Egypt have recently embraced more open skies policies, particularly with Europe.

- Royal Air Maroc is a state-owned success story but continues to receive political and financial support that strengthens its dominant market position.
- Algeria and Libya maintain highly restricted aviation markets, where foreign carriers face significant regulatory hurdles, and national carriers are prioritised by law.

Protectionism in North Africa has hindered regional integration and intra-African travel, even though the region boasts strong infrastructure and high air travel potential.

Cross-Cutting Impacts of Protectionism on Market Dynamics

Across all regions, protectionism leads to similar outcomes:

- Higher airfares due to lack of competition.
- Underutilisation of secondary airports and lack of regional connectivity.
- Reduced innovation and service quality, as national carriers lack pressure to improve.
- Limited private sector investment, as market distortions, increase risk and reduce investor confidence.
- Dependency on foreign hubs for intra-African travel, increasing costs and reducing economic multipliers from local aviation.

While protectionism in African aviation is often rooted in legitimate concerns, such as national pride, connectivity, and economic development, it frequently leads to counterproductive market distortions that hinder competition and limit growth. Regional perspectives reveal a spectrum of protectionist intensity, with some blocs embracing liberalisation and others remaining entrenched in state control. Moving forward, African governments must balance strategic interests with market efficiency, committing to open skies under SAATM, strengthening independent regulatory frameworks, and incentivising healthy competition. A unified, liberalised, and well-regulated aviation market holds the key to transforming Africa's skies into a driver of inclusive development and integration.

Market Exit: Causes and Consequences

The history of aviation in Africa is marked by a long list of failed airlines, with causes ranging from poor management and political interference to external shocks and economic instability. Prominent examples include Air Afrique, a once-celebrated regional carrier jointly owned by multiple West African states, which collapsed due to mismanagement and political wrangling. Similarly, Ghana Airways, Zambia Airways, and Cameroon Airlines fell victim to financial insolvency, governance issues, and operational inefficiencies.

More recently, South African Airways (SAA) entered business rescue in 2020 after years of financial distress despite being one of the continent's most established airlines. The collapse or retrenchment of such carriers not only disrupts connectivity but also results in the loss of critical aviation jobs, sunk infrastructure costs, and investor scepticism. In some cases, their exit creates market vacuums that are quickly filled by foreign carriers or opportunistic regional airlines, leading to a reshaping of competitive dynamics.

Exit behaviour in Africa is often abrupt, with little warning to consumers or stakeholders. This is partly due to the lack of financial buffers and risk management practices, as well as limited access to bankruptcy protection or restructuring mechanisms that are common in more developed aviation markets. The closure of an airline often leads to a loss of confidence in the regulatory environment and dampens enthusiasm for future private-sector investment in aviation.

The Role of State Intervention

Governments play a dual role in market entry and exit. While some actively promote new entrants through funding or strategic partnerships, others stifle competition by overly protecting legacy carriers or failing to reform aviation policies. In many cases, state-backed carriers are kept afloat despite chronic losses, distorting the market and deterring private competition. The tension between economic liberalisation and national pride in owning a flag carrier often complicates rational decision-making around entry and exit.

Conversely, well-designed government interventions, such as start-up funding with performance benchmarks, open skies agreements, and tax incentives, can facilitate responsible entry and ensure long-term viability. For example, Rwanda's partnership with Qatar Airways in supporting RwandAir shows a more strategic approach to market development through public-private collaboration.

The dynamics of market entry and exit in the African aviation sector underscore the fragility and complexity of the industry. While there is significant interest in tapping into Africa's aviation potential, structural and institutional barriers continue to inhibit sustainable growth. To foster a healthier and more resilient industry, African governments and regional bodies must prioritise policy harmonisation, infrastructure development, access to finance, and fair competition. Establishing clear, transparent, and investor-friendly frameworks will not only improve the quality and diversity of air services across the continent but also attract long-term investment that can withstand the cyclical nature of the aviation industry.

Overview of Airline Business Models

Airline network models primarily fall into three categories: the hub-and-spoke model (used by full-service carriers like Ethiopian Airlines), the point-to-point model (adopted by LCCs like Fastjet and Jambojet), and hybrid models which blend features of both. Hub-and-spoke networks focus on central hubs for connectivity, while point-to-point networks emphasise direct connections between cities to minimise cost and travel time.

Full-service carriers in Africa often originate as national flag carriers, either state-owned or privatised. They aim to provide a wide range of services including multiple cabin classes, in-flight meals, lounge access, and international connectivity through major hubs.

Key Players:

- ***Ethiopian Airlines (Ethiopia)***

Ethiopian Airlines, headquartered in Addis Ababa and operating out of Bole International Airport, stands as Africa's most successful and expansive airline. As a member of the Star Alliance, it boasts a modern fleet of over 140 aircraft, including Boeing 787 Dreamliners and Airbus A350s. Ethiopian Airlines is known for its resilience, particularly its ability to remain profitable even during periods of global aviation crisis, such as the COVID-19 pandemic.

One of its strategic advantages lies in its vertically integrated model. The airline owns and operates its own aviation academy, MRO (Maintenance, Repair & Overhaul) facility, catering, and ground handling services. This integration allows for better quality control and cost efficiency. Moreover, Ethiopian Airlines has aggressively pursued a Pan-African expansion strategy, taking equity stakes in other African carriers such as ASKY Airlines (Togo), Malawi Airlines, and Zambia Airways.

The airline's strength also lies in its vast network, connecting more African cities than any other airline while maintaining long-haul routes to North America, Europe, the Middle East, and Asia. Its cargo division is one of the largest in Africa, bolstered by a dedicated freighter fleet and a logistics hub in Addis Ababa. While the airline enjoys government ownership, it operates with a significant level of autonomy, contributing to its operational efficiency.

- ***Kenya Airways (Kenya)***

Kenya Airways, operating from Jomo Kenyatta International Airport in Nairobi, is East Africa's primary full-service airline and a member of the SkyTeam alliance. The airline, branded as "The Pride of Africa," plays a key role in connecting East Africa to the rest of the world. It has carved out a niche in linking African travellers with Asian markets such as China, India, and Southeast Asia, and in 2018, it became the first East African airline to launch direct flights to the United States (New York City).

Kenya Airways has undergone significant transformation since its partial privatisation in the 1990s, with Air France-KLM holding a minority stake for a time. Despite its strategic hub location and extensive African network, the airline has faced persistent financial difficulties attributed to high debt, fluctuating fuel prices, and forex challenges. It has received repeated government bailouts and is currently undergoing restructuring efforts aimed at returning to profitability.

The airline's subsidiary, Jambojet, operates on a low-cost model, allowing Kenya Airways to tap into the growing budget travel market without diluting its full-service brand. Through partnerships and codeshare agreements, Kenya Airways remains an important player in Africa's aviation ecosystem.

- ***South African Airways (South Africa)***

Once Africa's leading airline, South African Airways (SAA) has experienced a significant decline over the past decade. Headquartered in Johannesburg and operating from O.R. Tambo International Airport, SAA was long viewed as a benchmark for aviation excellence in Africa, benefiting from a sophisticated hub and extensive international routes.

However, a series of mismanagement issues, labour unrest, and chronic financial missteps led to massive losses and the airline's grounding in 2020. Since then, SAA has undergone a painful restructuring process. The South African government eventually agreed to a partial privatisation deal with the Takatso Consortium, which is expected to hold a majority stake and help steer the airline toward recovery.

Despite its challenges, SAA's brand remains strong, particularly in Southern Africa. The airline's technical divisions, including its MRO services and flight academy, are recognised for their quality. As a long-time member of the Star Alliance, SAA retains valuable global connectivity, though its network and fleet have been significantly scaled down post-restructuring.

- ***Royal Air Maroc (Morocco)***

Royal Air Maroc (RAM), Morocco's national carrier based in Casablanca, has grown into a dominant player in North and West Africa. Its strategic location at the crossroads of Europe, Africa, and the Americas gives it a unique advantage. The airline operates from Mohammed V International Airport and is the only African member of the Oneworld alliance, which it joined in 2020.

RAM's strength lies in its transatlantic and European connections, positioning Casablanca as a viable alternative hub for travellers moving between Sub-Saharan Africa and North America or Europe. The airline operates a mixed fleet of Boeing 737s, 787 Dreamliners, and Embraer jets, and has increasingly focused on serving the African diaspora in Europe and North America.

However, RAM faces stiff competition from European LCCs (especially Ryanair and easyJet) and Gulf carriers, particularly on routes to Europe and the Middle East. Nonetheless, its integration into a global alliance and continued fleet modernisation support its growth ambitions.

- ***EgyptAir (Egypt)***

EgyptAir, headquartered in Cairo and operating from Cairo International Airport, is one of Africa's oldest airlines, founded in 1932. It has been a major player in North Africa and the Middle East and a Star Alliance member since 2008. The airline has leveraged Egypt's geographical advantage to serve as a bridge between Africa, Europe, the Gulf, and Asia.

EgyptAir operates a multi-tiered structure with subsidiaries such as Air Cairo and EgyptAir Express, which cater to different market segments. Its fleet includes Airbus A320s, Boeing 777s, and 787s, enabling it to serve both short-haul and long-haul destinations.

While the airline has a broad network and deep experience, its performance has been periodically impacted by regional instability, including political unrest and security concerns. Nevertheless, EgyptAir remains a critical player in facilitating travel and trade across Africa and beyond.

Africa's full-service carriers are more than just transportation providers; they are integral to regional development, trade, and diplomacy. While their paths differ, Ethiopian Airlines, Kenya Airways, South African Airways, Royal Air Maroc, and EgyptAir each illustrate the complexities and potential of operating in Africa's aviation space. Some, like Ethiopian Airlines, have embraced expansion and innovation; others, like SAA, are seeking reinvention. Collectively, these airlines reflect the resilience, ambition, and diversity of Africa's aviation future. Continued reform, investment, and strategic alignment with continental goals such as AfCFTA and the SAATM will be crucial to their sustained success.

Below Table 7, illustrates the different African airline business models, with Ethiopian Airlines dominating the network markets.

Airline	Country	Hub Airport	Alliance	Fleet Size	Network Reach	Ownership	Key Strengths	Challenges	Strategic Notes
Ethiopian Airlines	Ethiopia	Bole Int'l Airport (ADD)	Star Alliance	140+	Africa, Europe, Asia, Americas	State-owned (operationally independent)	Most profitable African airline; Extensive African connectivity; Modern fleet; Strong cargo ops	Political risk; Rapid expansion risks; Regional competition from Gulf carriers	Owns MRO, aviation academy; Equity in other African carriers (ASKY, Zambia Airways, etc.)
Kenya Airways	Kenya	Jomo Kenyatta Int'l (NBO)	SkyTeam	~38	Africa, Europe, Asia, U.S.	Public-private (Govt. majority stake)	Strong East African hub; Direct Nairobi–NYC flight; Subsidiary LCC (Jambojet)	Financial instability; High debt levels; Reliance on government bailouts	Restructuring underway; JV history with KLM; Focus on East–West Africa–Asia connections
South African Airways	South Africa	O.R. Tambo Int'l (JNB)	Star Alliance	~15 (post-restructuring)	Africa, Europe (limited)	Majority-private (Takatso Consortium)	Technical expertise; Recognized MRO facilities; Strong legacy brand	Long-term mismanagement; Labour disputes; Shrinking international presence	Undergoing restructuring; Seeking sustainable model with reduced fleet and route focus
Royal Air Maroc	Morocco	Mohammed V Int'l (CMN)	Oneworld	~50	Africa, Europe, Americas	State-owned	Strategic geographic position; Strong Europe & U.S. access; Oneworld membership	Competition from Gulf/European LCCs; Infrastructure limitations at hub	Casablanca as transatlantic hub; Expanding African footprint; Focus on diaspora travel
EgyptAir	Egypt	Cairo Int'l Airport (CAI)	Star Alliance	~65	Africa, Europe, Asia, North America	State-owned	Strategic MENA location; Long operational history; Owns Air Cairo, EgyptAir Express	Political instability; Security/tourism volatility; Bureaucratic management challenges	Multi-brand approach; Diversified routes and hubs; Strong Hajj/Umrah travel demand

Table 7 Full-Service Network Carriers in Africa – Comparison Table; Source: Samunderu, 2024

The landscape of FSNCs in Africa is shaped by a diverse mix of national carriers that reflect the continent's complex economic, geographic, and political realities. At the forefront is **Ethiopian Airlines**, which stands out as Africa's most successful and expansive airline, leveraging a modern fleet, a strong cargo division, and strategic equity partnerships across the continent. **Kenya Airways** maintains a key position in East Africa with a notable transatlantic route to New York and a growing low-cost subsidiary (Jambojet), although it continues to face serious financial strain and relies heavily on government support. **South African Airways**, once a dominant force, is undergoing a significant restructuring phase following years of mismanagement and financial losses, aiming to rebuild a leaner, more sustainable operation under partial private ownership. In North Africa, **Royal Air Maroc** leverages Morocco's strategic location as a gateway between Africa, Europe, and the Americas, and its membership in the Oneworld alliance has enhanced its global connectivity. Similarly, **EgyptAir** benefits from its geographic position and diversified operations, serving major intercontinental routes while managing multiple subsidiary airlines. Across the board, these airlines face shared challenges, including competition from Gulf carriers, infrastructure constraints, political instability, and fluctuating demand. However, with strategic partnerships, alliance memberships, and growing intra-African travel demand, these FSNCs, continue to play a crucial role in connecting Africa to the world and driving regional integration.

Competitive Analysis of Low-Cost Carriers (LCCs) in the African Aviation Market

LCCs have emerged as a disruptive force in global aviation, offering affordable air travel primarily by minimizing operational costs and focusing on high-frequency, point-to-point routes. While LCCs have transformed air travel in Europe, Asia, and the Americas, their footprint in Africa remains relatively limited but growing.

This section presents a comprehensive scientific analysis of LCCs in Africa, examining their market dynamics, operational challenges, and strategic potential to transform intra-continental connectivity. While LCCs are relatively underdeveloped in Africa compared to other continents, they represent a critical vector for regional economic integration, mobility, and development. Using an interdisciplinary framework encompassing economics, transportation studies, and policy analysis, this study identifies the enabling conditions required for LCC growth and recommends strategic policy and investment pathways.

Intra-African connectivity remains one of the critical barriers to regional integration, despite the recent advances in continental frameworks such as the AfCFTA and the SAATM. While road and rail infrastructure are under development, air transport provides the fastest mode of regional mobility, particularly for business, tourism, and high-value cargo. However, the sector is dominated by FSNCs which often operate at high cost, limiting accessibility. In this context, LCCs present an alternative model capable of democratising air travel, enhancing mobility and supporting socio-economic development (Samunderu, 2023).

Figure 11 shows the number of routes currently operated by major LCCs in Africa, highlighting their geographic scale and operational reach.

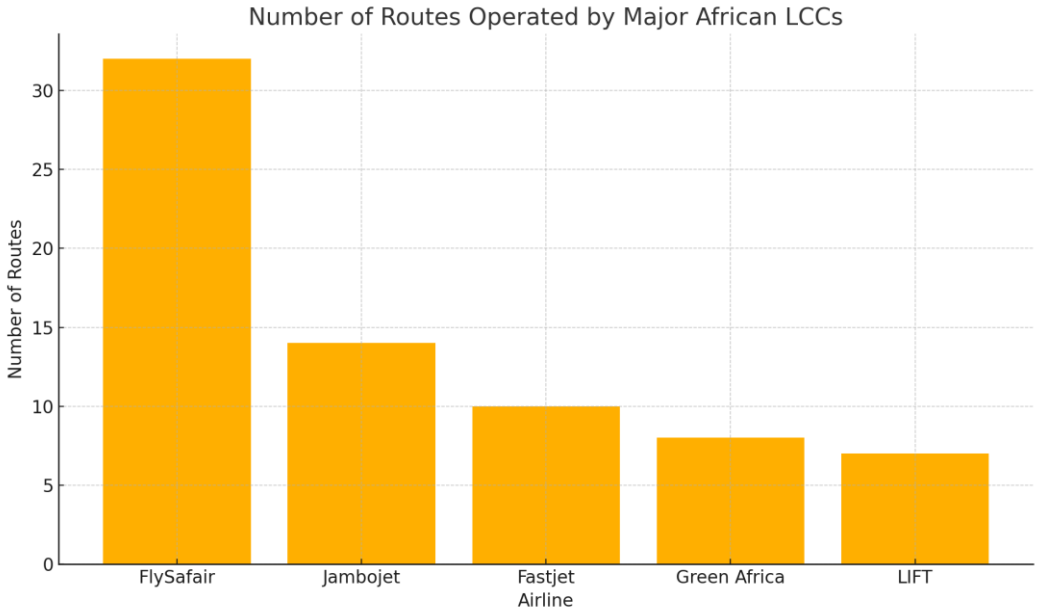


Figure 11 Regional Distribution of Major African LCCs; Source: IATA, 2022

FlySafair emerges as the dominant player in the African LCC market, operating more than double the number of routes compared to its nearest competitor. Currently, FlySafair serves 14 routes within Sub Sahara Africa. This extensive network suggests that FlySafair has not only the fleet capacity but also the infrastructure and market demand to sustain a broader geographic reach. The dominance of FlySafair points to a high level of operational maturity and an established customer base. This airline likely benefits from economies of scale and is positioned to influence market pricing and competition trends. The competitive landscape for LCCs in Africa is characterised by a growing but uneven presence, shaped by regional demand, economic disparities, and regulatory environments. While a few dominant players like FlySafair, Jambojet, and Fastjet have established strongholds in specific subregions, overall market penetration remains low compared to global standards. Demand is largely driven by a rising middle class, urbanisation, and the need for efficient business and leisure travel across countries. However, competition is not limited to other airlines, long-distance buses and informal transport remain formidable rivals due to cost advantages and route coverage. Additionally, FSNCs often engage in price wars, blurring distinctions in the budget market. Despite these pressures, LCCs continue to carve out niche routes and leverage operational efficiency to remain competitive in a fragmented yet opportunity-rich market.

Table 8 illustrates the key competitive dynamics defined by the leading LCCs.

Airline	Country	Region	Key Characteristics
FlySafair	South Africa	Southern Africa	Highly efficient operations, the most punctual in Africa, robust domestic network.
Jambojet	Kenya	East Africa	Subsidiary of Kenya Airways, affordable regional flights, expanding domestic market.
Fastjet	Zimbabwe/Tanzania	Southern Africa	Serves niche regional routes, compact fleet, and hybrid low-cost model.
Green Africa Airways	Nigeria	West Africa	Start-up with a domestic focus, potential for regional expansion, customer-centric digital approach.
LIFT	South Africa	Southern Africa	Flexible model with tech-driven service delivery, operating in competitive domestic space.

Table 8 Key LCC Players in Africa - Comparative Analysis; Source: Compiled by Author (2025)

Hybrid Airlines in Africa: Bridging the Gap Between LCCs and Full-Service Carriers

Hybrid airlines in Africa represent a growing segment of the aviation industry, combining the cost-efficiency of LCCs with selected services typical of FSNCs. These airlines aim to offer flexibility, comfort, and digital convenience while keeping operational costs relatively low. Notable examples include LIFT in South Africa, Air Peace in Nigeria, and RwandAir, which, while not branded as LCCs, employ hybrid pricing models and route strategies to appeal to a broader demographic.

Hybrid carriers often target mid-market travellers and those who value punctuality, basic comfort, and some level of onboard service, without the premium price tag. They tend to operate both domestic and regional routes, strategically deploying smaller, fuel-efficient aircraft to manage thin routes or fluctuating demand. These models are especially effective in Africa, where infrastructure, passenger income, and regulatory barriers vary widely across markets. The hybrid approach allows airlines to remain agile by offering frills on strategic routes while maintaining lean operations where necessary (Samunderu, 2024). This adaptability positions hybrid airlines as important contributors to intra-African connectivity, particularly as the continent transitions toward more liberalised and integrated airspaces under SAATM.

Hybrid Pricing Models and Route Strategies

African hybrid carriers adopt flexible pricing models that blend low-cost principles with optional premium services to accommodate diverse passenger segments. These airlines often use unbundled fare

structures, allowing passengers to pay a base fare and add services such as baggage allowance, meals, seat selection, ticket changes or refunds and priority boarding.

For example, Air Peace and LIFT offer tiered booking classes ranging from bare-bones economy to more inclusive bundles, providing affordability while upselling value-added services. This model is particularly effective in Africa, where price sensitivity is high, but demand for comfort and reliability is rising among business and middle-class travellers.

This study also revealed that FlySafair applies a classic unbundled fare model in African aviation, where passengers pay a low base fare for transportation and choose optional add-ons depending on their preferences. The following Table 9 outlines FlySafair's fare structure:

Service/Item	Included in Base Fare	Available as Paid Add-On
Seat	Yes (random assignment)	Preferred seat selection for a fee
Cabin Bag	Yes (small bag, 7kg limit)	Upgrade to a larger cabin bag for a fee
Checked Baggage	No	23kg or 32kg options available for a fee
Meals and Drinks	No	Available for purchase onboard
Ticket Changes	No free changes	Flexi Fare upgrade available
Priority Boarding	No	Purchase priority boarding separately

Table 9 FlySafair unbundled fare structure; Source: Author analysis based on FlySafair website

On the route side, hybrid carriers adopt opportunistic and demand-responsive strategies. They typically serve both high-density domestic routes (e.g., Lagos–Abuja or Johannesburg–Cape Town) and select regional destinations that are underserved by major carriers (e.g., Kigali–Lusaka or Nairobi–Bujumbura). Unlike traditional LCCs that focus only on point-to-point travel, hybrids sometimes operate mini-hub structures or interline with other carriers to improve load factors and expand connectivity.

Moreover, hybrid carriers increasingly leverage data-driven scheduling and dynamic pricing algorithms to adjust seat availability and fares in real time. This allows them to maximize revenue on peak routes while maintaining competitive pricing on thin or seasonal ones. As Africa's digital infrastructure grows and booking behaviours evolve, these hybrid models are becoming a vital part of a sustainable and scalable intra-African aviation network.

Dynamic Pricing Algorithms in the African Airline Market

Dynamic pricing algorithms are increasingly being adopted by African carriers, particularly hybrid and emerging LCCs, as a tool to optimise revenue and adapt to volatile market conditions. These algorithms leverage real-time data, such as booking patterns, seat availability, demand forecasts, seasonal fluctuations, and competitive pricing, to adjust airfares dynamically. This approach allows airlines to capture maximum willingness to pay from different customer segments, ensuring seats are sold at the most profitable rates over time.

In the African context, dynamic pricing plays a critical role in balancing the continent's unique economic and logistical challenges. For example, domestic routes such as Nairobi–Mombasa or Lagos–Abuja see fluctuating demand based on events, business cycles, or holidays. Dynamic systems help carriers manage these peaks while filling low-demand flights with lower-priced inventory. Moreover, given the continent's reliance on mobile and last-minute bookings, dynamic pricing algorithms provide airlines with the agility to respond instantly to market changes and competitor actions.

However, widespread implementation remains uneven due to limited data infrastructure, low digital booking penetration in rural areas, and consumer scepticism of fare variability. To address this, some carriers integrate pricing engines with mobile-first booking platforms, targeting Africa's growing smartphone user base. As digital adoption expands and airlines enhance their analytics capabilities, dynamic pricing is poised to become a core competitive lever in Africa's aviation ecosystem.

Dynamic Pricing

Dynamic pricing in African aviation is a revenue management strategy that adjusts airfares in real time based on multiple market factors such as demand, seat availability, competition, and customer behaviour. This is particularly useful in Africa, where route demand can fluctuate significantly due to cultural, economic, and logistical variables. Below is a simplified representation of a dynamic pricing equation adapted for the African context (Table 10).

$$P_t = B + \alpha D_t - \beta S_t + \gamma C_t + \delta R_t + \varepsilon M_t$$

Where:

Symbol	Description
P_t	Final price of a seat at time t
B	Base fare (operational cost + minimum margin)
D_t	Real-time demand at time t (e.g., searches/bookings)

Symbol	Description
S_t	Remaining seat availability on the flight at time t
C_t	Competitor pricing on similar routes
R_t	Route popularity/seasonality factor
M_t	Market segment modifier (e.g., mobile user or booking region)
$\alpha, \beta, \gamma, \delta, \varepsilon$	Sensitivity coefficients calibrated by analytics

Table 10 Dynamic Pricing; Source: Compiled by Author

This model (Table 10) allows airlines to flexibly adjust prices based on real-time data. For example, prices rise when demand surges before a public holiday or when seat availability becomes scarce. Conversely, the system can lower fares to stay competitive when rival airlines drop prices or when targeting more price-sensitive consumers booking via mobile platforms in rural regions.

Adoption of Dynamic Pricing by African Hybrid Airlines

In recent years, several hybrid airlines across Africa have begun implementing dynamic pricing systems as part of their revenue optimisation strategies. These airlines operate between the full-service and low-cost models, offering some onboard services while maintaining cost efficiency. Prominent examples include:

- ***Air Peace (Nigeria)***

Air Peace has integrated a tiered fare system with dynamic pricing, adjusting seat prices based on booking time, passenger demand, and travel season (See Figure 12) The airline uses digital platforms to monitor real-time demand, allowing for flexible fare changes particularly on popular routes such as Lagos–Abuja and Lagos–Accra.

The tiered fare system, commonly employed by hybrid airlines in Africa, allows passengers to select from a range of service bundles, each priced according to the included amenities. Dynamic pricing is applied within each tier to adjust fares in real time based on demand, seat availability, and other market conditions. Figure 12 below illustrates an example of how this system operates:

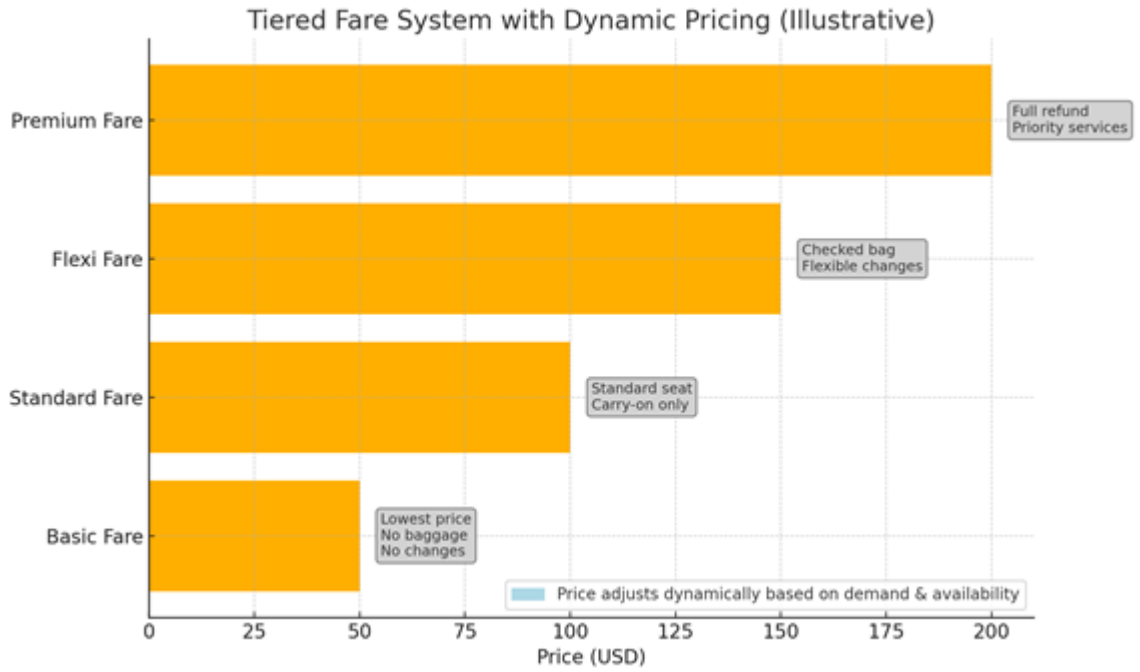


Figure 12 Tiered Fare System with Dynamic Pricing; Source: Author

Below is a recreated version of the tiered fare system as shown in Figure 12. Each fare tier is represented with corresponding pricing and feature highlights, showing how hybrid airlines in Africa may structure and dynamically price service levels.

Premium Fare – USD 200

- • Full refund
  • Priority services

Flexi Fare – USD 150

- • Checked bag
  • Flexible changes

Standard Fare – USD 100

- • Standard seat
  • Carry-on only

Basic Fare – USD 50

- • Lowest price
  • No baggage
  • No change

LIFT (South Africa)

LIFT is a digital-first hybrid airline that extensively uses artificial intelligence and machine learning algorithms to manage pricing. Customers booking early are offered lower fares, which rise as seats fill up. This model has helped LIFT compete effectively with both legacy carriers like South African Airways and pure low-cost operators like FlySafair.

LIFT is a South African hybrid airline launched in 2020, designed with a modern, tech-centric approach to air travel. Unlike traditional carriers, LIFT operates with a flexible scheduling model, digital distribution, and customer-centric operations. Its business model blends elements of both LCCs and FSNCs targeting a broad market while maintaining lean operational structures.

Central to LIFT's competitive edge is its application of advanced data analytics, artificial intelligence (AI), and machine learning (ML) to drive real-time decision-making in areas such as revenue management, flight planning, customer engagement, and especially dynamic pricing.

Use of AI and ML in Pricing Strategy

LIFT utilises AI-driven pricing engines to implement dynamic, demand-based fare adjustments. This approach deviates from traditional static pricing models and introduces a real-time, algorithmic fare structure influenced by variables such as:

- Customer search patterns and historical booking data
- Route-specific demand trends and seat inventory
- Time to departure and booking lead times
- Competitive pricing from rival carriers
- Seasonality and macroeconomic factors

The underlying ML algorithms continuously learn and adjust, meaning pricing improves over time as more data is collected. For example, if LIFT detects a spike in searches for Cape Town during a major event, it can increase prices incrementally as bookings rise, while still offering discounts on less demanded flights.

Moreover, the use of AI allows for micro-segmentation and offers personalised prices or promotions to different customer types based on behaviour, device type, or geography. This is especially relevant in a price-sensitive and mobile-first market like South Africa.

Benefits of AI/ML-Driven Pricing in the African Context

a) Revenue Optimisation

LIFT's intelligent pricing maximizes revenue per seat while maintaining market competitiveness. This is crucial in Africa, where high operating costs and thin margins leave little room for error.

b) Operational Agility

Using AI, LIFT can adjust not only pricing, but flight frequency and capacity based on predicted demand. This level of agility is vital in uncertain and seasonally volatile markets.

c) Customer-Centric Adaptability

AI helps LIFT offer tailored pricing bundles, giving travellers options from basic to premium while ensuring pricing fairness and transparency. This builds loyalty in a market where customer experience often lags.

d) Competitive Advantage

By being data-driven from inception, LIFT outmanoeuvres legacy airlines burdened by legacy systems and static pricing models. It also competes favourably with LCCs by offering better tech integration and service quality.

