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Financing of aviation companies: theory, methodology and practice

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NORMATIVE REFERENCES

1. Convention for the Unification of Certain Rules for International Carriage by Air (Montreal, May 28, 1999), (ratified by the Law of the Republic of Kazakhstan No. 297-V dated March 19, 2015) (the "Montreal Convention");

2. Convention on International Civil Aviation, Chicago, December 7, 1944 (ratified by Resolution of the Supreme Council of the Republic of Kazakhstan No. 1503-XII dated July 2, 1992) (the "Chicago Convention");

3. The Convention on International Interests in Mobile Equipment (Cape Town, 16 November 2001), ratified by the Law on Ratification of the Convention on International Interests in Mobile Equipment and the Protocol to the Cape Town Convention No. 29-V on Aircraft Equipment specific to 5 July 2012 (the "Ratification Law") (the "Cape Town Convention");

4. The Protocol on Aircraft Equipment, ratified by the Law on Ratification (the "Aircraft Protocol");

5. The Constitution of the Republic of Kazakhstan dated 30 August 1995;

6. The Civil Code of the Republic of Kazakhstan (General Part dated 27 December 1994; Special Part dated 1 July 1999) (the "Civil Code");

7. Entrepreneurial Code of the Republic of Kazakhstan No. 375-V dated October 29, 2015 (the "Entrepreneurial Code");

8. Law of the Republic of Kazakhstan "On Transport in the Republic of Kazakhstan" No. 156-XIII dated September 21, 1994;

9. Law of the Republic of Kazakhstan "On the Use of the Airspace of the Republic of Kazakhstan and Aviation Activities" No. 339-IV dated July 15, 2010 (hereinafter referred to as the "Aviation Law");

10. Order of the Acting Minister for Investment and Development of the Republic of Kazakhstan "On Approval of Certification Requirements for Civil Aircraft Operators" No. 153 dated February 24, 2015 (the "Order on Certification Requirements");

11. Order of the Minister of Investment and Development of the Republic of Kazakhstan "On approval of the Rules for certification and issuance of an operator certificate for civil aircraft" No. 1061 dated November 10, 2015 ("Aircraft Operator Certification Rules");

12. Order of the Minister of Investment and Development of the Republic of Kazakhstan "On approval of the Rules for the carriage of passengers, baggage and cargo by air" No. 540 dated April 30, 2015 ("Air Transportation Rules");

13. Resolution of the Government of the Republic of Kazakhstan "On approval of the Rules for the investigation of aviation accidents and incidents" No. 828 dated July 18, 2011 ("Civil Aviation Investigation Rules");

14. Order of the Minister of Defense of the Republic of Kazakhstan "On approval of the Rules for the investigation of aviation accidents and incidents in state aviation of the Republic of Kazakhstan" No. 145 dated March 18, 2015 ("Rules for Investigation in State Aviation");

15. Order of the Minister of Defense of the Republic of Kazakhstan "On approval of the Rules for the registration of aircraft of state aviation of the Republic of Kazakhstan" No. 220 dated May 18, 2011 ("Rules for the registration of state aircraft");

16. Order of the Minister of Transport and Communications of the Republic of Kazakhstan "On approval of the Rules for state registration of civil aircraft of the Republic of Kazakhstan, rights to them and transactions with them, as well as forms of documents certifying rights to them" No. 613 dated September 18, 2012 ("Rules for the registration of civil aircraft"); as well as other regulatory legal acts of the Republic of Kazakhstan [48].

NOTATIONS AND ABBREVIATIONS

AAK	Aviation Administration of Kazakhstan
ACI	Airports Council International
ADR	American Depositary Receipts
AIFC	Astana International Financial Centre
AIX	Astana International Exchange
ASK	Available Seat Kilometer
ASU	Aircraft Sector Understanding
ATR	Avions de Transport Regional
BNDES	The National Bank for Economic and Social Development (Banco Nacional de Desenvolvimento Econômico e Social)
CARES	Coronavirus Aid, Recovery, and Economic Security
CASK	Cost of Available Seat Kilometer
CBI	Climate Bonds Initiative
CEWS	Canada Emergency Wage Subsidy
CF	Cash Flow
COMAC	Commercial Aircraft Corporation of China
CRS	Computer reservations system
EASA	European Union Aviation Safety Agency
EBIT	Earnings Before Interest and Taxes
ECA	Export Credit Agency
ENAC	Italian Civil Aviation Authority (Ente Nazionale в l'Aviazione Civile)
EPS	Earnings per share
FAA	Federal Aviation Administration
FMRDA	The Agency of the Republic of Kazakhstan for Regulation and Development of Financial Market
FPO	Follow-on Public Offering
GDP	Gross domestic product
GDR	Global Depositary Receipt
GPS	Global Positioning System
IAA	Irish Aviation Authority
IAFC	International Airfreight Capacity
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICMA	International Capital Markets Association
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
IPO	Initial Public Offering
IRR	Internal rate of return
ISIN	International Securities Identification Number
JOL	The Japanese Operating Lease
JSC	Join Stock Company
KASE	Kazakhstan Stock Exchange

LCC	Low-cost company
LSE	London Stock Exchange
NPV	Net present value
PSP	Payroll Support Program
RK	Republic of Kazakhstan
ROA	Return on Assets
ROE	Return On Equity
SAA	South African Airways
SCIC	State Capital Investment Corporation
SIA	Singapore Airlines
UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNWTO	United Nations World Tourism Organization
USA	United States of America
WTO	World Trade Organization

INTRODUCTION

An overview of the thesis. The dissertation examines the characteristics of financial strategies employed by aviation companies. It formulates recommendations for the practical application of financial tools specifically adapted to the aviation industry within the financial framework of the Republic of Kazakhstan.

The relevance of the research. Nowadays, research on the financing of aviation companies is highly relevant. Aviation is a vital component of the global economy, providing substantial support to international trade, tourism, and transportation. When writing about past topics, ensure that you choose one that examines theories and metaphysical connections. As such, it is desirable to focus on aspects related to vendors and airlines, as well as individual entities.

Airlines' financing is especially relevant in the face of global issues, including pandemics, climate change, and geopolitical tensions. There are several Important things to keep in mind.

Pandemic and Economic Recession: The COVID-19 pandemic has had a profound impact on the aviation industry, resulting in a significant decline in passenger traffic, border closures, and substantial financial losses for airlines. Access to financing has been crucial in keeping businesses afloat and ensuring their survival.

Climate Change and Sustainability: Flight shaming is one of the new approaches climate change activists are taking. Funding can also enable research into more efficient technologies and cleaner sources of energy.

Geopolitical Risks and Trade Conflicts: Geopolitical factors, including trade wars and sanctions, may impact routes and resources. Funding enables airlines to react to such changes and devise alternative plans.

Technological Innovations and Digitalization: Important is that financing can give a boost to the development of new technologies in aviation, as well as new systems like drones, autonomous cars, new engines such as the more economic engines that will help improve the systems safety, which can be a decisive factor in providing a competitive advantage for the company.

In conclusion, this will enable businesses to pivot and remain responsive to global issues, while opening avenues for innovation that can be leveraged to optimize the future of the sector.

The aviation industry faces unique financial challenges, such as high capital expenditures on aircraft and equipment, substantial fuel costs, and the need to maintain airport infrastructure. Research into the financing of aviation companies helps to address these challenges and develop effective strategies to overcome them. Moreover, the aviation industry is heavily influenced by government regulations and political decisions. Research in this area is crucial for understanding the impact of regulatory measures and political policies on aviation financing, as well as for developing strategies to mitigate associated risks.

Aviation is one of the fastest-growing sectors globally, integrating technology, innovation, entrepreneurship, economic development, infrastructure support, demographic growth, and contributions to globalization. The progress in this sector is remarkable, both in its speed and diversity. Economic growth and passenger traffic are the two key indicators of commercial aviation's global expansion. Economic growth in a region typically has a significant influence on the rising demand for air travel.

Despite its challenges, aviation financing presents an opportunity for new entrants to achieve attractive returns, provided that the type of asset and terms are chosen wisely.

The degree of density of the issues. The first group of works forming the foundation of this research is related to the analysis of the airline market. Topics such as airline economics, market development, management, and analysis of airline performance efficiency are covered in the works of B.V. Artamonov, V.G. Afanasyev, V.N. Kazakov, V.D. Kasyanchik, E.F. Kosichenko, E.V. Kostromina, V.M. Kurilo, E.A. Olesyuk, E.M. Pinaev, O.V. Repina, N.V. Fileva, and A.A. Fridlyand. These authors primarily focus on the peculiarities of the airline market's functioning and the operations of airlines, addressing issues such as operational management in the airline industry, the calculation of flight efficiency indicators, and marketing aspects of their activities.

Significant interest also lies in the works of foreign authors who analyze the evaluation of aircraft, including G.T. Brown, P. Butowski, M. Ballard, S. Goldsmith, and N. Hallerström, among others.

In general, the assessment of an aircraft as a means of transportation is considered in several works by Russian economists. This issue is explored in the studies of L.P. Belykh, A.Z. Bobyleva, A.A. Andrianov, A.A. Kushel, V.S. Valadaytsev, and M.A. Fedotova, among others. These studies highlight the approaches and methods for evaluating fixed assets and their application features within domestic practices. However, the domestic works do not ensure a comprehensive approach to assessment. They also fail to consider the industry-specific and technological characteristics that significantly influence the objectivity of assessment results, nor do they address the evaluation of airline property under conditions of economic instability.

The sources reviewed include works on "airline economics, market development, management, and performance analysis of airlines" as well as "aircraft evaluation as a means of transportation." These include prominent authors such as:

• Michael E. Porter, known for his work on strategy and competitiveness, which can be applied to the aviation industry.

• John D. Hansman, with expertise in air navigation and air transport economics, whose works often address the analysis and management of aviation companies.

• David Gillen, specializing in transport economics and air navigation, whose research can provide valuable insights for analyzing airline performance.

• Peter Belobaba, an expert in aviation economics and air transport management, covers a broad range of issues related to the aviation industry.

• Ernst Heinrich Hirschel, a noted author in aerodynamics and air navigation, whose works can help understand fundamental principles underlying aircraft evaluation.

• David J. Peery, focusing on the evaluation of production processes in aircraft manufacturing and aerodynamics, whose works help understand the technical aspects of aircraft assessment.

The insufficient theoretical and practical development of issues related to airline financing, along with the necessity for effective utilization of financial instruments, determined the choice of the research topic, its objectives, and its tasks.

Purpose and objectives of the study. The purpose of the research is to develop scientifically grounded methodological and practical recommendations for improving airline financing in the face of global challenges.

The following *research objectives* were formulated:

– To substantiate theoretical and methodological approaches to defining financing and to provide an author's definition of the concept of financing aviation companies based on the analysis of its essence.

– To analyze financial statements and identify key aspects of financial multiples, focusing on the financial performance of internal and external funding sources of the Air Astana group and the specifics of foreign practice.

– To investigate the main trends of the aviation industry development, to analyze the activities and financial condition in the Air Astana group, and the specifics of airline financing to identify SWOT analysis and further strategy to strengthen advantages, eliminate weaknesses, use opportunities, and minimize risks.

– To explore alternative forms of airline financing and develop a conceptual roadmap for improving funding sources.

– To propose a business plan as an additional source of financing for the Air Astana group and to explore how digitalization contributes to the operational efficiency of aviation companies.

The object of the research: is the primary financial activities of Kazakhstani airlines, with a particular focus on the Air Astana group.

The subject of the research: encompasses the economic relationships involved in the formation of sources and methods for financing aviation companies.

The theoretical and methodological basis of the study. The theoretical foundation of this research is based on scholarly publications by both domestic and international researchers who have dedicated themselves to financing aviation companies during global challenges. It also incorporates examples of international practices and analyses of financial performance.

The study employed a systematic approach, enabling an integrated analysis of the aviation market as a unified structure. Additionally, the research utilized:

• A strategic approach that views an airline as inseparably connected to its external and internal environment.

• A functional approach focused on analyzing airline financing.

• A situational approach that limits the number of analyzed factors to the most critical ones for a given situation.

General scientific methods such as analysis and synthesis, induction and deduction, and economic-statistical methods for data processing were also applied.

Information base of the study. The information base and empirical research rely on publications in print media, methodological materials relevant to the dissertation topic, current data from rating agencies, and financial reports of domestic and international airlines.

The scientific novelty of the research. The scientific novelty of the dissertation is reflected in the conceptualization, theoretical justification, and practical resolution of a set of fundamental methodological and applied issues related to the financing of aviation companies and their performance during crises.

The following key *scientific results* were obtained during the research:

– The content of theoretical and methodological approaches to defining financing was structured, criteria were selected and substantiated, leading to the development of the author's definition of airline financing.

– Through the systematization and generalization of financial reports from the Air Astana group, key aspects of financial multiples were identified and clarified. Internal and external financing sources were analyzed, enabling the systematization and specification of the specifics of foreign practice.

– The main results of the analysis in Air Astana group activities were identified, particularly through the use of the results of the SWOT analysis, which shows the specifics of airline financing.

– A conceptual roadmap was developed as an alternative means of financial instruments for airline financing.

– The significance of digitalization in the financial activities of airlines and the impact of technological transformation were emphasized, leading to the proposal of a business plan for creating an additional source of income.

The main statements for the thesis defense:

– Theoretical and methodological aspects of financing aviation industry companies were substantiated based on a study of the specific characteristics of airline financing and the methodology for forming financing sources. An author's interpretation of the concept of airline financing was proposed, highlighting the unique features of managing financial resources in the airline industry.

– As a result of research on foreign practice in the aviation industry using quantitative and qualitative methods, an analysis of the financial performance of airlines was conducted. This identified the internal and external financing sources and aspects that determine the assessment of financial multiples for the Air Astana group.

– The specifics of airline financing for the Air Astana group were evaluated, including SWOT analysis and further strategy of the company.

– A methodology for using alternative options for financing aviation companies was developed. Additionally, a conceptual roadmap for the Air Astana group was proposed.

– A business plan was developed to create an additional source of income for the airline. This plan supports digitalization and technological transformation within the Air Astana group.

The theoretical contribution of the research results. The theoretical significance of the research lies in the synthesis and systematization of theoretical approaches to the essence and content of the concept of airline financing, as well as the sources and tools of financing. It also focuses on clarifying and highlighting the specific features of financial leasing concepts. The presented results reflect the author's conceptual approach and can be utilized by airlines in the development of strategic programs.

The practical contribution of the study. The practical significance of the research lies in its application to financing airlines within the context of globalization. The study's conclusions and findings can be applied by Kazakhstani airlines to navigate crises, leverage international experience, and implement alternative financial instruments, such as Islamic and green finance.