Broader Implications for African Aviation

LIFT's model signals a transformative shift in airline operations in Africa, suggesting that future success may not lie solely in cost-cutting but in digital adaptability and smart revenue models. As internet access and mobile usage continue to grow in Africa, tech-enabled airlines like LIFT can:

- Normalise digital ticketing and mobile bookings
- Drive consumer education around dynamic pricing
- Encourage greater market transparency and competitiveness
- Support more sustainable aviation networks by matching supply to real demand

The digital-first, AI-enhanced strategies employed by hybrid airlines like LIFT are reshaping the trajectory of African aviation. These models go beyond mere cost savings, they unlock new paradigms for competitiveness, accessibility, and sustainability. The following are the broader implications of such innovation on the continent's aviation ecosystem:

1. Catalysing a Digitally-Driven Aviation Ecosystem

The success of AI-powered, dynamically priced models fosters the growth of an end-to-end digital aviation value chain. Airlines, travel agencies, airport operators, and regulatory bodies are being nudged toward greater interoperability and data integration. This promotes:

- Real-time ticketing and scheduling
- Seamless mobile bookings

- Smart airport check-ins and biometric boarding
- Integration with ride-sharing and multimodal logistics

RwandAir (Rwanda)

While often seen as a full-service airline, RwandAir operates with hybrid characteristics in certain markets (Samunderu, 2024). Its online booking portal and partnerships with global distribution systems allow it to apply dynamic pricing, especially on regional routes in East and Central Africa where competition is rising.

RwandAir Strategic Positioning: A Hybrid within a Full-Service Shell

Although RwandAir is widely classified as a FSNC, but it strategically adopts hybrid characteristics, particularly in its regional and intra-African operations. This positioning is shaped by Rwanda's ambition to become a logistics and connectivity hub in East and Central Africa, while also responding to a highly price-sensitive and underserved market.

Key elements of its hybrid approach**:**

- Tiered Pricing: Offers a stripped-down economy fare on regional routes (e.g., Kigali–Nairobi, Kigali–Bujumbura) while maintaining business-class and value-added options on international long-haul flights.
- Selective Service Unbundling: Passengers can opt out of certain services (e.g., checked baggage or meals) to access lower fares—typical of low-cost models.
- Digital Channel Emphasis: RwandAir promotes online bookings, dynamic fare alerts, and app-based services to reduce distribution costs.
- Lean Regional Fleet: Operates smaller aircraft like Bombardier CRJs and De Havilland Q400s on short-haul routes—fitting for a hybrid model balancing efficiency and service.

RwandAir's business model represents a strategic adaptation to Africa's economic diversity, infrastructure limitations, and evolving passenger needs. By embracing a hybrid approach, RwandAir operates efficiently across regional markets while retaining a premium edge for international competitiveness. Below is an in-depth look at the core elements that define its hybrid identity:

1. Tiered Fare Structure with Optional Services

RwandAir implements multi-level pricing across routes, enabling passengers to choose from different fare classes such as:

- Economy Light – Low-cost base fare with restrictions (no checked baggage, no refunds)
- Economy Classic – Standard economy with 1 piece of checked luggage

- Economy Flex – More baggage, greater flexibility, and changeability
- Business Class – Premium seats with all-inclusive services

This allows passengers to customise their experience and cost, appealing to both budget sensitive travellers and premium clients, especially important in mixed-income African markets.

2. Strategic Route and Fleet Segmentation

RwandAir differentiates its fleet and route strategy according to route demand, distance, and market profile:

- Regional/Short-Haul Flights (e.g., Kigali to Entebbe, Bujumbura, Nairobi): Operated with turboprops and regional jets (e.g., De Havilland Q400, CRJ-900), offering lean services with optional add-ons.
- Long-Haul Flights (e.g., to London, Brussels, Dubai): Operated with widebody aircraft like Airbus A330s with full-service amenities.

This enables cost-efficient operation on regional routes while maintaining international competitiveness where expectations for comfort and service are higher.

3. Digital Booking and Revenue Management Tools

RwandAir actively encourages bookings through its:

- Mobile App
- Online portal
- Digital check-in systems

These platforms integrate dynamic pricing algorithms to adjust fares based on demand, booking trends, and seat availability. Digital adoption allows the airline to reduce distribution costs, offer targeted promotions, and improve revenue management in real time.

4. Selective Service Unbundling

On selected regional routes, RwandAir has adopted an unbundling service model, typical of low-cost carriers:

- No-frills tickets available (excluding food, baggage, or seat choice)
- Optional upgrades for specific services (extra legroom, onboard meals, lounge access)

This reduces baseline costs and increases ancillary revenue, which is critical for thin-margin routes.

5. Frequent Flyer Incentives with Scalable Benefits

Despite using low-cost principles on short routes, RwandAir retains a full-service carrier's hallmark: its Dream Miles loyalty program. This enables it to:

- Reward high-frequency travellers and business customers
- Encourage cross-selling between domestic and international segments
- Sustain customer retention across varying fare levels

The programme blends FSC-style brand loyalty with LCC-style price competitiveness, offering scalable perks tied to spending and frequency rather than just a class of service.

6. Hub-and-Spoke Model Leveraging Kigali

RwandAir uses Kigali International Airport as a central hub, connecting smaller regional cities to larger international gateways:

- Enables high aircraft utilisation by aggregating traffic from multiple low-demand destinations
- Allows the airline to feed its long-haul flights with traffic from Central, East, and Southern Africa
- Supports time-efficient connections, particularly for business travellers and trade logistics

This hybrid structure gives RwandAir network depth without excessive duplication of routes, a challenge that affects many full-service African carriers.

7. Government and Strategic Partner Support

The Rwandan government's support provides a strategic runway (no pun intended) for RwandAir to explore hybrid innovation:

- Policy alignment with Rwanda's Vision 2050 and Kigali as a pan-African hub
- Qatar Airways' 49% stake enhances operational expertise, revenue optimisation, and fleet modernisation, which are essential components of hybrid agility

This positioning ensures that RwandAir operates not just as a flag carrier, but as a commercially adaptive airline with global partnership leverage.

8. Operational Agility and Lean Cost Structure

While offering tiered service, RwandAir maintains a lean and flexible operating structure:

- Smaller workforce compared to legacy carriers
- Flexibility in flight planning and scheduling, based on AI-powered demand projections
- Growing reliance on digital customer service platforms instead of traditional call centres

This structure mirrors that of LCCs, but is refined to fit regional, diplomatic, and premium market contexts.

RwandAir's hybrid model is not an identity crisis, but a competitive strategy. It carefully blends cost control, service customisation, digital intelligence, and operational flexibility to serve an increasingly dynamic African travel market (Samunderu, 2023). As a result, RwandAir is not only redefining national carrier standards in Africa but also influencing how other airlines structure their services for sustainability, scalability, and strategic growth.

Jambojet (Kenya)

Launched in 2014 as a wholly owned subsidiary of Kenya Airways, Jambojet is Kenya's first true LCC. Its mission is to offer safe, reliable, and affordable air travel, particularly on domestic and regional routes underserved by legacy FSNCs, with its headquarters in Nairobi and primary hub at Jomo Kenyatta International Airport (JKIA), Jambojet strategically positions itself as a connector of secondary cities, economic hubs, and tourist destinations.

Though initially created to absorb and optimise Kenya Airways' short-haul domestic operations, Jambojet has evolved far beyond its foundational role. The rationale behind its launch in 2014 was twofold: first, to unbundle the high-cost structure associated with Kenya Airways' operations on low-yield domestic routes, and second, to enter the burgeoning low-cost travel market in East Africa. Kenya Airways, like many FSNCs, faced challenges in operating short-haul domestic flights profitably due to high overheads, legacy labour contracts, and passenger expectations of full-service offerings. By transferring these routes to a new, independent, low-cost subsidiary, Kenya Airways was able to reduce operational complexity and target a broader, more price-sensitive customer base. Jambojet's lean operating model centred on simplified services, cost control, and digital-first customer engagement—allowed it to thrive where its parent struggled. Over time, Jambojet developed its own brand identity and commercial independence, transitioning from a tactical solution for Kenya Airways into a strategic growth engine and pioneer in affordable regional aviation across Eastern and Central Africa.

Jambojet offers a hybrid service model with dynamic fare structures. Its dynamic pricing strategy is particularly effective on routes such as Nairobi–Mombasa and Kisumu–Eldoret, where demand can fluctuate daily. The airline uses its digital channels and customer data analytics to implement real-time fare updates.

At the heart of Jambojet's success is its disciplined adherence to the Low-Cost Operating Model (LCOM), a strategic framework that emphasises operational efficiency, cost minimization, and unbundled service delivery. Jambojet operates a simplified fleet, primarily consisting of De Havilland Dash 8 Q400 turboprops, which are well-suited for short-haul operations with lower fuel consumption and maintenance costs. The airline optimises aircraft utilisation through quick turnaround times, enabling more flights per day and

maximizing revenue per aircraft. Furthermore, Jambojet keeps costs low by adopting a no-frills service approach**,** where passengers pay for the base seat fare and can choose to purchase additional services such as baggage allowance, seat selection, onboard refreshments, and insurance. This unbundling not only gives travellers control over their travel experience but also generates significant ancillary revenue**.** On the staffing side, Jambojet benefits from lean management structures and high crew productivity while also leveraging technology for digital bookings, online check-in, and customer service automation**,** thereby reducing distribution and operational overhead. Unlike traditional airlines burdened by legacy costs, Jambojet's model allows for greater pricing flexibility and competitiveness, which is particularly vital in the high-cost, price-sensitive African aviation environment. The success of this model has not only enabled the airline to scale its domestic network efficiently but also paved the way for regional expansion into underserved and high-demand markets across East and Central Africa.

Market Conduct Analysis

Behaviour *(conduct*) refers to the airline´s behaviour in determining prices, production levels, products, advertising, and how to deal with competing airline carriers. The main focus of corporate behaviour is how the airline reacts to market structure conditions and interactions with its competitors. Thus, market behaviour is defined as a pattern of responses made by the airline to achieve its goals within the scope of industrial competition. Reactions between one airline against another airline are implemented in the form of fixing the selling price, as well as product promotion (advertising). The airline´s behaviour, which is reflected in the determination and implementation of competitive strategies to continue to exist in a market as previously described, is expected to improve the performance of the company. In other words, company behaviour will affect company performance, and in a broader scope, industrial behaviour will affect industrial performance.

The conduct of market players, such as, airlines, airports, regulators, and service providers, within the African aviation industry reflects a complex interplay of competition, regulation, partnerships, pricing strategies, and route development. This section explores how these players behave and interact within the liberalising but still fragmented African aviation landscape.

Pricing Behaviour and Fare Structures

Pricing behaviour and fare structures in the African aviation industry vary significantly across regions but are universally marked by high costs and limited affordability. In West Africa, for example, routes between cities like Lagos, Accra, and Abidjan often have some of the highest airfares per kilometre globally, driven by a lack of LCCs, limited competition, and heavy taxes. Intra-regional fares within ECOWAS are frequently inflated due to reliance on international hubs, even for short distances.

Thus, airfare pricing across Africa remains disproportionately high, largely due to limited competition, infrastructural inefficiencies, and regulatory bottlenecks. In West Africa (ECOWAS), for instance, routes like Accra–Lagos or Abidjan–Dakar are operated by few carriers, leading to elevated fares despite short distances (See Tables 10 and Table 11).

Airline Market share on key West African routes

The following Table 11 and Table 12 provide a snapshot of airline competition and market conduct on two critical intra-West African routes: Accra–Lagos and Abidjan–Dakar. These routes are essential for regional connectivity under ECOWAS and offer insight into the level of competition and dominance within the West African aviation space.

1. *Accra (Ghana) – Lagos (Nigeria) Route*

This short-haul route is one of West Africa's busiest and is primarily operated by the following carriers:

Airline	Country	Estimated Market Share	Notes
Africa World Airlines (AWA)	Ghana	~40%	Longest-serving carrier on the route; plans to increase frequency.
Air Peace	Nigeria	~25%	Major Nigerian carrier expanding regionally.
Ibom Air	Nigeria	~15%	Newer entrant on the route.
United Nigeria Airlines	Nigeria	~10%	New entrant with regional ambitions.
ASKY Airlines	Togo	~10%	Pan-African regional airline.

Table 11 Key carriers on the Accra-Lagos Route; Source: Author´s own analysis based on various airline websites (2025)

2. Abidjan (Côte d'Ivoire) – Dakar (Senegal) Route

This route links two important West African capitals and is served by a mix of national and regional carriers:

Airline	Country	Estimated Market Share	Notes
Air Côte d'Ivoire	Côte d'Ivoire	~52%	National carrier with a dominant share.
Air Senegal	Senegal	~30%	Rapidly expanding national airline.
ASKY Airlines	Togo	~10%	Operates across West Africa.
Ethiopian Airlines	Ethiopia	~8%	Connects through Addis Ababa with regional links.

Table 12 Key Carriers on the Abidjan-Dakar Route; Source: Author´s own analysis based on airline websites (2025)

Similarly, in Central and Southern Africa (SADC), routes such as Johannesburg–Lusaka or Luanda–Harare often have monopolistic operators, with taxes and surcharges comprising up to 40% of total ticket prices.

Southern Africa, while more developed in terms of aviation infrastructure, also faces elevated pricing. Though South Africa has a relatively competitive domestic market with airlines like FlySafair, routes to neighbouring countries such as Namibia, Zimbabwe, and Mozambique often remain expensive due to bilateral restrictions and dominance by national carriers.

In contrast, East Africa (EAC) has seen more fare flexibility, especially on routes involving Nairobi, Kigali, or Entebbe, thanks to increased regional competition and the rise of low-cost carriers like Jambojet. However, even here, cross-border flights remain significantly more expensive than comparable domestic flights in Europe or Asia. The uneven implementation of SAATM contributes to this disparity, as closed markets restrict route access and hinder price competition. As a result, high fares persist, limiting air travel accessibility for the average African consumer and slowing regional integration.

In East Africa, dominated by players like Kenya Airways and Ethiopian Airlines, fares are slightly more competitive on major corridors (e.g., Nairobi–Addis Ababa or Nairobi–Kigali), but many secondary routes remain underserved or overpriced. Central and North Africa experience similar pricing inefficiencies, often driven by state monopolies or limited access for foreign carriers. Across all regions, high operational costs, including fuel, navigation fees, and ground handling—combined with inconsistent application of SAATM reforms, result in pricing behaviour that discourages mass air travel. Without substantial liberalisation, regional cooperation, and tax harmonisation, airfares across Africa are likely to remain out of reach for a majority of the population, thus limiting the full potential of the continent's aviation market.

Route Development and Network Strategy

African airlines predominantly operate hub-and-spoke models centred around major airports such as Addis Ababa, Nairobi, Johannesburg, and Casablanca. These hubs facilitate regional and intercontinental connectivity but often result in route duplication and under-served secondary cities. The implementation of SAATM has provided an opportunity for more direct, point-to-point services, yet many countries continue to restrict foreign carriers on domestic and high-yield regional routes. Airlines are cautious in expanding routes due to high start-up costs, infrastructure limitations, and weak passenger demand in less-developed regions.

External competitors, particularly airlines from Europe, the Middle East, and increasingly Asia play a significant and complex role in African aviation. Major carriers such as Emirates, Qatar Airways, Turkish Airlines, and Air France-KLM have expanded aggressively across African markets, often offering superior connectivity, pricing, and service levels compared to many African airlines. While their presence has

boosted access to global markets and improved service standards for African consumers, it has also intensified competitive pressure on domestic and regional carriers, many of which struggle with high operating costs, limited fleet size, and regulatory protectionism. In some cases, bilateral air service agreements heavily favour non-African airlines, perpetuating the dominance of external players in lucrative intercontinental routes. This dynamic risk undermines the growth of a strong, homegrown aviation sector in Africa unless measures are taken to improve the competitiveness of African airlines, enhance intra-African connectivity, and strategically negotiate fairer market access terms. Balancing the benefits of global integration with the need to develop robust African aviation players is, therefore, a critical policy challenge.

Foreign carriers are indeed reconfiguring Africa's aviation competition landscape by introducing new competitive pressures, pricing models, and service standards that many domestic airlines struggle to match. Airlines such as Emirates, Qatar Airways, Turkish Airlines, and Ethiopian Airlines (though African, they often function with the scale and reach of global carriers) have established strong networks connecting African cities to global hubs. This has increased connectivity but also diverted passenger traffic away from intra-African routes, weakening regional airlines' viability.

Their dominance on long-haul and high-yield routes means African carriers are often left competing on less profitable, short-haul routes with limited traffic. In many cases, foreign airlines benefit from favourable BASAs and superior infrastructure, giving them a structural advantage. Their entry has also pushed African airlines to consolidate or seek strategic alliances—but these responses are not always sufficient or timely due to regulatory and financial constraints.

Moreover, foreign carriers bring with them stronger brand recognition, better economies of scale, and advanced digital platforms, which elevate consumer expectations and force African airlines to innovate or risk losing market share. While this can benefit consumers in the short term through lower prices and better service, it poses a long-term challenge to the development of a competitive and self-reliant African aviation ecosystem unless domestic and regional players are strengthened through targeted policy interventions. Furthermore, African carriers are increasingly adopting route development strategies focused on enhancing intra-African connectivity, leveraging strategic hubs, and forming regional partnerships to overcome infrastructure and regulatory challenges.

Route development and network strategy are critical levers shaping competition in African aviation. Airlines that can establish strong, efficient networks, particularly through strategic hub development, in order to gain significant competitive advantages in market access, cost efficiencies, and brand loyalty. Major African hubs like Addis Ababa (Ethiopian Airlines), Nairobi (Kenya Airways), and Johannesburg (Airlink, SAA) demonstrate how robust route planning can turn national carriers into dominant regional players. However, much of Africa still suffers from fragmented networks, with many cities poorly connected to one another and over-reliant on non-African hubs for international travel. This creates gaps in intra-African connectivity

that agile competitors, including foreign carriers, can exploit. Airlines that invest in underserved routes (secondary cities, regional hubs) and optimise hub-and-spoke models or point-to-point services can quickly capture untapped demand. Furthermore, strategic decisions on fleet mix (e.g., deploying smaller regional jets vs. larger wide-body aircraft) allow airlines to match capacity to demand more competitively. Network strategy also increasingly involves digital partnerships, code-sharing, and membership in global alliances, which enhance reach without necessarily adding physical routes. Therefore, in Africa, the winners in aviation competition will be those carriers and alliances that intelligently design their networks to balance profitability, market access, and regional integration, especially under the SAATM.

Route development and network strategy in the African aviation industry are also central to shaping how people, goods, and services move across the continent and beyond. These strategies are influenced by a combination of market demand, airline business models, airport infrastructure, and regulatory frameworks. In recent years, efforts like the SAATM have attempted to liberalise route access and encourage direct intra-African connectivity. However, the reality on the ground still reflects an industry grappling with historical constraints, uneven growth, and policy fragmentation.

At the core of network planning in Africa is the hub-and-spoke model (An, Zhang & Zeng, 2015), which is widely adopted by major carriers such as Ethiopian Airlines, Kenya Airways, EgyptAir, Royal Air Maroc, and South African Airways. These airlines concentrate flights at a central hub airport—Addis Ababa, Nairobi, Cairo, Casablanca, or Johannesburg—allowing passengers from smaller or regional destinations to connect through the hub to domestic, regional, or intercontinental destinations. This model is favoured due to the low demand densities on many African point-to-point routes, making it economically viable to funnel passengers through a few major airports.

However, while the hub-and-spoke system offers operational efficiency, it also leads to over-reliance on major hubs and under-servicing of secondary cities and remote regions. Many African travellers still need to route through non-African hubs—such as Istanbul, Doha, Paris, or Dubai—for trips between African cities due to the absence of direct intra-African flights. For instance, flying between Lusaka and Dakar or Kinshasa and Nairobi may require multiple layovers, significantly increasing travel time and costs.

In terms of route development, African airlines have historically been conservative, focusing on a few high-yield routes rather than aggressively expanding their networks. This caution stems from high operating costs, volatile demand, and regulatory restrictions. Airline decisions about route expansion are often based on access to fifth freedom rights, BASAs, and the financial viability of entering new markets. Countries that restrict access to their markets, either to protect national carriers or due to bureaucratic inertia, therefore discourage route growth and reduce options for travellers.

Some airlines, however, are pursuing strategic route diversification. Ethiopian Airlines, for instance, has adopted a multi-hub strategy, partnering with smaller national carriers and investing in operations outside

Ethiopia (e.g., in Togo, Zambia, and Malawi). Similarly, RwandAir is positioning itself as a pan-African connector, with Kigali as a rising hub and support from Qatar Airways. In West Africa, ASKY Airlines operates a dense network of intra-regional flights using smaller aircraft and optimised scheduling, demonstrating that regional route specialisation can be profitable with the right model.

Meanwhile, LCCs like FlySafair, Fastjet, and Jambojet have focused on domestic and short-haul routes, helping to stimulate demand through lower fares and simplified service. Their emergence has started to reshape network strategies, particularly in markets like South Africa, Kenya, and Zimbabwe. However, their regional footprint remains limited due to regulatory challenges, fleet constraints, and a lack of liberalised markets.

Airport infrastructure and slot availability also influence route development. Overcrowded or under-equipped airports, especially in secondary cities, limit the potential for new routes. Conversely, modernised terminals in Accra, Kigali, Nairobi, and Addis Ababa are attracting more routes by offering efficient operations, safety, and enhanced passenger services.

The route development landscape is also shaped by diplomatic and political factors. Bilateral relations, visa policies, and trade agreements often influence airline access and frequency. For example, countries with open visa regimes and active participation in regional trade blocks tend to attract more flights and become more integrated into the continental air transport system.

Thus, the route development and network strategy in Africa remain a mix of progress and persistent gaps. While major hubs are thriving and some carriers are innovating, the continent still suffers from limited intra-African connectivity and an uneven spread of air services. To move forward, African states must commit to fully implementing SAATM, invest in secondary airport infrastructure, and provide a regulatory environment that encourages airline competition and route growth. Doing so will unlock greater mobility, economic integration, and opportunities across the continent.

Competitive Dynamics and Alliances in the African Aviation Industry

The competitive dynamics and alliance strategies within the African aviation industry are shaped by a complex interplay of market liberalisation, state involvement, operational capacity, and regional cooperation. While Africa's aviation landscape is home to more than 150 carriers, the competitive environment is uneven, with a handful of dominant players operating alongside struggling national airlines, niche carriers, and emerging low-cost entrants. Within this ecosystem, alliances, both formal and informal, play a critical role in shaping connectivity, route viability, and market reach.

One of the most prominent features of African aviation competition is the dominance of a few pan-African carriers. Ethiopian Airlines, Royal Air Maroc, EgyptAir, Kenya Airways, and to a lesser extent, South African Airways, serve as continental giants. They benefit from relatively large fleets, government backing,

international alliances, and strategic hub airports. Ethiopian Airlines, in particular, has distinguished itself by adopting an aggressive expansion strategy, leveraging a multi-hub approach and forming strategic partnerships or investments in other African carriers (e.g., ASKY in Togo, Malawi Airlines, Zambia Airways). This gives Ethiopia access to multiple markets while shielding it from regulatory and financial risks in host countries.

Kenya Airways, a member of the SkyTeam Alliance, has used global partnerships to expand its footprint, offering code-sharing and interline agreements that link East Africa to Europe, Asia, and North America. However, its competitive edge has been weakened in recent years due to financial struggles and limited domestic market growth. Similarly, South African Airways (SAA), once the continent's largest airline, has faced recurring bailouts, management crises, and route reductions, which have eroded its competitive position despite its historic influence in Southern Africa.

Meanwhile, newer and regionally-focused carriers, such as RwandAir, ASKY Airlines, and Air Côte d'Ivoire, are rising by capitalising on intra-African routes, regional integration efforts, and agile business models. These airlines have strategically focused on underserved markets, building dense regional networks and leveraging partnerships with larger carriers. RwandAir, for instance, has developed an effective hub in Kigali and secured strategic investment and codeshare support from Qatar Airways, which gives it a foothold in both African and Middle Eastern markets.

On the lower end of the competitive spectrum, LCCs like FlySafair, Fastjet, and Jambojet are gaining traction within domestic and short-haul regional markets. These carriers are disrupting legacy players by offering affordable fares, streamlined operations, and technology-driven service models. However, their growth is still constrained by regulatory hurdles, restrictive air service agreements, and infrastructure bottlenecks that hinder regional expansion.

Market concentration remains a challenge. In many countries, national carriers are protected through restrictive bilateral agreements and slot allocations, discouraging foreign or private competitors. In such markets, competition is suppressed, and consumers are left with limited options and higher fares. For example, some Francophone West African states have historically protected their state airlines and granted fuel and ground handling monopolies, creating an uneven playing field for new entrants.

Airline alliances and codeshare agreements offer a workaround to these constraints, allowing carriers to extend their route networks without deploying new aircraft. Through such partnerships, airlines can serve destinations they don't fly to directly and share revenues and risks. Regional alliances like Ethiopian's strategic partnerships or Kenya Airways' links through SkyTeam, help increase interconnectivity. However, the success of these alliances often depends on mutual trust, aligned schedules, shared IT platforms, and operational reliability, which are not always guaranteed in the African context.

The absence of a unified African airline alliance similar to Star Alliance or Oneworld's presence in other regions also highlights the fragmentation in the African market. Though various efforts have been made to foster inter-airline cooperation, political, linguistic, and operational differences between carriers have made deep integration difficult. Furthermore, the implementation of the SAATM has been slow and uneven, limiting the ability of airlines to take full advantage of open skies and compete freely across borders.

In summary, competitive dynamics in African aviation are marked by uneven liberalisation, dominance by a few strong players, and a patchwork of alliance strategies. While legacy carriers continue to hold sway in many markets, newer regional and low-cost airlines are slowly reshaping the landscape. Strategic alliances, particularly those involving investment, codesharing, or regional partnerships will be essential for survival and growth, especially as African markets become more integrated. To foster a truly competitive environment, African governments must reduce regulatory barriers, and open markets, and incentivise collaborative models that prioritise connectivity and service quality over protectionist interests.

Regional Differences in Conduct in African Aviation: An SCP Model Analysis

As described earlier, the SCP model offers a valuable lens to analyse how market structure influences firm conduct, and in turn, determines industry performance. Applying this model to the African aviation sector, we observe distinct regional disparities in airline conduct that stem from underlying structural differences across the continent.

Table 13 below shows the regional differences in market conduct.

Region	Notable Conduct Patterns	Key Carriers
East Africa	Hub-and-spoke (Addis, Nairobi); strategic partnerships; aggressive entry deterrence	Ethiopian Airlines, Kenya Airways
Southern Africa	Mixed liberalisation; government bailouts; slow privatisation	SAA, Airlink, FlySafair
West Africa	Emerging cooperation (AFRAA); weak enforcement; state support	Royal Air Maroc, Air Côte d'Ivoire
North Africa	High state involvement; intercontinental expansion focus	EgyptAir, Royal Air Maroc, Tunisair

Table 13 Regional differences in market conduct; Source: Author´s own analysis

1. West Africa: Conduct driven by fragmented and liberalising market structures

In West Africa, countries like Nigeria, Ghana, and Côte d'Ivoire have increasingly liberalised their airspace under frameworks like SAATM. The market structure is fragmented, with several small to mid-sized carriers (e.g., Air Peace, Africa World Airlines, ASKY) operating both domestic and regional routes. As a result, airline conduct in this region is generally competitive and firms actively engage in price competition, frequent promotional fares, route experimentation, and partnership models such as code-sharing.

However, the conduct is sometimes unstable due to low financial resilience and high exit rates, which reflect poor economies of scale. Firms enter and exit the market rapidly, showing short-term pricing strategies aimed at market penetration rather than long-term sustainability. Despite liberal market access, the lack of deep capital markets, high operating costs, and infrastructure constraints still hamper conduct efficiency.

2. East Africa: Coordinated Conduct in a semi-concentrated market

East Africa presents a different scenario, with a semi-concentrated market structure dominated by major state-owned players such as Ethiopian Airlines, Kenya Airways, and RwandAir. These carriers operate extensive hub-and-spoke models and exhibit coordinated, strategic conduct, including joint ventures, alliances (e.g., Ethiopian's stake in multiple African airlines), and long-term route planning.

Conduct in this region reflects high levels of government involvement and a push for regional aviation leadership. Pricing tends to be more stable, with fewer aggressive fare wars compared to West Africa. These carriers often emphasise service quality, cargo integration, and international expansion rather than just local dominance. However, this strategic behaviour also comes with state support and political shielding, which can distort market forces and limit contestability for private entrants.

3. Southern Africa: Mixed Conduct with market maturity and legacy effects

Southern Africa, particularly South Africa, has a mature aviation market with both legacy carriers (e.g., South African Airways, now partially restructured) and newer low-cost entrants like FlySafair and Lift. The market structure is moderately competitive, especially on domestic routes. Airline conduct here reflects market segmentation, with low-cost carriers aggressively pursuing price-sensitive customers, while others focus on premium services and business travel.

There is a higher degree of brand differentiation, route rationalisation, and customer loyalty strategies (e.g., frequent flyer programmes). Conduct is also influenced by historical overcapacity and state bailouts and some carriers behave conservatively due to past financial shocks. In contrast to other regions, regulatory oversight is more robust, and consumer protection laws influence conduct by promoting transparency and accountability.

4. Central and North Africa: Restrained Conduct in highly regulated or protected markets

In Central Africa, weak infrastructure and limited competition create a highly concentrated market structure, often served by a single or dual carrier system (e.g., Equatorial Congo Airlines, Camair-Co). Here, conduct tends to be inward-focused and defensive, and airlines operate on politically protected routes with minimal innovation or pricing competition. Route expansion is slow, and fare levels are typically high due to a lack of economies of scale.

North Africa, while structurally more developed (e.g., with EgyptAir, Royal Air Maroc, Tunisair), still sees restricted conduct due to state regulation and legacy operating models. Though regional integration efforts exist (e.g., Maghreb cooperation), carriers often behave conservatively, focusing on national hubs and bilateral traffic rights. Conduct in North Africa is heavily influenced by tourism cycles, political stability, and EU competition rules due to geographic proximity to Europe.

The SCP model makes it clear that airline conduct across African regions is not uniform and it varies widely based on market structure, ownership patterns, regulatory maturity, and degree of liberalisation. Where the market is fragmented and liberal (e.g., West Africa), conduct is opportunistic and price-driven. Where the market is concentrated and state-dominated (e.g., East and Central Africa), conduct is more strategic or constrained. Recognising these differences is critical for designing aviation policies that foster sustainable competition, improve service quality, and support regional air connectivity across Africa.

African Airports Competition

As part of addressing the SCP model, this part examines the notion of competition (conduct) within African airports.

African airports do compete, but not with the same intensity, openness, or commercial aggression as airports in more liberalised aviation markets like Europe or North America. Historically, most African airports have operated as natural monopolies within their countries, serving as the sole international gateways without significant domestic competition. However, competition is emerging at the regional level, particularly among major hub airports like Addis Ababa Bole International (Ethiopia), Jomo Kenyatta International (Kenya), and Kigali International (Rwanda), all vying for dominance as transit hubs for connecting intercontinental and intra-African traffic. Unlike the dynamic competition seen in Europe, where airports actively lower fees, offer incentives to airlines and market themselves to capture LCCs and new routes. African airports often face structural constraints such as state ownership, limited liberalisation of air service agreements, non-transparent fee structures, and infrastructure limitations. While some competitive elements exist, such as cargo logistics rivalry and service quality upgrades to attract premium passengers and airline partnerships, broader airport competition remains hampered by regulatory barriers and slower market reforms. As frameworks like the SAATM advance and privatisation models expand,

genuine and more intense competition among African airports is expected to grow, but it currently remains in a developmental stage compared to the highly competitive environments of Europe and North America.

Airport Competition Levels Across African Regions

Airport competition in Africa is evolving but remains fragmented and uneven across the continent. This section provides a detailed analysis of airport competition across different African regions (See Table 14 below). The competition levels are rated on a scale from 0 (no competition) to 10 (high competition). The analysis is based on hub rivalry, private sector participation, infrastructure quality, and service incentives offered to airlines and passengers.

Region	Competition Level (0-10)
East Africa	6
West Africa	5
Southern Africa	7
Central Africa	3
North Africa	6

Table 14 Airport Competition Table; Source: Author´s own analysis

Regional Analysis

Southern Africa (7/10)

Southern Africa stands out as the most competitive region for airports. This is largely attributed to the mature aviation markets in South Africa (Johannesburg, Cape Town, Durban), where private sector participation, investment in infrastructure, and competitive services have flourished. Airports compete fiercely for both international and domestic traffic, often offering better services, cargo facilities, and route incentives.

East Africa (6/10)

East Africa follows closely behind, buoyed by strong regional players like Nairobi's Jomo Kenyatta International Airport and Addis Ababa Bole International Airport. The rivalry between these hubs, along with Kigali's and Entebbe's emerging roles, fosters healthy competition. Regional initiatives like the SAATM are also pushing East African states to improve competitiveness.

North Africa (6/10)

North Africa also scores a moderate competition level. Cairo, Casablanca, and Tunis serve as major hubs, each striving to capture different segments of the African, Middle Eastern, and European markets. Private investments in Egypt and Morocco, as well as improvements in terminal capacity and services, have moderately intensified the competitive environment.

West Africa (5/10)

Competition in West Africa is present but less intense than in East or Southern Africa. Accra and Abidjan lead the region, but infrastructural bottlenecks, fragmented regulatory environments, and partial liberalisation slow down the full potential of competitive airport development.

Central Africa (3/10)

Central Africa records the lowest competition level among the regions. Airports in countries like Congo, Gabon, and Chad suffer from poor infrastructure, limited international connectivity, inefficient management, and low private-sector involvement. These challenges result in airports operating largely in monopolistic conditions with very little competitive pressure to innovate or improve services.

Overall, Southern Africa demonstrates the most robust airport competition, driven by effective private sector engagement and strategic route development. East and North Africa are emerging as moderately competitive regions, while West Africa is gradually improving. Central Africa remains the most underdeveloped and least competitive, requiring urgent infrastructural and regulatory reforms to unlock its aviation potential.

Market Performance Analysis

Airline performance in Africa varies significantly across regions due to differences in market liberalisation, infrastructure, fleet size, economic conditions, and government support. This section assesses performance based on commonly accepted KPIs**,** drawing examples from five major regions: North Africa, West Africa, Central Africa, East Africa, and Southern Africa**.**

KPIs are essential metrics used to evaluate the efficiency, profitability, and service quality of airlines. Table 15 below summarises the main KPIs commonly applied in airline performance assessments, particularly within the context of African aviation markets.

KPI	Description
Load Factor (%)	The percentage of available seat kilometres (ASK) that are actually filled by revenue-paying passengers. Indicates efficiency in seat utilisation.

KPI	Description
On-Time Performance (OTP %)	The percentage of flights that depart or arrive within 15 minutes of their scheduled time. Reflects punctuality and operational reliability.
Revenue per Available Seat Kilometre (RASK)	Measures of how much revenue is generated per seat per kilometre. Indicates pricing power and yield management.
Cost per Available Seat Kilometre (CASK)	Represents the cost incurred per seat per kilometre flown. Useful for benchmarking cost efficiency.
Net Profit Margin (%)	Indicates how much of the airline's revenue is retained as profit after expenses. Shows financial health.
Fleet Utilisation (hours/day)	An average number of hours each aircraft is in use daily. Higher utilisation reflects operational efficiency.
Route Network Coverage	Number of destinations served and geographic diversity. Shows the airline's market reach.
Break-even Load Factor	Minimum load factor needed for the airline to cover its operating costs. Indicates the viability of the business model.

Table 15 KPIs Aircraft Cargo Performance; Source: Author

Market performance represents the economic outcomes resulting from the structure and conduct of the market. It encompasses various aspects, such as pricing efficiency, flexibility in adapting to changing situations, profitability, resource utilisation efficiency, growth, and other indicators of economic success. Performance indicators can include measures such as net profits, return on owner's equity, production efficiency, allocation of resources, growth rates, RPKs, ASKs, Load Factor, market share, etc. These measures provide insights into the economic effectiveness and outcomes of firms operating within a particular market. More details on the characteristics of these metrics are documented below.

Since, the airline industry has its own peculiarities, it is important to bring the reader into perspective by explaining some of the most significant performance measure metrics applicable to the airline industry.

Admittedly, no single measure can provide a clear performance target or focus attention on the critical areas of a business. Besides, multiple criteria which include indicators of key success factors are needed to assess an organisation. Considering the fact that there is a lack of consensus with regard to the relevant variables that should be taken into account as measurement metrics when it comes to measuring the overall performance of an airline, this study employs the following performance measurement variables:

Proposition 2: Herfindahl-Hirschman Index (HHI)

In order to capture variations in Africa´s airline markets IATA´s World Air Transport Statistics (WATS) was used with a regional focus on the African market. The following section gives a snapshot perspective of the industry concentration and airline competition performance across the African market. The Herfindahl-Hirschman Index (HHI) is a commonly used measure of market concentration. It is calculated by summing the squares of the market shares of all firms in an industry. In the context of African airlines, the HHI provides insight into the level of competition or dominance within the continental aviation sector.

The WATS is a powerful tool because it offers an unparalleled, data-rich snapshot of the global aviation industry, built on standardised, verified inputs directly from IATA's member airlines. Its strength lies in its scope, consistency, and credibility; spanning over 250 airlines and representing nearly 90% of total scheduled international air traffic, WATS delivers comprehensive data on passenger and cargo traffic, financial performance, fleet composition, employment, and environmental metrics. This makes it an indispensable resource for benchmarking, policy-making, market analysis, and strategic forecasting. For emerging markets like Africa, WATS helps identify growth gaps, connectivity deficits, and evolving trade patterns, while globally, it serves as a trusted foundation for industry reports, economic impact studies, and regulatory frameworks. Its standardised methodology ensures that the data is not only vast but also comparable across regions and over time, making WATS a uniquely powerful instrument for understanding aviation trends and guiding both public and private decision-making in the sector.

The Role of the HHI in Evaluating Competition in African Aviation

The African aviation sector is undergoing a period of dynamic change, driven by regulatory reforms, strategic alliances, and ambitious initiatives like the AfCFTA and the SAATM. In this evolving environment, accurately assessing market competition is crucial to ensure that liberalisation efforts do not inadvertently create monopolies or stifle new entrants. One of the most effective tools for measuring market concentration and guiding policy, regulatory, and investment decisions is the HHI. Through the systematic application of HHI, stakeholders can gain critical insights into the structure and competitive dynamics of African aviation markets.

The HHI plays a critical role in the evaluation of market concentration within the African aviation industry, offering a quantitative framework to assess the distribution of market power among competing airlines. As a widely accepted economic measure, HHI calculates the sum of the squares of the market shares of all firms within a market, providing a clear indication of the degree of competition or dominance present. In the African context, where markets often vary dramatically between regions and countries, the application of HHI is particularly valuable. A high HHI score indicates significant market concentration, where a small number of carriers, such as Ethiopian Airlines, Kenya Airways, or EgyptAir, may exert disproportionate influence, potentially stifling competition and innovation. Conversely, a lower HHI suggests a more

fragmented and competitive market landscape, which could encourage service improvements, lower fares, and greater connectivity. Regulatory bodies and competition authorities rely on HHI analyses to monitor the implications of mergers, strategic alliances, or government interventions on market health, ensuring that competition remains robust and that consumer interests are safeguarded. Additionally, for investors and new entrants, HHI offers strategic insights into market saturation and potential entry points. In alignment with continental initiatives like the SAATM, understanding market concentration through HHI supports efforts to liberalise airspace, promote fair competition, and enhance intra-African connectivity. Therefore, HHI not only facilitates regulatory oversight and investment decisions but also serves as a foundation for broader policy development aimed at achieving a more integrated, efficient, and competitive African aviation sector.

In practical terms, the HHI serves as a critical decision-making tool for evaluating the competitive impacts of mergers, acquisitions, and the establishment of new airlines within the African aviation market. When two airlines propose a merger or strategic alliance, competition authorities can calculate the pre- and post-merger HHI to determine the likely effects on market concentration. A significant increase in the HHI post-merger, particularly in already concentrated markets, can trigger regulatory scrutiny or lead to the imposition of conditions to preserve competition. For instance, a merger between two dominant regional carriers could create a monopolistic environment, reducing consumer choice, raising fares, and hindering the growth of smaller competitors. Conversely, in fragmented or underserved markets, an increase in HHI resulting from consolidation might be viewed more favourably if it leads to enhanced efficiency, better connectivity, and stronger financial sustainability. Similarly, entrepreneurs and investors planning to launch new airlines can use HHI analysis to identify regions where market concentration is low, signalling opportunities for entry and growth without immediately facing dominant incumbents. In the African aviation context, where market imbalances often reflect both historical state ownership and emerging private-sector dynamism, applying HHI systematically ensures that market developments align with broader goals of liberalisation, economic integration, and sustainable industry growth. Thus, HHI not only evaluates the current state of competition but actively shapes strategic decisions that influence the future structure and performance of African aviation.

The following approach was adopted to assess HHI by examining the following parameters:

- *Airline performance analysis variables*
- *Cabin class analysis*
- *Route level analysis*

Airline performance analysis

RPKs serve as a critical indicator of airline passenger traffic demand, combining passenger volumes and distances travelled. Monitoring RPK allows airlines to assess and benchmark their market share and

growth relative to competitors, offering insights into passenger preferences, network effectiveness, and market presence. RPK analysis reveals competitive positioning, highlights shift in consumer demand and identifies opportunities for strategic expansion or network optimisation within the highly competitive aviation landscape.

From January 2014 to December 2024, the airline industry, as depicted by RPK performance, exhibited significant fluctuations, particularly influenced by the global disruption around 2020. Airlines demonstrated diverse recovery patterns post-pandemic, reflecting their varied strategies and network strengths.

The overall RPK market share from January 2014 to December 2024 is heavily concentrated, signifying strong industry dominance (Figure 13):

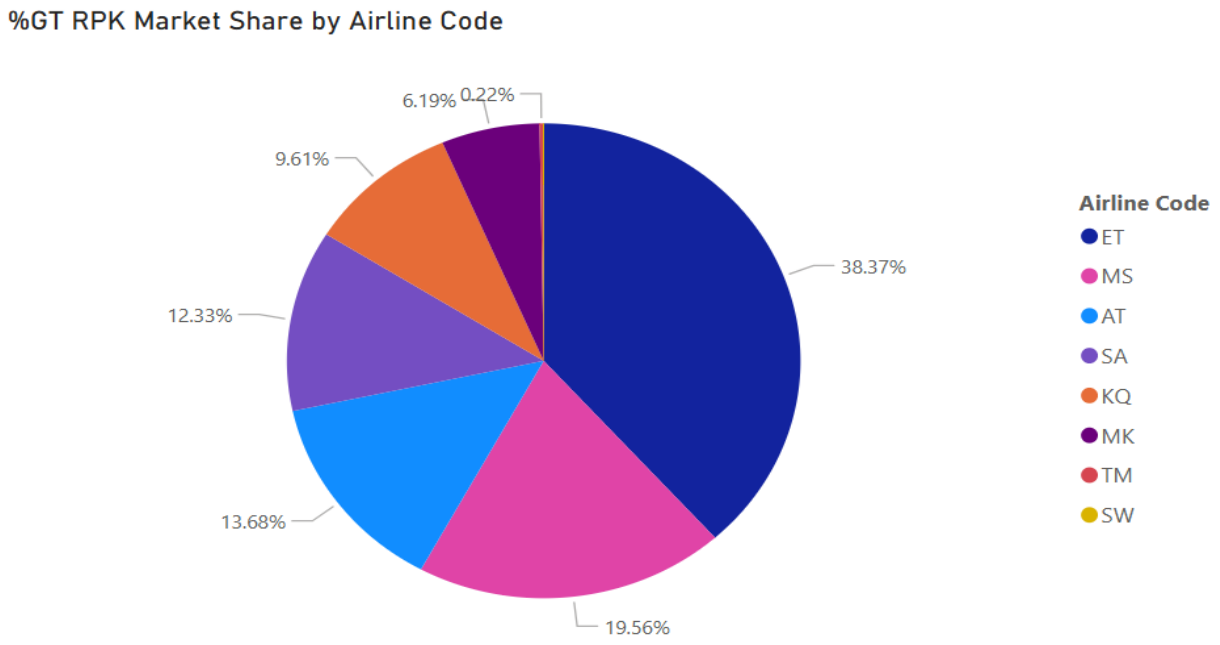


Figure 13 Percentage of RPKs by Airline code; Source: Author analysis based on WATS, 2024

Figure 13 highlights a highly uneven RPK distribution, confirming that Ethiopian Airlines is the dominant player, while others are clustered in the mid- to lower-tier performance range. This supports the earlier HHI analysis of moderate to high market concentration in African aviation.

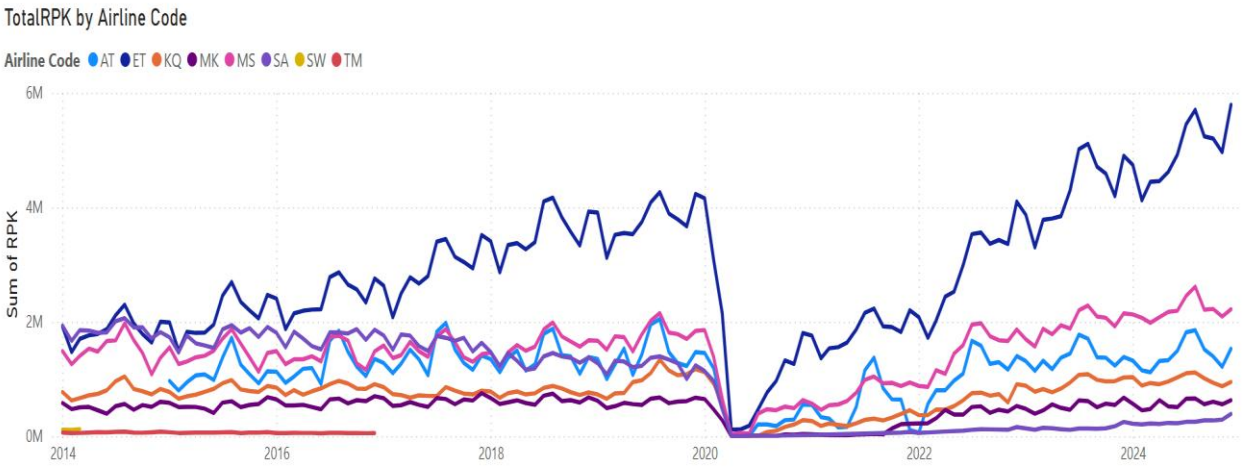


Figure 14 RPKs for major African carriers from 2014 – 2024; Source: Author analysis based on WATS, 2024

Figure 14 of RPKs across African airlines from 2014 to 2024 provides visual confirmation of a moderately to highly concentrated market structure, based on the HHI analysis. The dominant position of Ethiopian Airlines (ET) is unmistakable with its RPK trajectory significantly higher than that of all other carriers throughout the observed period, including both pre-and post-pandemic phases. This sustained dominance contributes disproportionately to the HHI score (~2,264), signalling that a single airline captures a large share of total market activity. The steep post-COVID-19 recovery by ET further widens the gap, reinforcing its role as the continent's primary hub carrier. In contrast, airlines like Kenya Airways (KQ), EgyptAir (MS), and Royal Air Maroc (AT) show modest but stable growth, indicating their roles as regional contenders, while the rest—including South African Airways (SA), RwandAir (WB), and Air Zimbabwe (SW)—remain in the lower band, contributing minimally to total RPK. This asymmetrical market share distribution, as visualized in the graph, affirms that African aviation is far from perfectly competitive. Rather, it reflects a structure where market power is concentrated in the hands of a few state-backed or regionally integrated players, consistent with the HHI findings and raising important implications for competition policy, market liberalisation under SAATM, and the sustainability of smaller carriers.

The RPK-based HHI analysis clearly demonstrates industry consolidation over the decade. From 2014 to early 2020, the market displayed relatively moderate concentration (HHI ~0.2–0.3).

The pandemic period (2020–2021) saw a sharp spike in industry concentration, with the HHI peaking at approximately 0.6, reflecting drastically reduced competition due to airline capacity reductions and route suspensions.

Post-2021, the HHI gradually decreased but remained elevated compared to pre-pandemic levels, stabilising around 0.3–0.35 by 2024. This indicates that despite the recovery, the market remained more concentrated than pre-pandemic levels.

The RPK HHI chart (Figure 15) from 2014 to 2024 reveals a clear trend of increasing market concentration in Africa's airline industry. From 2014 to 2019, the HHI remained relatively stable and low (around 0.2), suggesting a competitive and fairly fragmented market. However, there was a sharp spike in 2020, reaching over 0.6, primarily due to the COVID-19 pandemic, which disrupted operations and left only a few dominant carriers active, temporarily inflating market concentration. After this shock, the index stabilises at a higher baseline (~0.3–0.35), reflecting the post-pandemic dominance of fewer carriers, particularly Ethiopian Airlines. This sustained rise in HHI indicates that African aviation has become more concentrated, with long-term implications for competition, consumer choice, and policy direction under initiatives like SAATM.

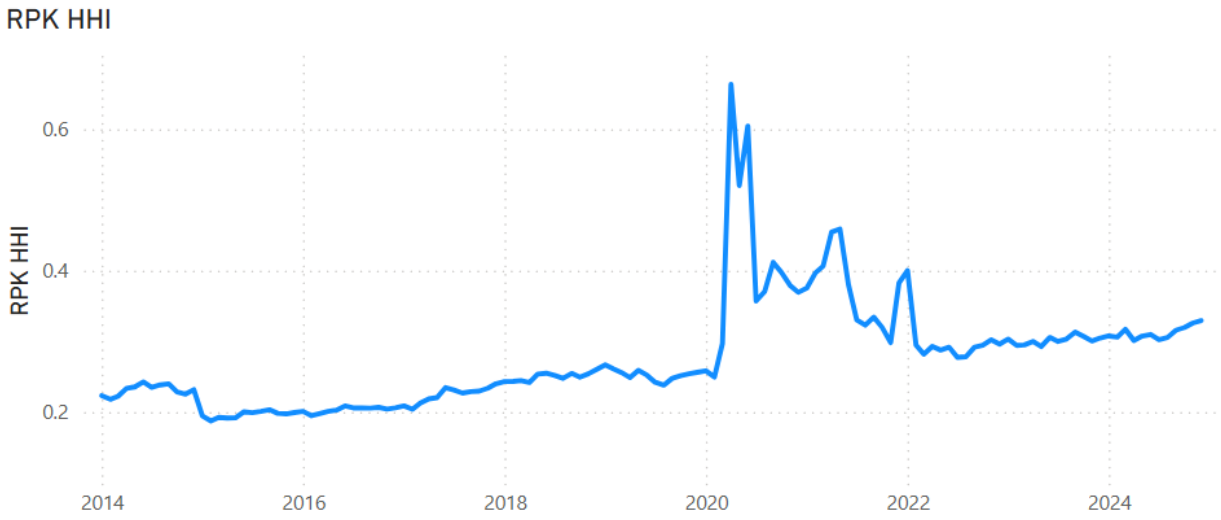


Figure 15 RPK HHI market concentration trend; Source: Author analysis based on WATS, 2024

Throughout the 10-year period under review, Ethiopian Airlines (ET) consistently maintained the highest total RPK, establishing clear market dominance from early 2014 and progressively widening its lead, particularly after 2021. By December 2024, ET had achieved approximately 6 billion RPK, significantly outperforming all other competitors in the market.

EgyptAir (MS) and Royal Air Maroc (AT) consistently vied for second and third positions, demonstrating steady growth trajectories from 2014 up until the sharp decline observed in 2020. This downturn, largely attributed to the COVID-19 pandemic, was followed by a gradual and steady recovery for both airlines. By

the end of 2024, both carriers had stabilised at approximately 2 billion RPK, maintaining their relative standings in the market hierarchy.

Kenya Airways (KQ) and South African Airways (SA) occupied the mid-tier segment, exhibiting moderate growth trends prior to 2020. However, both airlines experienced notably weaker post-pandemic recoveries, with RPK figures remaining relatively flat and persistently below the 1 billion marks through 2024.

Meanwhile, Air Mauritius (MK), Air Seychelles (HM), and Air Namibia (SW) consistently reported low RPK levels throughout the entire period. These carriers maintained marginal market shares and demonstrated limited growth, with their recovery trajectories post-2020 remaining particularly constrained.

Overall, the data underscores a highly concentrated market structure, where a few dominant airlines captured the majority of traffic, while smaller players struggled to expand their market presence meaningfully.

Ethiopian Airlines (ET) emerged as the undisputed market leader, commanding approximately 38.37% of the total RPK. This substantial market share underscores ET's dominant position and strategic advantage within the industry. EgyptAir (MS) followed as the second-largest carrier, accounting for 19.56% of the market— a significant, albeit markedly smaller, share compared to Ethiopian Airlines. Royal Air Maroc (AT) maintained a solid presence with a market share of 13.68%, clearly positioning itself as the third-largest operator within the region. Collectively, a group of smaller airlines, including Kenya Airways (KQ), South African Airways (SA), Air Mauritius (MK), LAM Mozambique Airlines (TM), and Air Namibia (SW), contributed approximately 28.39% to the overall market. Within this group, South African Airways (SA) represented a notable 12.33% share on its own. The concentration of market share among a few major airlines highlights a competitive landscape characterised by limited rivalry at the top tier, suggesting significant barriers to entry and a strong consolidation of market power among leading carriers.

The analysis presented above, of RPK trends over the past decade reveals a highly concentrated and hierarchical market structure within the African aviation sector. Ethiopian Airlines (ET) has firmly established itself as the dominant carrier, significantly outpacing its competitors, particularly after 2021. EgyptAir (MS) and Royal Air Maroc (AT) have maintained stable, competitive positions, though at a substantial distance from ET. Mid-tier airlines such as Kenya Airways (KQ) and South African Airways (SA) exhibited resilience prior to 2020 but faced considerable challenges in post-pandemic recovery. Smaller carriers, including Air Mauritius (MK), Air Seychelles (HM), and Air Namibia (SW), have remained marginal players with limited growth prospects. These trends suggest that market leadership is likely to remain concentrated among a few major airlines, barring any significant shifts in strategic positioning, investment, or external market dynamics.

In Figure 16, South African Airways (SA) maintained a dominant position in the domestic market over the observed 10-year period, securing a substantial 40.46% share, despite exhibiting relatively weaker performance in the international segment. Ethiopian Airlines (ET) also demonstrated strong domestic capabilities, holding an 18.28% market share, while EgyptAir (MS) followed closely with 16.46%, highlighting both carriers diversified operational strengths within their respective home markets. Conversely, in the international market, Ethiopian Airlines (ET) emerged as the clear leader with a commanding 39.30% share, underscoring its extensive international connectivity and dominance in long-haul networks. EgyptAir (MS) retained a strong position internationally as well, with a 19.70% share, while Royal Air Maroc (AT) and Kenya Airways (KQ) maintained notable international presence with market shares of 13.75% and 11.04%, respectively. These figures collectively illustrate the contrasting dynamics between domestic and international market strengths among leading African airlines, with Ethiopian Airlines notably excelling on the global stage.

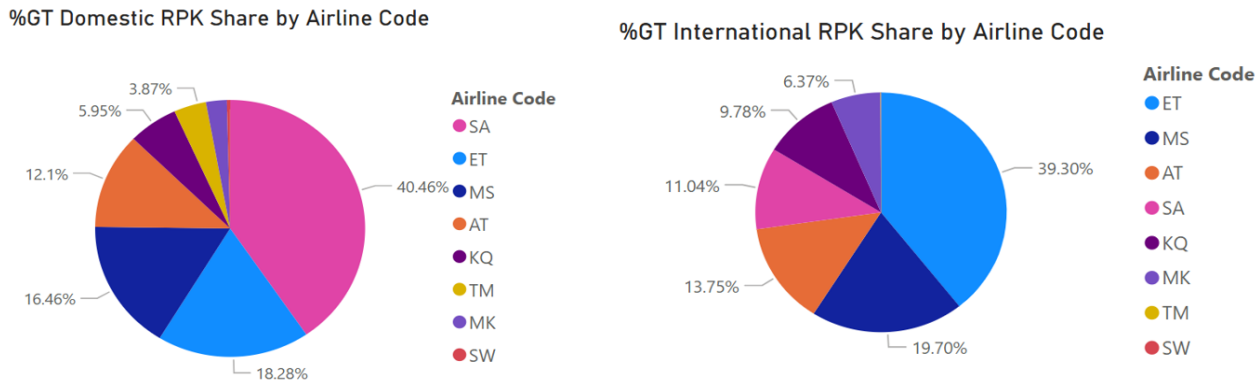


Figure 16 Domestic vs International RPK Share by African Airlines from 2014-2024; Source: Author analysis based on WATS, 2024

In summary, the analysis highlights a clear divergence between domestic and international market dynamics among leading African airlines. South African Airways (SA) remains the dominant force within the domestic market, while Ethiopian Airlines (ET) and EgyptAir (MS) demonstrate strong, balanced operations across both domestic and international segments. However, it is in the international arena where Ethiopian Airlines distinctly outperforms its competitors, leveraging its expansive network and strategic positioning to command a leading market share. The strength of Royal Air Maroc (AT) and Kenya Airways (KQ) in international markets further illustrates the competitive intensity beyond domestic borders. These patterns suggest that long-term success for African carriers increasingly depends on their ability to expand and strengthen international networks while maintaining robust domestic operations.

Ethiopian Airlines' dominant position in both domestic and international markets highlight its exceptional strategic resilience and operational foresight. Its ability to not only recover but surpass pre-pandemic RPK

levels by 2024 underscores aggressive capacity restoration and effective route planning. In contrast, EgyptAir and Royal Air Maroc, while exhibiting commendable resilience and sustained market relevance, have not posed a substantial challenge to Ethiopian Airlines' supremacy, indicating a competitive gap in scale and reach. South African Airways presents a contrasting profile, maintaining a strong domestic presence yet struggling internationally which reflects a sign of strategic imbalance likely rooted in post-pandemic fleet and financial constraints. Meanwhile, smaller carriers such as Air Mauritius and Air Namibia show marginal RPK growth, reflecting limited recovery capacities and highlighting the structural and operational limitations these airlines face in a highly competitive and capital-intensive industry.

The comparative analysis of RPK market share from 2014 to 2024 clearly highlights significant shifts within the airline's competitive landscape (Figure 17). Ethiopian Airlines (ET) notably expanded its dominance, increasing from 28,08% in 2014 to 47.84% in 2024, reinforcing its position as the clear market leader. This significant growth underlines ET's successful strategic network expansion, fleet growth, and competitive advantage in both passenger demand capture and capacity deployment over the decade.

The decade-long market share trends among key African airlines underscore a landscape marked by both strategic gains and severe setbacks. EgyptAir (MS) exhibited relative stability, with a marginal decline from 22.73% in 2014 to 21.19% in 2024, signalling enduring resilience but also mounting competition, particularly from Ethiopian Airlines. Royal Air Maroc (AT) demonstrated notable growth, ascending to 13.67% and solidifying its third-place position, likely driven by targeted expansion and market diversification strategies. Kenya Airways (KQ) maintained a consistent yet modest trajectory, with a slight dip to 9.4%, reflecting a steady presence without significant scale advancement. South African Airways (SA) faced a striking collapse in market share, plummeting from 28.10% to just 2.44%, a clear indication of sustained financial and operational crises. Meanwhile, smaller carriers like Air Mauritius (MK) experienced limited gains, with market share decreasing to 5.46%, suggesting constrained growth capacity in the face of intensified regional competition. Overall, the data reveals a consolidating market where strategic agility and investment in capacity are key to maintaining or enhancing market position.

Overall, the decade reflects increased market consolidation with Ethiopian Airlines solidifying its dominance, alongside notable strategic repositioning from Royal Air Maroc, and significant competitive pressures affecting historically strong airlines such as South African Airways. This analysis provides key insights into competitive dynamics, strategic positioning, and market evolution critical for airline strategy formulation and market forecasting.

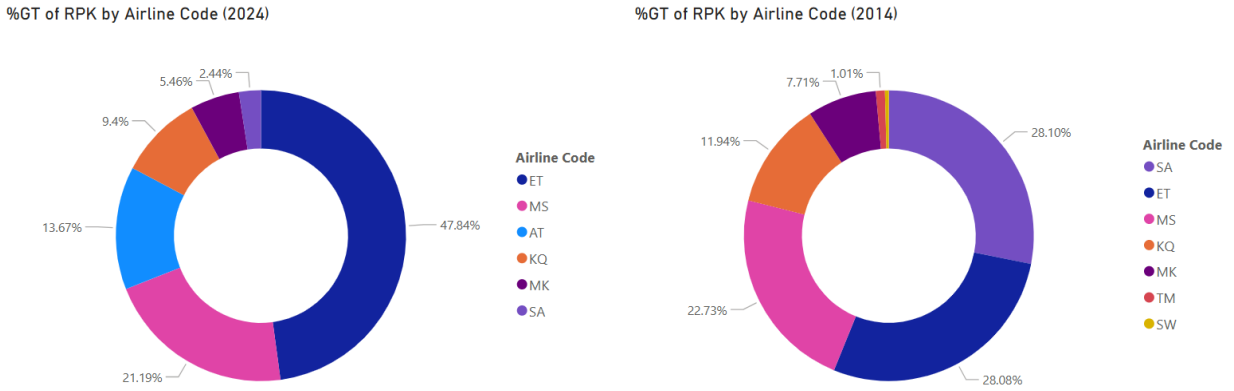


Figure 17 Total RPKs by airline from 2014-2024; Source: Author analysis based on WATS, 2024

Available Seat Kilometres

ASKs (Available Seat Kilometres) measure an airline's passenger-carrying capacity by multiplying the number of available seats by the distance flown. ASK is crucial for assessing competitive dynamics as it indicates an airline's scale, route network strength, and capacity deployment strategy. Comparing ASK across airlines allows stakeholders to evaluate competitive positioning, fleet utilisation strategies, and the effectiveness of airlines in adapting their operational capacity to changing market conditions, providing key insights into competitive intensity and strategic opportunities within the industry.