Approbation and implementation of the research results. The research findings were presented in 15 reports at international scientific and practical conferences and roundtables between 2020 and 2023.

Publications. 5 scientific works were published on the dissertation topic. 4 articles were published in journals recommended by the Committee for Quality Assurance in Education and Science of the Ministry of Education and Science of the Republic of Kazakhstan, and 1 article was published in a journal indexed in the Scopus database.

Structure and scope of the thesis. The structure of the dissertation adheres to scientific principles of reliability, independence, novelty, internal coherence, and practical value. The dissertation consists of an introduction, three chapters, a conclusion, a bibliography, and appendices.

1 THEORETICAL AND METHODOLOGICAL ASPECTS OF FINANCING AVIATION INDUSTRY COMPANIES

1.1 Specifics of airline financing: essence, content, and sources

Financing encompasses the various forms, types, methods, and tools utilized to meet a company's financial obligations. It involves mobilizing resources to support all aspects of an organization's operations. At the corporate level, financing begins with pooling all available funds, including those provided by the company's owners [1].

Economists define financing through various lenses. Some view it as events, as occurrences: the supply of necessary resources for the costs of national economy construction, socio-cultural, defense, and other public needs [2], as well as the supply of financial resources for the state economy, regions, businesses, and individual entrepreneurs [3]. Others focus on the functional dimension, referring to it as "the collection of funds" [4], "the allocation of resources for social objectives, programs, economic growth, production and other requirements" [5] or "ensuring that an enterprise has the financial resources it needs to pay for its various expenses" [6].

According to other scholars, finance is known as "a whole range of operations (works) to achieve the goals of business (to provide cash inflow into the enterprise) including money inflow as a result of operation of the enterprise (self-financing), borrowing on the financial markets, and external capital attracted in different forms (money, goods, security)". An integral element of their perspective is the acknowledgment that financing can include non-monetary resources, such as contributions of property, land, securities, and goods. They also differentiate between two classical types of funding: action-oriented financing, described as cash flows, financial resource preparation, and compliance, and event-oriented funding, explained as "the preparation and allocation of capital (money, goods, securities) aimed at certain purposes" [7].

Most scholars, however, view financing as a multi-stage process, with the specific stages varying depending on the approach. Some definitions, for instance, focus narrowly on the attraction of financial resources without considering the broader goals of financing [8]. The "Modern Financial and Credit Dictionary" and R. Koch's monograph align with this view, describing financing as the process of securing financial resources for a business in various forms [9]. Another definition emphasizes the cost-efficiency of financing, stating that it involves "raising funds at minimal cost, while their utilization constitutes investing, aimed at maximizing returns on investment" [10].

According to some economists, financing in this context is understood as the "result" of spending funds, which is always preceded by the most critical stage — "financial support," consisting of arranging methods and forms for raising and accumulating monetary funds [11]. S.V. Bolshakov emphasizes the importance of this preparatory stage, and I.A. Blank states that financing is "the process of setting directions, forms, and methods for the use of financial resources to stimulate

economic growth and increase the market value of an enterprise" [12].

When an enterprise faces no challenges in attracting external financial resources or relies exclusively on internal funds, the focus of financing naturally shifts to the effective utilization of these resources. This perspective is logical and difficult to contest. But in reality, enterprises struggle to raise capital. This reality compels a more expansive definition of financing that captures not just the deployment of financial resources but also their attracting and borrowing.

If, for example, one business recognizes the need for and justification of an investment project but lacks sufficient financial resources, the financing of the investment project primarily involves raising the necessary funds. This broadened perspective captures the Dichotomy of financing: to acquire resources and strategically allocate them. The most precise definition of financing, in our view, encompasses both the formation (or allocation) of funds and their expenditure to achieve specific objectives or projects [13]. As defined by others like I. Bernard and J.-C. Colli, financing is "the set of means and methods used to cover the expenses necessary for the completion of an economic project. The act of financing involves generating capital for a specific operation, so that at the end of a specified period, the necessary resources to carry out the operation will be provided in the form of money, payment instruments, or values equivalent to the operation. According to the enterprise level, financing starts with the aggregation of all the funds permanently handed over to its founders or investors, the so-called foundation of share capital" [14]. As pointed out by (V.F. Garbuzov), control plays a vital role in financing: “Financing is a process of providing financial resources for costs aimed at the planned and dynamic development of material production, the economic basis of society, a source of an increase in national income. The financing process at the enterprise level represents the behavioral means of delivering funds to economic entities as well as a set of processes for using this income by allocating and controlling it using various systems to ensure targeted and best representation of use of resources" [15]. This viewpoint highlights financing as both a mechanism for resource acquisition and a management and oversight system.

Hence, financing is a process and comprises three phases, shown in Figure 1.

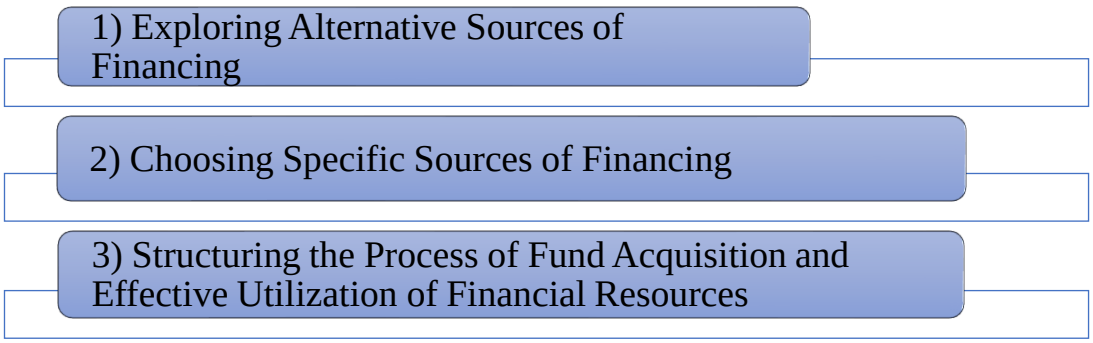


Figure 1 - Phases of the Financing Process

Note: Compiled by the author

The first phase can take anywhere from one week to three months, depending on how investors utilize their funds, whether by borrowing or investing in internal or external sources. But if internal financial resources can accommodate, then the first (and perhaps the second) stage would take a little time.

The second stage is characterized by the fact that multiple sources of funding have superseded the single source of financing under regular market conditions. There are several reasons for the approach:

- Few internal funds at the time – may not be enough for large-scale applications. The company's liquidity risk is another factor that leads to these challenges.
- Borrowed funds often come with time constraints, particularly in the current volatile economic environment, where lenders aim to minimize risks by shortening loan terms.
- The cost of borrowing can serve as a restricting factor, especially when interest rates surpass the company's profit margins.
- The operational context of many enterprises necessitates the use of funds sourced from various channels to maintain liquidity and support ongoing activities.

The benefits of the production cycle commonly dictate the financing process. Stage C financing corresponds to expenditures on raw materials, supplies and other working capital, creation of fixed assets or business premises, salaries of workers and employees, and sale of finished products. This stage describes the time from when the capital is offered until the money is recovered. The length of this phase and the costs related to this phase are influenced by various factors, which include the state of the market, the efficiency of the supply system that they use, like how suppliers are paid for the goods delivered, and processes followed within and between organizations, like standardization, the length of the production cycle.

There is a methodological conflict within the analysis of debt financing, for instance, loans, where it can be interpreted as "financing" or "lending". Hence, there is no unified opinion, according to L.N. Pavlova, who classifies financing and lending as a combination of types, conditions, principles, and approaches for financial support, subject to limitations on financial resources, for both simple and expanded models. As Pavlova states, lending does not fall under the type of financing. Therefore, she differentiates them as 'financial security', where financing relies on internally generated repayable funds, whereas lending is carried out through borrowed repayable resources.

On the other hand, Kazakh researchers Chelekbay A.D. and Abzhalelova Sh.R. state: "Financing involves providing enterprises with the necessary material, technical, and working capital resources" [17]. A lack of internal funds forces enterprises to seek additional borrowed sources, such as loans.

From our perspective, lending has distinctive characteristics and represents one of the forms of debt financing for an enterprise. The term "financing," in our view, applies to enterprises that utilize both internal resources and borrowed funds to

sustain their operations.

Financing of airlines has a particular specificity, as airlines conduct operations with a high value of their assets. Airlines must not only regularly purchase (or lease) new aircraft and airliner engines, but also make important long-term decisions to meet the needs of their market, while creating a relatively economical fleet for operation and maintenance.

Another financial challenge for airlines is hedging fuel purchases, the costs of which, as a rule, are second only to employee salaries in terms of relative cost to the company. However, with the increase in fuel prices, it has become the most significant expense for airlines [18].

Airline companies are primarily affected by aviation fuel prices, as even minor changes can significantly impact their finances and operations. To manage these price fluctuations, airlines employ a strategy known as fuel hedging. That means signing contracts that are intended to protect against unexpected rises in fuel prices.

A fuel hedge costs what the future price of fuel indicates it will cost. These contracts enable airlines to negotiate with fuel suppliers to secure a set fuel price. If fuel prices increase above the contracted rate, the airline pays the contract price, insulating itself from incremental costs. On the other hand, if the fuel prices are lower than the fixed rate, the fuel company reimburses the airline for the difference [19]. Due to the implementation of newer fleets, older airliners require significantly more labor than more recent ones, particularly with rising fuel prices.

As a result, today's airline operations are significantly influenced by prevailing market conditions, which can be summarized as follows (Figure 2).

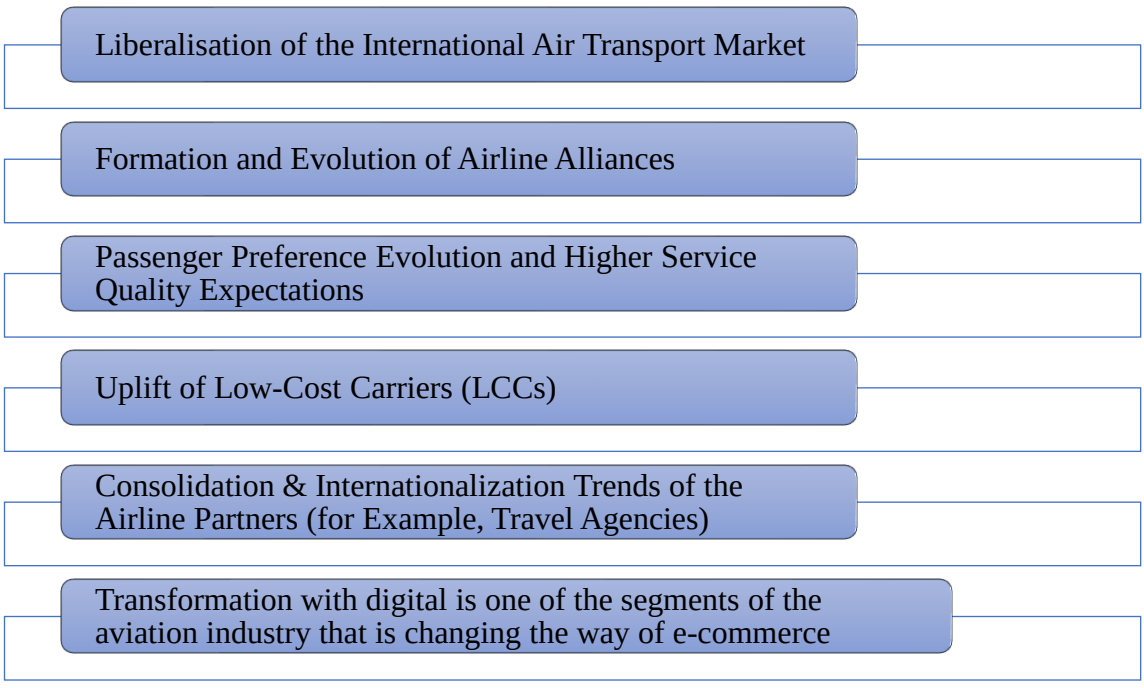


Figure 2 - Key Aspects Defining Airline Activities

Note: Compiled by the author

These features underscore the necessity of selecting the appropriate instruments for airline financing and projects optimal capital structure. The process is vital and indispensable in making sure a carrier runs efficiently and remains financially viable. A review of current funding models, identifying their merits and shortfalls, will allow a more precise definition of what constitutes "airline finance".

Airline financing is the process of selecting strategies, tools, and methods for acquiring and utilizing financial resources to cover initial costs, capital investments, operating expenses, fuel costs, labor compensation, and overall management of financial resources within the airline.

The aviation industry is a high-tech sector that requires the integration of the latest scientific advancements and technological innovations. For this, one needs to keep the investment policy active and adopt solid investment strategies.

Investment programs of this kind require a lot of financing to implement. Currently, the principal instruments for financing airline activities are: (Figure 3)

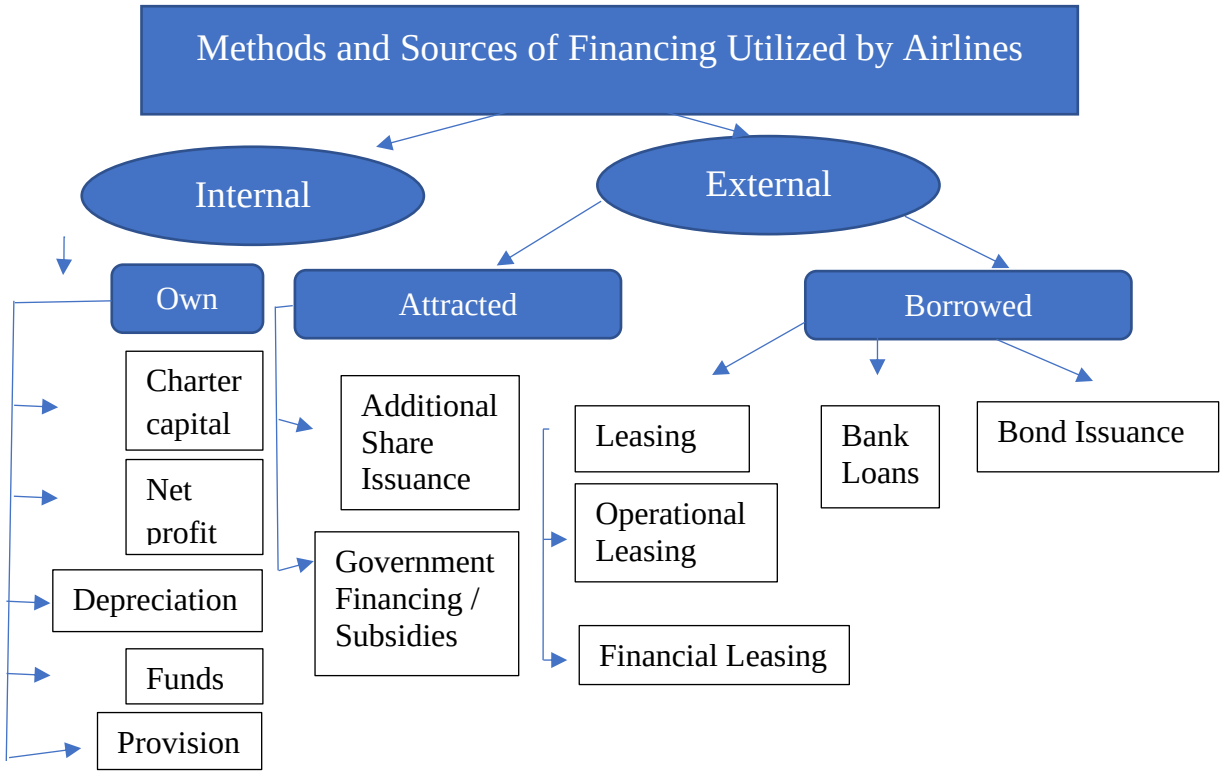


Figure 3 - Financing Instruments for Airline Operation

Note: Source [20]

The types of financing resources and their sources that promote the growth of several types are shown in Figure 3. According to the figure, the sources of financing for airlines can be divided into internal and external.