The two pie charts (Figure 17) above, showing % of total RPKs by airline in 2014 and 2024, clearly depict the evolution of market concentration and competitive dynamics in Africa's aviation sector over the decade. This transition supports the earlier Herfindahl-Hirschman Index (HHI) analysis and reinforces the growing dominance of a few key players, especially Ethiopian Airlines (ET).

The analysis of Available Seat Kilometres reveals a highly concentrated market dominated by a few key players. Ethiopian Airlines emerges as the clear leader, commanding 39.28% of total ASK, a reflection of its expansive route network, efficient fleet utilisation, and strategic investment in international connectivity. EgyptAir secures the second position with 19.83%, indicating strong capacity deployment, particularly in regional and intercontinental markets. Royal Air Maroc follows with 13.59%, maintaining a solid footprint but with a comparatively moderate scale. Meanwhile, South African Airways (12.07%) and Kenya Airways (9.37%) demonstrate constrained capacity growth, which may stem from financial limitations, restructuring efforts, or restricted network expansion. Collectively, all remaining carriers contribute less than 6% of total ASK, underscoring the dominance of the top three airlines and pointing to significant market concentration within the African aviation sector.

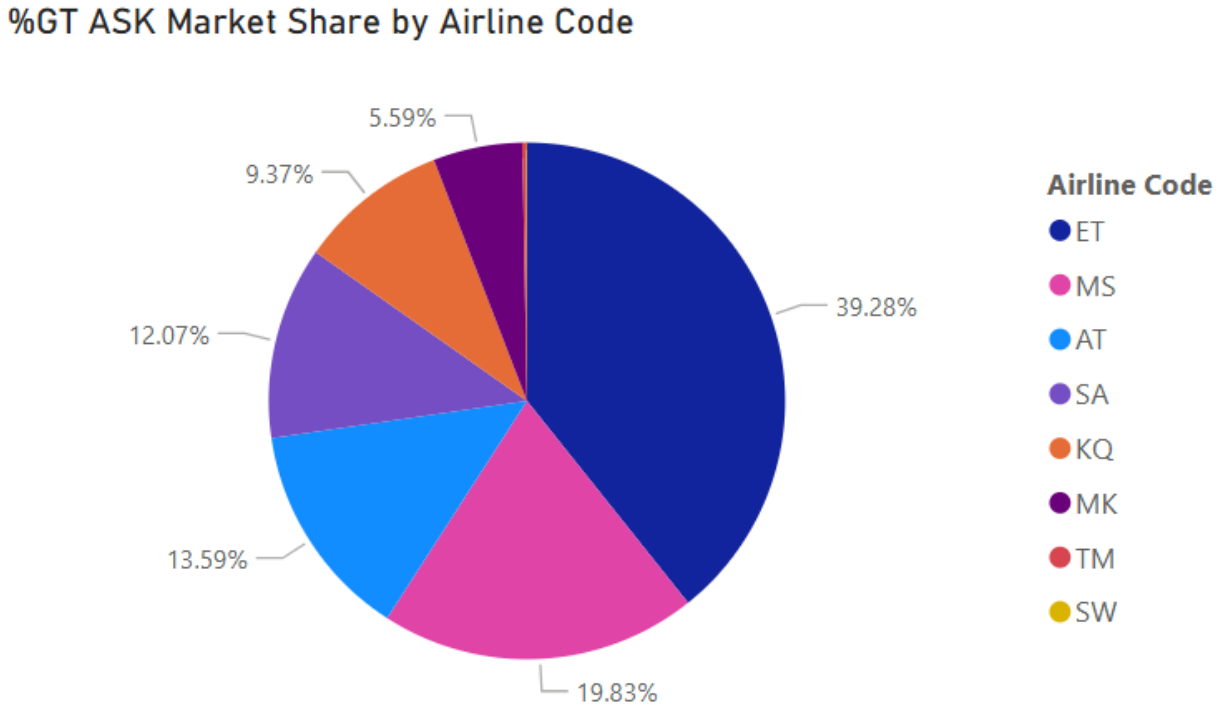


Figure 18 ASK Market share by airline code 2014-2024; Source: Author analysis based on WATS, 2024

According to Figure 18, Ethiopian Airlines (ET) consistently delivered the highest ASK values, prominently expanding from about 3 billion ASK in early 2014 to approximately 7,5 billion ASK by 2024, showing remarkable growth post-2021 recovery. Its rapid rebound post-2020 reflects a robust and efficient capacity restoration strategy.

EgyptAir (MS) and Royal Air Maroc (AT) maintained moderate and relatively stable ASK capacities throughout the observed period, with EgyptAir steadily positioned around 3 billion ASK, and Royal Air Maroc around 2.5 billion ASK by 2024. Both airlines demonstrated consistent recovery patterns post-pandemic, although with limited growth relative to ET.

Kenya Airways (KQ) and South African Airways (SA) presented relatively flat ASK trends, reflecting limited growth or strategic capacity constraints. Both airlines stabilised around 1 billion ASK throughout the decade, experiencing only modest fluctuations and slower recovery post-2020.

Smaller airlines such as Air Mauritius (MK), LAM Mozambique (TM), and Air Namibia (SW) remained at consistently low ASK levels (well below 1 billion ASK), reflecting niche market positioning and limited strategic investment or capacity expansion.

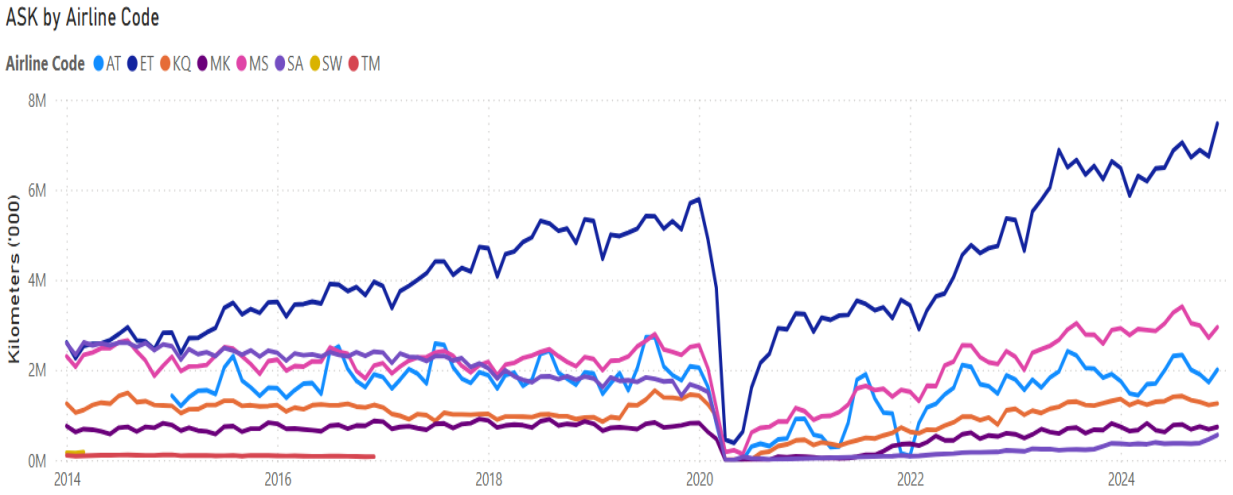


Figure 19 ASK by Airline code from 2014-2024; Source: Author analysis based on WATS, 2024

The ASK time series graph (Figure 19) illustrates the sharp consolidation of capacity in Africa's aviation market, which is particularly evident post-2020. Using the HHI as a measure of market concentration, it's clear that Ethiopian Airlines' (ET) rapid and dominant recovery, marked by a steep and sustained rise in ASK and has significantly increased market concentration. With EgyptAir (MS) and Royal Air Maroc (AT) holding stable but smaller shares, and South African Airways (SA) exhibiting decline, the HHI would reflect a moderate to high concentration level. This suggests limited competitive balance, with a few airlines, particularly ET, commanding a disproportionate share of total capacity which is an important consideration for regulators and policymakers aiming to foster a more competitive and resilient African aviation market

ASK-based HHI analysis illustrates moderate market concentration before 2020, consistently near 0.2. A sharp spike to around 0.6 occurred during the pandemic, reflecting significantly reduced operational capacities and pronounced market consolidation.

Post-pandemic recovery stabilised HHI around 0.3–0.35, slightly higher than pre-pandemic levels, driven primarily by Ethiopian Airlines' strong recovery and market presence expansion. The gradual increase post-2022 signals enduring moderate concentration with incremental growth in market dominance by leading airlines.

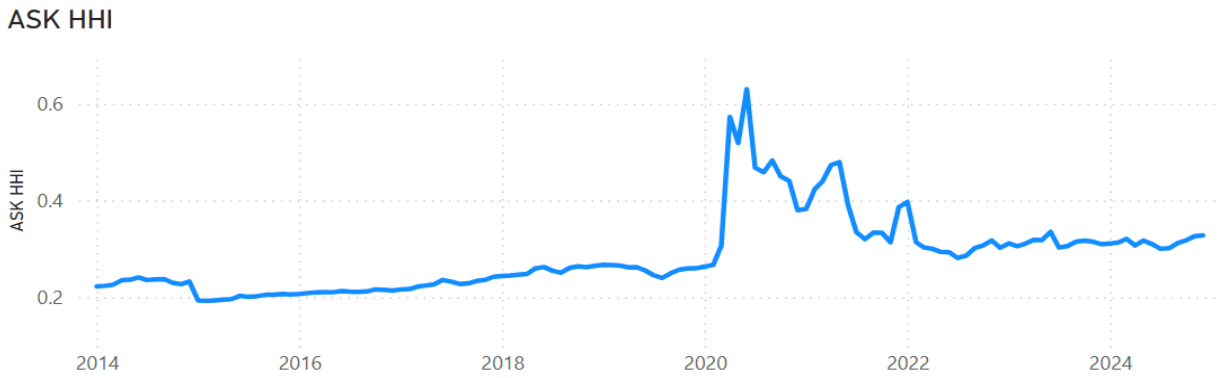


Figure 20 ASK by Airline code from 2014-2024; Source: Author analysis based based on WATS, 2024

The ASK HHI Figure 20 reflects a clear trend of increasing market concentration in African aviation, particularly following the onset of the COVID-19 pandemic in 2020. The sharp spike in HHI during 2020, peaking above 0.6, indicates that a few dominant carriers, most notably Ethiopian Airlines retained or rapidly regained capacity while others scaled down significantly or ceased operations. Although the HHI declined slightly in the years that followed, it remains elevated compared to pre-2020 levels, signalling a sustained reduction in competitive balance. This trend suggests that the African aviation market has become more consolidated, with fewer carriers controlling a larger share of available seat capacity.

The ASK–RPK comparison (Figure 21) highlights consistent industry patterns where ASK consistently exceeds RPK, indicating spare capacity. This gap was narrow pre-pandemic (reflecting higher efficiency and load factors), widened significantly during 2020 due to demand collapse, and gradually reduced post-2021. By 2024, both metrics approach pre-pandemic efficiency levels, suggesting strong demand recovery, yet airlines are cautiously managing capacity relative to demand.

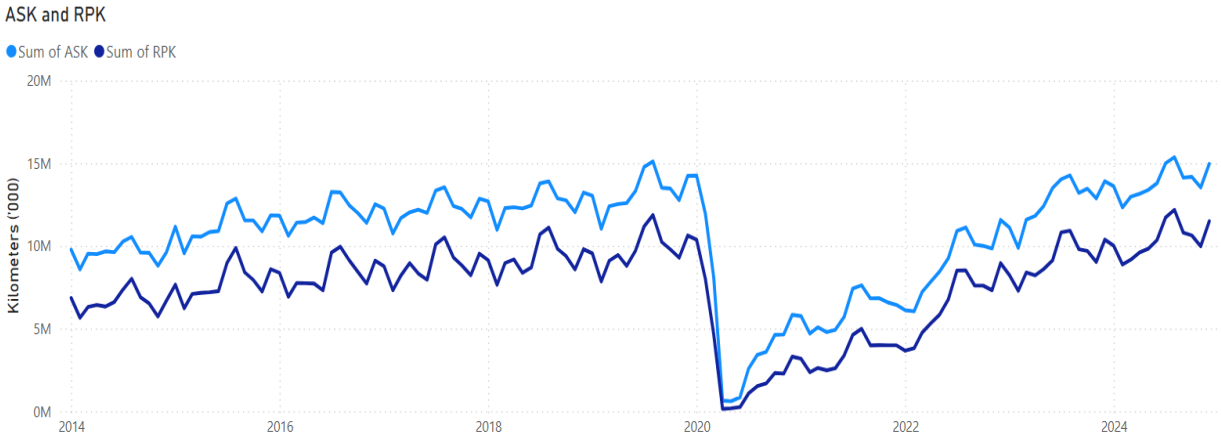


Figure 21 ASK and RPK comparison from 2014-2024; Source: Author analysis based on WATS, 2024

The comparative analysis of ASK and RPK from 2014 to 2024 (Figure 21) reveals key trends in the African aviation market. Prior to 2020, both metrics showed steady growth, with ASK consistently exceeding RPK, which reflects a typical pattern indicating adequate spare capacity to accommodate peak demand. However, the onset of the COVID-19 pandemic in 2020 led to a sharp and simultaneous collapse in both ASK and RPK, reflecting widespread flight suspensions and suppressed passenger movement. Notably, ASK dropped more sharply, closing the gap between supply and demand. In the post-pandemic recovery phase, ASK rebounded more aggressively than RPK, highlighting a mismatch between capacity restoration and actual passenger demand. This divergence suggests a phase of overcapacity, where airlines operated more flights than demand warranted, potentially impacting profitability and efficiency. The trend emphasises the importance of aligning capacity planning with realistic demand forecasts in the evolving African aviation landscape.

Key Performance Indicators (KPIs) for Aircraft Cargo Performance

In the African aviation sector, aircraft cargo operations are becoming increasingly vital to airline revenue streams, especially in light of global supply chain disruptions and the slow recovery of passenger traffic in some regions. To evaluate the efficiency and effectiveness of cargo performance, airlines and regulators rely on several KPIs. Among the most important is the FLF**,** which measures how much of an aircraft's available cargo capacity is actually utilised; in Africa, this varies widely due to route imbalances and infrastructure constraints. RTK and ATK help assess how much cargo is moved versus how much could have been moved, offering insight into capacity management. Another critical metric is Cargo Yield**,** which reflects the revenue generated per tonne-kilometre and is influenced by demand fluctuations, fuel costs, and global freight rates. African carriers like Ethiopian Cargo & Logistics have demonstrated leadership in this area, leveraging dedicated freighters, hub-and-spoke models, and strategic partnerships to maximize yield and utilisation. Meanwhile, Cargo Revenue as a Share of Total Airline Revenue has grown, particularly for airlines that adapted quickly during the COVID-19 pandemic by shifting capacity from passenger to cargo operations. However**,** On-Time Delivery Rates remain inconsistent across the continent due to weak ground handling systems, customs inefficiencies, and outdated infrastructure in many secondary airports. For African airlines aiming to become competitive global logistics players, optimising KPIs like freighter utilisation**,** tonne-kilometres per flight hour, and unit cost per tonne-kilometre are essential. Strengthening these indicators not only improves operational performance but also positions African carriers to capitalise on regional trade growth under the AfCFTA**.**

Table 16 outlines the essential KPIs used to evaluate the performance of aircraft cargo operations. These indicators are particularly relevant for assessing cargo efficiency, profitability, and operational effectiveness within the African aviation sector.

KPI	Description
Freight Load Factor (FLF)	The ratio of revenue tonne-kilometres (RTK) to available tonne-kilometres (ATK). Measures cargo capacity utilisation.
Revenue Tonne-Kilometres (RTK)	Cargo weight transported (in tonnes) multiplied by the distance flown. Indicates actual freight movement.
Available Tonne-Kilometres (ATK)	Total cargo capacity (in tonnes) multiplied by the distance flown. Shows available capacity.
Cargo Yield (per RTK)	Revenue generated per tonne-kilometre. Reflects the profitability of cargo operations.
Cargo Revenue as % of Total Revenue	It indicates the proportion of total airline revenue that comes from cargo services.
On-Time Delivery Rate (%)	Percentage of shipments delivered on or before the scheduled delivery time. Reflects service reliability.
Tonne Kilometres per Flight Hour	Evaluates freight efficiency by measuring tonne-kilometres transported per hour of flight.
Freighter Utilisation (hours/day)	Average operational hours per day for dedicated cargo aircraft. Higher utilisation indicates better efficiency.
Unit Cost per Tonne-Kilometre (CASK-Cargo)	The cost incurred to transport one tonne of cargo per kilometre. Important for cost control.

Table 16 KPIs Aircraft Cargo Performance; Source: Author´s own compilation

Air cargo has become an essential component of Africa's aviation and trade ecosystem, driven by global supply chain shifts and the continent's growing logistics needs. This analysis explores the competitive landscape, market dynamics, fleet structure, and operational strategies that define cargo competition within Africa.

How Cargo Operators Compete in Africa

Airlines compete based on network reach, pricing, speed, reliability, and specialisation. Major carriers like Ethiopian Airlines Cargo leverage vast networks and partnerships, while smaller airlines like Astral Aviation focus on niche markets. Pricing flexibility, cold chain handling, and on-time delivery are key differentiators in the competitive landscape.

Cargo operators in Africa compete through a complex interplay of pricing strategies, network coverage, service reliability, fleet capabilities, and strategic partnerships. Given the continent's vast geography, underdeveloped road infrastructure, and growing demand for high-value and time-sensitive goods, air cargo presents a crucial logistics solution. Operators such as Ethiopian Cargo, Astral Aviation, and Kenya Airways Cargo dominate the market by offering hub-and-spoke models, efficient handling at central hubs (e.g., Addis Ababa and Nairobi), and access to international networks. Competition is also influenced by the ability to secure bilateral rights and overflight permissions, especially on popular trade corridors like Africa, Asia and intra-African routes. Additionally, technological advancements, like digital cargo booking platforms and real-time tracking, are being used to improve operational transparency and customer service, creating further competitive advantages. Smaller and emerging operators often compete by targeting niche markets, such as humanitarian aid logistics or pharmaceutical transport, where specialised equipment and regulatory compliance give them a foothold. However, intense competition is hampered in some regions by state monopolies, limited ground infrastructure, and bureaucratic bottlenecks, which restrict market entry and reduce efficiency. Overall, the African cargo landscape is a mix of consolidation around strong regional players and growing opportunities for specialised operators, especially as trade under the AfCFTA expands.

Fleet Structure and Capacity

The fleet structure is critical to cargo competitiveness. African carriers operate a mix of dedicated freighters, converted aircraft, and belly-hold capacity on passenger planes. Ethiopian Airlines leads with the largest freighter fleet, while others like Astral Aviation and EgyptAir Cargo operate diverse aircraft to serve regional and intercontinental routes.

As shown in Table 17, Ethiopian Airlines Cargo stands as the leading airfreight cargo operator in Africa, leveraging a modern fleet that includes Boeing 777-200LRFs, 767-300Fs, and 737-800Fs to serve over 50 dedicated cargo destinations globally (Table 17). Its dominance is supported by strategic investments in fleet expansion and state-of-the-art cargo infrastructure at its Addis Ababa hub. Astral Aviation, based in Kenya, follows as a major regional player with a mixed fleet ranging from large widebody freighters like the 747-400F to smaller 727s, enabling it to provide both scheduled and charter services across Africa, the Middle East, and Asia. Emerging operators like Suid Cargo in South Africa are entering the market through partnerships and leasing arrangements, such as those with Astral, to tap into underserved intra-African cargo routes. This growing competitiveness and diversification among African airfreight carriers highlight the continent's increasing role in global and regional logistics, driven by rising e-commerce, trade liberalisation, and infrastructure development.

Airline	Freighter Fleet Type	Base	Notable Features
Ethiopian Airlines	B777F, B767F, B737F	Addis Ababa	Largest cargo fleet in Africa
Astral Aviation	B747F, B727F, DC9F, B757F	Nairobi	Diverse aircraft mix for intra-Africa routes
Kenya Airways (KQ Cargo)	B737F (leased)	Nairobi	Growing digital cargo capabilities
EgyptAir Cargo	A300F, B737F	Cairo	Key Mediterranean–Africa connections
RwandAir Cargo	A330 belly hold	Kigali	Developing cold chain services

Table 17 Fleet Summary of Leading African Cargo Operators; Source: Author´s own compilation

Africa's air cargo market is poised for transformation. Airlines that invest in fleet modernisation, logistics technology, and strategic partnerships will be well-positioned to lead. The success of SAATM and AfCFTA will further unlock competition, reduce costs, and enhance cargo connectivity across the continent.

Cargo Data Analysis

The analysis based on the WATS tool explored the KPIs related to cargo performance within the African market.

Ethiopian Airlines (ET) leads the African market in ATK, commanding approximately 45.67% of the total share. This dominant position underscores the airline's expansive investment in both passenger and cargo capacity, reinforcing its status as the continent's most operationally integrated carrier. Royal Air Maroc (AT) follows with a strong 18.13% share, largely driven by its well-established international passenger network and supplementary cargo operations. EgyptAir (MS) holds a significant 15.57% share, reflecting its broad regional and intercontinental reach and solid overall capacity deployment. In contrast, South African Airways (SA) occupies a more moderate position at 9.70%, indicating a reduced footprint in total capacity when compared to the leading carriers. These figures highlight a clear concentration of capacity within a few dominant players, with ET significantly outpacing its competitors in both reach and tonnage capability. Smaller airlines, including Kenya Airways (KQ), Air Mauritius (MK), LAM Mozambique (TM), and Air Namibia (SW), collectively share less than 10%, emphasising their relatively limited combined passenger and cargo capacity deployment.

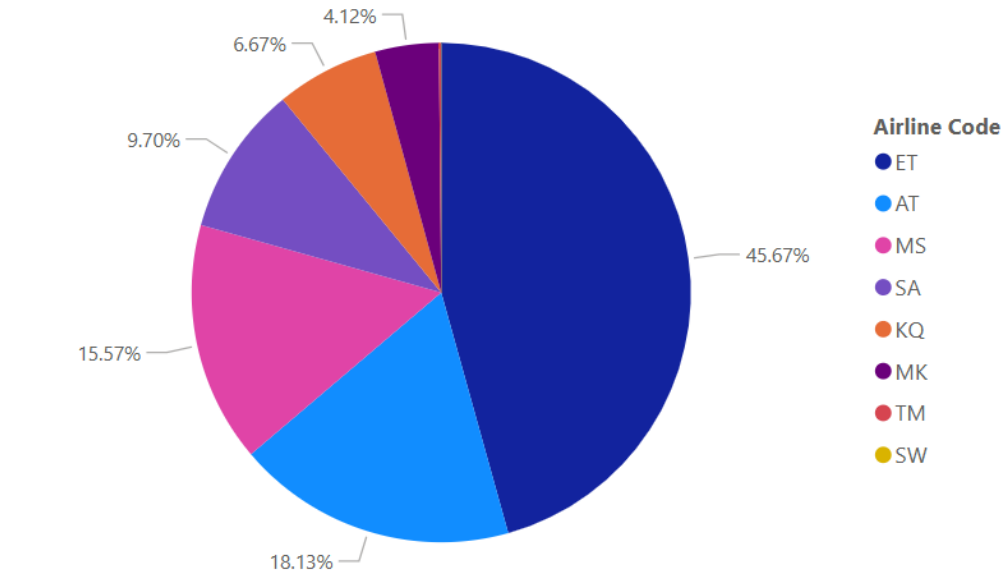


Figure 22 Sum of ATK by Code; Source: Author analysis based on WATS, 2024

Figure 22 displays the %GT ATK by airline code and illustrates a highly concentrated African air transport capacity market, with Ethiopian Airlines (ET) overwhelmingly dominating at 45.67%. This reflects ET's extensive investment in both passenger and cargo fleet capabilities, enabling it to operate on a scale far beyond its regional peers. Royal Air Maroc (AT) and EgyptAir (MS) follow with 18.13% and 15.57%, respectively, suggesting well-balanced operations that integrate strong international passenger services with moderate cargo logistics. South African Airways (SA), with 9.70%, maintains a respectable share, although notably lower than the top three, likely reflecting the impact of operational restructuring and financial constraints in recent years. The remaining airlines (KQ, MK, TM, and SW), together accounting for less than 11%, indicate limited capacity and scale, underscoring the dominance of a few large players in controlling the majority of air transport resources on the continent. This distribution emphasises the strategic advantages of integrated cargo-passenger operations in achieving market leadership in ATK.

The trend analysis of ATK from January 2014 to December 2024 also highlights notable fluctuations in airline industry capacity. The early period from 2014 to 2016 saw significant volatility, with ATK sharply rising to a peak exceeding 5 billion during 2015, indicating rapid capacity expansion by airlines, likely due to strategic fleet additions or network expansions. Post-2016, the market stabilised, maintaining a relatively consistent capacity of around 4–5 billion ATK until the dramatic drop in early 2020, triggered by the global COVID-19 pandemic, sharply decreasing ATK below 2 billion due to severe travel restrictions and operational cutbacks.

From late 2020 onwards, airlines demonstrated gradual and sustained capacity restoration, with ATK progressively recovering and stabilising around 3 billion by the end of 2024. However, despite steady recovery, the industry has yet to reach the peak capacity levels seen in 2015. The moderate recovery trajectory suggests cautious strategic adjustments and careful market adaptations post-pandemic, reflecting airlines' prudent approach toward managing combined passenger and freight capacity in a recovering, yet uncertain competitive environment.

The time series graph ATK from 2014 to 2024 (Figure 23) reflects significant fluctuations in Africa's air transport capacity, with clear structural disruptions and recovery phases. A sharp spike in ATK around 2015 suggests a brief surge in cargo or fleet expansion, likely driven by temporary operational changes or new entrants in the market. This was followed by a stabilisation period from 2016 to 2019, where capacity hovered at moderate levels. The dramatic dip in 2020 corresponds with the onset of the COVID-19 pandemic, which caused a severe contraction in both passenger and cargo aviation activity. Since 2021, the ATK curve has shown a steady upward recovery, indicating gradual reinstatement of capacity, though levels remain below the mid-2010s peak. The slow and uneven rebound suggests lingering challenges in fully restoring cargo and fleet operations, as well as strategic caution among African carriers in redeploying tonnage capacity.

Figure 23 ATK from 2014 – 2024; Source: Author analysis based on WATS, 2024

The ATK-HHI trend offers a clear view of the evolving market concentration dynamics within African aviation. Prior to the COVID-19 pandemic, the index fluctuated within a moderate range of 0.2 to 0.3, reflecting a relatively balanced competitive environment in terms of capacity allocation among airlines. However, 2020 saw a dramatic spike in the HHI to approximately 0.8, driven by the pandemic's disruptive impact on the industry. This surge indicated a sudden and sharp consolidation of capacity, primarily benefiting Ethiopian Airlines, which maintained robust operations, especially in cargo, while many

competitors reduced or suspended services. In the years following the pandemic, the HHI gradually declined, reaching around 0.4 by 2024. While this decrease signals a degree of market recovery and rebalancing, the index remains significantly above pre-pandemic levels, underscoring the sustained concentration of capacity in the hands of a few dominant players, chiefly Ethiopian Airlines, thus highlighting a structurally altered competitive landscape in the African ATK market.

Industry Analysis

Utilising the HHI framework, this study also conducted a detailed data analysis reflecting the patterns of performance of the KPIs. This multi-metric Figure 24 offers a comprehensive overview of the African airline industry's performance across four critical KPIs: ASK, ATK, CTK, and RPK. The pre-2019 period shows a robust and synchronised growth trend across all indicators, led by ASK and closely followed by RPK, highlighting strong capacity expansion in response to rising passenger demand. The onset of COVID-19 in 2020 marks a severe inflexion point, with all KPIs collapsing to historic lows, illustrating the scale of the operational shutdown across both passenger and cargo services. The subsequent recovery phase beginning in 2021 is marked by a sharp resurgence in ASK and RPK, nearing pre-pandemic peaks by 2024, while CTK's steadier recovery reflects the enduring demand for cargo services even amid reduced passenger activity. Meanwhile, the more gradual rise in ATK suggests a strategic rebuilding of combined passenger and freight capacity. The sustained gap between ASK and RPK post-2021 further indicates a cautious industry stance, restoring supply slightly ahead of demand as a risk management strategy. Overall, the figure underscores the industry's resilience, the importance of diversified revenue streams, and the capacity leadership of airlines that adapt quickly to post-pandemic dynamics.

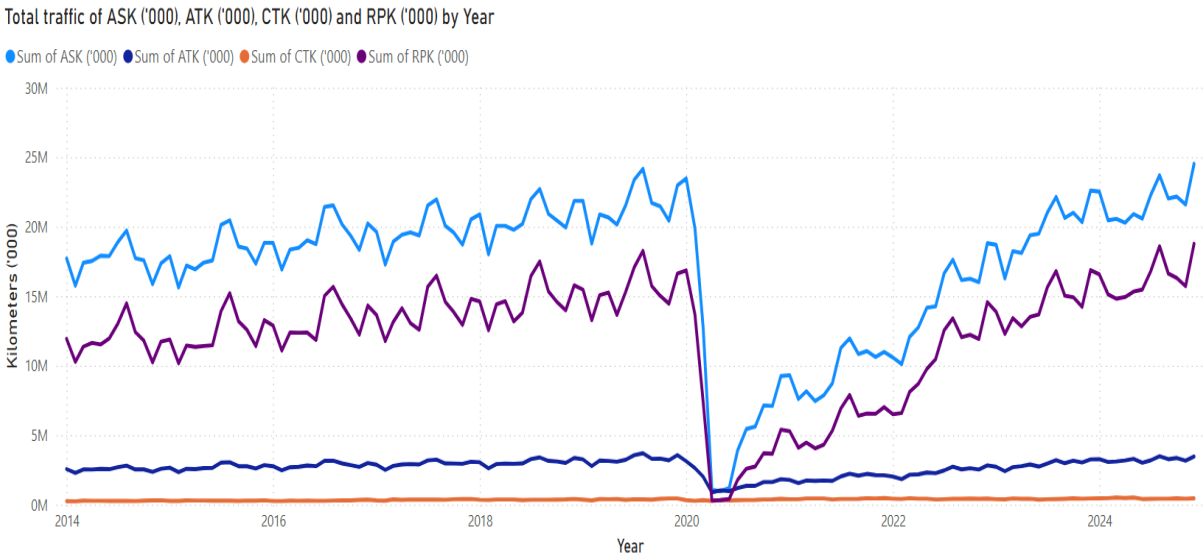
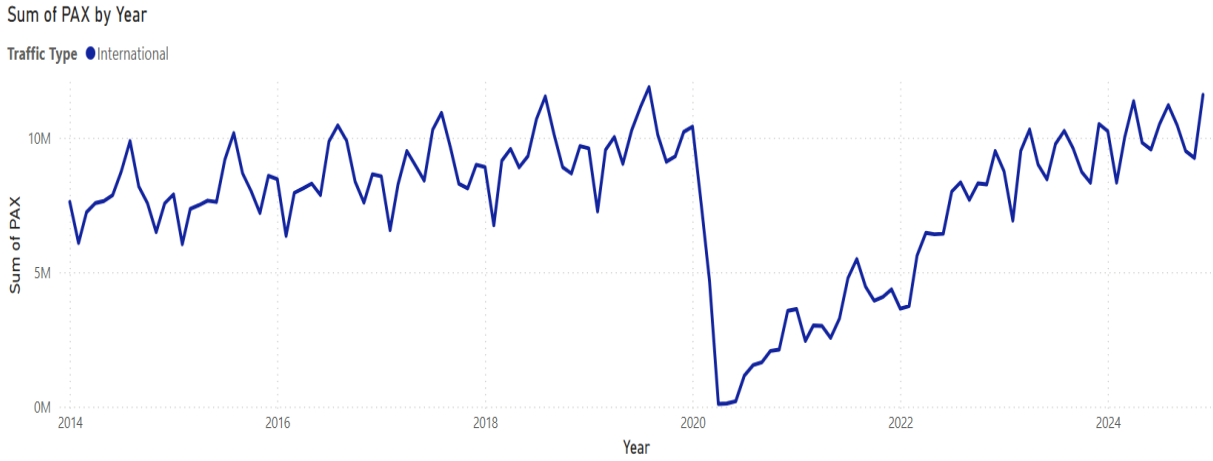


Figure 24 Total traffic ASK; ATK, CTK and RPK from 2014-2024; Source: Author analysis based on WATS, 2024

Figure 24 illustrates total traffic trends for ASK, ATK, CTK, and RPK from 2014 to 2024 and visually captures both growth trajectories and systemic disruptions in the African aviation sector. When interpreted in the context of the HHI, it highlights how shocks like COVID-19 not only suppressed total traffic volumes but also triggered significant shifts in market concentration. The collapse in all indicators in 2020 coincides with the dramatic spike in HHI observed during that period, reflecting a consolidation of activity among a few dominant carriers, particularly Ethiopian Airlines, which maintained more resilient operations, especially in cargo.

As traffic began to recover from 2021 onward, ASK and RPK rebounded more quickly than ATK and CTK, indicating a strong push to restore passenger capacity. However, despite this overall market recovery, HHI levels remained higher than pre-pandemic norms, implying that a smaller number of airlines are now commanding a larger share of industry capacity. The more gradual and consistent climb of CTK and ATK also aligns with this trend, suggesting that cargo capacity is less affected by passenger demand volatility and has played a pivotal role in post-pandemic market restructuring. Overall, the chart supports the view that while total industry metrics are improving, the competitive landscape remains more concentrated, reinforcing the insights revealed by the ATK-HHI and ASK-HHI indicators.

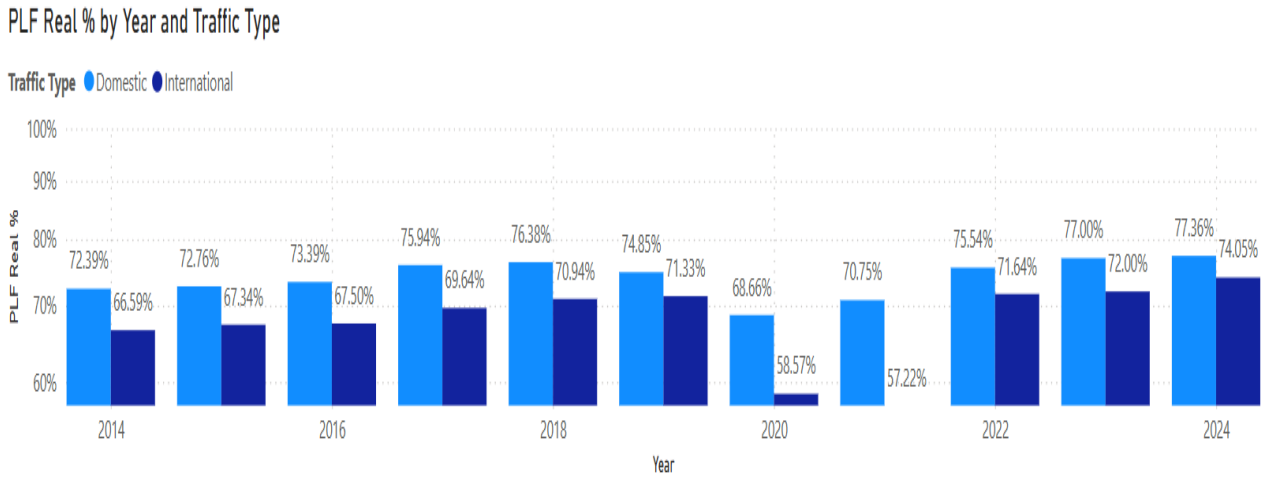
Figure 25, tracking international passenger volumes over time, presents a clear narrative of growth, disruption, and gradual recovery in African aviation. Between 2014 and 2019, international passenger traffic experienced consistent growth, marked by seasonal fluctuations but with sustained peaks exceeding 10 million, reflecting expanding global connectivity and rising demand. However, the onset of the COVID-19 pandemic in early 2020 caused an abrupt and near-total collapse in international travel, with passenger numbers plummeting to near zero by mid-2020. The rebound was notably slow and uneven, highlighting the complexities of international travel recovery amid evolving border controls, inconsistent global vaccination efforts, and lingering economic constraints. By 2024, passenger volumes had almost returned to pre-pandemic levels, though not yet fully recovered. This prolonged lag emphasises the sensitivity of international markets to external shocks and regulatory environments, while also demonstrating the underlying resilience of cross-border travel, which has resumed a steady upward trajectory in the post-pandemic era.



***Note**: The data in this visual reflects **only international traffic**. Domestic passenger data was not included or reported in the dataset used for this chart.*

Figure 25 Sum of PAX by year from 2014-2024; Source: Author analysis based on WATS, 2024

Figure 26 compares annual PLF performance across domestic and international traffic. From 2014 to 2019, domestic PLF consistently outperformed international PLF. The pandemic caused both segments to collapse in 2020, with international PLF falling to 58.57% and domestic PLF to just 68.66%, which is a reflection of widespread travel suspensions and reduced frequencies.



Note: Real PLF (Passenger Load Factor) is a ratio that measures the efficiency of seat capacity usage by dividing the total Revenue Passenger Kilometres (RPK) by the total Available Seat Kilometres (ASK). It indicates the percentage of seat capacity actually filled with paying passengers, providing a direct measure of airline operational performance.

Figure 26 Comparison annual PLF performance across domestic and international traffic.; Source: Author analysis based on WATS, 2024

Post-pandemic recovery was faster in the domestic market, which overtook international PLF from 2021 onward. By 2024, domestic PLF reached 77.36%, slightly higher than the international rate of 74.05%,

indicating improved seat utilisation in local markets. This shift underlines the domestic sector's greater resilience and adaptive recovery, likely driven by shorter planning cycles, fewer border restrictions, and more flexible capacity allocation.

The PLF trends in the African market, segmented by domestic and international traffic from 2014 to 2024, reveal insightful dynamics on operational efficiency and market resilience. Throughout the pre-pandemic years, both domestic and international PLFs maintained relatively strong and stable levels, with domestic PLFs consistently outperforming international by a few percentage points—indicating more efficient seat utilisation in local markets. In 2020, the COVID-19 pandemic caused a dramatic drop in both segments, with international PLF falling to 55.57% and domestic to 57.22%, underscoring the severe impact of travel restrictions and plummeting demand. However, domestic markets rebounded more quickly, supported by the relaxation of internal travel restrictions and a faster return of local demand. By 2024, PLFs had nearly returned to pre-pandemic levels, with domestic at 77.36% and international at 74.05%. This convergence signals renewed demand recovery across both segments and improved capacity management by African carriers. The continued strength in domestic PLF suggests that intra-country travel remains a cornerstone of African aviation, while the steady international rebound reflects the continent's gradual re-integration into the global air travel network.

The quarterly year-on-year (YoY) growth in PLF provides a clear visualisation of performance volatility, particularly around the pandemic period (See Figure 27). PLF growth remained marginally positive and stable before 2020, rarely exceeding +5%, suggesting mature market behaviour with modest improvements in efficiency.

From Q2 2020 onward, PLF collapsed sharply, with the worst decline of -54.81% in Q2 2020. The sharpest recovery occurred in Q2 2021, where PLF surged by +77.59%, driven by a low base and a rebound in demand. However, from 2022 onwards, PLF growth stabilised, returning to normalised rates of 2–5%, indicating a rebalancing of supply and demand after the recovery spike. This metric is instrumental in identifying the speed of market adjustment and the sustainability of efficiency gains.

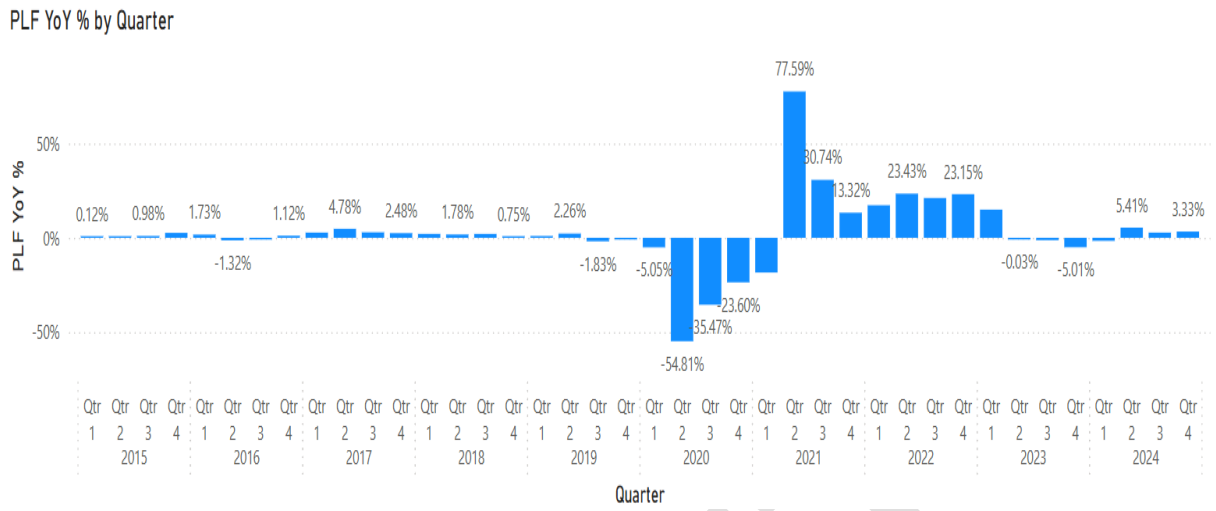


Figure 27 Passenger Load Factor change YoY by quarter; Source: Author analysis based on WATS, 2024

The quarterly year-on-year change in CLF reflects the performance and efficiency trends in air cargo operations. Pre-pandemic, cargo load factor growth showed intermittent gains, notably peaking at 25.98% in Q1 2017. The pandemic saw a dramatic upturn, with Q2 2020 reaching +39.53%, as passenger flights were grounded and cargo capacity tightened, raising demand for dedicated freighter space.

This surge stabilised throughout 2021, with growth above 30% in Q1, before tapering off. From 2022 onwards, CLF growth moderated and eventually declined into slightly negative territory in 2023 and 2024 (e.g., -4.01% in Q2 2024), as passenger belly cargo capacity returned and demand growth normalised.

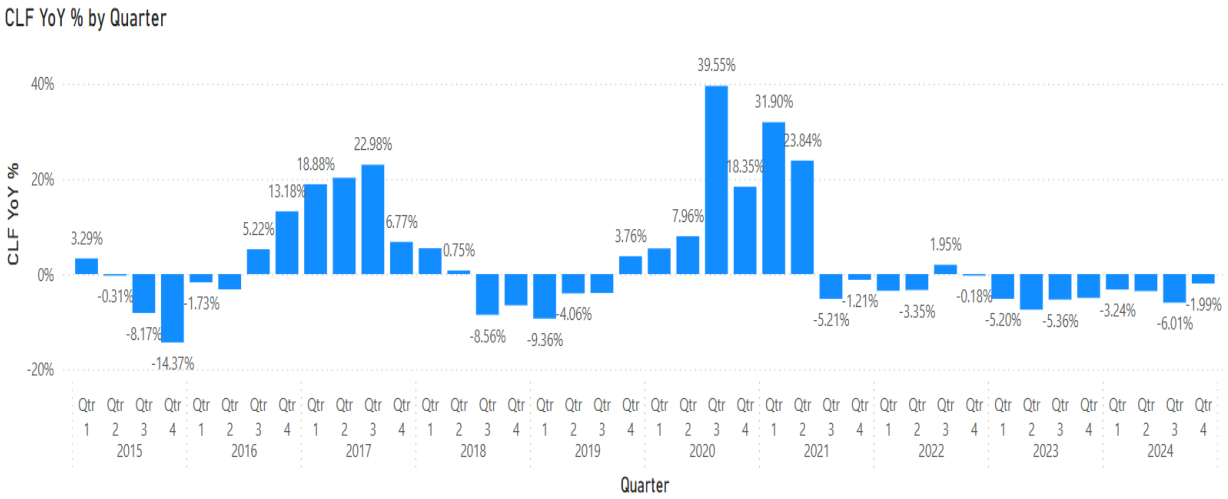


Figure 28 Cargo Load Factor change YoY by quarter; Source: Author analysis based on WATS, 2024

Figure 28 illustrates quarterly trends in CTK (demand) and ACTK (supply) over the period 2014 to 2024. ACTK consistently outpaced CTK, but the gap remained relatively narrow, suggesting efficient capacity deployment and stable load factors across the decade. The slight divergence in 2020 reflects pandemic-related disruptions—while passenger belly cargo capacity collapsed, dedicated freighters picked up some of the slack, causing fluctuations in capacity deployment.

Post-2020, both CTK and ACTK demonstrated steady growth, with CTK rising notably through 2022–2024, indicating growing demand for air freight services. The alignment between CTK and ACTK during the recovery phase highlights successful capacity scaling and demand planning. This trend is crucial for competition analysis, as it reflects an airline's ability to optimise cargo profitability and adapt to shifting freight logistics, especially in a post-pandemic trade environment where supply chains are recalibrating.

Route level Analysis

Passengers

Route-level analysis provides critical insights into how airlines allocate capacity (ASK), generate demand (RPK), and manage efficiency (PLF). By examining the performance and distribution of KPIs across key markets such as Africa–Europe, Africa–Middle East, and Africa–Far East, stakeholders can assess demand patterns, strategic focus, and competition intensity within specific international flows. These indicators highlight which routes are core revenue generators, where over- or under-capacity exists and which regions are growing in strategic relevance, vital for competitive positioning, alliance partnerships, and policy design.

The RPK share by route area in the African market from 2014 to 2024 highlights Africa–Europe routes as consistently dominant, reflecting strong historical, economic, and diaspora-driven demand. This route maintained the highest share throughout the period, peaking at 71.1% in 2022, which suggests a prioritisation of European connectivity in post-pandemic recovery strategies. In contrast, intra-African routes held a stable but secondary position, ranging between 24% and 30%, peaking in 2022 when intra-continental travel rebounded faster than intercontinental travel due to the easing of regional restrictions. Africa–Middle East and Africa–Far East routes consistently held smaller shares, averaging around 5–9% and 1–3%, respectively, indicating limited but steady connectivity to these regions. The modest growth and recent plateauing of these routes reflect geographic distance, fewer direct connections, and varying economic ties. Overall, the data underscores a dependency on Europe-bound traffic while highlighting opportunities for deeper intra-African network integration and diversification toward Asia and the Middle East to enhance the continent’s aviation resilience and reduce market concentration.

Figure 29 provides critical insight into supply-side dynamics by illustrating the ASK share across key African route corridors. Consistent with RPK trends, the Africa–Europe corridor dominates capacity

deployment, peaking at 68.1% in 2022, indicating strategic alignment between supply and high passenger demand. In contrast, the Africa–Middle East corridor consistently maintains a moderate ASK share between 25% and 30%, which, when compared to its lower RPK share, suggests potential overcapacity or a less efficient utilisation of seats and possibly due to competitive pressure or broader network positioning strategies. Meanwhile, the Africa–Far East corridor shows persistently low ASK levels, remaining under 9%, pointing to limited connectivity, infrequent service, or cautious capacity allocation in response to volatile or low demand. This ASK distribution analysis is vital for evaluating how effectively airlines match capacity to demand, identifying opportunities for strategic expansion in underserved markets, and addressing imbalances that could be eroding load factors and profitability across routes.

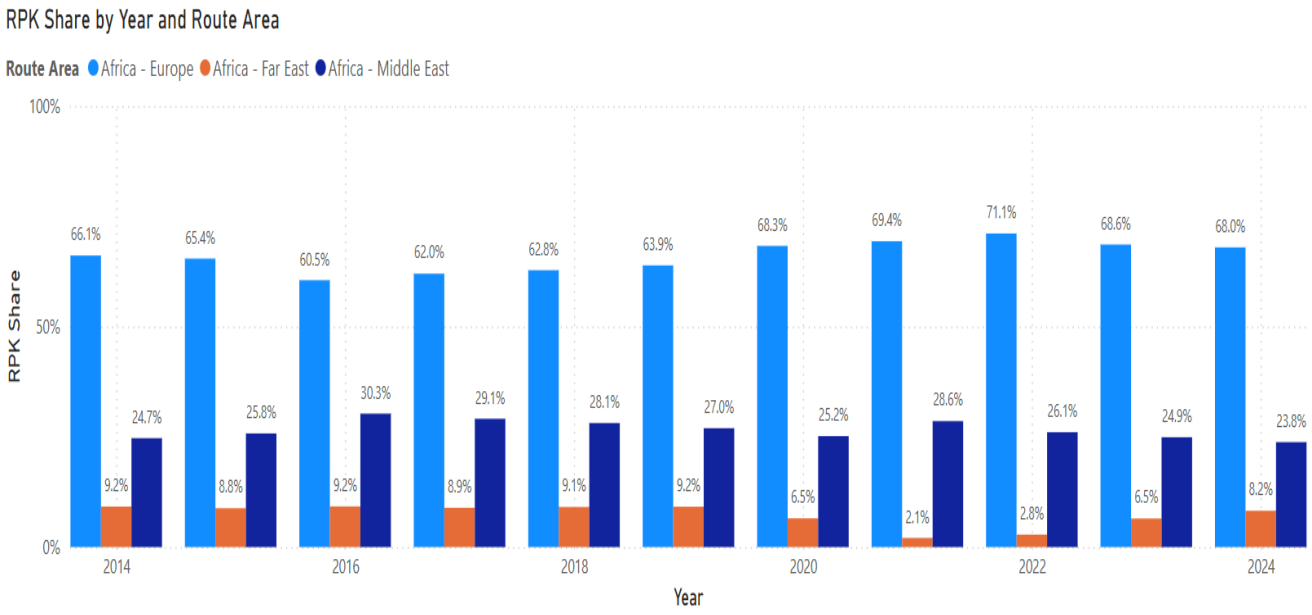


Figure 29 RPKs share by year and route area from 2014-2024; Source: Author analysis based on WATS, 2024

The Africa–Far East route demonstrates a long-term, structurally improving trend in both ASK and RPK, underscoring the growing strategic importance of passenger connectivity between the two regions. On the supply side, ASK rose steadily from around 8 million kilometres ('000) in 2014 to approximately 10 million by the end of 2019. This suggests a deliberate and consistent increase in capacity provision, likely driven by rising commercial and diplomatic engagements between African and Asian economies.

The demand side, reflected in RPK, closely mirrored ASK trends, though at a consistently lower level, indicating solid but not fully optimised seat utilisation. From 2014 to 2019, RPK expanded moderately, demonstrating a healthy upward trajectory that slightly lagged ASK, which is common in developing corridors with capacity ramp-up strategies preceding demand maturity.

The impact of COVID-19 in 2020 is clearly visible, with both ASK and RPK collapsing to near-zero levels. By Q2 2020, both ASK and RPK collapsed to near-zero levels. However, the recovery on the demand side has been particularly sluggish. While ASK began to recover by mid-2021 and reached around 10M km by 2024, RPK lagged noticeably, never fully closing the gap.

Cabin Class Analysis

Cabin class analysis in the context of HHI (Herfindahl-Hirschman Index) reveals critical layers of market concentration that are often hidden in overall market assessments. By disaggregating data into Economy, Business, and First-Class segments, analysts can detect significant differences in competitive dynamics across cabins. Economy Class typically exhibits lower concentration, with multiple airlines competing vigorously on price and frequency, resulting in a lower HHI. In contrast, Business and First-Class cabins often show much higher HHI values, indicating limited competition and greater market power concentrated among fewer carriers. This segmentation reveals that while an overall route might appear competitive, premium cabins could suffer from near-monopolistic conditions, leading to higher fares and fewer choices for corporate and high-end travellers. Moreover, even though premium cabins represent a smaller share of total passenger volume, they account for a disproportionately large share of airline revenue, making cabin-specific HHI a crucial indicator of revenue concentration risks. Understanding these nuances is especially vital for regulatory authorities during merger reviews, as cabin-level concentration can highlight areas where consumers could be adversely affected even if the broader market remains competitive. Ultimately, cabin class analysis enriches strategic insights for airlines by pinpointing competitive pressures and profit opportunities across different market segments, helping stakeholders make more informed regulatory, strategic, and investment decisions.

Figure 30 of PAX by Cabin Class clearly demonstrates that Economy class dominates the market, accounting for the vast majority of passenger traffic throughout the period. A regular seasonal fluctuation is visible, with peaks aligning with high travel seasons. The impact of COVID-19 is sharply visible in 2020, where total PAX fell below 0.5 million, followed by a steady and structured recovery beginning in 2021, surpassing 5 million passengers per period by 2024.

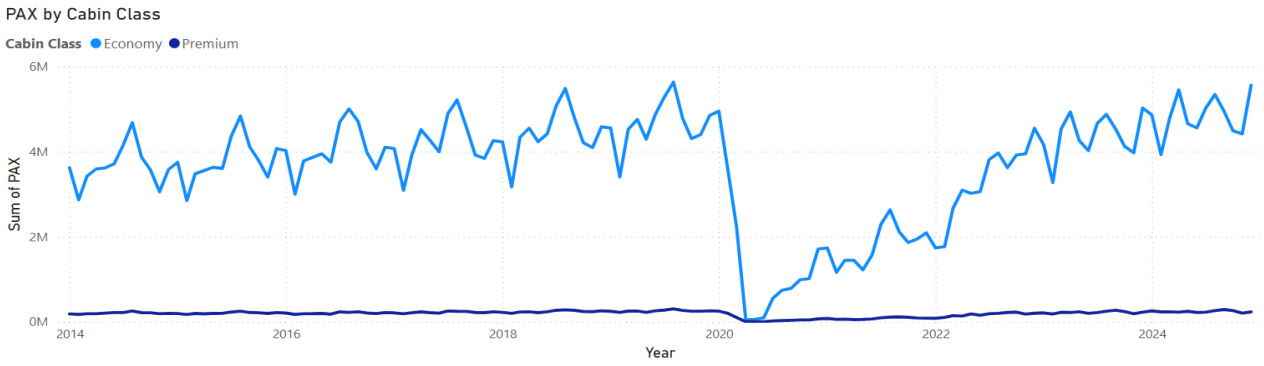


Figure 30 PAX by cabin class 2014-2024; Source: Author analysis based on WATS, 2024

The data (Figure 30) clearly shows that Economy class overwhelmingly dominates air travel in Africa, with consistently high volumes and pronounced seasonal peaks up until early 2020. Premium class travel remains marginal throughout the entire period, indicating that African air travel remains largely price-sensitive, driven by budget-conscious travellers and limited by a comparatively small business or luxury travel segment. The impact of the COVID-19 pandemic is starkly visible in 2020, with a sudden collapse in passenger volumes across both cabin classes, particularly affecting the high-volume economy sector. Recovery begins gradually from 2021, gaining momentum through 2022 and stabilising at near pre-pandemic levels by 2024. The steady resurgence of economy-class travel post-pandemic suggests a resilient underlying demand for affordable mobility across the continent, fuelled by necessity travel, regional tourism, and growing intra-African connectivity. However, the near-flat trend in premium travel underscores limited market expansion in high-yield segments, likely constrained by income distribution, corporate travel restrictions, and limited premium product differentiation among African carriers. Overall, this trend reflects a market that is rebounding robustly at the base level but still has considerable room for diversification and revenue optimisation at the premium tier.

The African air transport market remains distinctly price-sensitive, as evidenced by economy class accounting for a dominant 95.01% of total passenger volume. This overwhelming share reflects a strong demand for affordable air travel options driven by a socio-economic landscape where cost remains a critical factor in mobility. In contrast, the premium class constitutes just 4.99% of passengers, pointing to a limited but clearly defined niche market for higher-tier services. Despite its smaller footprint in terms of volume, premium class carries significant strategic weight, contributing 6.22% to total Revenue Passenger kilometres (RPK). This disproportionate RPK share implies that premium passengers tend to travel longer distances, often on intercontinental or long-haul routes, and generate higher yields per seat. The economy class, meanwhile, contributes 93.78% of RPK and is closely aligned with its PAX dominance, thus underscoring its central role in overall network economics. The premium segment's capacity to drive long-haul profitability, despite its modest size, reinforces its importance in airline strategy, particularly for

network carriers aiming to optimise revenue across different cabin tiers while maintaining service differentiation on high-value routes.

The data analysis findings from 2014 to 2024, RPKs across cabin classes, reveal market overwhelmingly driven by economy-class travel, which consistently accounted for over 93% of total RPK (See Figure 31). The time-series trend shows steady growth in economy RPK until 2019, followed by a sharp collapse in 2020 due to the COVID-19 pandemic. Recovery began in 2021, and by 2024, economy RPK had nearly returned to pre-pandemic peaks, driven by resilient demand for short- and medium-haul travel.

In contrast, premium-class RPK, while small in volume, remained structurally important, contributing 6.22% of total RPK despite representing less than 5% of total passengers. This indicates that premium passengers typically travel longer distances and contribute disproportionately to network yield. The slower rebound in premium RPK post-2020 highlights the gradual return of business and high-yield leisure travel. Together, the cabin class data illustrates a market defined by volume in the economy and strategic value in premium, underscoring the importance of maintaining a dual-focus strategy in network and cabin planning.

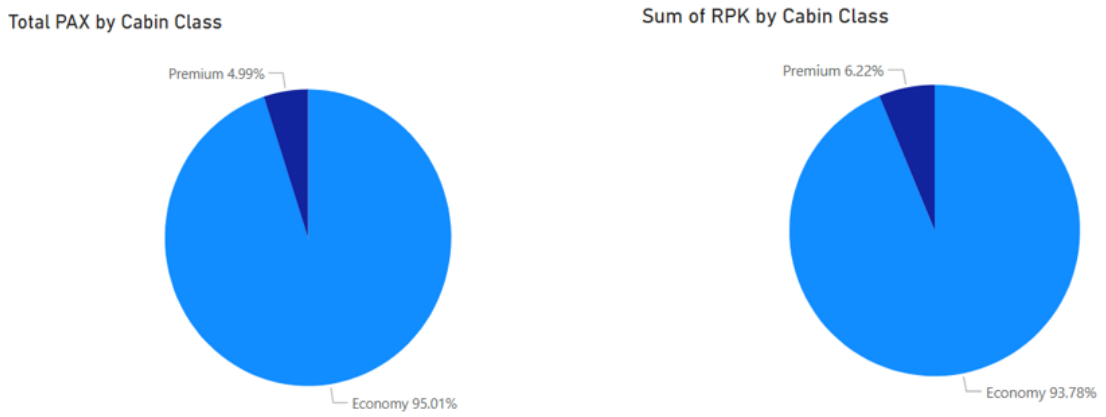


Figure 31 Total PAX by cabin class from 2014-2024; Source: Author analysis based on WATS, 2024

The comprehensive analysis of Africa's aviation sector from 2014 to 2024 reveals a market marked by resilience, structural shifts, and emerging opportunities. Ethiopian Airlines has firmly established itself as the regional leader across all key performance metrics, ASK, ATK, RPK, and HHI—benefiting from a robust long-haul network and cargo integration, particularly during the COVID-19 crisis. The pandemic catalysed a temporary yet sharp market consolidation, with recovery dynamics favouring airlines with diversified operations and strong state backing. Passenger traffic remains overwhelmingly dominated by economy class, which constitutes over 95% of total passengers, highlighting the continent's continued price

sensitivity. However, the premium class, though small in volume, proves strategically valuable due to its high yield and longer average trip distances. In terms of geography, Africa–Europe routes dominate both supply and demand, though there is growing potential in intra-African and Middle Eastern corridors. Post-pandemic capacity recovery has outpaced demand, as seen in sustained gaps between ASK and RPK, indicating cautious optimism and improved planning among carriers. Overall, the findings underscore a consolidating yet opportunity-rich environment where equitable policy frameworks, strategic investments in underserved routes, and balanced capacity management will be key to sustainable growth in African aviation.

HHI analysis across African air transport markets reveals that despite pockets of liberalisation, market concentration remains significantly high on many intra-African routes. This elevated concentration is often driven by a limited number of dominant national carriers, restrictive bilateral agreements, and insufficient competition in both primary and secondary markets. Cabin class segmentation further exposes deeper layers of dominance, especially in premium travel segments, where Business and First-Class markets are often monopolised by one or two carriers. High HHI scores suggest limited consumer choice, higher airfares, and a lack of incentive for service improvement, all of which undermine the goals of SAATM. Addressing these issues requires a concerted effort to liberalise air service agreements, foster new entrants, strengthen regulatory frameworks for fair competition, and invest in aviation infrastructure across the continent. Regular and detailed HHI monitoring, both overall and by cabin class, should be institutionalised to track progress towards a truly competitive, accessible, and seamless African air transport network. In essence, reducing concentration levels is not just about market structure; it is a critical enabler for economic integration, tourism growth, and broader continental development under Agenda 2063.