Financial resources in business refer to the sources of financing used to acquire assets and perform operations provided for by different types of aviation operations.

The funds and resources a company can retain from its aviation activities are

an internal source of financing. This market funding stream enables it to fund operating expenses, maintenance expenses, and capacity development without independent debt or equity financing.

Factoring: at the junction of external and internal sources of financing - replenishment of working capital at the moment of assignment of contractual requirements. Specialized factoring companies offer such financing, making it possible to consider factoring. Since factoring is the transfer of obligations under a contract, it can be viewed as a form of financing utilizing internal resources. In this process, a business transforms one asset type—accounts receivable—into cash. The primary sources of financing for airlines (Figure 4):

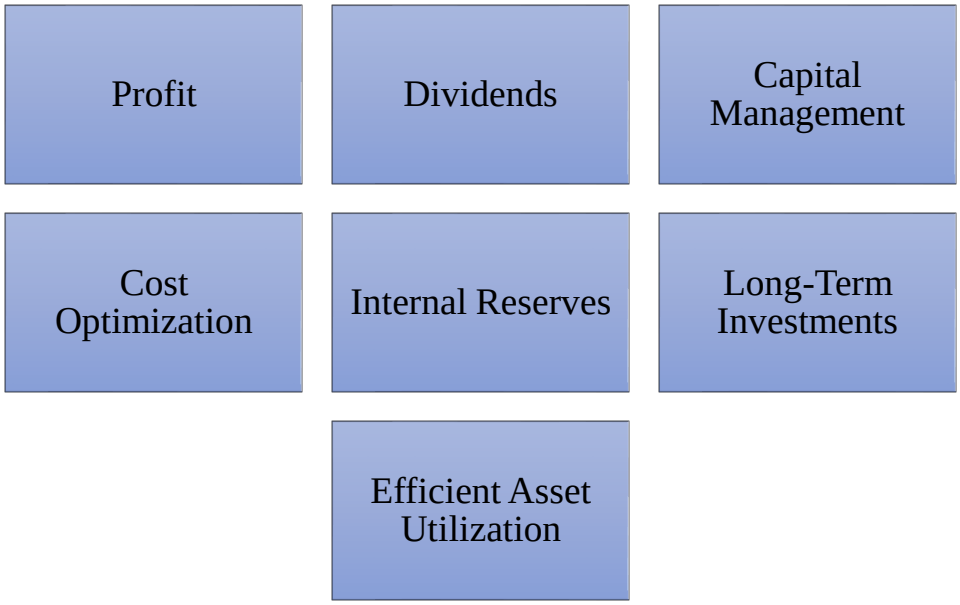


Figure 4 - Key Internal Sources of Financing for Airlines

Note: Compiled by the author based on source [21]

1) Sales revenue. For airlines, the primary revenue source comes from ticket sales and related services. The cash flow generated by successful sales will cover operating expenses and ensure a profit for the business.

2) Dividends. If the airline is a publicly traded company, it can pay dividends to its shareholders. Dividends are a portion of a company's earnings distributed to its shareholders.

3) Use of capital well. By effectively managing its capital, the airline can optimize the use of its funds, thereby minimizing the need for external funding.

A. The primary sources of internal financing for airlines are the airline itself, which involves investing financial resources through its equity structure.

These elements, which are constituents of an airline's internal funds, are classified into different forms of capital (Table 1) [22].

Table 1 - Types of capital forming the equity capital of airlines

Types	Characteristics
1) Charter Capital	The authorized capital is the minimum amount of assets that an airline must hold, established to protect creditors. The airline's authorized capital system is formed depending on the organizational and legal state and usually consists of: - Partnership and LLC: Capital contributed from the participants or members. - For JSCs: Nominal value of issued shares. - For Production Cooperatives or Artels — Contributions in the form of property shares from the members. - For State-Owned Enterprises: Funds granted administration of a government authority or a local self-governing body. These funds serve as the foundation for the airline's financial stability and legal compliance, highlighting its ability to meet its obligations and continue operations.
2) Additional Capital	It corresponds to the amount before the revaluation of the noncurrent assets of the airline, made by the established procedure, and the gratuitous assets received, and other similar amounts.
3) Reserve Capital	Its foundation complies with legal norms to serve as security for both unproductive losses and damages that have befallen the airline, as well as dividends to agents if the profit for the reporting year is less than, or nonexistent, for the given purposes.
4) Reserve Funds	These reserves are intended to cover accrued expenses, payables, and provisions, such as doubtful debts (airlines), undeclared vacation payments, annual performance bonuses, and expected repair costs of the airline's fixed assets, among others.
5) Accumulation Funds	Funds allocated for financing the airline's capital investment projects.
6) Targeted Financing and Receipts	An amount of money granted to an airline by a government or sponsor to enable the execution of specific targeted actions.
7) Lease Obligations	Lease obligations refer to the payment commitments for the use of leased assets, such as aircraft, under either operating or financial lease agreements.
8) Retained Earnings	It is the earnings retained by an airline after paying dividends to shareholders and settling outstanding liabilities.
9) Depreciation Deductions	A portion of the airline's revenue is typically allocated to accumulation funds, repair reserves, and other similar purposes.
Note: Compiled based on Source [23].	

4) Cost Optimization. Airlines can increase profitability and manage costs more effectively by streamlining their business processes and reducing expenses.

5) Internal Reserves. An example would be airlines setting aside internal reserves or funds to cover unexpected expenses, maintenance, and the modernization of their fleet.

6) Long-Term Investments. Investments a company makes in new technology,

equipment, or marketing are considered long-term sources of income, as they improve the company's financial position.

7) Efficient Use of Assets. Improving the utilization of assets, such as the entire fleet of aircraft, can enhance a company's efficiency and profitability, thereby increasing its internal financial resources.

The types of external financing instruments (sources) used by the airlines are as follows:

1) raised funds:

2) borrowed funds

I. Raised funds for airlines

FPO is the process by which a new number of shares of the airline is issued by the firm, leading to dilution of the shares held by existing investors in the business. The procedure enables the issuing airline to attract investment to achieve any of its goals, such as repaying liabilities or further developing the enterprise. Some of the fundamentals for airline equity financing (Figure 5):

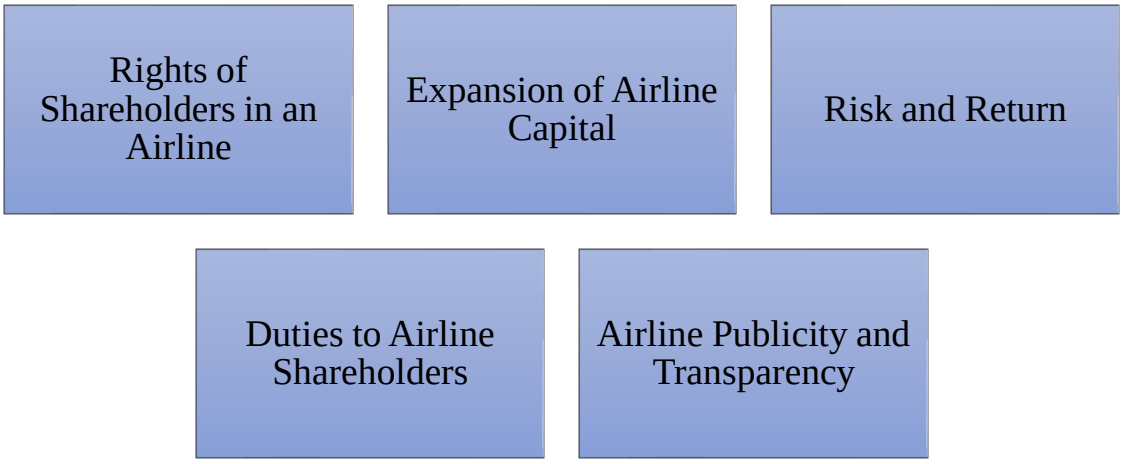


Figure 5 - Key Aspects of Equity Financing for Airlines

Note: Compiled by the author based on Source [24]

Equity financing is an internal source of financing in airlines, referring to the process of raising capital through the issuance of company shares to stockholders on the stock market.

If an airline opts to use equity financing, it takes some of its common stock and sells it to investors. By buying these shares, investors help to finance the company in return for the cash. After listing the shares on the market, they are traded among investors.

Key points about equity financing of airline companies are:

- Shareholder rights: Investors who purchase shares become shareholders and therefore have additional rights, including voting rights at shareholder meetings and the right to receive dividends (in the event the company generates sufficient profits).

- Capital growth: The equity lessor enables airlines to deploy their capital without the burden of repaying borrowed funds. You can use this money to fund the purchase of new planes, the modernization and digitalization of the aircraft fleet, as well as the expansion of the airline's business.
- Risk and reward: Investors who buy shares assume new and ongoing risk with the money they invest. If the company's value changes in the market, the value of the shares also changes accordingly. If the company succeeds, shareholders could earn a profit from the steep rise in share price and dividends.
- Commitments to shareholders: Airlines that have raised funds through equity financing are now providing shareholders with regular updates on the company’s financial position, business activities, and prospects.
- Publicity and transparency: Listed airline must follow transparency and financial reporting requirements that could potentially constitute a restraint [25].
- Equity financing allows the accumulation of considerable financial resources by placing shares among an unlimited number of investors for the implementation of promising innovative projects. By issuing securities, an investment loan is replaced by market debt obligations, which helps to optimize the structure of financial resources invested in an innovative project.

Public financing of airlines refers to the funding of their activities through the state or government. Such support may take many forms and be used for various purposes aimed at either ensuring the national economy or the security of the country, or other strategic objectives. Governments then stepped in, especially those in the travel and tourism sector, which, in addition to supporting the airline sector, is an essential part of the global economy. The primary tools of state support for airlines are: (Figure 6).

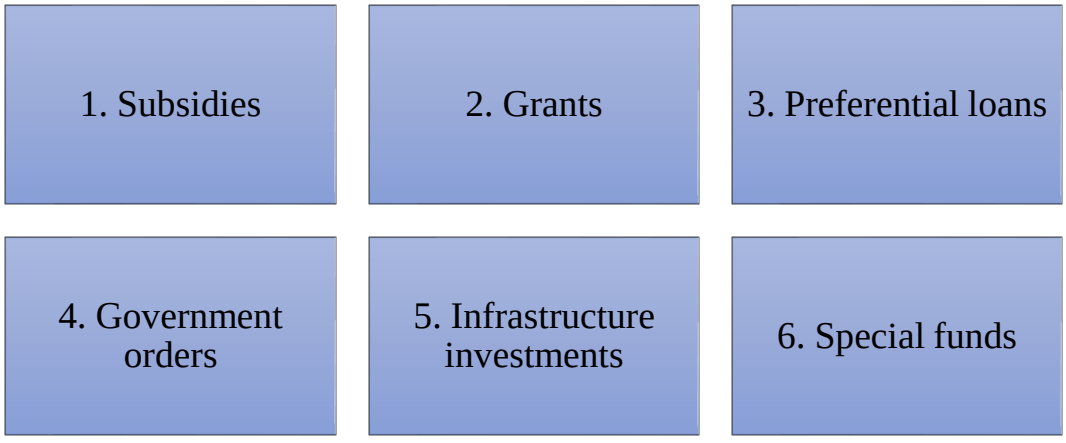


Figure 6 - Key Tools of Government Support for Airlines

Note: Compiled by the author based on Source [26]

1. Subsidies. It means the federal government can directly offer the airlines subsidies when they're facing a global crisis, a pandemic, or a challenging geopolitical situation.

2. Grants. In 2020, the United States provided the most significant aid to carriers 2020. In all, more than $80 billion in federal funds were directed via grants and loans to support air transport.

3. Preferential loans. The government can provide airlines with access to preferential loans with low interest rates, allowing companies to access capital on more favorable terms [27].

4. Government orders. Airlines can receive financial assistance through contracts that commit to covering the wages of employees in the aviation field.

5. Infrastructure Investments. The government can invest in aviation infrastructure, including airline fleets and airports, which will indirectly enhance the resilience of airlines by improving operating conditions and maintaining infrastructure assets.

As part of this initiative, the government has implemented a measure to support the airline industry, providing a one-off subsidy for Hong Kong-registered aircraft. Additionally, the Hong Kong Airport Authority has acquired 500,000 air tickets from local carriers.

6. Special funds. Public financing tends to spark discussions about fairness, resource efficiency, and the state's role in the economy. However, events like the COVID-19 pandemic play a significant strategic role in determining the importance of an industry remaining stable and functional.

II. Airline borrowings are subject to significant fluctuations. They are closely tied to the growth in demand and the volume of air travel or production of other related goods, which are predominantly seasonal.

During the "low" season, airlines often face a shortage of funds to meet their obligations to suppliers. To address this, in addition to utilizing their working capital, they rely on borrowed working capital.

However, with borrowed funds, company managers can mitigate the impact of seasonality in production, address deviations in production volumes from planned levels, and implement specific economic processes that require additional funds.

These debts are known as airline borrowings, including bank loans, airline bond issues, and aircraft leasing.

During the "low" season, airlines often face financial constraints that limit their ability to fulfill obligations to suppliers. To mitigate this issue, they not only utilize their working capital but also depend on borrowed funds. By leveraging these borrowed resources, company managers can navigate the challenges posed by seasonal fluctuations in production, variations in production volumes from anticipated levels, and the execution of specific economic activities that necessitate additional financial support.