Proposition 3: African Air Traffic Forecasting

This section of the study analyses the traffic data provided by AFRAA in order to make predictive forecasting of intra-African aviation data. Exogenous variables were included to improve model accuracy and account for external factors influencing demand. This section evaluates Facebook Prophet as a forecasting tool.

Prophet, is a forecasting tool developed by Facebook (Meta) and is a powerful solution for handling complex time series data, making it highly valuable for airline forecasting and competition evaluation in African aviation. Aviation data often exhibits strong seasonal patterns, irregular events, missing values, and sudden trend shifts, which challenges Prophet is specifically designed to manage. It decomposes data into three main components: trend, seasonality, and holidays or special events, allowing for a nuanced understanding of travel demand dynamics. In the African context, where data irregularities are common and market conditions can change rapidly, Prophet's flexibility is particularly beneficial. It can model

nonlinear growth trends, account for local holidays and major events, and handle missing data without sacrificing forecast accuracy. This makes it an excellent tool for forecasting passenger volumes, predicting route profitability, or anticipating competitive pressures across different markets. Prophet also provides uncertainty intervals, enabling airlines, policymakers, and regulators to better prepare for various demand scenarios in volatile or rapidly liberalising environments. However, its reliance on the assumption that past patterns will generally repeat means it is most effective for medium-term forecasting rather than long-term strategic planning. Overall, Prophet offers a practical, robust, and adaptable method to support evidence-based decision-making and proactive competition management in African aviation.

Airline forecasting analysis is essential in evaluating competition in African aviation because it allows stakeholders to anticipate future market conditions rather than simply react to current realities. Given Africa's dynamic but fragmented aviation landscape, marked by emerging hubs, fluctuating demand, regulatory shifts, and infrastructure development, thus, forecasting helps identify potential capacity constraints, competitive pressures, and growth opportunities ahead of time. Accurate demand forecasts inform decisions on new route development, fleet expansion, pricing strategies, and market entry planning, helping airlines position themselves competitively. From a regulatory perspective, forecasting enables authorities to evaluate whether future supply will meet rising passenger demand or whether markets risk becoming over-concentrated, particularly as liberalisation initiatives like the SAATM mature. It also helps detect early warning signs of monopolistic behaviour or potential market failures, supporting proactive policy interventions. Furthermore, in a continent where aviation growth is closely tied to broader economic development and regional integration goals, forecasting ensures that air transport planning is aligned with long-term mobility and trade needs. Ultimately, airline forecasting analysis enhances the quality of competition assessments by shifting the focus from static snapshots to forward-looking strategies that build a stronger, more resilient African aviation sector.

Data Collection

The cornerstone of any forecasting framework lies in the quality and comprehensiveness of the data collected. In aviation demand forecasting, data is obtained from various sources, including official airline systems, airport traffic reports, and third-party aviation databases. Essential data fields include passenger counts, booking information, fare structures, Passenger behaviour, RPKs, economic indicators, etc. In general, passenger demand can also be influenced by external variables such as economic factors (GDP, inflation), social events, and policy changes. While external regressors are not explicitly used in this model, their inclusion in general frameworks can improve forecasting accuracy by accounting for real-world dynamics.

Data Pre-processing

Raw data is often noisy, incomplete, or inconsistent, necessitating pre-processing to ensure reliability and usability. Pre-processing includes handling missing values, treating outliers, and scaling variables to achieve consistency across dimensions. Time series decomposition, an integral part of this phase, breaks the data into trend, seasonality, and residual components, helping identify underlying patterns and seasonal fluctuations. The stationarity of the time series is tested using statistical methods, as stationarity is a critical prerequisite for many forecasting models. Furthermore, data is split into training and testing subsets to validate the model's generalisability and predictive power.

Time Series Analysis

Time series analysis focuses on identifying patterns and dependencies in historical passenger demand data. This phase helps uncover trends, periodicities, and seasonality, which are key to understanding the dynamics of passenger demand. Stationarity checks ensure that the time series adheres to statistical assumptions required by certain models, and any necessary transformations, such as differencing, are applied. Proper train/test splits are then established to evaluate model performance on unseen data, ensuring robust and reliable forecasting outcomes. Techniques such as Principal Component Analysis (PCA) play a crucial role in this phase by reducing the dimensionality of high-dimensional datasets, especially when dealing with multiple regressors that are often intercorrelated. PCA improves the accuracy of prediction models by pinpointing the components and reducing interference, from important factors.

Model Evaluation

The accuracy and reliability of the forecasting models are evaluated using standard performance metrics such as Root Mean Square Error (RMSE) and Mean Absolute Error (MAE). These metrics quantify the deviation between the predicted and actual values, allowing for an objective comparison of model performance. *R*-squared is used to measure the goodness of fit, while additional analyses such as residual diagnostics ensure the consistency of the model outputs. Forecast Skill Score (FSS) is applied to compare model performance against a baseline forecast, highlighting improvements achieved through advanced methods. P-values provide insights into the statistical significance of the regressors used, ensuring their contribution to the forecasting process is valid. Principal Component Analysis (PCA) and Exogenous Variable Rankings are performed to determine the most influential predictors, further refining the selection of features. By ranking the models based on these metrics, the best-performing forecasting approach is selected, providing a robust foundation for actionable decision-making.

Dataset Description

The dataset used for this section of the study, consists of intra-African passenger demand data spanning from January 2019 to December 2023. It contains 148,933 rows and 14 columns detailing various features

related to passenger demand, revenue, and fare metrics across different routes and time periods in Africa. Each row represents a specific record of traffic data for a departure and arrival airport combination. The source of this dataset is the AFRAA.

Dataset Fields and Features

1. Dep Airport Code - The departure airport code identifies the origin of the flight.
2. Arr Airport Code - The arrival airport code, identifies the destination of the flight.
3. Gateway1 Airport Code - Represents any intermediate gateway airport codes (if applicable).
4. RPKs - Measures the actual demand, calculated as the total number of kilometres travelled by revenue-paying passengers. It serves as a fundamental indicator of passenger volume and airline performance.
5. Total Est. Pax (Estimated Passengers) - Indicates the estimated total number of passengers for each route.
6. AvgFare First - The average fare collected for First-Class passengers on the respective route.
7. AvgFare Business - The average fare collected for Business-Class passengers.
8. AvgFare Premium Economy - The average fare collected for Premium Economy-Class passengers.
9. AvgFare Total - Represents the total average fare across all classes (First, Business, Premium Economy, etc.) for the given record.
10. Total Est. Revenue - The estimated total revenue generated for the respective record, calculated based on the number of passengers and fares.
11. AvgFare FullY - Represents the average fare collected for Full-Y fare tickets, which are flexible and unrestricted economy class tickets.
12. Bookings (Unadjusted) - Total number of unadjusted passenger bookings made for the given route.
13. Time Series - A numeric field representing the time series of the records in YYYYMM format, which aids in time-based analysis.
14. Year - The year in which the corresponding record occurred (e.g., 2019, 2020, etc.).

The dataset contains both quantitative features (e.g., RPKs, Total Est. Pax, Total Est. Revenue) and categorical features (e.g., Dep Airport Code, Arr Airport Code, Gateway1 Airport Code). Passenger fares are represented across various fare classes, including AvgFare First, AvgFare Business, and AvgFare Premium Economy, though fare data availability varies across the records.

RPKs and Total Est. Pax serves as core demand indicators, reflecting passenger traffic volume, while AvgFare and Total Est. Revenue provides financial metrics that are critical for understanding revenue

dynamics. The Time Series and Year fields enable time-dependent analysis, facilitating trend identification and seasonality checks essential for demand forecasting.

This dataset forms the foundation for the forecasting framework aimed at predicting passenger demand across intra-African air routes. By leveraging time series features and demand indicators, the dataset supports the application of both univariate models (e.g., Autoregressive Integrated Moving Average (ARIMA) Prophet) and multivariate approaches involving techniques such as AutoRegressive Integrated Moving Average (ARIMAX) and PCA-transformed features. ARIMAX is an advanced time series forecasting model that extends ARIMA by including external (exogenous) variables that are believed to influence the value of the main time series you are forecasting.

The diversity and scale of the data provides an opportunity to uncover trends, seasonality, and other influencing factors affecting air traffic volume in Africa. Such insights are crucial for stakeholders, including airlines and policymakers, to optimise operational planning, pricing strategies, and infrastructure development.

Data Pre-processing

In the data pre-processing phase, the dataset was made clean, consistent and in a form that is suitable for forecasting analysis. The dataset spans a 5-year period and covers the time from January 2019 to December 2023 and is monthly aggregated, which makes it possible to analyse the data in detail from the temporal perspective while keeping the level of granularity sufficient for accurate demand forecasting.

Handling Missing Values

The dataset has a wide gap in missing or incomplete data, especially in the financial variables and demand metrics and the zero values are considerably high, which points to data errors or missing values. In the aggregation phase, the average of the non-zero values was calculated to ensure that the integrity of fare regressors and revenue indicators was maintained during analysis.

Data Cleaning and Transformation

To prepare the dataset for analysis, several cleaning and transformation steps were applied:

1. Time Series Conversion: The Time Series column, originally in YYYYMM format, was converted into a proper datetime format to facilitate time-series analysis.
2. Type Conversion: Numerical columns such as RPKs, Total Est. Pax, AvgFare, and Revenue were explicitly converted to numeric types, with non-numeric entries replaced with NaN for consistency.
3. Zero Value Removal: rows where RPKs or Total Est. Pax equalled to zero were removed as such entries do not have meaningful information in demand forecasting. Since the Total Est. Pax is the primary variable that the forecasting models are based on. It was important to verify the

completeness and accuracy of this data. Most importantly, the number of rows deleted was Insignificant, which ensures the overall integrity and representativeness of the dataset.

Aggregation

To ensure consistency and usability of the dataset, monthly aggregation was applied, enabling a detailed temporal analysis while addressing missing values in financial variables. The aggregation process involved the following steps:

1. Summation - RPKs, Bookings (Unadjusted), and Total Est. Pax were aggregated using their sum to represent cumulative monthly demand.
2. Averaging - Financial variables such as AvgFare First, AvgFare Business, AvgFare Premium Economy, AvgFare Total, Avg Total Est. Revenue, and AvgFare FullY were aggregated using the mean while excluding zero values. This approach maintained realistic fare metrics without distortions from missing or unrecorded data.

This step ensured that financial variables were represented accurately despite missing values, providing a robust foundation for subsequent modelling and forecasting.

Prophet

It is particularly suited for time series forecasting in situations where the data exhibits strong seasonal patterns and non-linear trends. The methodology of Prophet is grounded in its decomposable time series model, which is constructed with three main components: trend, seasonality, and holiday effects.

The Prophet's forecasting model equation can be expressed as follows:

$$y(t) = g(t) + s(t) + h(t) + \varepsilon_t$$

Where g(t) captures non-periodic changes in the time series (the trend), s(t) accounts for periodic variations like weekly or yearly seasonality, and h(t) models holiday effects that occur on irregular schedules. The error term ε_t represents unpredictable changes not explained by the model, assumed to follow a normal distribution

In this study, both a standard Prophet model and a series of Prophet models enhanced with external regressors to improve forecasting accuracy were implemented. The standard model forecasted the target variable, Sum Total Est. Pax, independently, while the extended models included external variables such as:

- Sum RPKs;
- Sum Bookings (Unadjusted);
- Avg AvgFare First;

- Avg AvgFare Business;
- Avg AvgFare Premium Economy;
- Avg AvgFare Total;
- Avg Total Est. Revenue;
- Avg AvgFare FullY.

Additionally, principal components (PCs) derived through Principal Component Analysis (PCA) were employed as regressors to address multicollinearity issues among the original variables.

Evaluation Metrics

It is essential to include the Evaluation as a part of any forecasting methodology because it is a way to measure the accuracy and reliability of the model. The primary objective of the evaluation is to quantify how well a model captures the patterns in historical data and its ability to predict future outcomes. The errors from the modelling and testing phases were utilised to assess the model's fitness and predictive performance, allowing for a comprehensive comparison of the model's abilities to meet the desired objectives.

Results

Missing Values:

An interesting finding is that the Gateway1 Airport Code column contains 58,955 missing values, accounting for 39.61% of the dataset. This suggests that a majority of the travels are direct flights without intermediate stops. While this is an interesting observation, the absence of Gateway1 Airport information does not impact the core objective of this study and is therefore treated as a finding rather than a limitation.

In addition, several critical columns contain a high proportion of zero values, indicating missing or unrecorded data. The breakdown of zero values relative to the total of 148,933 rows is as follows:

- RPKs: 2382 (1.60%)
- Total Est. Pax: 4,498 (3.02%)
- AvgFare First: 145,009 (97.36%)
- AvgFare Business: 141,580 (95.07%)
- AvgFare Premium Economy: 139,446 (93.63%)
- AvgFare Total: 125,897 (84.56%)
- Total Est. Revenue: 125,897 (84.56%)
- AvgFare FullY: 131,504 (88.30%)
- Bookings (Unadjusted): 65,336 (43.86%)

Rows with zero values in RPKs or Total Est. Pax was removed, and for other variables, zero values were excluded from mean calculations to prevent skewing the aggregated statistics and ensure the accuracy of financial metrics like average fare and total revenue.

Outliers Handling

Outliers were identified and handled to ensure the integrity of the data and prevent any extreme values from skewing the model performance. A significant outlier was detected in March 2023, where certain financial and demand metrics showed abnormal spikes. These outliers were corrected by replacing them with the average of the surrounding months, preserving the overall trend and avoiding any distortions in the data.

Data Aggregation and Key Variables

The dataset was aggregated monthly to ensure consistency for time series analysis and forecasting. The aggregation was done using the sum for passenger counts (Total Est. Pax, RPKs) and mean for fare and revenue metrics (excluding zeros). The key aggregated variables include:

- Total Estimated Passengers (Sum Total Est. Pax): A primary indicator of passenger demand.
- Revenue Passenger Kilometres (Sum RPKs): Reflects the volume of passenger travel.
- Bookings (Unadjusted): Measures booking activity.
- Fare Variables: AvgFare Business, AvgFare First, and AvgFare Premium Economy, among others, represent different fare classes.
- Total Est. Revenue: Summarised financial metrics indicating the revenue generated from the recorded passengers.

The dataset reveals a clear pattern in intra-African air traffic demand from January 2019 to December 2023, as shown in Figure 32 below.

The plot of Total Estimated Passengers demonstrates fluctuations in demand over the five-year period. Notably, there is an increasing trend in passenger demand from 2019 to 2020, followed by a sharp and significant drop in early 2020. This decline in traffic is largely attributed to the impact of the COVID-19 pandemic, which led to widespread travel restrictions, lockdowns, and a halt in international flights, causing a substantial decrease in passenger volumes. For example, IATA's March 2020 report highlighted that global international RPKs dropped by 10.3% in February, further falling to 55.8% by May. In the Asia-Pacific region, the decline reached 65.5%, marking the largest decline ever recorded.

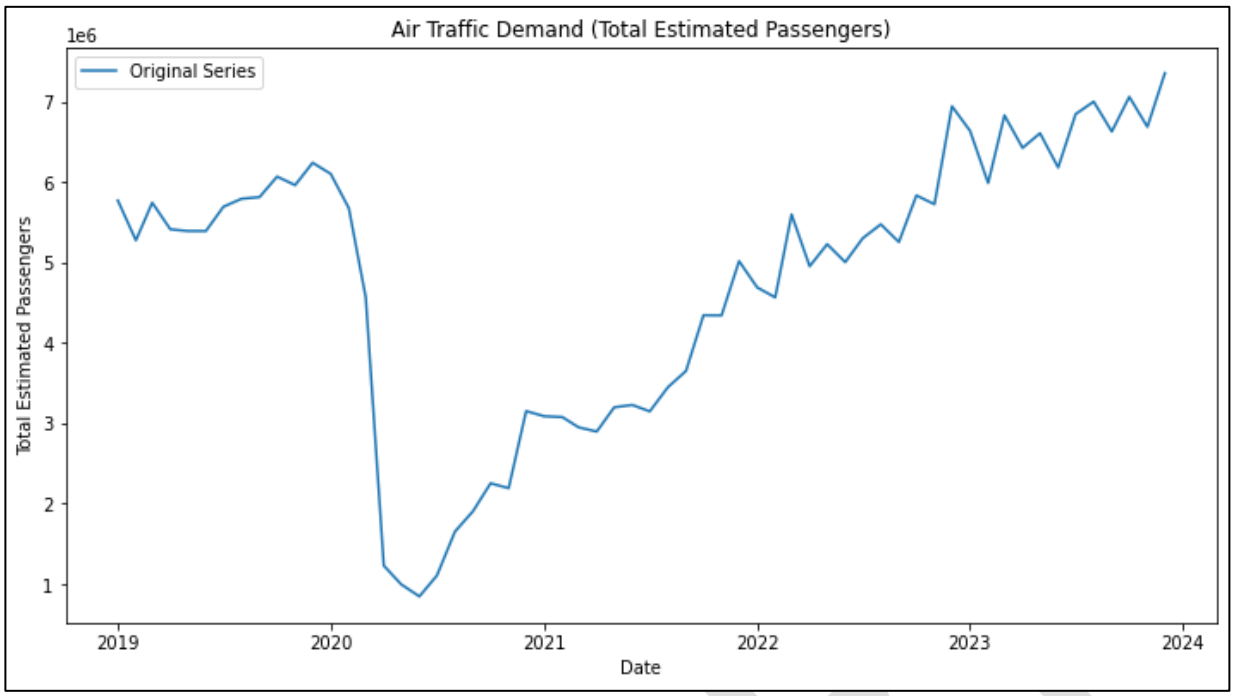


Figure 32 Intra-African Air Traffic volume; Source: Author analysis based on AFRAA data, 2024

The air traffic demand trend in Africa from 2019 to early 2024 reflects a story of sharp disruption followed by resilient recovery and growth (Figure 32). Before 2020, passenger volumes were stable and gradually increasing, reflecting steady market development. However, in early 2020, the continent experienced a dramatic collapse in demand, with passenger numbers dropping to their lowest levels due to the COVID-19 pandemic, widespread border closures, and travel restrictions. From 2021 onwards, a cautious recovery began, though it was initially uneven, reflecting the differing pace of reopening across African nations. By 2022, the trend strengthened significantly, with clear upward momentum indicating renewed traveller confidence, economic reopening, and pent-up demand for air services. Throughout 2023, air traffic not only returned to pre-pandemic levels but exceeded them, highlighting a shift from recovery to genuine growth. The beginning of 2024 shows record-high passenger volumes, suggesting that African aviation is entering a new expansion phase. This robust resurgence underscores the resilience of African air transport but also points to growing pressures on infrastructure, connectivity, and policy frameworks.

To provide further clarity on the impact of the COVID-19 pandemic, Figure 33 includes vertical lines indicating the start and the end of the COVID-19 pandemic. These vertical lines help contextualise the significant drop in passenger numbers in early 2020 and provide a clear demarcation for the recovery phase.

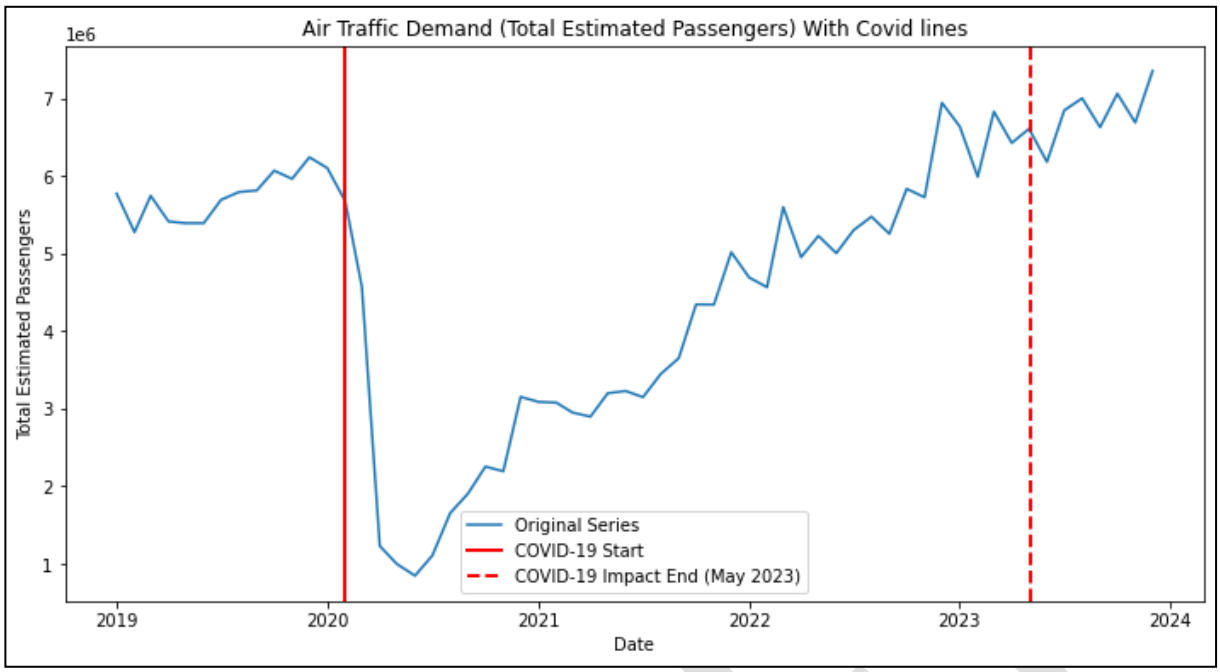


Figure 33 Intra-African Air Traffic volume with Covid-19 Pandemic start and end marked.

Time Series Decomposition; Source: Author analysis based on AFRAA data, 2024

The air traffic demand in Africa shows a sharp collapse starting around early 2020 with the onset of COVID-19, as indicated by the first red line (Figure 33). Passenger volumes plunged dramatically and remained depressed through much of 2020 before beginning a gradual recovery in 2021. The rebound gained strength throughout 2022, and by May 2023 (the second red line), air traffic demand had fully recovered to pre-pandemic levels. Post-May 2023, the trend continues upward, suggesting strong and sustained growth beyond simple recovery, positioning African aviation for a new phase of expansion.

To further examine these trends, a time series decomposition was used to further explore the data and its inner dynamics (Shown in Figure 34). This decomposition separates the data into three primary components: trend, seasonality, and residuals. The trend component shows the overall increase in passenger demand post-pandemic, while the seasonal component highlights recurring patterns within the data, such as seasonal peaks in demand. As shown in the seasonal plot Figure SS, these fluctuations repeat every 12 months, with high peaks observed in certain months and lower troughs in others, indicating a yearly seasonal cycle.

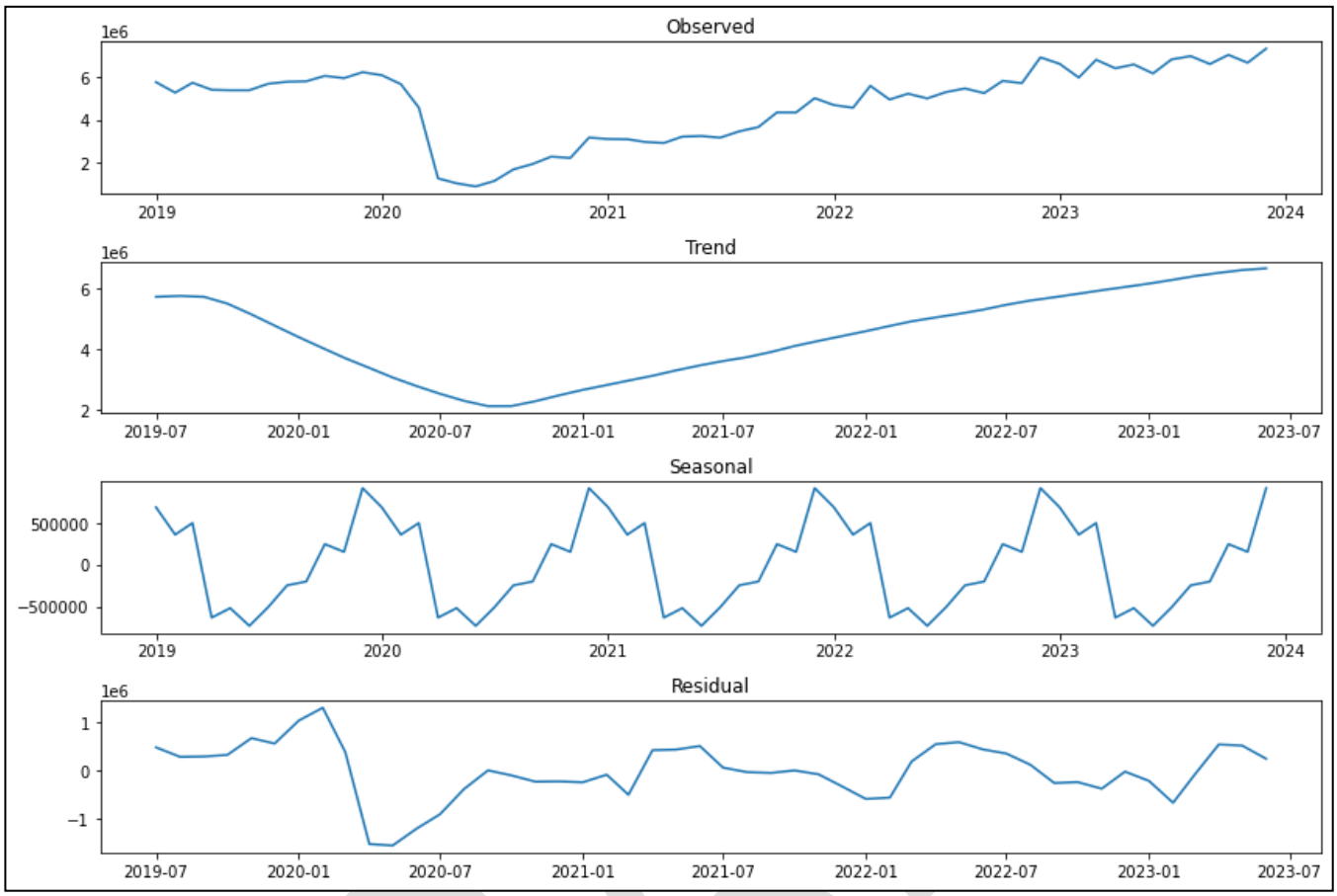


Figure 34 Time Series Decomposition of Intra-African Air Traffic Demand Data Split and Forecasting; Source: Author analysis based on AFRAA data, 2024

In Figure 34, the time series decomposition of intra-African air traffic demand shows that while the observed data experienced a major drop during 2020 due to COVID-19, the long-term trend steadily recovered and has been rising strongly since early 2021. Seasonality is evident, with regular, repeated fluctuations tied to travel patterns across the year, showing peaks during typical high-demand periods. The residual component, representing irregularities not captured by the trend or seasonality, is relatively small post-2021, indicating that most of the variation is now explainable by stable patterns. Overall, the decomposition highlights a healthy and consistent growth trajectory for intra-African air travel post-pandemic, with predictable seasonal effects and minimal unexplained shocks in recent periods.

The Prophet model was trained using the entire dataset, from January 2019 to December 2023, leveraging all available historical data to generate forecasts. Since Prophet does not require an explicit train/test split, the model was applied to predict the following six months, from January 2024 to June 2024.

To examine the relationships between the endogenous and exogenous variables, the Pearson Correlation Coefficient (PCC) was computed. The PCC measures the linear relationship between two variables, with values close to +1 or -1 indicating a strong positive or negative correlation, respectively. A value near 0 suggests little to no correlation. The interpretation of the correlation coefficients is detailed in Figure 35, where the size of the correlation coefficient is shown, indicating the strength of the relationship.

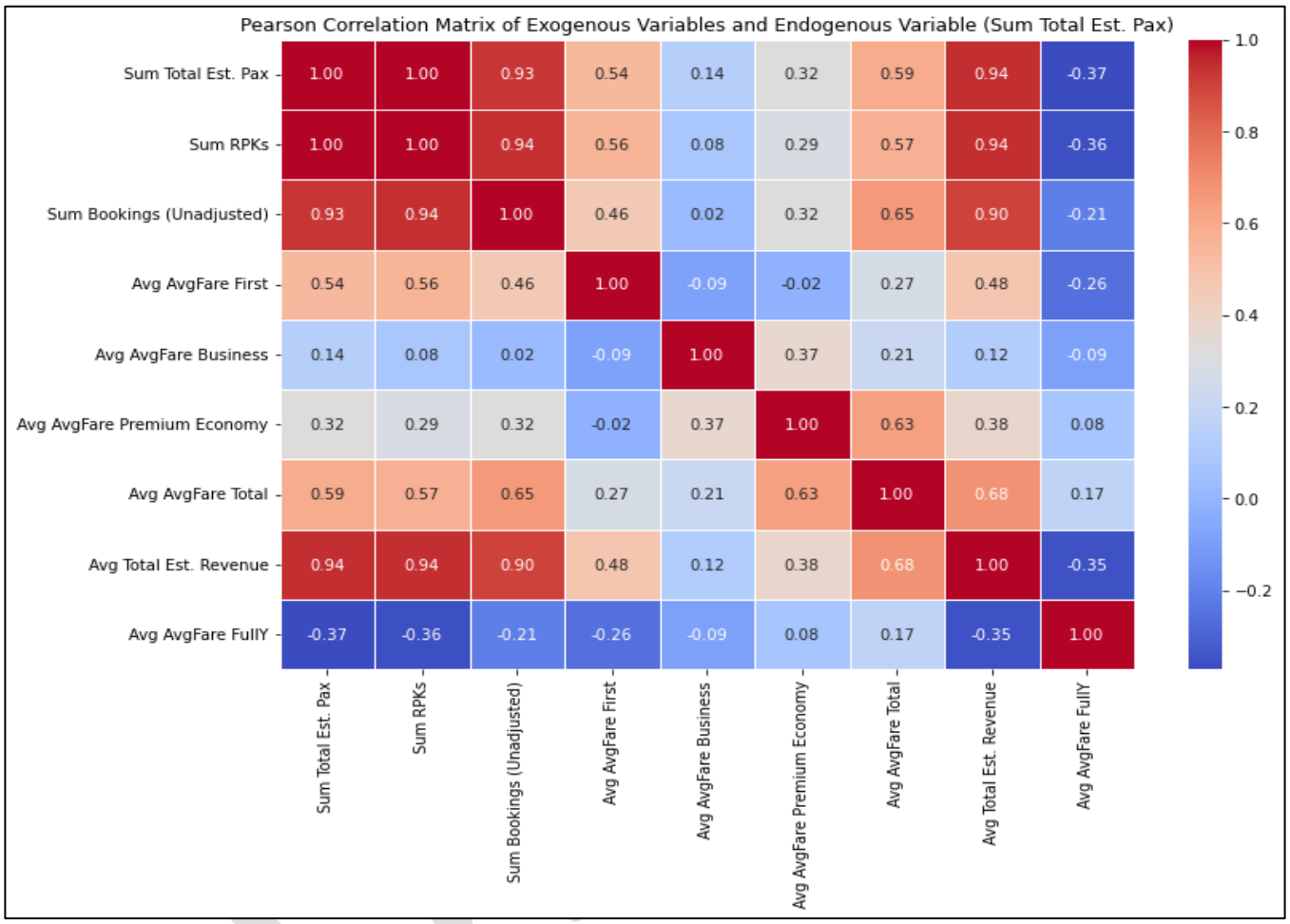


Figure 35 Pearson Correlation Matrix of Exogenous and Endogenous Variable; Source: Author analysis based on AFRAA data, 2024

In Figure 35, the Pearson correlation matrix shows that total estimated passengers are highly correlated with sum RPKs (Revenue Passenger Kilometers) and sum bookings, both with a perfect correlation of 1.00, indicating that traffic volumes and ticket sales move directly in tandem. Average airfares across different cabin classes (Economy, Business, Premium Economy, First) show relatively weak or even negative correlations with total passengers, suggesting that fare levels have less direct influence on overall demand. Interestingly, total estimated revenue is also strongly correlated with passenger volumes (0.95), confirming that revenue growth is largely driven by increased traffic rather than higher prices. Overall, the

matrix highlights that capacity, and bookings are the strongest predictors of passenger volumes in the African aviation market, while price sensitivity is less pronounced across cabin classes.