Bank loans: This is a type of borrowed funds that airline companies can obtain from financial institutions, such as banks. These loans can be used for various purposes, including, but not limited to, the acquisition of new aircraft, maintenance, business expansion, payment of operational expenses, and various capital needs.

An airline can borrow the following working capital at the rate specified in [20, p. 51-52].

General features of bank loans for aviation operators are as follows (Figure 7).

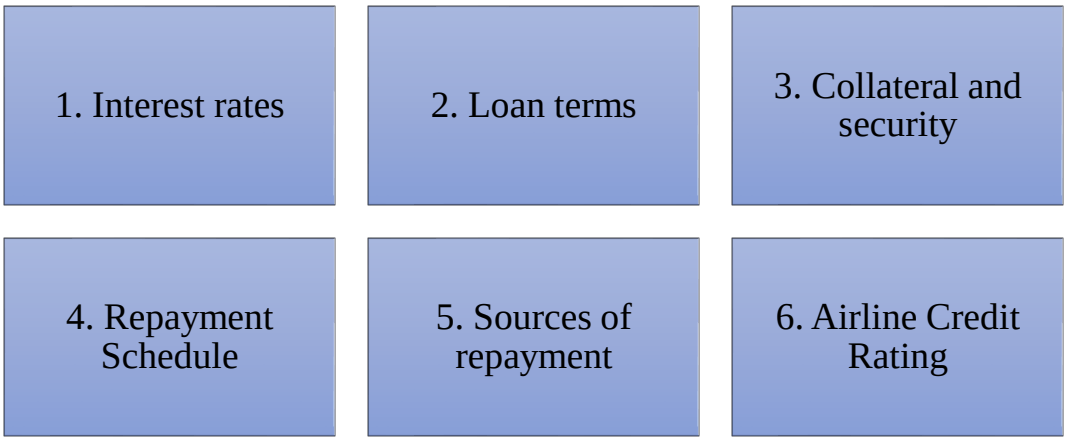


Figure 7 - Characteristics of bank loans for airlines

Note: compiled by the author based on the source [28]

1. Interest rates. The loan recipient must then pay interest on the loan amount.

2. Loan terms. The loan may be for a specified amount of time, and could range from a few months to a few years. The term relies on the reason for the loan and the company's financial resources.

3. Collateral and security. Interest of the company – Generally, banks deal with the interests of the company, as they need to look forward to receiving some benefits from the company. This can be aircraft, land assets, equipment, or even shares of these companies.

4. Repayment schedule. The firm must repay the principal on the loan, along with interest, according to a predetermined repayment plan. The schedule could be standard, irregular, or even deferred payments."

5. Repayment sources. Repayment of loans will be made from the company's revenues, including profits from sales, dividends, and other sources of income.

6. Airline credit rating. A company with a healthy credit score may be able to secure loans on more favorable terms, such as lower interest rates.

It is an essential tool for airline companies, providing them with financial resources for their operations and projects. However, these loans and their associated risks can also incur costs, and careful consideration should be given to the exact terms of any agreement before making one.

Airline bond issuance means the act by which an airline provides debt securities (bonds) on financial markets. Investors purchase bonds that grant them the right to receive interest (coupons) and the return of the bond's face value upon maturity. One way airlines can raise capital is by issuing bonds.

Concerns related to issuing bonds for airlines encompass key aspects, as illustrated in Figure 8.

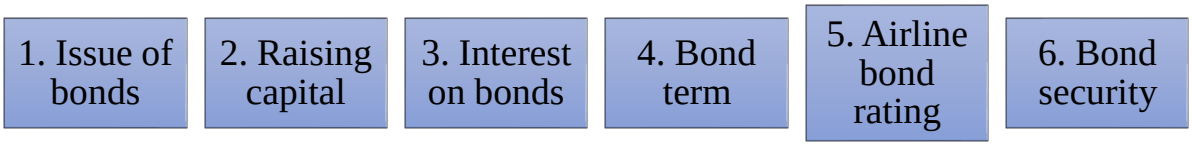


Figure 8 - Key Aspects of Bond Issuance in the Context of Airlines

Note: Compiled by the author based on Source [29]

1. Bond issue. Companies in the aviation industry have effectively issued and placed corporate bonds over the past decades. The characteristics of the aviation industry, the primary characteristic of which is the duration of the production cycle, and the long-term nature of contracts. An airline creates bonds and sells these securities to investors. Such bonds can be fixed- or variable-income bonds with various maturities and additional features.

2. Raising capital. When investors purchase bonds, the airline receives cash that can be invested into anything from new aircraft, technology upgrades, debt paydowns, or other capital expenditures.

3. Interest on bonds. The airline undertakes to pay interest (coupons) to bondholders during the term of the bond. This represents the cost of servicing the debt.

4. Bond term. Bonds have a specific maturity date, after which the company is obligated to return the face value of the bond to the bondholders. The terms can be for short (a few years) or long (decades) periods.

5. Airline bond ratings. Interest rates and investor interest in private airline bonds can be affected by the credit rating. Firms with better credit ratings will typically be able to issue bonds at lower interest rates.

6. Bond security. In some instances, firms offer collateral or other types of guarantees that ensure bondholders are compensated, thereby guaranteeing that investors' capital is repaid [23, p. 11].

Thus, issuing bonds is an option to diversify sources of financing, as companies do not wish to attract new shareholders. However, the debt, including interest payments and future capital repayment, means that such a move would increase the airline's financial obligations.

The leases of aircraft purchased by airlines are a key factor in the evolution of the global aviation industry. The cost of contemporary commercial airplanes can run into hundreds of millions of dollars.

As not every company has the budget to pay for commercial aviation on its own, it is common to resort to borrowed funds and complex leasing systems.

Ship leasing refers to a financial model that allows for the long-term leasing of an aircraft (with or without the option to purchase the plane afterwards) from one airline or aircraft operator to another airline or from a leasing company.

Figure 9 shows the mechanism of Aircraft leasing.

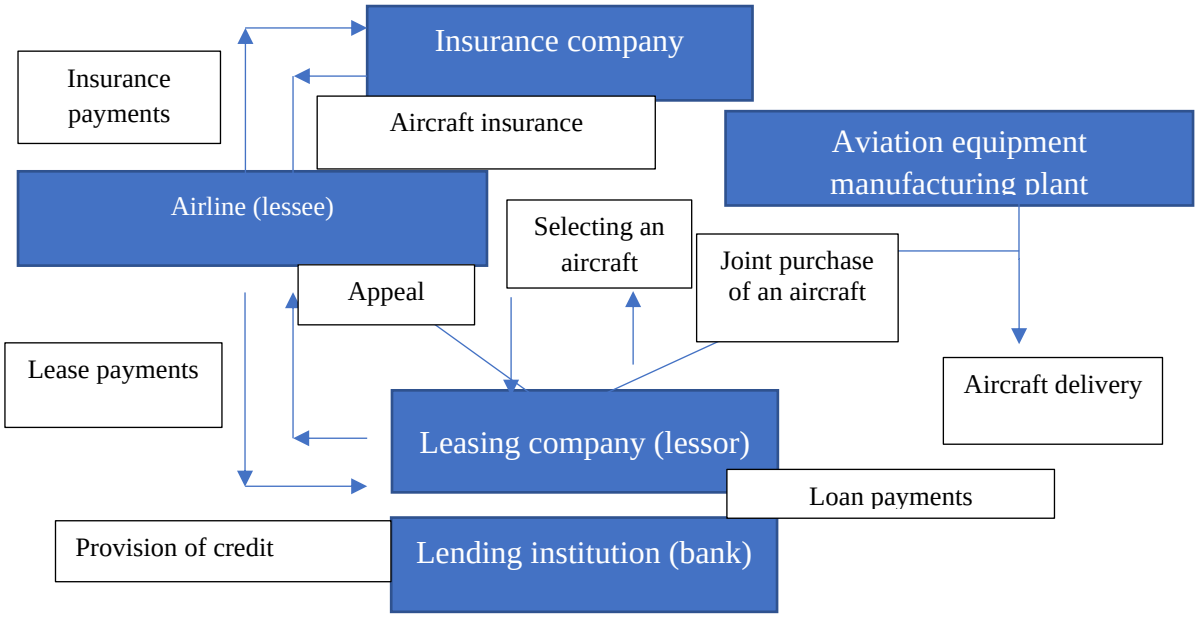


Figure 9 – Scheme of the leasing mechanism

Note: compiled based on the source [30]

Aircraft leasing involves not only the acquisition of the equipment itself, but also all the accompanying infrastructure, equipment, and accessories, as well as the services associated with them.

The leasing can also be executed with aircraft that have already been in service with other airlines (pre-owned aircraft), as well as with completely new aircraft. We need to point out the main principles of leasing organization: the urgency, the payment and the cost-effectiveness, on the base of that we can develop the substance of aircraft leasing: the aircraft leasing is a complex economic and legal relationship between three entities: the lessor, the lessee and the seller, during which the investing leasing company acquire in ownership of a particular aircraft (AC) or other aviation property from a specific manufacturer and give this property to a leasing company for a charge in the frame of regular leasing payments for temporary possessing and for use during commercial flights with the opportunity of transfering the ownership [31]. The financial and operational types, as well as return, are the most common forms of leasing in civil aviation enterprises (Figure 10).

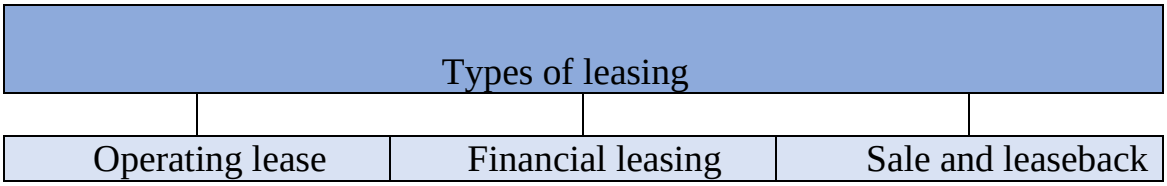


Figure 10 – Types of leasing

Note: compiled based on source [32]

Under operational leasing, an aircraft is leased by the lessor to the lessee with no further transfer of ownership for a defined period. Such leasing is generally short-term, and typically is shorter than the aircraft's depreciation term, which is about 10 years or less.

Contrarily, financial (capital) leasing means long-term contracts with fixed duration (mostly up to 10–20 years). Such deals generally afford the lessee a right of acquisition in respect of the aircraft from the leasing company upon lease expiry for its estimated residual value. In this kind of structure, for example, the lessor typically purchases the aircraft (usually utilizing collateralized debt) and leases it to the operational organization. Financial leasing features long-term loans, so it must pay attention to the financial examination situations of the lessee.

In the sale and leaseback model, an airline sells its aircraft to a bank, investor, insurance company, or leasing company. It leases it back simultaneously, typically for a period of 10 to 20 years. This is a common tactic for cash-scarce firms [33].

The lease payments include (Figure 11):

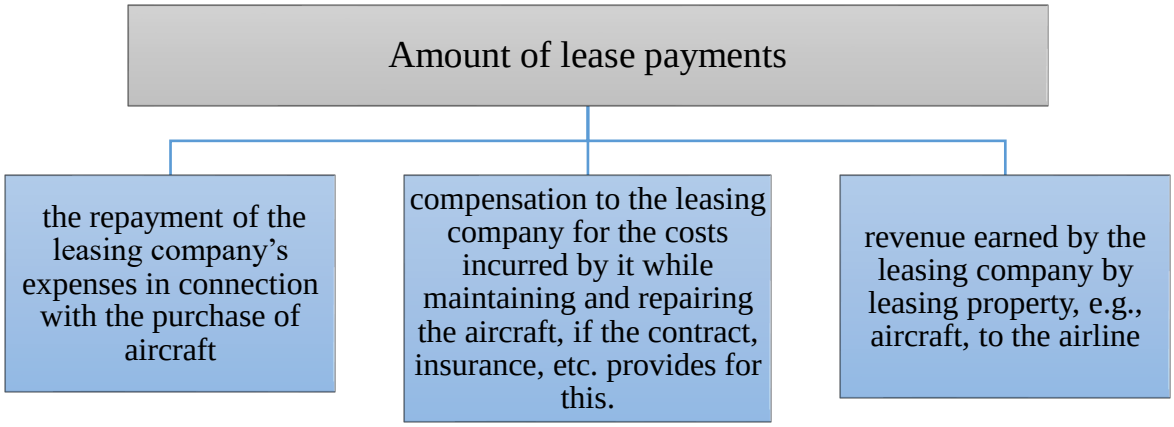


Figure 11 - Amount of leasing payments

Note: Compiled by the author based on the source [34]

As the year 2020 comes to a close, the aviation system is under growing stress due to the spread of the virus. In this critical context, the function of aircraft leasing is clear, as it is, in fact, the primary mechanism of airline financing for aircraft acquisition [27].

Therefore, external sources of financing for airlines include funds from the state, financial and credit organizations, and other non-financial companies. Internal sources, on the other hand, are financing activities at the expense of the airlines' internal funds.

Thus, according to the analysis of sources of financing, three groups of models of financing aviation companies can be distinguished (Figure 12):

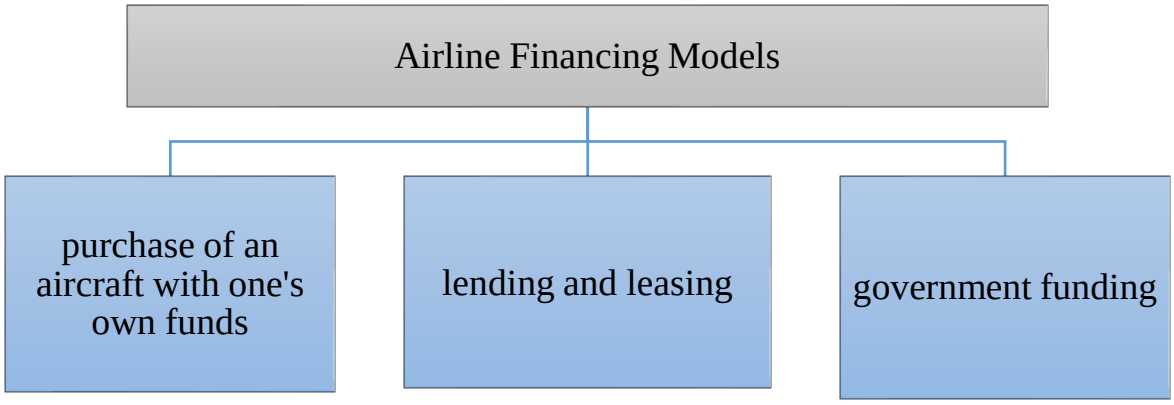


Figure 12 - Models of financing aviation companies

Note: Compiled by the author based on the source [26]

The initial paradigm involves purchasing an airplane with its capital. In this model, airlines immediately receive ownership rights; they are listed on the balance sheet as fixed assets, and depreciation is accrued on them.

Nonetheless, the challenge with the first model is that it is impractical in most cases, as most airlines do not have the funds to purchase the aircraft outright.

The second type, lending, is more similar to a leasing contract and may be a less expensive form of financing. In this model, the aircraft, engines, and other equipment are immediately transferred to the airline’s ownership. At this point, they become part of its assets and liabilities and are subject to depreciation.

The most notable advantage of a bank loan is its ease of obtaining funds. Airlines minimize the cost of documentation preparation, as banks typically require a standard set of documentation. However, this model presents notable drawbacks, including the requirement for collateral that often exceeds the loan value and high interest rates [24, p. 47].

Additionally, leasing remains the most widely used financing option for airlines within this model. Aircraft leasing allows airlines, which may lack sufficient funds or prefer not to manage aircraft beyond their operational lifespan, to partner with leasing companies. These companies purchase the aircraft from manufacturers and lease them to airlines for a specified period in exchange for a fee.

And the third model would be state financing of airlines. Most states that understand, at least to some extent, the strategic importance of the aviation industry in the country's economic life, where the conditions for the core economic activity are created, recognize the first link. However, due to the need to stabilize the aviation industry and enable it to continue its forward-looking role in driving the national economy and supporting jobs, various forms of government assistance (financial, regulatory, or both) are extended to the sector.

Several airlines have demonstrated successful results in the stock markets by combining sound management, diversification of services, and transparency for investors.

Delta Air Lines (NYSE: DAL). Headquartered in the United States. Strategy for Success:

1. Financial stability: Delta is one of the few airlines that pays dividends to its shareholders and has a share buyback program to increase shareholder value.

2. Revenue diversification: Development of loyalty programs (SkyMiles) as a source of significant revenue; Investments in partner airlines around the world.

3. Operational efficiency: Continuous investment in fleet modernization to reduce fuel costs and improve efficiency.

Ryanair Holdings (ISE: RYA, LSE: RYA). Headquartered in Ireland. Strategy for Success:

1. Low-cost model: Utilization of a low pricing policy with an emphasis on additional services (such as baggage, meals, and seat selection); minimization of costs due to a single fleet (Boeing 737). 2. Investor Transparency: Transparent cost and revenue structure; Focus on long-term shareholder value growth.

3. Expansion: Continuously expanding route network in Europe and beyond.

Southwest Airlines (NYSE: LUV). Headquartered: United States. Strategy for Winning:

1. Customer Focus: Simple fare structure, no hidden fees; Rapid Rewards loyalty program.

2. Market Stability: The company has a reputation for being one of the most stable airlines in the United States; it hedges fuel prices to protect against volatility.

3. Investor Appeal: Stable dividend payout; Good history of shareholder value growth.

Singapore Airlines (SGX: C6L). Headquartered: Singapore. Strategy for Winning:

1. Premium Service: High standards of passenger service and comfortable onboard conditions; Appealing to premium customers and business travelers.

2. Transparency and innovation: Regular disclosure of financial statements; Investments in new technologies and sustainable development.

3. State support: Partial state ownership ensures financial sustainability.

Air Canada (TSX: AC). Headquartered in Canada. Strategy for Success:

1. Post-Crisis Recovery: Following its restructuring, Air Canada was able to increase operational efficiency; Investors praised the company’s ability to adapt to changing conditions.

2. Revenue Diversification: Developing cargo operations and expanding its range of services.

3. Focus on ESG: Sustainability and reducing carbon footprint were key areas for attracting investors.

International Airlines Group (LSE: IAG). Headquartered in the United Kingdom. Strategy for Success:

1. Conglomerate of brands: Includes British Airways, Iberia, Aer Lingus, and other airlines.

2. Synergies: Optimizing costs through centralized management and effective use of code-sharing agreements.

3. Financial Transparency: Regular publication of reports and attracting investors through clear growth strategies.

To successfully enter the stock market and attract investors, Air Astana JSC can use the following approaches:

1. Transparency: Provide investors with clear information on the structure of revenues, expenses, and strategic goals.

2. Diversification: Develop additional revenue streams (cargo transportation, premium services, loyalty programs).

3. Focus on efficiency: Optimize the route network and costs.

4. Work with ESG factors: Emphasis on environmental responsibility to attract investors focused on sustainable development.

5. Government support: Interaction with shareholders, including government agencies, to ensure financial stability.

Air Astana JSC prioritizes the implementation of ESG (environmental, social, and corporate governance) principles in its operations and strives to achieve sustainable development, thereby enhancing its social responsibility.

Environmental responsibility: The Company has also adopted the Low Carbon Development Program for 2023-2032, in line with Kazakhstan's commitment to carbon neutrality by 2060. Air Astana aims to achieve carbon neutrality by 2050, in line with the global target endorsed by the ICAO Assembly in 2022. The Paris Agreement appears to align them to update the program in 2024 by setting short-term (biennial) targets, independently verified. Additionally, the company is participating in a study on the prospects of producing and applying sustainable aviation fuel (SAF) in Kazakhstan, to achieve a 5% SAF application rate by 2030.

Social responsibility: Air Astana promotes gender equality and diversity in the workplace. The company has been training employees with a total of 6,384, comprising 3,829 women from 72 nationalities as of 30 September 2023. Women constitute 44% of management, well above the 25% target set by IATA. They donate tens of thousands of dollars to national charities and offer free or discounted flights to members of these organizations and other community programs, providing support to local needs.

Corporate Governance: In February 2023, Air Astana adopted an ESG strategy for 2023-2032, based on international standards and best practices. The strategy prioritizes six of the UN Sustainable Development Goals: quality education; gender equality; decent work and economic growth; reduced inequalities; climate action; and partnerships for the goals. It also published its first GRI-based sustainability report in 2020 and continues to embed sustainability issues within its management system.

Therefore, Air Astana reaffirms its commitment to the principles of ESG by continually working to mitigate its environmental impact, engaging in socially responsible initiatives, and adopting best practices in corporate governance.

1.2 Methodology for developing financing sources for airlines

When studying the methodology of forming sources of financing for aviation companies, it is necessary, first of all, to understand the essence of the terms "methodology", "method", and "technique". If we go from the general to the specific, the following hierarchy would be correct:

Methodology is a science, an interdisciplinary "rules of the game", that is, a set of methods used in individual sciences; the doctrine of structure, logical organization, methods, and means of activity.

Methodology is a system of methods, that is, a set of specific instructions regulating the actions of an individual in space and time. Methodology is a general set of rules, an algorithm, methods for studying something, a process, or a path of theoretical research [34].

Methodology can be defined as a set of methods used in individual sciences; it encompasses the doctrine of structure, logical organization, strategies, and means of activity.

The methodology for forming funding sources for aviation companies involves a systematic and structured approach to determining and organizing the resources necessary for aviation companies to maintain and effectively develop their activities [35].

This methodology encompasses various stages and strategies that enable companies to manage their finances effectively.

Let us consider some key aspects of the methodology for forming funding sources in the context of modern aviation companies (Figure 13).



Figure 13 - Key aspects of the methodology for forming sources of financing for airlines

Note: compiled by the author based on the source [36]

1) Analysis of the financial condition of the airline. The first step in the methodology is to analyze the airline's current financial condition, including an assessment of its assets, liabilities, profit, and cash flows. The analysis helps to identify financial needs and determine the amount of necessary financing.

Within the framework of this dissertation research, Chapter 2 will consider the analysis of the financial condition and financial results of the airline JSC Air Astana.

The fact that the aviation industry highly affects a sizable number of stakeholders: consumers (passengers), partners, suppliers, airline management, the Government of the Republic of Kazakhstan, shareholders, society, employees, banks and other creditors [37] increases the importance of strata, qonoq a financial condition analysis of airlines.

2) The analysis of an airline's financial results involves studying and evaluating its financial activities to understand its financial condition, efficiency, and sustainability.

Airline tariff setting methods refer to the strategies and approaches used to determine prices for tickets and other air transportation services. These methods may vary depending on various factors, including route type, market segment, competitive environment, and time constraints.

3) Strategic planning. Airlines develop strategic plans that define their long-term and short-term goals. These plans include business expansion, equipment modernization, opening new routes, and other strategic areas that require financing—airline risk assessment. Airlines operate in a complex environment that is exposed to numerous risks, including changes in fuel prices, political instability, and competition. The methodology includes assessing these risks and developing measures to mitigate them.

4) Determining sources of financing. Based on strategic planning and risk analysis, the company identifies the most suitable sources of funding. This may include a combination of bank loans, bond issues, attracting investments, using internal reserves, and other forms of financing.

5) Assessing the cost of capital. Airlines assess the cost of capital to determine the capital structure and optimize the allocation between long-term and equity capital.

6) Attracting investors. If an airline decides to attract external investment, it is essential to develop effective strategies for attracting investors and offering them attractive terms.

7) Compliance with financial regulations and requirements. Airlines must consider financial regulations, laws, and regulatory requirements to ensure compliance with financial reporting and management standards.

8) Developing a business model for financing airlines involves creating a strategy and structure that determines where the company will obtain the necessary financial resources for its activities [38].

One of the most common methods for identifying sources of financing is analyzing the financial condition of airlines. Existing approaches to assessing the analysis of the financial condition of airlines from the perspective of various

stakeholders, which include an individual or legal entity, a group of individuals, individual organizations and structures whose actions, behavior or decisions can affect the activities and results of the company and the processes in it [39].

First, we will pay attention to the analysis methods that are designed for the subjects. The primary objective of the methodological recommendations for assessing the financial and economic condition of aircraft operators is to enhance control over financial stability. Aircraft operator (AO) - an individual or legal entity operating an aircraft based on ownership, a lease agreement, or other title documents.

Table 2 – Classification of Operators by Categories in the Context of Analyzing Airline Financial Stability

Categories	Category 1	Category 2	Category 3
Financial Stability Subcategories	a) operators with an acceptable level of debt b) operators with a moderate level of debt c) operators with a high level of debt	a) with an acceptable level of debt; b) with a high level of debt	a) with an acceptable level of debt; b) with a high level of debt
Set of indicators	Return on Sales EBIT Return on Sales Net Profit Return on Sales ROA ROE	Operating Profit Margin Before Depreciation Ratio of operating profit before depreciation to % paid (or % paid, taking into account net other income) Ratio of liquid assets to current debt Proportion of cash in liquid assets	Ratio of liquid assets to current debt, Share of cash in liquid assets Ratio of net debt to the arithmetic mean of positive operating profit before depreciation
Note: compiled by the author based on the source [33, p.42]			

To evaluate the risk of a decline in the financial and economic condition of operators and to analyze their potential for restoring solvency, a specific set of indicators is utilized. These include the average monthly net disposable income and the reduction in monthly flight hours per average listed aircraft (Table 2).

The determination of whether an operator's financial and economic condition is satisfactory or unsatisfactory is based on their classification into one of the profitability categories and a corresponding financial stability subcategory, utilizing an additional set of indicators.

The complexity of applying this methodology arises from two key aspects: The challenge of accurately categorizing operators based on the defined indicators. The

potential variability and interdependence of the indicators may complicate the analysis.

Firstly, the methodology doesn't clearly define the main concepts: "financial and economic condition," "financial stability class," "profitability category," "financial stability subcategory," and "loss-making/loss-making operating model." This complicates explaining the results of the calculation because these terms lack an economic description and content.

Secondly, the methodology faces information constraints due to the restricted availability of data, as much of it is not publicly accessible. Moreover, as previously noted, the methodology does not consistently identify crisis indicators, limiting its effectiveness in certain scenarios. The methodological recommendations focus on analyzing the following aspects: Risks associated with the deterioration of operators' financial and economic condition. Potential opportunities for restoring solvency. Shortages in financial resources. According to the methodological recommendations for assessing the financial and economic condition of operators engaged in commercial air transportation, the set of indicators used varies depending on the specific purpose of the analysis [40].

Additionally, a rapid or express analysis of an airline's financial condition can be applied as an assessment tool. This methodology involves evaluating aviation companies' financial reports for alignment with the characteristics of a "healthy balance sheet," which include: An increase in the balance sheet total. The amount and growth rate of equity capital exceed that of borrowed capital. The absence of "problematic" items in the financial reports. A higher growth rate of current assets compared to non-current assets, among other indicators. However, express analysis focuses mainly on balance sheet assessment and falls short of including a lot of financial and non-financial information, potentially making it incomplete [41].

Let us examine the analytical capabilities of these indicators, which can serve as markers of financial crisis, within the framework of express analysis (Table 3).

Table 3 - Express analysis of cash flows and financial results of airlines

Indicator	01.01.19	01.01.20	01.01.21	01.01.22	01.01.23
Airline No. 1					
Financial result	NP	NP	NP	NL	NL
NCF of current operations	-	-	-	-	-
NCF of financial operations	+	+	+	+	+
NCF	+	-	-	+	-
Airline No. 2					
Financial result	NP	NP	NP	NP	NP
NCF of current operations	+	-	+	+	-
NCF of financial operations	+	+	-	-	+
NCF	+	-	-	-	+
Note: compiled by the author based on the source [42]					

NCF — net cash flow; NP — net profit; NL — net loss; "-" — negative value; "+" — positive value. NCF is one of the key indicators to be looked at when studying the financial condition of an organization.

The basis for all calculations is the balance sheet profit, the primary financial indicator of an aviation enterprise's production and economic activity. The key characteristics of the methodology for analyzing the financial results are reflected in Table 4.

Table 4 - Key characteristics of the methodology for analyzing the financial results of airlines

№	Indicator	Characteristic of the indicator
1	Reporting:	Financial Statements: Study of annual and quarterly reports, including financial statements, income statement, balance sheet, and cash flow statement.
		Segment Reports: Analyze the results of various segments such as passenger services, cargo services, aircraft maintenance, and others.
2	Profitability:	Profitability: Evaluate net profit, profit before tax, and other essential profitability metrics.
		Marginality: Study of gross margin, net margin, and other margin metrics.
3	Asset turnover:	Asset Turnover: Evaluate how efficiently assets are used to generate revenue.
4	Capital structure:	Long-Term and Equity: Study of capital structure and ratios to evaluate financial leverage.
5	Profitability ratios:	ROA (Return on Assets): Measures how much profit a company generates from its assets.
		ROE (Return on Equity): Analyze how efficiently equity is used.
6	Asset management efficiency	Inventory Turnover and Accounts Receivable: Analyze how quickly a company converts inventory into revenue and collects accounts receivable
7	Liquidity:	Current Ratio and Quick Ratio: Assess a company's liquidity and ability to pay its obligations.
8	Operating activity analysis:	Passenger and Cargo Revenue: Consider the significant sources of revenue.
		Aircraft utilisation: A study of the degree of utilisation of aircraft.
9	Expenses:	Operating Expenses: Analysis of operating expense structure, including fuel, personnel, maintenance, and other costs
10	Trends and Comparative Analysis:	Dynamics of indicators: Study of changes in financial indicators over time.
		Comparison with competitors: Comparison of results with competitors and industry standards.
Note: compiled by the author based on the source [43]		

The methodology determines the very form in which the entire analysis of the airline's profit will be carried out (Figure 14).