The correlation matrix reveals several key relationships between the endogenous variable (Sum Total Est. Pax) and the exogenous variables. As expected, Sum RPKs exhibits a very high correlation with Sum Total Est. Pax (r = 1.0), as RPKs directly depend on the number of passengers, reflecting the total distance flown by passengers. This strong correlation suggests that RPKs and Sum Total Est. Pax are essentially measuring the same underlying concept, with RPKs being a function of the number of passengers and their respective distances travelled.

Similarly, Sum Bookings (Unadjusted) (r = 0.93) and Avg Total Est. Revenue (r = 0.94) shows very high correlations with the target variable. These relationships reinforce the close link between air traffic demand and other factors like booking levels and revenue, both of which depend on passenger numbers, since Sum Total Est. Pax is the fundamental driver for both RPKs and Revenue, these strong correlations suggest redundancy in using these variables as separate predictors.

Other notable relationships include moderate positive correlations between Avg AvgFare Premium Economy (r = 0.37) and Avg AvgFare First (r = 0.46) with Sum Total Est. Pax, indicating that changes in pricing in premium classes can influence passenger demand, although to a lesser degree. On the other hand, the moderate negative correlation (r = -0.37) between Avg AvgFare Fully and Sum Total Est. Pax suggests that higher fully paid fares may be associated with a reduction in passenger demand, potentially due to price sensitivity among customers. As discussed in previous chapters, the data contains a significant number of missing values, so this analysis and the conclusions drawn should be regarded as assumptions.

The analysis also revealed important correlations between the exogenous variables themselves. Sum RPKs, Avg Total Est. Revenue and Sum Bookings (Unadjusted) are highly correlated ($r \geq 0.9$), indicating that these variables are closely related. Similarly, Avg Total Est. Revenue has a moderate positive correlation (r = 0.68) with Avg AvgFare Total, suggesting that higher fares generally lead to higher revenue. This reinforces the idea that revenue generation is tightly coupled with passenger numbers and fare prices.

Prophet with Exogenous Variables

The Prophet model was applied to forecast air traffic demand by incorporating various exogenous variables as regressors. The primary objective was to examine how these external factors, in addition to their high correlation with the target variable, could improve the model's forecasting accuracy compared to the regular Prophet model or PCA-derived regressors. Specifically, the goal was to explore whether these exogenous variables could better capture the underlying dynamics of air traffic demand. The following exogenous variables were selected as regressors:

- RPKs;

- Bookings (Unadjusted);
- AvgFare First;
- AvgFare Business;
- AvgFare Premium Economy;
- AvgFare Total;
- Total Est. Revenue;
- AvgFare FullY.

These variables were tested one by one, and their respective impact on the forecast was evaluated. As shown in Figure 36, some of the regressors, such as RPKs, Bookings and Total Est. Revenue, performed well in predicting the actual data, closely following the fluctuations and trends of the observed demand. On the other hand, some variables, such as AvgFare Business and AvgFare FullY, did not perform as well, with their forecast deviating significantly from the actual data. This visual inspection highlights the varying effectiveness of the exogenous variables in capturing the demand dynamics.

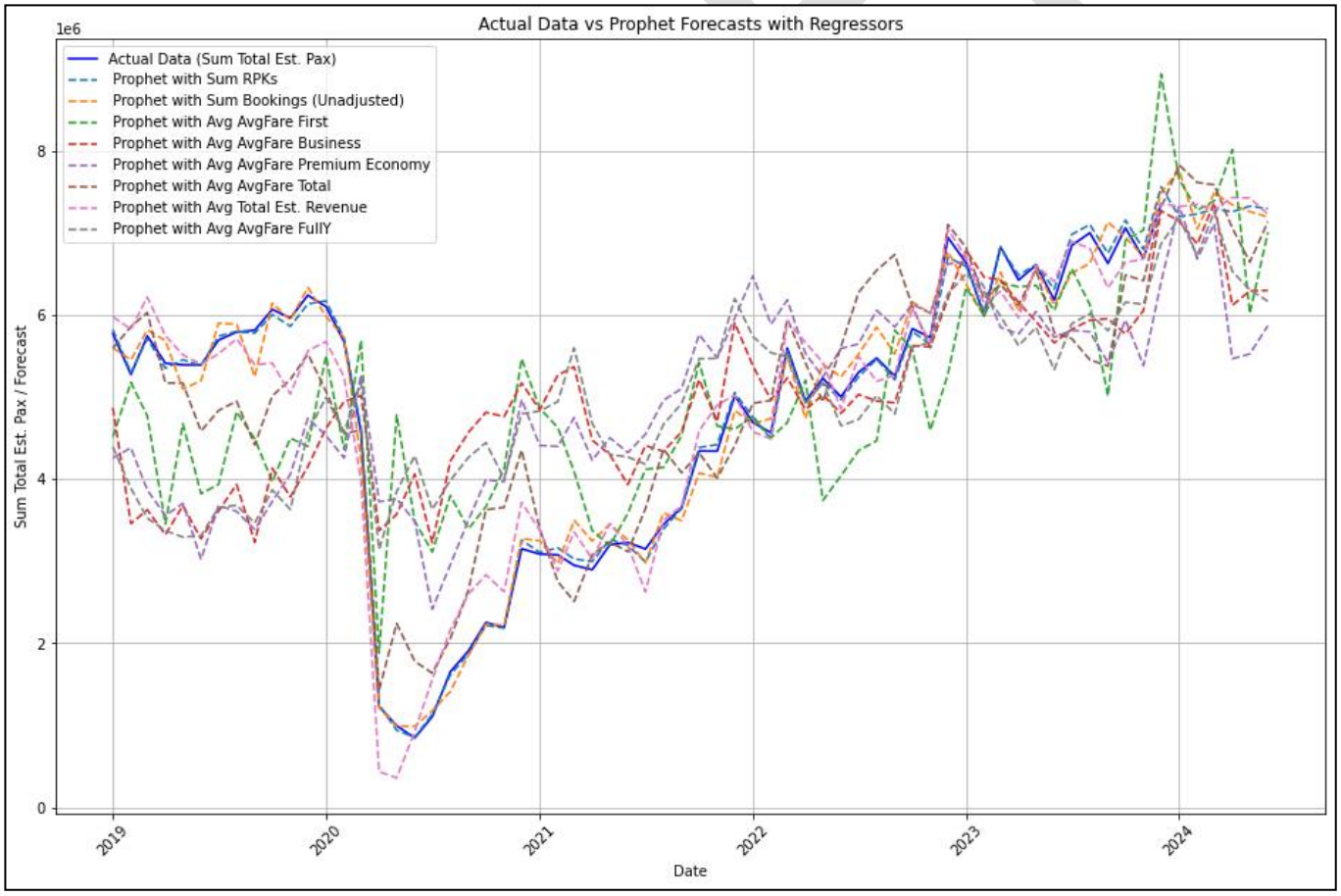


Figure 36 Forecasted Values from All Exogenous Variables vs. Actual Data; Source: Author analysis based on AFRAA data, 2024

By incorporating dynamic factors such as RPKs, booking trends, and pricing strategies into forecasting efforts, stakeholders can enhance readiness, optimise resource allocation, and improve capacity planning. These insights are particularly valuable during periods of disruption, such as those introduced by the COVID-19 pandemic.

Exogenous variables played a central role in improving forecasting accuracy across models. Variables such as RPKs, Bookings, Average Fares across different classes, and Total Estimated Revenue were all relevant to aviation demand. However, their contributions varied significantly. For instance, certain variables, like RPKs and Bookings, strongly aligned with demand patterns and enhanced forecast reliability. In contrast, other variables, despite being relevant, showed weaker performance, which could be attributed to the presence of missing data or their limited direct relationship to short-term demand fluctuations. This underscores the need for thoughtful variable selection to ensure accurate predictions.

Stakeholder engagement – Workshop

Stakeholder consultations are a critical component of the methodology employed in this study, aimed at supporting the African Civil Aviation Commission (AFCAC) in assessing the Aviation market competition in Africa.

The African Continental Coordination Meeting on Competition in Aviation, held on November 7–8, 2024, at the AFCAC headquarters in Dakar, Senegal, was a pivotal component of the current study. This workshop forms part of a broader initiative aimed at addressing critical challenges and opportunities in the continent's aviation sector, with a particular focus on fostering harmonisation of competition regulations in alignment with the AU´s flagship projects, such as the SAATM and the AfCFTA.

As African nations work toward liberalising air transport under SAATM and promoting economic integration through AfCFTA, the workshop aimed to bridge the regulatory gaps and align competition policies at continental, regional, and national levels. This aligns with the study's objectives of identifying structural barriers, assessing the impact of existing frameworks, and formulating actionable strategies to enhance competition in Africa's aviation market.

Supported by the European Union and implemented by the European Union Aviation Safety Agency (EASA), the workshop gathered stakeholders from key organisations, including AFCAC, AfCFTA, and Regional Economic Communities (RECs) such as COMESA, EAC, and ECOWAS. Participants included experts in competition law, policymakers, and representatives from aviation-related entities, fostering a collaborative environment for robust dialogue.

By creating a platform for knowledge exchange and capacity building, the workshop facilitated discussions on pressing issues such as regulatory fragmentation, market inefficiencies, and consumer protection. It also aimed to equip African competition authorities with the tools necessary to address anti-competitive

practices and promote fair competition in alignment with Africa's broader economic integration goals. This workshop serves as a critical milestone in advancing the study's overarching mission of creating a more competitive, integrated, and sustainable African aviation sector.

The discussions revolved around critical challenges affecting aviation competition, including regulatory fragmentation, high operating costs, and inadequate connectivity, alongside actionable strategies to address these issues. This section presents the key findings from the workshop.

Growth Challenges in African Aviation

Africa's air traffic growth, estimated at 5% annually from 2019 to 2040, remains constrained by high operational costs, limited economies of scale, and restrictive national policies. Participants highlighted the following impediments:

1. **Protectionist Policies**: Many African states prioritise national carriers, creating barriers to market entry and restricting competition. This limits the potential for price reductions and market efficiency.
2. **High Airfares and Operating Costs**: Elevated airfares, driven by excessive taxes and operational inefficiencies, deter intra-African travel and undermine accessibility for a broader population.
3. **Infrastructure Deficits**: Limited investment in airport infrastructure, air traffic management, and ground-handling facilities restrict the growth potential of African aviation. Public-private partnerships, while identified as a viable solution, are underutilised.

Regulatory Fragmentation and Connectivity Challenges

Fragmented regulatory frameworks across the continent hinder connectivity and market liberalisation. The following challenges were underscored:

- **Inconsistent Application of SAATM Provisions**: Despite its aim to liberalise African skies, inconsistent implementation of aviation freedoms constrains route optimisation and cost efficiency.
- **Limited Collaborative Agreements**: The absence of code-sharing and interline agreements among airlines restricts seamless travel, reflecting mistrust and protectionist attitudes.
- **Airport Capacity Constraints**: Insufficient infrastructure at key hubs impedes airlines' ability to establish new routes, exacerbating connectivity gaps.

Consumer Protection and Accountability

Participants raised concerns about prevalent consumer grievances, including cancelled flights without compensation and mishandled luggage. Stakeholders emphasised the need for:

- **Centralised Complaint Mechanisms**: AFCAC was highlighted as a potential mediator for addressing consumer grievances, ensuring accountability, and building trust.

- **Public Awareness Campaigns**: Increasing consumer awareness of their rights under international conventions could empower passengers to seek redress effectively.

Merger Control and Market Efficiency

Cross-border merger control presents unique challenges in the African context due to overlapping jurisdictions and limited regulatory capacity. The following insights emerged:

- **Harmonisation of Regional Frameworks**: Regional competition authorities like COMESA and EAC have taken steps toward uniform merger control practices, yet broader continental alignment is required.
- **Addressing Global Transactions**: Participants stressed the need for supranational oversight to manage mergers involving global entities, ensuring alignment with local market dynamics.

Digital Competition and Capacity Building

The workshop highlighted the growing significance of digital markets in aviation and the capacity constraints faced by regulatory authorities:

- **Regulating Digital Markets**: The rapid expansion of digital platforms necessitates updated regulatory frameworks to prevent market abuse while fostering innovation.
- **Capacity Development**: Establishing a structured mentorship and training program tailored to competition law and digital market regulation was identified as a priority.

Outcomes

The workshop delivered several critical outcomes that are instrumental in advancing the harmonisation of competition regulations in Africa's aviation sector. These outcomes reflect a collective effort to address structural challenges and create a unified framework for fostering competition across the continent.

Strengthened Cooperation Among Key Institutions: A prominent outcome of the meeting was the recognition of the need for enhanced cooperation, collaboration, and coordination among key entities, including the AFCAC, the AfCFTA, and the competition authorities of Regional Economic Communities (RECs). This strengthened cooperation is seen as vital to achieving coherent and effective competition frameworks. By fostering dialogue and partnership among these institutions, the meeting laid a foundation for collective action in tackling cross-border challenges and ensuring regulatory consistency.

Increased Awareness and Capacity Building: The workshop underscored the importance of raising awareness about competition issues and enhancing the capacity of African experts. Participants identified a pressing need for targeted capacity-building initiatives to equip stakeholders with the skills and knowledge necessary for implementing and enforcing competition laws effectively. Such initiatives include

training programmes, mentorship opportunities, and the development of specialised resources to address market dynamics and anti-competitive practices. Capacity building is critical to empowering national and regional authorities to navigate the complexities of the aviation market and align their policies with continental objectives.

Re-evaluation of Institutional Structures: Another significant outcome was the call to re-evaluate institutional frameworks at both the continental and regional levels. Participants highlighted the necessity of ensuring that continental regulations are binding on all member states to promote regulatory alignment and adherence. The discussion emphasised the importance of establishing robust enforcement mechanisms to address regulatory non-compliance effectively. A streamlined institutional structure that integrates national, regional, and continental priorities is seen as key to reducing fragmentation and enhancing regulatory efficiency.

Development of a Continental Platform: A consensus emerged on the need to establish a continental platform to coordinate harmonisation efforts and address overlaps in regulatory competencies. Such a platform would serve as a central mechanism for facilitating dialogue, knowledge exchange, and alignment of competition regulations across African states. By promoting collaboration among AFCAC, AfCFTA, and RECs, this platform aims to create a unified approach to competition that reduces inconsistencies and supports the broader objectives of economic integration under the SAATM.

Delegation and Differentiation of Responsibilities: The workshop also highlighted the importance of clearly defined roles and responsibilities to ensure effective regulatory governance. Participants acknowledged the need for a framework that delineates responsibilities between continental and regional entities while reconciling differences in their regulatory approaches. Such differentiation is essential to avoid jurisdictional conflicts, streamline decision-making processes, and promote accountability in implementing competition laws.

In conclusion, the outcomes of the workshop reflect a comprehensive strategy to address the challenges of competition regulation in Africa's aviation sector. Through strengthened cooperation, capacity building, re-evaluated institutional frameworks, and the creation of a continental platform, the groundwork has been laid for a more integrated and competitive aviation market. These efforts, coupled with a clear delegation of responsibilities, are pivotal to advancing the harmonisation of competition regulations and unlocking the full potential of Africa's aviation sector in alignment with SAATM and AfCFTA objectives.

RECOMMENDATIONS

This chapter presents evidence-based recommendations aligned with the methodology employed in this study, including insights derived from a comprehensive literature review, stakeholder consultations and data analysis. These recommendations aim to address the challenges in the African civil aviation market, enhance alignment with international standards, and support the operationalisation of the SAATM.

Harmonisation Roadmap

To address the fragmented regulatory landscape of Africa's aviation sector, it is essential to develop a structured Harmonisation Roadmap that aligns national and regional regulations under a cohesive continental framework. This roadmap should identify specific competition issues such as market access disparities, pricing inconsistencies, and anti-competitive practices. By focusing on synchronising policies across regions, the roadmap can ensure consistency in regulatory enforcement and compliance. The process should involve key stakeholders, including the AU; RECs, CAAs, and airline operators, to ensure that the roadmap reflects the realities and needs of the industry. Priority steps should include establishing a common regulatory body or framework, adopting unified rules on market access and pricing, and setting clear timelines for implementation. This harmonisation will be critical for enabling the SAATM to achieve its goal of seamless and fair competition across Africa's aviation markets.

Engage Political Leadership

Political commitment is a cornerstone for the successful implementation of competition policies in Africa's aviation sector. Elevating competition issues to the political level ensures that they become part of broader continental strategies, such as AfCFTA and SAATM initiatives. Policymakers must be engaged to prioritise competition as a key driver for economic growth and connectivity. Strategies for achieving this include convening high-level summits, fostering dialogue between aviation regulators and political leaders, and integrating competition policies into national development plans and regional trade agreements. By securing political buy-in, decision-makers can allocate resources, streamline policy implementation, and address resistance from entrenched interests. Political leadership will also facilitate the resolution of cross-border challenges, such as route monopolies and tariff inconsistencies, which often hinder fair competition.

Sector-Wide Training and Awareness Initiatives

A well-informed industry is essential for the effective enforcement of competition regulations. Conducting Sector-Wide Training and Awareness Initiatives will empower businesses, regulators, and other stakeholders with the knowledge to identify and address anti-competitive behaviours. These initiatives should focus on building capacity among industry players, including airline operators, airport authorities, and ground service providers, to understand and comply with competition laws. Training programmes should be tailored to address specific issues such as pricing practices, fair market access, and

collaboration under anti-trust laws. Additionally, public awareness campaigns can foster a culture of compliance and encourage whistleblowing on anti-competitive practices. Partnerships with academic institutions, industry associations, and international organisations like the ICAO and the AFCAC can enhance the effectiveness of these initiatives. Regular workshops, online modules, and compliance toolkits should be disseminated to create a continent-wide culture of competition compliance, ultimately ensuring a level playing field for all market participants.

Formulation of a Continental Framework

To foster fair competition and integrate Africa's aviation markets, it is imperative to establish a Continental Framework that unifies competition regulations and ensures clarity, consistency, and efficiency across regions. Thus, the fair competition provisions focus on air carriers belonging to a given state party, which should not benefit from special agreements between the concerned state parties when they were concluded to adversely affect competition.

This framework should serve as a guiding document to harmonise diverse regulatory approaches, create synergies among national and regional authorities, and reduce the risks of conflicting institutional mandates. Key components of the framework should be:

1. **Unified Regulatory Standards:**

Develop and adopt standardised rules and guidelines for competition regulation that are aligned with international best practices. These standards should address core aspects such as market access, pricing transparency, anti-competitive practices, and consumer protection. By aligning with global frameworks such as those from the ICAO and the World Trade Organisation (WTO), the framework can ensure credibility and global competitiveness for African markets.

2. **Clearly Defined Roles and Responsibilities:**

The framework must delineate clear roles and responsibilities for all stakeholders, including RECs, CAAs, and competition oversight bodies. This will help prevent jurisdictional overlaps and conflicts. For example, RECs could be tasked with monitoring regional compliance, while a central continental authority, such as the AFCAC oversees cross-border and continental issues.

3. **Conflict Resolution Mechanism:**

Include a robust mechanism for resolving disputes between national and regional authorities or between private sector players and regulators. This mechanism could involve mediation panels or arbitration systems managed by a central regulatory body to ensure swift and impartial conflict resolution.

4. **Policy Flexibility for Regional Variances:**

While ensuring alignment, the framework should allow flexibility for regions to adapt certain policies to their unique market conditions. This could include phased implementation of regulations for emerging aviation markets or special provisions for landlocked or island nations.

5. **Monitoring and Enforcement Systems:**

Establish a centralised monitoring and enforcement mechanism to track compliance with the framework and address violations. This system should be data-driven, leveraging tools such as digital reporting platforms and collaborative agreements for information sharing among stakeholders.

Implementation Strategy:

- **Stakeholder Engagement:** Engage national governments, RECs, CAAs, airlines, and other industry stakeholders in the design and adoption of the framework to ensure buy-in and practicality.
- **Capacity Building:** Invest in training and capacity building for national and regional authorities to implement and enforce the framework effectively.
- **Legislative Alignment:** Encourage member states to align their national laws with the continental framework to eliminate regulatory inconsistencies.
- **Regular Review and Updates:** Establish a mechanism for periodic review of the framework to ensure it remains relevant and adaptable to evolving market dynamics.

Monitoring System

A comprehensive competition monitoring system is a critical tool for addressing the challenges of fragmented regulations and inconsistent enforcement in Africa's aviation sector. By establishing a centralised database, regulators can collect real-time data on market trends, airline performance, and passenger behaviours. This system would enable the identification of anti-competitive practices, such as predatory pricing and abuse of market dominance, using advanced analytics and automated alerts. With this information, regulators could make data-driven decisions about policy reforms and targeted interventions, ensuring that competition issues are resolved efficiently and equitably. Additionally, the database would serve as a platform for sharing insights across regions, providing a foundation for regulatory harmonisation and fostering consistency in the application of competition policies throughout the continent.

Beyond regulatory oversight, such a system would support transparency and collaboration among stakeholders, including airlines, policymakers, and regional economic communities. It could provide aggregated market data and competition reports accessible to the public, promoting accountability and trust. Moreover, the system would align with broader continental initiatives like the SAATM and the AfCFTA,

enabling a unified approach to competition management. By empowering regulators and industry players with actionable insights, the monitoring system would enhance market efficiency, encourage fair competition, and support the long-term growth and sustainability of Africa's aviation industry.

Policy Recommendations: Ensuring a Level Playing Field in African Aviation

To foster an even playing field in African aviation, the AFCAC should adopt a multifaceted, inclusive, and strategic approach that addresses regulatory, operational, and infrastructural disparities across the continent. Below are key recommendations.

1. Harmonise Regulatory Frameworks Across Member States

- ✓ Adopt and enforce Yamoussoukro Decision (YD) and SAATM principles uniformly.
- ✓ Promote mutual recognition of licenses, certifications, and safety oversight procedures.
- ✓ Standardise charges and tax regimes to reduce competitive distortions caused by uneven national fiscal policies.

2. Improve Transparency in Airport and Air Navigation Charge

- ✓ Establish an AFCAC-led centralised database on fees and taxes levied at airports across Africa.
- ✓ Mandate annual reporting and benchmarking of airport charges, fuel surcharges, and other cost structures.
- ✓ Introduce cost-justification audits for service providers to ensure fair and non-discriminatory pricing.

3. Encourage Market Access and Liberalisation

- ✓ Facilitate fifth and sixth freedom rights for African carriers on a reciprocal basis.
- ✓ Eliminate protectionist practices that limit route access for foreign African airlines.
- ✓ Create a dispute resolution mechanism for bilateral disagreements that hinder fair competition.

4. Address State Subsidies and Financial Disparities

- ✓ Develop guidelines for transparent and fair state aid policies to prevent market distortion.
- ✓ Support financially weaker or emerging carriers with pan-African development funding, possibly through partnerships with the African Development Bank (AfDB).
- ✓ Promote fleet modernisation programs for smaller airlines via joint leasing mechanisms or pooled procurement.

5. Foster Infrastructure Equality and Capacity Building

- ✓ Advocate for equitable investment in secondary and underserved airports, improving access for smaller carriers.
- ✓ Support joint training programs for aviation personnel to address capacity gaps across states.
- ✓ Enhance digital and physical connectivity between landlocked and coastal regions to decentralise traffic flow.

6. Establish a Performance Monitoring and Compliance Unit

- ✓ AFCAC should monitor airline and airport performance metrics (e.g., PLF, ASK, RPK, ATK, delay times).
- ✓ Create a Fair Competition Index to rank states and service providers based on alignment with fair competition standards.
- ✓ Issue compliance scorecards and highlight best practices for member states.

7. Promote Regional Airline Cooperation and Alliances

- ✓ Encourage inter-airline agreements, code-sharing, and resource pooling to reduce duplication and enhance connectivity.
- ✓ Incentivise joint ventures between larger and smaller African carriers to help expand regional access.
- ✓ Facilitate interline partnerships that reduce barriers for passengers on multi-carrier itineraries.

8. Integrate Cargo Strategy for Equitable Growth

- ✓ Develop a continental air cargo framework that ensures fair slot access, customs harmonisation, and infrastructure for perishable goods and e-commerce.
- ✓ Support cargo-focused start-ups and regional freight carriers through subsidies or cargo hubs.

By creating uniform standards, enhancing transparency, and levelling the playing field for both large and small airlines, AFCAC can catalyse the growth of a more equitable, competitive, and connected African aviation market.

Practical Measures and Recommendations

➢ Promote Non-Discriminatory Market Access:

- Eliminate preferential treatment for national airlines.

- Expand open skies and fifth freedom rights within Africa.

➢ Monitor and Address Market Dominance:

- Enforce rules against abuse of dominant positions and predatory practices.

- Promote competitive neutrality between state-owned and private carriers.

➢ Support Smaller Carriers and New Entrants:

- Ensure fair slot allocation and access to airport infrastructure.

- Facilitate interline agreements and shared resource programs.

➢ Establish Effective Dispute Resolution Mechanisms:

- Create fast-track arbitration under AFCAC.

- Encourage collaboration among national competition bodies for cross-border cases.

Roles of Key Institutions

AFCAC:

- Lead SAATM enforcement and aviation competition monitoring.

- Publish fair competition scorecards and conduct regulatory audits.

RECs:

- Coordinate regional implementation of harmonised aviation competition policies.

- Support regional infrastructure development and market integration.

National Competition Authorities:

- Enforce domestic competition rules and investigate anti-competitive behaviour.

- Collaborate on cross-border enforcement and policy alignment.

AfCFTA Competition Protocol:

- Serve as the legal backbone for cross-border competition in aviation.

- Enable unified enforcement mechanisms and continental cooperation.

Ensuring fair competition in African aviation requires coordinated action at national, regional, and continental levels. AFCAC, RECs, national competition authorities, and the AfCFTA Competition Protocol must work synergistically to eliminate market distortions, support smaller players, and build a unified air transport market that benefits all African economies.

As part of the final recommendations aligned to the study objectives, the following are pivotal in terms of establishing an even playing field within Africa´s aviation sector.

Recommendations for Strengthening Competition Laws and Policies

1. Accelerate Full Implementation of SAATM

African governments must demonstrate real political commitment by:

- Removing non-physical barriers (e.g., high taxes, visa restrictions)
- Updating bilateral air service agreements to align with SAATM principles
- Setting binding timelines for compliance

2. Harmonise Competition Laws Across Africa

The AU, through instruments like the AfCFTA competition protocol, should:

- Promote regional competition frameworks applicable to aviation

- Develop a model aviation competition code for member states to adopt
- Create regional dispute resolution mechanisms for aviation competition issues

3. Build Capacity of Competition Authorities

- Provide targeted funding, training, and technical assistance to national competition authorities.
- Encourage the creation of specialised aviation competition units within these bodies.
- Foster cooperation between aviation regulators and competition authorities.

4. Address Dominance and Anti-Competitive Practices

- Monitor and regulate dominant airlines to prevent abuse of market power.
- Review and regulate strategic alliances and code-sharing agreements to ensure they do not distort competition.
- Encourage fair access to airport slots, ground handling, and other key facilities.

5. Foster Private Sector Participation

- Liberalise ownership and control rules to allow more private investment in airlines.
- Support start-up airlines with fair access to routes and airport facilities.
- Promote LCCs to increase affordability and stimulate intra-African travel.

6. Enhance Consumer Protection Frameworks

- Establish pan-African standards for passenger rights.
- Create independent complaint resolution bodies accessible to consumers.
- Mandate transparent disclosure of fares, taxes, and fees.

The African aviation sector holds immense potential for driving economic integration, tourism, and investment. However, realising this potential requires addressing deep-rooted competition challenges. Strengthening competition laws and policies, through full implementation of SAATM, harmonised legal frameworks, capacity building, and proactive regulation of dominant players is essential. A more competitive African aviation market will not only lower costs and improve services but also unlock opportunities for millions across the continent. Political will, regional cooperation, and strong institutions will be the cornerstones of this transformation.

Tools for Competition Monitoring and Enforcement in African Aviation

1. Competition Authority Investigative Powers

- *Market Studies*: Regularly conduct aviation market studies to understand pricing trends, capacity allocations, route access, and market concentration.
- *Investigations and Dawn Raids:* Empower authorities to conduct unannounced inspections ("dawn raids") at airline offices and airports to uncover evidence of price-fixing, predatory pricing, abuse of dominance, etc.
- *Data Collection*: Mandatory reporting obligations for airlines to submit route performance, fare structures, slot allocations, and partnership agreements.

2. Surveillance and Monitoring Tools

- *Airfare Monitoring Systems*: Set up a central airfare monitoring platform that tracks ticket prices across different carriers and routes to detect price-fixing or collusion.
- *Slot Monitoring Systems*: Monitor how airport slots (take-off/landing times) are allocated and used to prevent slot hoarding or anti-competitive blocking of rivals.
- *Open Data Dashboards*: Public dashboards to show real-time or quarterly airline market shares, on-time performance, customer complaints, etc.