Figure 14 - Profit Analysis Methodology

Note: compiled by the author based on the source [44]

To determine the main areas of research of reserves for increasing the level of profit, the factors influencing its receipt (increase) are divided into two main groups:

Internal factors are those that affect the size of the enterprise's profit. They affect by increasing production and sales of products, improving the quality of products and prices, and reducing the cost of production and sales. External factors are those that are independent of the company's activities.

External factors can significantly impact the amount of profit. The company receives profit if the revenue from sales is higher than the cost of sold products (works, services).

Distribution and use of profit is a key process that ensures both the coverage of airlines' needs and the formation of state revenues. The mechanism for distributing profits should be structured in a way that facilitates increased efficiency in air transport services [20, p. 92].

The main formulas for calculating profits are presented in Table 5.

Table 5 - Formulas for calculating the financial results of airlines

№	Indicator	Formula	Designations
1	Profit indicator	$P = R - C$	P – sales profit; C – cost of goods sold (works, services); R – revenue from the sale of goods (works, services).
2	Net income	$NI = \Sigma M + \Sigma P - C$	NI – net income; ΣM – sum of marginal income; ΣP – net balance of income and expenses; C – amount of fixed management expenses.
3	Mathematical formula of the factor analysis model of sales profit	$SP = Vprod \times (C - Sed)$	SP — sales profit (planned or base); Vprod — sales volume of products (goods) in physical quantities; C — selling price of a unit of sold products; Sed — the cost price of a unit of sold products.
4	Examination of the Impact of Factors on Financial Outcomes	$p(Rc) = \frac{(R_{c1} - R_{c0}) \times R_0^{Sp}}{100}$ $Sp(C) = \frac{B_{p1} \times (C_1 - C_0)}{100}$ $\Delta Sp(Me) = \frac{R_{c1} \times (Me_1 - Me_0)}{100}$ $\Delta Sp(Ce) = \frac{R_{c1} \times (Ce_1 - Ce_0)}{100}$ $Sp_1 - Sp_0 = \Delta Sp(Rc) + \Delta Sp(C) + \Delta Sp(Me) + \Delta Sp(Ce)$	1. Due to the factor of revenue change (Rc): 2. Due to the factor of change in the level of cost of sales (C) 3. Due to the factor of change in the level of management expenses (Me) 4. Due to the factor of change in the level of commercial expenses (Ce) 5. Balance equation of factors of change in profit from sales
Note: compiled by the author based on the source [45]			

To assess the overall performance of an organization and analyze its strengths and weaknesses, it is necessary to summarize the indicators to identify cause-and-effect relationships that affect its financial position and its components.

The entire set of these indicators can be calculated based on key indicators such as balance sheet profit, profit from product sales, and net profit. Data for the analysis of financial results are present in the profit and loss statement. Profitability of production activities (cost payback) is calculated as the ratio of gross or net profit to the amount of costs for sold or manufactured products (Table 6).

Table 6 - Methodology for analyzing the profitability of airlines

№	Indicator	Formula	Designations
1	Profitability of production activities	$R_з = \frac{П_{рп}}{И}$ $R_з = \frac{ЧП}{И}$	Rз - profitability of production activities (cost recovery); Прп - gross profit from sales of products; NI - net income; И - expenses Where Rn - sales profitability; Прп - profit from sales of products; B-revenue from sales.
2	Profitability of sales	$R_п = \frac{П_{рп}}{В}$	Where R - is the profitability of sales; Прп - is the profit from sales of products; B- is the revenue from sales.
3	Profitability of core activities	P = P/E	E - expenses
4	Profitability of fixed capital	$P = \frac{Pr}{Fc} \times 100\%$	P - return on fixed capital; Pr - profit (net) for the reporting period; FC - fixed capital minus depreciation at the end of the reporting period.
5	Factor analysis	$R = \frac{P}{N}$ or $R = \frac{(N-S)}{N} \times 100$ $\Delta RN = \frac{N_1-S_1}{N_1} - \frac{N_0-S_0}{N_0}$ $\Delta RS = \frac{N_1-S_1}{N_1} - \frac{N_1-S_0}{N_1}$ $\Delta R = \Delta RN + \Delta RS$	where P - profit; N - revenue; S - cost price. Influence of the factor of change in product price influence of the factor of change in the cost price Sum of factor deviations
Note: compiled by the author based on the source [46]			

Profitability indicators demonstrate the overall efficiency of the organization, the return on various types of activities (production, investment) [33, p.76].

Gross profitability reflects the amount of gross profit in each tenge of sold products (works, services). In foreign practice, this economic characteristic is called marginal income (trading margin).

Of particular interest in assessing the efficiency of financial and economic activities of airlines is the analysis of non-traditional profitability indicators, such as cost-profitability, which shows how much profit from sales is 1 tenge of costs. Profitability (return) of capital is calculated as the ratio of net profit to the average

annual cost of all invested capital or its components; equity, debt, fixed, working capital, etc. [33, p.63].

The tariff policy should reflect the airline's position in the air transportation market and its financial performance directly. The price system used in the field of air transport is thus characterized by numerous tariffs, conditions of their application, as well as a heterogeneous structure of transport costs (tariff + fees) [20, p. 91]. Passenger Tariff Types, as shown in Figure 15.

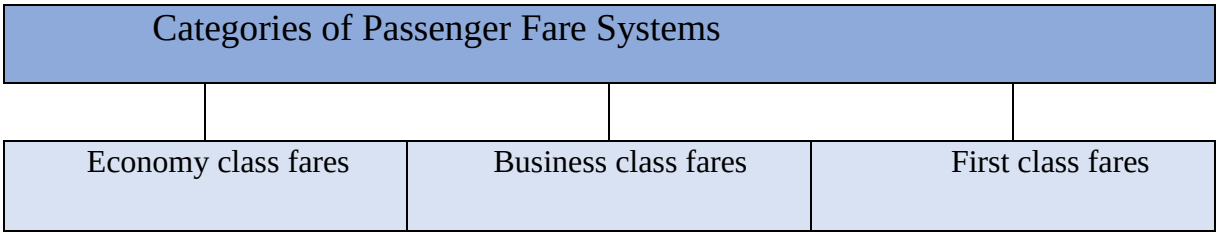


Figure 15 – Types of passenger tariffs

Note: compiled based on the source [20, p.85]

The principles of fare formation are based on the marketing concept (Figure 16).

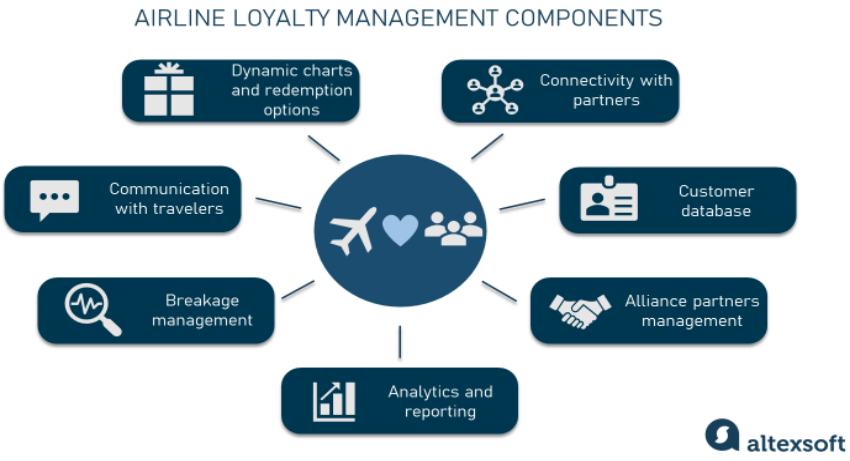


Figure 16 – Basic principles of the marketing concept for forming tariffs for airline services

Note: Source [20, p.88]

The application of marketing principles in the development of passenger fare structures enables airlines to enhance operational efficiency by broadening their customer base and catering more effectively to the transportation needs of diverse population groups. Airlines utilize the following tariff strategies in their operations (refer to Table 7).

Table 7 - Tariff methods used in the activities of airlines

	Method	Advantages	Disadvantages
1	Cost-Plus Pricing Method	Simplicity of Calculation for Airlines	The method is independent of the market conditions in the air transport sector; it does not consider the consumer characteristics of air transport services.
2	Break-Even Analysis Method	The method considers the paid aspect of financial outcomes	Utilizes interest rates, which, in inflationary conditions, are uncertain over time
3	Value-Based Pricing Method	The method takes into account the consumer's perception and the perceived value of the service.	Cannot be applied by airlines with high costs and low passenger traffic
4	Market-Oriented Pricing Method	Driven by market conditions	The presence of competing airlines and the unreasonable nature of a specific fare level for passenger air transport services, as determined by calculations
5	Negotiated Pricing Method	Adaptability of the method	Risk of incurring negative financial results from providing air transport services
Note: Source [20, p.88]			

The airline's operating expenses methodology involves a detailed breakdown of various expense categories, enabling the airline to manage resources efficiently and improve operational performance (Table 8).

When forming an air passenger tariff in a competitive environment, it is essential to adopt a marketing approach in managing an aviation company. This is especially true for companies operating passenger transportation on domestic air routes, which are typically characterized by low profitability.

One of the traditional ways to attract passengers to airline flights and subsequently increase revenue is to differentiate the tariff system and offer new, preferential, reduced prices. For air transport to be attractive to a broad section of the population, the company is entitled to provide a range of tariffs, from the tactical level (on the corresponding route) to the railway tariff, and up to a tariff that ensures high flight efficiency.

Aviation companies engaged in competition must adopt a marketing-oriented perspective for setting air passenger tariffs. This is all the more relevant for carriers operating domestic routes, where profitability is often limited.

The differentiation of tariff structures and the introduction of discounted fares

is a time-tested way of attracting more passengers and generating revenue. Then airlines have a relatively wide band of tariffs to do utilise to get a broader cross-section of the population to use air traffic — from these tariffs that would go along with those of the rail transport over this distance, up to higher tariffs to also price elastically to give as good an operational result as possible.

Table 8 - Key Features of Airline Operating Expense Analysis Methodology

№	Indicator	Characteristic of the indicator
1	Cost Segmentation:	By Category: Costs are divided into various categories, including fuel, salaries, and landing fees.
		By Activity: Costs are analyzed within the context of various activities, including passenger operations, cargo operations, and aircraft maintenance.
2	Fuel Expenses:	Fuel Price Monitoring: Evaluating current and projected fuel prices and their effect on an airline's financial planning.
		Fuel Efficiency: Investigating technologies and strategies to enhance fuel consumption efficiency.
3	Personnel Costs:	Salaries and Landing Fees: Assessing expenses on wages, landing fees, and other personnel-related costs.
		Workforce Productivity: Analyze productivity and optimize the workforce.
4	Aircraft Maintenance:	Maintenance and Repair: Study aircraft maintenance and repair costs.
		Fleet Renewal: Plan and analyze costs for acquiring new aircraft.
5	Airport Services Costs:	Landing and Ground Services: Analyze airport service costs such as landing fees, baggage handling, and ground handling.
6	Leasing and Insurance:	Aircraft Leasing: Calculate aircraft leasing costs and determine optimal financing strategies.
		Insurance: Analyze insurance costs, including aircraft and liability insurance.
7	IT Costs:	Systems Upgrade: Plan and analyze costs for upgrading information technology systems, including ticket reservations and flight management systems.
8	Training and Certification:	Employee Training: Estimate costs for training pilots, flight attendants, and other employees.
		Certification and Licensing: Costs associated with obtaining certification and necessary licenses.
9	Variation Analysis:	Variance Analysis: Study actual cost variances from planned costs and identify causes.
10	Risk Management:	Risk Insurance: Estimate the need for and cost of insurance against various risks, such as changes in fuel prices or natural disasters.
Note: compiled by the author based on the source [48]		

The methodology for operating expenses is crucial for optimizing costs and enhancing the airline's competitiveness. This analysis helps to identify effective cost management strategies and improve overall financial performance.

Cost structures likely vary from airline to airline, depending on their strategy, size, geographic location, and other factors. Managing these costs properly is essential to the financial health and competitiveness of the airline.

One focus in determining the cost for the following items is to use the route network along which air transportation occurs as a basis for making calculations. Thus, it allows considering operational conditions to the maximum, not only in terms of economic and technical indicators of aircraft in airlines but also in terms of passenger and cargo transportation as well as remote settings (Table 9).

The increase in airport fees at regional airports, coupled with the ongoing decline in passenger traffic, diminishes the accessibility of regional air travel.

Now, the vicious cycle is often demonstrated in the following chain: an increase in the airport fees will be followed by the rise in the air transport tariffs (the least of all encouraging of air passenger traffic) and then an increase in cost per unit of service provided (CTU) and, therefore, the increase in tariffs, and others [20, 78].

Table 9 - Cost structure based on fixed and variable direct operating costs

Variable direct costs	Fixed direct costs	Indirect costs
1) Fuel costs: fuel, oil, alcohol. 2) Variable crew costs: - wages and bonuses. 3) Variable flight attendant costs: - wages and bonuses. 4) Direct technical costs: - depending on the number of takeoffs and landings; - depending on the flight time. 5) Airport and route charges: - landing charges and other airport charges; - navigation charges. 6) Passenger service costs: - food and passenger accommodation; service charges.	7) Fixed costs of aircraft: - depreciation or rent; - insurance; - maintenance and repair. 8) Annual crew costs: - fixed salary and other costs not dependent on flight hours; - crew administration. 9) Annual flight attendant costs: - fixed salary and other costs not dependent on flight hours; 10) Technical costs: - fixed salary for technical personnel not dependent on aircraft use, etc.	11) Parking and ground expenses. 12) Passenger services: - passenger service personnel; - insurance. 13) Sales expenses. 14) General and administrative expenses.
Note: Source [20, p.75]		

Overhead costs are determined for the airline or the airline, and then distributed by type of activity, by type of aircraft, and by the flights in question [20, p.79].