3. Regulatory Tools

- *Merger Control:* Scrutinise airline mergers, acquisitions, and alliances (e.g., code-share agreements) to ensure they do not substantially lessen competition.
- *Licensing Conditions*: Issue air operator certificates (AOCs) or licenses with pro-competition conditions, such as mandatory interlining or access to essential facilities.
- *Public Service Obligations (PSO) Mechanisms*: Allow competition while ensuring service to remote routes by transparent PSO tenders rather than exclusive monopolies.

4. Legal Tools

- *Sector-Specific Competition Regulations*: Specialised aviation competition rules under national laws that define and outlaw specific anti-competitive practices (e.g., predatory pricing, capacity dumping).
- *Sanctions and Fines*: Strong enforcement through deterrent-level fines and penalties against anti-competitive conduct.

- *Leniency Programs*: Introduce whistle-blower protections and leniency programs for airlines or employees who disclose cartel behaviour.

5. Coordination Tools

- *Cross-Border Cooperation Agreements*: Regional memoranda of understanding (MoUs) between competition authorities for sharing information and coordinating cross-border investigations (important because many African routes are international).
- *Joint Competition Committees*: At the REC level (e.g., COMESA, EAC, SADC), establish joint aviation competition committees to monitor intra-regional issues.
- *AU-Level Watchdog*: AFCAC's mandate as a continental watchdog for competition in aviation under SAATM.

6. Dispute Resolution and Appeals Mechanisms

- *Competition Tribunals*: Specialised aviation competition tribunals to hear appeals and competition disputes quickly and fairly.
- *Arbitration Panels*: Especially for cross-border aviation competition disputes between airlines or between airlines and states.

7. Capacity Building and Training Tools

- *Specialised Aviation Competition Training*: Continuous training for regulators, judges, and enforcement officers on aviation economics, airline alliances, predatory behaviour, and market definition.
- *Toolkits and Guidelines:* Develop African-specific competition guidelines for aviation, for instance, guidelines on assessing dominance, defining aviation markets, or analysing slot allocation abuses.

The following Table 18 outlines essential tools for the effective monitoring and enforcement of competition within the African aviation sector. Organised into key functional categories—investigative, monitoring, regulatory, legal, coordination, dispute resolution, and capacity building, these tools are designed to promote fair market practices, prevent anti-competitive conduct, and facilitate the liberalisation of air transport services across the continent. Their comprehensive and consistent application is critical to achieving the objectives of the SAATM initiative and fostering a competitive, integrated African aviation industry.

Category	Tools
Investigative	Market studies Dawn raids Data collection from airlines
Monitoring	Airfare monitoring systems Slot allocation monitoring Public data dashboards
Regulatory	Merger control reviews Licensing with pro-competition conditions PSO mechanisms
Legal	Sector-specific aviation competition laws Sanctions and fines Leniency programs
Coordination	Cross-border cooperation agreements Joint competition committees AFCAC watchdog role
Dispute Resolution	Specialised competition tribunals Arbitration panels
Capacity Building	Aviation competition training Development of toolkits and regulatory guidelines

Table 18 Tools for Competition Monitoring and Enforcement in African Aviation; Source: Compiled by author

Fostering Collaboration and Harmonisation of Regulatory Frameworks in African Aviation: An Action Plan for AFCAC

Since, AFCAC is uniquely positioned to lead the drive toward harmonised aviation regulations across Africa. This policy brief recommendations below outlines a strategic action plan to enhance collaboration among member states, harmonise regulatory frameworks, and achieve the goals of the SAATM. Implementing this plan will facilitate a more competitive, integrated, and efficient African aviation sector.

The Key Actions and Timeline section (Table 19) outlines a clear, phased roadmap for fostering collaboration and harmonisation of aviation regulatory frameworks across Africa. Each action step is strategically designed to build momentum, from drafting model regulations to creating platforms for continuous dialogue and technical assistance. The timeline ensures that early wins, such as the establishment of regulatory working groups and knowledge hubs, are achieved quickly, while more complex initiatives like dispute resolution mechanisms and scorecards are developed over time. Together, these actions aim to create an enabling environment that strengthens regulatory coherence, promotes fair competition, and accelerates the full realisation of the SAATM.

Action Step	Timeline	Description	Key Performance Indicators (KPIs)
1. Develop Model Aviation Regulations	6–12 months	Draft comprehensive model laws for competition, consumer protection, safety, and air service agreements.	Model regulations are completed and approved; At least 20 AU member states adopt within 2 years.
2. Establish a Continental Regulatory Working Group	3–6 months	Form a permanent working group of national aviation regulators and competition authorities.	Working group established; Quarterly meetings held; 80%-member participation.
3. Launch AFCAC Aviation Regulatory Knowledge Hub	9 months	Create a digital platform for sharing regulations, case studies, compliance tools, and best practices.	Knowledge Hub operational; 1,000+ downloads or views within the first year.
4. Conduct Regional Regulatory Alignment Workshops	Annually	Organise regional workshops to train national regulators on harmonised standards.	5 workshops conducted annually: 80% positive feedback rate from participants.
5. Create an Aviation Dispute Resolution Mechanism	12–18 months	Establish a formal mediation and arbitration body for aviation competition and market access disputes.	Dispute mechanism operational; First 5 cases resolved within 2 years.
6. Implement a Regulatory Compliance Scorecard	1 year	Develop a public compliance scorecard to track each country's adoption of harmonised rules.	Scorecard published annually; Compliance improves by 20% year-on-year.
7. Coordinate with AU and AfCFTA Bodies	Ongoing	Engage with AUC and AfCFTA Secretariat to embed aviation regulatory goals in broader continental frameworks.	Aviation regulatory objectives incorporated into at least 2 AU strategic documents within 3 years.
8. Launch Technical Assistance Missions	Starting within 6 months, ongoing	Send AFCAC technical teams to assist countries with aligning their national regulations.	10 missions completed in the first 2 years; At least 15 national regulations harmonised.

Table 19 Key Actions and Timeline; Source: Compiled by author

The Key Success Targets by Year provide a structured framework for measuring AFCAC's progress in harmonising aviation regulations across Africa (See Table 20). In **Year 1**, the focus is on establishing foundational structures, finalising model regulations, launching the regulatory knowledge hub, and operationalising the regulatory working group. **Year 2** emphasises implementation and capacity building through regional workshops, the creation of a dispute resolution mechanism, and the publication of the first regulatory compliance scorecard to promote accountability. By **Year 3**, the objective shifts toward broader regulatory adoption, with at least 30 countries aligning their frameworks and the integration of aviation regulatory priorities into AU strategic documents. This phased approach ensures steady momentum, quick wins, and long-term systemic transformation of Africa's aviation landscape.

Year	Targets
Year 1	Model regulations completed; Knowledge Hub launched; Regulatory working group operational.

Year	Targets
Year 2	First regional workshops; Launch of dispute resolution mechanism; Compliance scorecard published.
Year 3	Broad adoption of harmonised regulations by at least 30 countries; Regulatory goals integrated into AU strategic agendas.

Table 20 Key Success Targets by Year; Source: Compiled by author

The combined roadmap of Key Actions and Success Targets presents a comprehensive and results-driven strategy for AFCAC to lead aviation regulatory harmonisation across Africa. The action plan ensures that early institutional foundations are laid, while capacity-building and dispute-resolution mechanisms progressively deepen regional cooperation. Meanwhile, the annual success targets provide clear milestones that measure tangible progress, ensuring sustained political and technical momentum. Together, this integrated approach positions AFCAC not only as a regulator but as a catalyst for the full realisation of a competitive, unified African aviation market aligned with the objectives of SAATM and broader continental integration efforts.

Strategic Principles for Success

- *Inclusivity*: Ensure participation from all member states, including smaller and less-developed ones.
- *Transparency*: Make regulatory harmonisation efforts visible and participatory.
- *Political Advocacy*: Secure AU Heads of State endorsement for all major initiatives.
- *Capacity Building*: Focus on sustainable training and knowledge transfer.

By implementing this action plan, AFCAC can lead Africa towards a truly unified, competitive, and efficient aviation market. Harmonisation of regulatory frameworks is critical to unlocking Africa's economic potential through air transport connectivity and integration.

Recommendation Analysis: Facilitating Data and Intelligence Sharing

Target Institution: *AFCAC*

Objective: Enhance cross-border collaboration, improve decision-making, and strengthen regulatory enforcement through efficient data and intelligence sharing.

1. Establish a Centralised Aviation Data Repository

Recommendation:

Develop a continental aviation data hub under AFCAC's leadership to consolidate critical data from CAAs and stakeholders.

Key Features:

- Traffic volumes, route utilisation, and fare data
- Slot allocations and airport capacity utilisation
- Safety incident reports and compliance records
- Licensing and certification statuses
- Market conduct data (e.g., pricing anomalies, anti-competitive behaviour)

Implementation Steps:

- Conduct a feasibility study and stakeholder consultation
- Develop data standards and harmonised reporting protocols
- Build a secure digital infrastructure (cloud-based or regional server clusters)
- Pilot the system in select RECs (e.g., ECOWAS, EAC)

Benefits:

- Reduces duplication of effort among CAAs
- Increases transparency for oversight and policy design
- Supports early warning systems for safety or market risks

2. Create a Secure Data-Sharing Protocol

Recommendation:
Adopt and institutionalise a data exchange framework based on mutual trust, legal safeguards, and technical interoperability.

Elements to Include:

- Data classification (public, restricted, confidential)
- Privacy protection and cybersecurity protocols
- Consent-based data use agreements between states
- Encryption and audit trails for shared datasets

Reference Models:

- EU's SESAR Data Sharing Framework
- ICAO's SWIM (System Wide Information Management)

Benefits:

- Builds trust among regulators and stakeholders
- Prevents misuse or political manipulation of data
- Enhances compliance with international data governance norms

3. Develop an Aviation Intelligence and Analytics Unit within AFCAC

Recommendation:
Establish a dedicated Intelligence & Analytics Unit to process data, generate insights, and support evidence-based policymaking.

Functions:

- Predictive analytics for safety and traffic trends
- Market behaviour monitoring (e.g., price volatility, slot abuse)
- Support to merger assessments and licensing reviews
- Benchmarking national performance vs. continental averages

Skills Required:

- Data scientists, aviation economists, regulatory analysts, GIS experts

Partnerships:

- Collaborate with academic institutions, ICAO, and data providers (e.g., SITA, IATA, FlightRadar24)

Benefits:

- Drives a shift from reactive to proactive regulation
- Enhances AFCAC's strategic role in guiding SAATM implementation

4. Promote Member States' Capacity for Data Contribution

Recommendation:
Support CAAs and ministries with training, digital tools, and funding to ensure consistent, high-quality data submissions.

Action Points:

- Develop toolkits and templates for national data collection
- Host regional workshops and e-learning programs
- Offer technical grants or in-kind support to low-capacity states

Benefits:

- Improves data completeness and accuracy
- Ensures inclusiveness across member states
- Fosters ownership and sustainability of the data ecosystem

5. Institutionalise Reporting and Feedback Mechanisms

Recommendation:
Implement regular reporting dashboards and feedback loops to share key insights with stakeholders.

Examples:

- Quarterly dashboards on safety trends, market dynamics
- Annual state-of-aviation intelligence report
- Custom insights for regulators, policymakers, and operators

Benefits:

- Encourages evidence-based decision-making
- Promotes accountability and performance tracking
- Increases trust in AFCAC's role as a knowledge leader

By systematically implementing these recommendations, AFCAC can become the backbone of aviation intelligence in Africa, supporting safety, competition, market development, and SAATM rollout. The initiative would also reinforce its leadership role regionally and internationally.

Recommended Action Plan for Stakeholder Engagement

1. Define Objectives and Scope

Goal: Clarify what the stakeholder engagement seeks to achieve.
Examples:

- ✓ Build consensus on data-sharing protocols
- ✓ Improve compliance with regional aviation rules
- ✓ Facilitate buy-in for SAATM implementation

Actions:

- ➢ Set SMART objectives (Specific, Measurable, Achievable, Relevant, Time-bound)

- Identify geographic and thematic scope (e.g., West African air transport regulators)

2. Identify and Map Stakeholders

Goal: Ensure inclusive and targeted engagement.

Stakeholder Groups:

- National CAAs and Ministries of Transport
- Airlines (state-owned and private)
- Airport operators
- Regional bodies (e.g., ECOWAS, COMESA)
- International partners (e.g., ICAO, IATA)
- Civil society and consumer advocacy groups

Actions:

- Conduct a *stakeholder mapping exercise* (influence vs. interest matrix)- See Table 21 below.
- Prioritise stakeholders based on role, power, and commitment levels
- Identify potential allies and blockers

Stakeholder Mapping Exercise for Harmonising Aviation Regulatory Frameworks in Africa

1. Stakeholder Categories

Category	Stakeholders
Continental Institutions	AFCAC, AUC, AfCFTA Secretariat
National Governments & Regulators	CAAs, Transport Ministries, Competition Commissions
Regional Economic Communities (RECs)	COMESA, EAC, SADC, ECOWAS, IGAD
Airlines & Aviation Operators	National carriers, Private/Low-cost airlines, Ground handling & cargo services
Airport Authorities & Infrastructure Providers	National airport management bodies, Air navigation service providers (ANSPs)
Judicial & Legal Bodies	National courts, Competition tribunals, Regional arbitration centres
International Partners	ICAO, IATA, World Bank, EU, African Development Bank (AfDB)
Consumers & Civil Society	Passenger advocacy groups, Media, Business travel associations
Training & Academic Institutions	Regional aviation training centres, Universities, Policy institutes

Table 21 Stakeholder Categories; Source: Compiled by author

The Influence vs. Interest Matrix presented in Table 22 below is a strategic tool AFCAC can use to prioritise and tailor stakeholder engagement in its mission to harmonise aviation regulations across Africa. Stakeholders with *high influence and high interest*, such as AFCAC itself, CAAs, and key ministries, should be engaged as core partners in shaping and implementing policy. Those with high influence but lower interest**,** such as Finance Ministries or some RECs, must be kept informed and brought on board through political advocacy. Stakeholders with high interest but lower influence, including consumer groups and academic institutions, should be empowered through consultations and capacity-building. Finally, actors with low influence and low interest, while not central to regulatory reform, should still be monitored for shifts in relevance. This approach enables AFCAC to lead with clarity, allocate engagement resources efficiently, and build a coalition for reform that is both broad-based and strategically aligned.

Quadrant	Explanation	Examples
High Influence, High Interest	Key partners and co-implementers. Need to be engaged closely.	AFCAC, CAAs, Transport Ministries, major airlines
High Influence, Low Interest	Powerful but less directly invested; it requires advocacy and alignment.	Finance Ministries, some RECs, legal bodies
Low Influence, High Interest	Interested but lack power; involve them through consultation and empowerment.	Consumer groups, academic institutions
Low Influence, Low Interest	Minimal impact but may become relevant later. Monitor passively.	Some local NGOs, general public

Table 22 Influence vs. Interest Matrix; Source: Compiled by author

As shown in Table 23 below the engagement strategy aims to foster inclusive, transparent, and sustained dialogue among key aviation stakeholders across Africa to support the implementation of regional initiatives such as SAATM and data-sharing frameworks. By identifying stakeholder interests, tailoring communication approaches, and ensuring two-way feedback mechanisms, the strategy will build trust, encourage policy alignment, and strengthen collective ownership of reforms. This approach prioritises collaboration with national regulators, airlines, regional bodies, and international partners to ensure policy decisions are informed, practical, and broadly supported.

Stakeholder Group	Engagement Approach
AFCAC, AUC, CAAs	Steering committees, working groups, funding mechanisms
Airlines & Operators	Industry forums, policy dialogue platforms, technical consultations
RECs	Joint policy harmonisation initiatives, MoUs, joint regulatory frameworks
Consumers & Civil Society	Public consultations, feedback surveys, inclusion in rights protection frameworks
International Partners	Strategic partnerships, co-financing, technical assistance

Legal & Judicial Bodies	Sensitisation workshops, harmonisation of legal frameworks, dispute mechanism training

Table 23 Engagement Strategy; Source: Compiled by author

Stakeholder	Role	Influence	Interest	Engagement Priority
AFCAC	Lead coordinator & regulator	High	High	Very High
CAAs	Implementing regulation	High	High	Very High
National Airlines	Affected by competition rules	High	Medium-High	High
AUC	Political support & advocacy	High	Medium	High
Consumer groups	Advocacy and feedback	Low	High	Medium
AfCFTA Secretariat	Integration alignment	Medium	Medium	Medium
International donors	Funding & technical support	High	Medium	Medium
RECs	Regional policy drivers	Medium	Medium	High

Table 24 Output Summary: Stakeholder Prioritisation Table; Source: Compiled by author

The Stakeholder Prioritisation Table 24 provides AFCAC with a clear framework to assess and engage stakeholders based on their roles, influence, and interest in aviation regulatory harmonisation. High-priority actors such as CAAs national airlines, and the AUC should be central to AFCAC's coordination efforts, as their actions directly affect regulatory outcomes. Medium-priority stakeholders, including consumer groups and international donors, play a vital supporting role through advocacy and technical assistance. By using this table, AFCAC can systematically align engagement strategies to stakeholder impact, ensuring targeted collaboration and maximizing support for the successful implementation of the SAATM:

2. Design Engagement Methods

Goal: Use appropriate platforms and approaches to build trust and collaboration.

Engagement Tools:

- Consultative forums (in-person or virtual)
- Surveys and feedback instruments
- Working groups or technical committees
- Bilateral meetings or diplomatic briefings
- Public outreach through media and social platforms

Actions:

- Tailor approaches to each stakeholder type (e.g., technical workshops for regulators, simplified policy briefs for NGOs)
- Schedule engagements around key milestones (e.g., draft framework release, pilot project launch)

3. Develop Communication Materials

Goal: Provide stakeholders with clear, accessible, and persuasive content.

Materials Needed:

- Policy briefs and explanatory notes
- FAQs and myth-busting documents
- PowerPoint decks and infographics
- Translations into major regional languages (e.g., French, Arabic, Portuguese)

Actions:

- Align messaging with stakeholder interests
- Use storytelling and case studies to illustrate benefits (e.g., improved safety, reduced fares)
- Highlight regional success stories and champions

4. Implement Feedback Mechanisms

To ensure stakeholder engagement is effective and responsive, AFCAC will institutionalise structured feedback mechanisms that allow stakeholders to share insights, concerns, and suggestions throughout the policy development and implementation process. These mechanisms will help AFCAC capture valuable ground-level perspectives, adjust its strategies accordingly, and maintain transparency and accountability.

Goal: Ensure engagement is two-way and that stakeholder inputs shape the outcome.

Tools:

- Online feedback portals
- Real-time polls during events
- Feedback summaries and “you said, we did” reports

Key Actions:

1. Create a Multi-Channel Feedback System:
    - Set up dedicated online portals and feedback forms on AFCAC’s website.
    - Provide email channels and mobile-friendly tools (e.g., WhatsApp or SMS surveys) for easier access, especially in low-connectivity regions.
2. Integrate Real-Time Feedback During Engagements:

- Use polling tools and interactive Q&A sessions during workshops and webinars.
- Collect session evaluations immediately after events.

3. Develop Stakeholder Feedback Reports:
   - Summarise all stakeholder inputs in periodic “What We Heard” reports.
   - Clearly indicate which suggestions were incorporated and why certain feedback was not adopted.
4. Institutionalise Follow-Up Engagements:
   - Organise feedback review meetings or targeted follow-up calls to clarify input and ensure stakeholder expectations are managed.
   - Schedule updates to inform stakeholders on how their input shaped policy adjustments or implementation.
5. Monitor and Evaluate Feedback Effectiveness:
   - Track response rates, satisfaction levels, and recurring concerns.
   - Continuously refine tools and methods based on performance indicators and stakeholder preferences.

Benefits:

- Builds credibility and reinforces AFCAC’s role as a listening, responsive institution.
- Strengthens stakeholder trust and participation over time.
- Improves the quality and legitimacy of aviation policy and regulatory decisions.

5. Monitor, Evaluate, and Adapt

Goal: Continuously improve the engagement process.

To ensure AFCAC’s stakeholder engagement remains effective, inclusive, and results-driven, a robust system for monitoring, evaluation, and adaptive learning will be established. This will allow AFCAC to measure the impact of its engagement efforts, identify areas for improvement, and adapt its approaches to evolving needs and feedback.

Key Actions:

1. Define Clear KPIs
   - Number and diversity of stakeholders engaged

- Frequency of engagement activities (workshops, consultations, etc.)
- Stakeholder satisfaction (via post-event surveys)
- Responsiveness to feedback (how often feedback informs decisions)
- Increase in stakeholder participation over time

2. Conduct Regular Evaluations:
   - Use surveys, interviews, and focus groups after major engagements.
   - Perform internal reviews after each engagement cycle or policy rollout phase.
   - Partner with independent evaluators when appropriate to ensure objectivity.
3. Develop a Stakeholder Engagement Scorecard:
   - Track performance across regions and stakeholder categories.
   - Use visual dashboards to support internal reporting and decision-making.
4. Document Lessons Learned:
   - Capture successes, challenges, and innovations after each major activity.
   - Create a digital repository of engagement case studies and best practices.
5. Adapt and Update the Engagement Strategy:
   - Adjust communication channels, language, or formats based on evaluation results.
   - Reprioritise stakeholders or engagement methods as the policy environment evolves.
   - Incorporate new technologies or practices to improve reach and inclusivity.

Benefits:

- Ensures continuous improvement and institutional learning
- Aligns engagement activities with strategic aviation goals
- Reinforces AFCAC's credibility as a forward-looking, data-driven regulator

Future Research Directions: African Aviation Competition

Future research in African aviation competition should focus on assessing the effectiveness of liberalisation SAATM reducing market concentration and fostering new entrants. Comparative studies between African regions and global benchmarks could illuminate best practices for competition policy design. An in-depth analysis of barriers to intra-African connectivity, including regulatory bottlenecks, monopolistic practices, and infrastructure disparities, is also critical. Moreover, research should explore the impact of competition on airfares, service quality, and consumer welfare, particularly for underserved routes. Finally, the role of digitalisation, alliances, and new business models, such as LCCs and cargo-only operations, should be examined to guide policies that future-proof African aviation markets.

The following areas provide fundamental research gaps in African aviation:

1. Impact Assessment of SAATM Implementation

Although the SAATM promises increased liberalisation, its real impact on market structure, pricing, and competition remains underexplored.

Proposed Study: A longitudinal study assessing traffic volume, route diversity, and market entry/exit before and after SAATM across different regions.

Key Question: *Has SAATM led to more competitive fare structures and improved consumer welfare?*

2. Competition Dynamics Between State-Owned and Private Airlines

Many African markets still have dominant state-owned carriers coexisting with emerging private operators.
***Proposed Study*:** Comparative analysis of competitive behaviour (pricing, frequency, route choices) between these two groups.

Key Question: *Does state ownership distort competitive neutrality in the market?*

3. Barriers to Entry and Market Access

Entry barriers, including regulatory red tape, airport slot allocation, and bilateral agreements, still limit competition.

Proposed Study: A regulatory index measuring the openness of African aviation markets.
Key Question: *What regulatory reforms are needed to improve contestability?*

4. Economies of Scale and Efficiency Among Carriers

Given Africa's fragmented demand and low load factors, studying how airlines can achieve scale and operational efficiency is crucial.

Proposed Study: Econometric modelling using cost and production functions to assess scale economies.
Key Question: *What firm size or operational model optimises cost efficiency in African contexts?*

5. Regional Competition in Ground Handling and Fuel Supply

Ground handling and fuel markets are often monopolised, reducing service quality and raising costs.
Proposed Study: Market structure analysis using HHI and pricing models across different airports and regions.

Key Question: *How do monopolistic practices in ancillary services impact airline competition?*

6. Digital Transformation and E-Commerce Logistics

As digital air cargo and e-commerce grow, competitive dynamics are shifting, especially for cargo operators.
Proposed Study: *Market mapping of digital cargo platforms and e-freight adoption.*
Key Question: How is digitalisation changing the competitive landscape in African air freight?

7. Sustainability and Green Competition

Environmental pressures are growing, and competition may shift toward sustainable operations.
Proposed Study*: Benchmarking African carriers' green strategies and their impact on competitive positioning.*
Key Question: Will sustainability become a competitive advantage or burden in African aviation?

8. Consumer Perception and Choice Behaviour

There is limited data on how African passengers perceive airline competition, quality, and service differentiation.
Proposed Study: *Choice modelling and consumer surveys across multiple countries.*
Key Question: *What factors drive consumer airline selection in Africa?*

CONCLUDING REMARKS

For Africa's aviation sector to become more competitive and integrated, systemic improvements in data management and institutional capacity are essential. As demonstrated throughout this report, the project's support in strengthening regulatory institutions, enhancing competition oversight, and developing robust data systems directly contributes to a more transparent and predictable operating environment—key conditions for fostering fair competition. By equipping aviation authorities with the tools and training to enforce standards consistently, monitor market dynamics, and share data across borders, the project helps reduce market fragmentation and supports the realisation of initiatives such as the SAATM. These efforts not only improve operational safety and efficiency but also create the regulatory certainty and institutional strength needed to attract new entrants, support regional carriers, and level the playing field for all market participants. In this way, the project's contributions extend beyond technical support to help unlock the full potential of a competitive and connected African aviation market.

Effective competition in African aviation depends not only on regulatory frameworks but also on the availability and use of high-quality data. Data analysis enables policymakers and regulators to assess market dynamics objectively—such as route dominance, pricing trends, passenger flows, and airline market shares—allowing them to identify anti-competitive behaviour, market barriers, or imbalances in access.

In a continent where air transport is unevenly distributed and often dominated by a few carriers or bilateral agreements, robust data allows stakeholders to evaluate whether liberalisation efforts like the Yamoussoukro Decision or the SAATM are actually increasing competition or simply reshuffling dominance.

Furthermore, institutional capacity to collect and analyse this data across safety, competition, economic, and consumer dimensions is essential for evidence-based interventions. For example, comparative analysis of load factors, slot allocations, or fare variability can help regulators adjust policies to promote fair access, transparency, and route sustainability.

Africa needs large-scale reforms across the spectrum of African aviation stakeholders. In order to garner the traction to achieve a single air transport market, multiple stakeholder involvement is required. For example, the role of financial institutions like the World Bank and African Development Bank will add the capital impetus required to drive growth for airlines requiring financial assistance. Beyond implementing the required regulatory framework for open markets, Africa needs to develop its aviation sector in a gradual and coordinated manner, from regulatory and policy-making in the sector to infrastructure enhancement. The Bank's investment in aviation forms part of a larger contribution to infrastructure development in Africa.

This calls for a clear financing framework and guidelines for the support of the aviation sector, especially in particular for fleet expansion and renewal programmes. The following themes will be pivotal in defining the growth propensity of African air transport development:

- Access to capital funding in the aviation sector
- Air transport infrastructure and
- Aviation safety, security and regulatory oversight

Integrating the functional role of financing institutions will enhance Rec's authorities to ensure that economic and technical policy frameworks are in place and the financial institutions will assist governments in designing the appropriate frameworks. Experience has shown that the intervention of Development agencies has been crucial in providing such assistance to governments. The Bank will therefore become a key stakeholder in aviation sector development in Africa, providing loans/ grants to critical infrastructure development projects and support to align their industries with international standards and best practices through capacity-building and technical assistance.

For profitable carriers in particular, the African aviation sector will present investment opportunities to finance their fleet renewal projects while large airports (regional hubs or gateways) and ANSPs are poised to attract investors to cover the financial gap of their expansion projects as the industry becomes more lucrative.

The mechanism for driving regional and international cooperation includes the following:

- Joint air transport negotiation workshops will allow country delegates to collaborate and exchange regional knowledge, so market liberalisation effort issues become an integral part of policymaking across government ministries.
- The critical importance of maintaining momentum through mutual support and regional collaboration, with a shared vision of building a robust future for African aviation.
- The ICAO, No Country Left Behind initiative should be the central focus of forging cross platform collaboration among various stakeholders within the continent in order to drive harmonisation.

African integration remains a process with players at three levels: national, regional and continental. At all these levels, the responsibility incumbent on each of these players is being pursued with insufficient resources. Among the priorities set by African states, integration is still far from occupying a pride of place even though the states have never ceased to mention the need to achieve African integration.

Financing for integrative projects remains meagre. For most projects, funding comes from donor partners, making regional and continental organisations fragile in their quest for political autonomy. The AUC receives funding from partners for the implementation of plans and programmes to the tune of 75% of its

total budget. This can compel member states to compromise on their real needs when the partners' objectives do not tally with those of African states.

With the implementation of the 2063 Agenda requiring enormous funding and resources, the AUC, tasked with coordinating implementation, is far from being financially independent given the huge financial outlay that partners allocate for its operation. The decision to make the AUC autonomous by asking each member state to contribute to the tune of 0.2% of its imports has been adopted, but progress remains extremely slow because it is subject to state interests. With the financial challenge remaining an obstacle, the various national, regional and continental players must pool forces to accord a high priority to managing integration.

Africa is known for having over 300 airlines across only 54 countries, this is unsustainable, and a balance is needed. If African aviation does not resolve this fragmentation, it risks being taken over by foreign airlines. Only 20% of the African market is served by African airlines. For example, Europe, 20 years ago, had more than 11 global airlines, due to protectionism. But now, in Europe there are four big airlines (Ryanair, Lufthansa Group, International Airlines Group, KLM/Air France and the rest are feeders. The reluctance to consolidate is perceived as a destruction of national carriers, yet, in fact, consolidation is a catalyst drive to harness and share skills and improve intra-Africa and international connectivity for the continent.

To realise the full benefits of a unified African aviation market, AFCAC must act decisively and collaboratively. Member states, regional bodies, and industry stakeholders are encouraged to align their efforts with this action plan and commit to its timely implementation. By doing so, Africa can unlock unprecedented opportunities for economic growth, regional integration, and global competitiveness through air transport. The time to accelerate aviation reform is now — collective leadership, sustained commitment, and immediate action are essential to chart a new course for Africa's aviation future.

Finally, as documented in this study, in order to strategically foster aviation competition in Africa, a multi-pronged approach is essential. Full implementation of the SAATM should be prioritised to eliminate restrictive bilateral agreements and open markets to eligible African carriers. Liberalising ownership rules to allow cross-border investments and joint ventures can strengthen the financial and operational capacity of airlines. A harmonised regulatory environment, driven by AFCAC, will reduce operational inconsistencies and lower barriers to entry. Investments in airport and air navigation infrastructure, especially in underserved regions, are crucial to levelling the playing field. Additionally, establishing transparent and fair subsidy frameworks will prevent market distortion, while LCCs through reduced taxes, simplified licensing, and the use of secondary airports, can boost affordability and competition. Lastly, encouraging PPPs will inject innovation and capital into the sector, supporting a dynamic and competitive African aviation market.

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