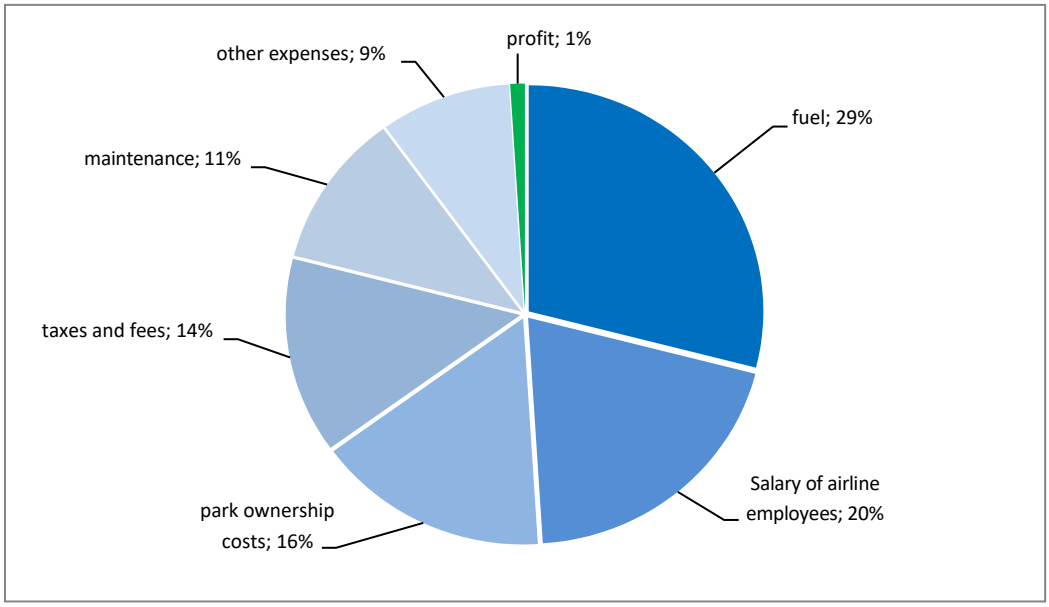


Figure 17 – Approximate cost structure of a Russian airline

Note: Source [20, p.76]

Most airlines, aviation flight schools, aircraft repair companies, and aircraft manufacturers will, at some point, seek debt financing options to help cover the costs of operations, company expansion (including acquisitions), debt refinancing and consolidation, and general working capital needs. Below, we will consider some of the financing options available to airlines in Kazakhstan as part of developing a funding source methodology [20, p. 76].

Many airlines, aviation flight schools, aircraft repair companies, and aircraft manufacturers eventually explore debt financing options to support various needs. These include covering operational expenses, funding company expansion (including acquisitions), refinancing and consolidating existing debt, and maintaining general working capital. Below, we will examine some of the financing options available to airlines in Kazakhstan as part of developing a methodology for sourcing funds.

Therefore, numerous factors have a restraining effect on development, negatively affecting the performance of airlines. To counteract the above factors, modern airlines strive to improve the efficiency of their operations by attracting additional sources of financing and implementing a set of measures to increase profitability and reduce costs.

Airlines seeking financing for long-term working capital and capital expenditures typically seek a conventional or alternative term loan because the structure allows the debt to be serviced over a more extended amortization period than most other debt financing mechanisms. Term loans to airlines may be offered by conventional banks, institutional lenders, asset-based lenders, private lenders, and other non-bank commercial lenders [49]. Figure 18 illustrates the process of establishing the sources of airline debt financing.

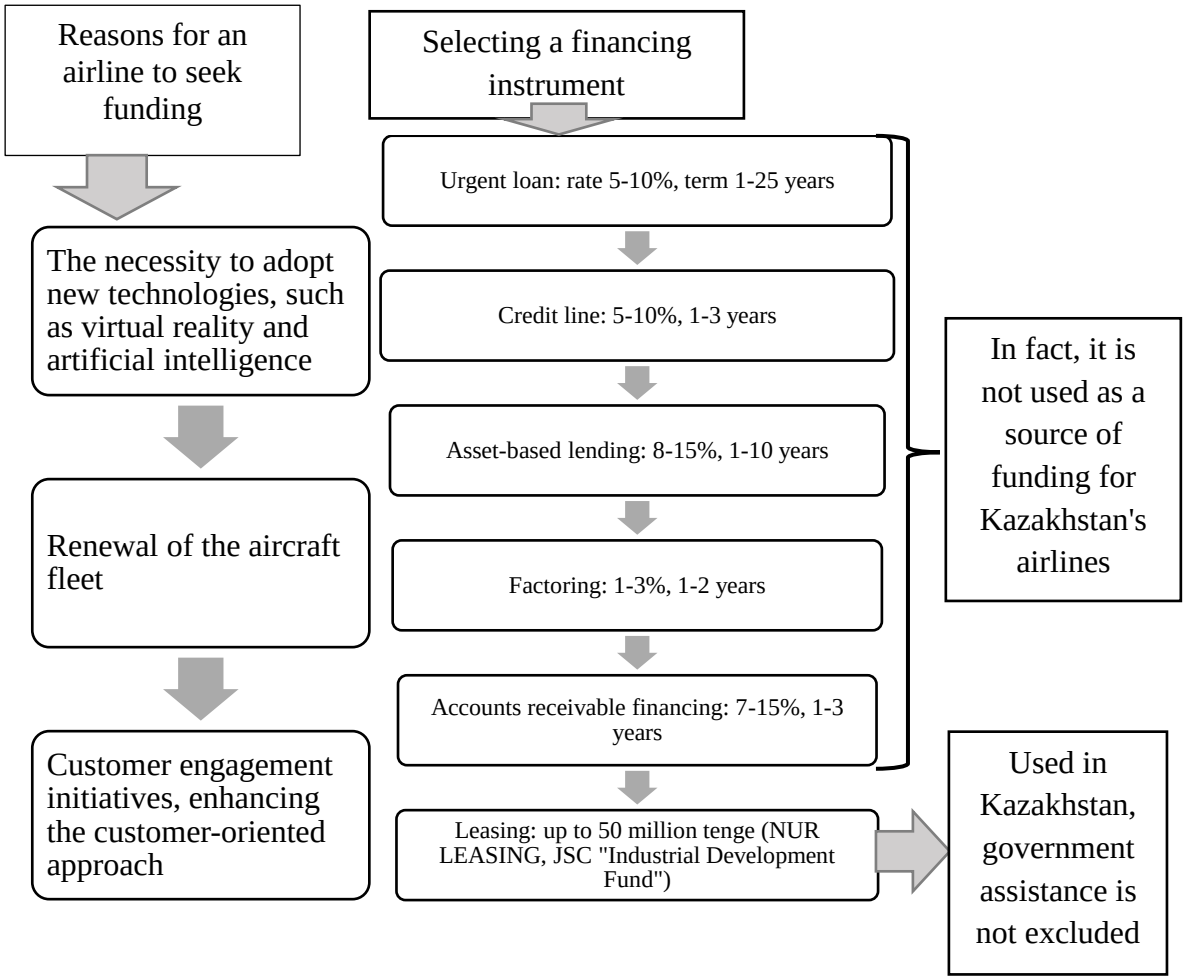


Figure 18 – Methodology for the formation of borrowed sources of financing for airlines

Note: compiled based on the source [50]

As shown in Figure 18, there is a need to develop alternative sources of financing for airlines in Kazakhstan, such as factoring, term loans, credit lines, asset-based lending, and accounts receivable financing.

This is important because airlines must develop not only with the help of the state and funds, but also independently exist in the marketplace. As can be seen, numerous business lending options are available to airlines seeking financing. The key is to find the right lender that offers the best financing to ensure that the debt is serviced with the least amount of money, thereby managing cash flow more effectively.

A credit line is a handy financing tool because the borrower gets pre-approval for readily available capital without the need for additional underwriting from a bank or lending institution. Additionally, a credit line can save airline businesses money because they will not have to pay interest on capital that is not borrowed. Asset-based lending is a good form of commercial financing for companies that may lack

the credit quality required by traditional lenders and for companies that have strong balance sheets and would like to monetize the equity in their assets (such as commercial real estate, accounts receivable, inventory purchases, and equipment and machinery).

Factoring involves selling a company's accounts receivable to a factoring company in exchange for immediate financing at a discount. This type of business financing is considered a business-to-business transaction rather than a loan, so the interest rate is calculated using a multiple rather than an APR. Factoring companies purchase invoices, forward a percentage of the invoice value, keep the fee for themselves, and then provide the borrowing company with the balance of the invoice value after the customer pays the invoice.[51]

Accounts receivable financing is similar to factoring in that it is based on a company's accounts receivable aged 0-90 days. The main difference is that, unlike factoring, accounts receivable financing does not involve the actual sale of accounts receivable or invoices. Instead, the accounts receivable are used as collateral for a line of credit. Once the line of credit is granted, the lending company will monitor the company's accounts receivable to check for declines and increases, and then adjust the line of credit accordingly.

1.3 Features of airline financing: international practices

Significant and notable feature of the modern day is the acceleration of international integration processes and the expansion of globalization of trade and financial markets. These advances have led to issues that necessitate the adoption of global economic and legal decisions. Among them were a slate of security measures for the economy as a whole and individual industries, including aviation.

Notably, from this perspective, is the Convention of the International Institute for the Unification of Private Law on International Interests in Mobile Equipment (Cape Town Convention), signed at a diplomatic conference in Cape Town on November 16, 2001.

The Cape Town Convention aims to facilitate the attraction of financing for three categories of mobile equipment (aviation equipment (airframes, aircraft engines and helicopters), railway rolling stock and space vehicles) through the mechanisms of secured lending, sale with reservation of title and leasing (financial and operational). Along with the Convention, the Protocol to the Convention on International Interests in Mobile Equipment on Aircraft Equipment was signed. The Convention entered into force on April 1, 2004, but its provisions started to apply only once the Protocol entered into force on March 1, 2006.

73 countries have ratified the Convention, and the Aviation Protocol has been adopted by 66 Contracting States (while the Convention also covers rolling stock and satellites, its applicability to aviation is contingent on the ratification of the Protocol). The Convention is gaining increasing significance in international aviation financing as it becomes more widely applicable, and the prompt ratification by all EU Member States could be a crucial milestone. It is expected that, in the coming years, the Convention will become the standard framework for the creation,

recognition, and enforcement of aircraft security interests in most countries involved in aviation [52]. ICAO's mission is to ensure the safe and orderly growth of international air traffic.

The International Civil Aviation Organization (ICAO) Council passed ICAO International Standards and Recommended Practices ICAO Standards) that were formalized in Annexes to the Chicago Convention, covering all aspects of international civil aviation [53]. It should be noted that these documents are part of the sources of global air law, which concern the relations of states in the field of airspace and the organization of international air traffic.

The aviation industry is a high-tech sector that must leverage the latest advancements in scientific and technical progress, which includes the introduction of new technologies. This necessitates an active investment policy and the execution of investment processes. Implementing investment programs requires substantial funding. As a crucial component of the integrated transport system, air transport handles the majority of passenger travel and the delivery of goods and materials over long distances, typically exceeding 1,000 km. It also facilitates the transportation of products to remote economic regions where other modes of transport are either difficult or virtually impossible to use.

As a result, air transport plays a crucial role in the rapid development of new regions and their integration into national and international trade, exemplified by the growth of the Tyumen oil fields. According to statistics, over 1.6 billion people are transported annually on regular flights worldwide, meaning that, on average, one in every four people on Earth uses air travel services each year. This is because air transport, unlike other modes of transportation, offers several distinct advantages [54].

Another advantage of air transport is its use of natural communication routes, which eliminate the need for additional construction costs. This has led to rapid growth in the length of air routes. The total length of air routes in the sky is 1,500 times greater than the length of highways and more than 50 times longer than that of railways. The longest nonstop flight in the world is the New York to Hong Kong route, which spans 13,581 km and passes over the North Pole [55].

Due to these characteristics, air transport is the primary mode for fast passenger travel over long distances, facilitating both intercity and international transportation.

The average range of passenger transportation by air exceeds 2,300 km. In comparison, by rail in intercity traffic, it does not surpass 850 km, and by road transport in the same type of communication, it is limited to no more than 100 km. In terms of passenger turnover, air transport ranks second, following rail transport. Over the past decade, the share of air transport in the total passenger turnover across all modes of transport for intercity and international travel has reached 35% [39, p. 9].

It segmented the global aviation market in terms of type, including commercial aviation (passenger and cargo aircraft), military aviation (combat and non-combat aircraft), and general aviation (helicopters, piston, turboprop aircraft and business jets), and by geography (North America, Europe, Asia-Pacific, Latin America,

Middle East and Africa). The projected volumes of the global aviation market are shown in Figure 19.

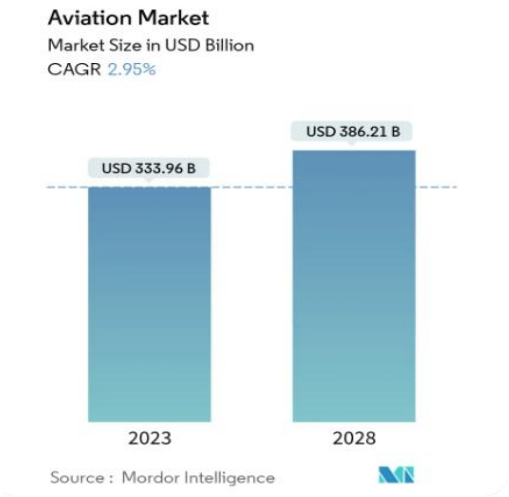


Figure 19 – Projected volumes of the global aviation market

Note: Source [56]

The worldwide aviation market was valued at USD 333.96 billion at the beginning of 2023 and is projected to reach USD 386.21 billion by 2028, growing at a compound annual growth rate (CAGR) of 2.95% during the forecast period from 2023 to 2028 [57]. Figure 20 shows the steep decline in passenger traffic that occurred in the commercial sector in 2020 and 2021. The aviation industry began to recover in 2022 and is slowly returning to pre-COVID-19 levels. International air passenger traffic in 2022 has performed better than 2021 in the latest data from IATA (International Air Transport Association), International Civil Aviation Organization (ICAO), Airports Council International (ACI), United Nations World Tourism Organization (UNWTO), World Trade Organization (WTO) and the International Monetary Fund (IMF). The international passenger traffic surge in June 2022 reached 229.5% compared to June 2021, while June 2022 revenue passenger kilometers (RPK) was 65% [58].

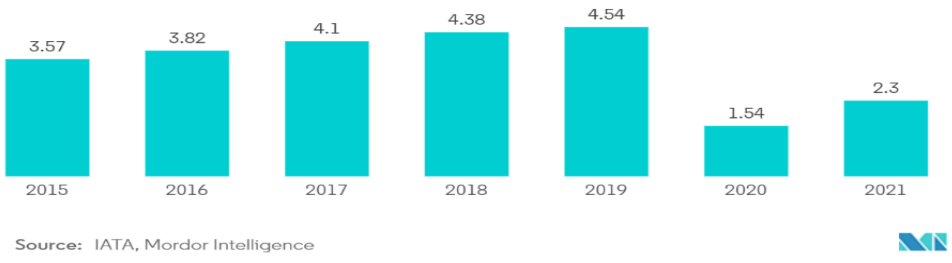


Figure 20 – Dynamics of global passenger traffic for 2015-2021

Note: Source [59]

However, commercial aircraft sales were significantly impacted by COVID-19 in 2020. However, in 2021, aircraft deliveries began to increase as large commercial aircraft manufacturers, including Airbus and Boeing, accelerated production and deliveries. Passenger flows began to rebound as travel restrictions were eased. As passenger traffic increased, airlines reinitiated operations on all key routes and launched new ones.

United unveiled new routes as part of its most considerable transatlantic expansion ever. While the aviation sector is still recovering from the pandemic's shock, new airlines are also entering the market. For example, Akasa Air, an Indian airline that launched in August 2022, initially had only one route and operated 28 flights a week when it began service, but added two further routes soon thereafter.

On October 21, 2022, Alaska Airlines announced a $785 million contract to equip its 52 next-generation Boeing 737 MAX aircraft with new technology. The airline has also made plans to transition to an all-Boeing mainline fleet by the end of 2023 [60].

Over the past few years, the Asia Pacific region has evolved into a key hub for the aviation industry. Companies hoping to invest in or cater to the region’s growing travel market are optimistic, however, particularly due to emerging economies like India and China, which are experiencing massive growth in their civil aviation markets, driven by surging demand for air travel. Therefore, revenue from the Asia Pacific region is expected to grow at a high compound annual growth rate (CAGR) during the forecast period.

Driven by strong domestic demand, China is at the forefront of a recovery in the global commercial aviation industry, putting some airlines on a path to profitability. In subsequent years, it has become a leading center of aviation due to robust demand from both civil and military customers. Over the years, commercial aviation has become a significant component of China’s aviation industry [61].

The global aviation market is moderately consolidated, with large manufacturers such as Airbus SE, The Boeing Company, Lockheed Martin Corporation, Embraer, and Textron Inc. meeting the market's requirements. 2022 saw a continued rivalry between The Boeing Company and Airbus SE, primarily in the commercial aviation segment. Boeing’s commercial segment revenues have decreased over the last two years, but its strong defense segment performance has enabled it to maintain a significant market share. [62]

The new technologies will lead to a revolution in aircraft design, reimagining what safety, comfort, and efficiency mean to the passenger. The latest technological innovations allow airlines to share, if not compete for, a larger share of revenue.

When determining sources of financing for airlines, it is essential to consider the key characteristics of aircraft, as purchasing an aircraft is often the primary reason airlines seek financing. Physical and Economic Characteristics of Aircraft: They are dependable assets with an enduring economic lifespan. The economic life of 100+ seat commercial aircraft in service today, some of which still operate in

commercial fleets more than 30 years old, typically ranges from 25 to 30 years. A few may have been preserved in some cargo conversion.

The aircraft leasing community is the primary source of financing for an airline, as discussed earlier. In 2021, the global aircraft leasing market was valued at nearly $168 billion [63].

Demand for new aircraft was expected to require $181 billion in financing by the end of 2023. The global aircraft leasing market is projected to reach approximately $247.4 billion by 2026, with a compound annual growth rate (CAGR) of around 8.7% between 2021 and 2026 [64].

In 2022, the 50 largest lessors managed 11,109 aircraft (a 3.7% increase from 2021), with a current market value of $318.5 billion (a 9.3% increase from 2021). The total number of aircraft orders from commercial lessors during this period was 2,779, with an estimated value of about $151.7 billion.

The global fleet leasing market is highly concentrated, with the top five leasing companies accounting for 93.9% of orders in 2022 by volume and 95.3% by value. As of 2022, the leaders in this market were China (1,075 orders worth $56.6 billion), the United States (625 orders worth $36.0 billion), Ireland (475 orders worth $27.0 billion), Russia (223 orders worth $14.0 billion), and Japan (211 orders worth $10.9 billion) [65].

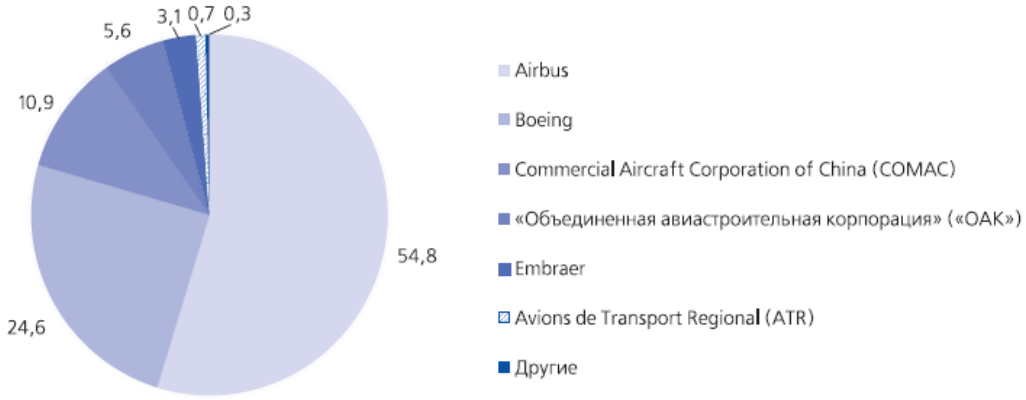


Figure 21 – Structure of orders of leasing companies by aircraft manufacturers in 2022, in %

Note: Source [66]

According to Figure 21, in 2022, 54.8% of orders were for aircraft produced by Airbus (1,523 aircraft for $82.6 billion), 24.6% for Boeing (684 aircraft, $40.9 billion), 10.9% for Commercial Aircraft Corporation of China (COMAC) (303 aircraft, $13.9 billion), 5.6% for United Aircraft Corporation (UAC) (155 aircraft, $10.9 billion), 3.1% for Embraer (85 aircraft, $2.8 billion), 0.7% for the Franco-Italian concern Avions de Transport Regional (ATR) (19 aircraft, $0.5 billion). 88.5% of the market consists of narrow-body aircraft, 6.2% are regional, 4.4% are wide-body, and approximately 1.0% are turboprop [667].

The top 20 largest leasing companies by number of aircraft in 2022 represented roughly 74.3% of the total portfolio of the world's 50 largest lessors, while the top 10 accounted for just over half.

There are six Chinese, six American, five Irish, one Japanese, one UAE, and one British company in the top 20. (Irish registration is primarily for foreign companies for aircraft leasing.) [68]

The most significant increase of aircraft by number and cost compared to 2021 is recorded by a company from the USA (Carlyle Aviation Partner - 78.1 and 200.9%, respectively) and those from China (China Aircraft Leasing Company - 26.8 and 21%) and (CDB Aviation - 12.6 and 22.8%) [69].

Figure 22 presents the top 20 largest leasing companies worldwide based on the number of active aircraft in the year 2022.

Компания	Страна	Количество воздушных судов		Стоимость воздушных судов	
		ед.	в % к 2021 г.	млн долл.	в % к 2021 г.
Aercap*	Ирландия	1809	-9,9	47 939	1,7
Avolon	Китай	587	3,0	19 810	8,3
Air Lease Corporation	США	507	14,2	21 709	19,4
SMBC Aviation Capital	Япония	506	0,2	19 552	3,1
BBAM	США	456	-12,1	16 451	-11,2
ICBC Financial Leasing	Китай	428	8,9	15 052	9,6
BOC Aviation	Китай	426	7,6	17 647	10,5
Carlyle Aviation Partners	США	406	78,1	8175	200,9
DAE Capital	ОАЭ	362	7,4	9550	10,8
Nordic Aviation Capital	Ирландия	350	-27,8	3143	-29,3
Aviation Capital Group	США	347	1,5	10 051	5,6
Castlelake	Ирландия	272	2,6	4893	15,5
Bocomm Leasing	Китай	270	4,7	9554	8,2
CDB Aviation	Китай	269	12,6	9676	22,8
Falco	Великобритания	257	14,7	2490	5,9
Aircastl	США	255	-0,8	5018	3,6
Jackson Square Aviation	США	195	3,2	7389	6,7
Macquarie Airfinance	Ирландия	189	0,0	3298	1,1
Orix Aviation	Ирландия	183	-16,8	5401	-13,5
China Aircraft Leasing Company	Китай	175	26,8	5020	21

* – С конца 2021 г. Gecas стала частью Aercap; данные за 2021 г. приведены в сумме для обеих компаний.
Источник: [32].

[2] Вместе с Гонконгом, Макао и Тайванем.

Figure 22 – Top 20 Largest Aircraft Leasing Companies in the World by Number of Aircraft in 2022

Note: Source [70]

A further means of financing airlines is through government financing. The outbreak of a new coronavirus infection, COVID-19, has had a unique impact on various sectors of the global market, particularly affecting civil aviation. In fact, due to the most profound crisis in the history of global aviation and the almost complete

suspension of international flights, aviation companies worldwide suffered from unprecedented losses — approximately $ 150 billion last year, according to the International Air Transport Association (IATA). Nearly 50 air carriers have gone under, and many others are on the brink of collapse.

The response of governments worldwide has demonstrated to the industry that they recognize the critical role airlines will play in the economic recovery after the COVID-19 crisis is over.

But few countries have had the temerity to take bold measures to support the industry, including direct financial assistance to airlines.

Airlines receiving direct or indirect state financial assistance to keep operating, keep their employees, and make it through this economic crisis, etc. Financial assistance usually comes in the following forms (Figure 23):

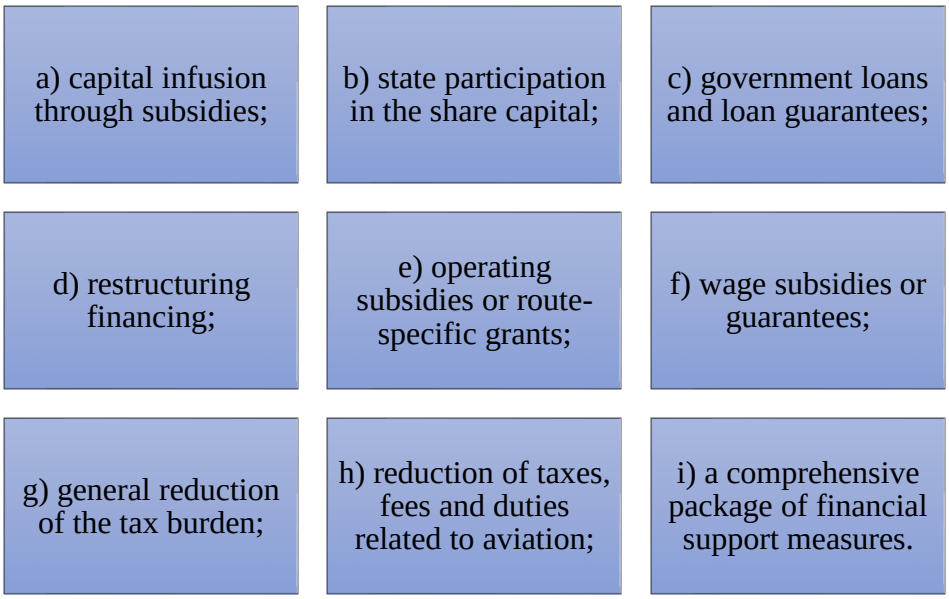


Figure 23 - Forms of government support for airlines in the world

Note: compiled by the author based on the source [22, p.12]

This comprehensive overview offers a detailed examination of the various types of government support and funding mechanisms that have been made available to airlines, particularly in response to crises such as the COVID-19 pandemic. Key aspects of financial assistance provided by governments include:

1. Grants

Grants are financial resources provided by governments directly to airlines to help mitigate losses or promote specific goals. For example, the European Commission granted Croatia Airlines €11.7 million in direct compensation to offset losses incurred due to the suspension of flights caused by COVID-19.

U.S. Federal Support: Over $80 billion in grants and loans for the U.S. airline industry to support operations during the pandemic.

2. Equity Participation or Investment

Vietnam Airlines: The government approved measures allowing the airline to issue new shares and sell them to existing shareholders, with the government (via State Capital Investment Corporation) purchasing 85% of those shares.

Swiss Government's Support for Skyguide: CHF 150 million capital injection to help the air navigation service provider overcome revenue losses from reduced flight operations.

3. Subsidized Loans

Governments can provide airlines with loans at preferential interest rates, significantly lowering the cost of borrowing. Singapore Airlines: A $13 billion package, including loans and capital investments, to help the airline navigate the economic downturn caused by COVID-19.

Air France and KLM: The two airlines collectively received state-backed loans as part of a European package of bailouts.

4. General Orders and Salary Support Programs

Governments may provide financial assistance via contracts and agreements with airlines that are intended to keep those community services operating in times of economic distress: U.S. Payroll Support Program (PSP): A $25 billion program to support wages for airline employees, as part of the CARES Act, ensuring airlines retain their workforce during the pandemic.

5. Infrastructure Investment

Governments may invest in the airline industry's infrastructure, such as purchasing planes or providing airline subsidies to gain access to airports or fleets. Hong Kong Government Support: Contribution of premiums for aircraft registered in Hong Kong and the buyout of 500,000 tickets from local carriers to enhance short-term cash flow.

6. Special Funds

Governments create specialized funds or agencies to manage and disperse funds for the airline industry: State Aid for Lufthansa: The German government extended €9 billion of state aid — in loans, participation in its equity, and guarantees — to Lufthansa.

7. Tax Relief

Governments may offer tax deferment as part of relief to help the airlines. Italy: In a bid to provide airlines with financial relief, the suspension of invoicing for airlines and airports during the COVID-19 emergency.

8. Export Credit Agencies (ECAs)

ECAs support airlines in financing aircraft acquisitions through loans, loan guarantees, and insurance: U.S. Export-Import Bank (Ex-Im Bank): Loans for Boeing planes and engines.

Additional Points on Government Financial Support

Support from them typically comes alongside other measures, such as government guarantees or targeted stimulus packages intended to help keep airlines afloat during major disruptions.

This lengthy text provides listings of financing tools used by airlines, ranging from standard global practices to those found in Kazakhstan, including both

traditional and alternative mechanisms. Let's recap the main points and conclusions that we can draw from the above:

1. Export Credit Agency (ECA) in Kazakhstan:

KazakhExport Restructured into Export Credit Agency KazakhExport has been reorganized into an export credit agency (ECA) type of institution and will now play a crucial role in promoting and supporting non-resource exports, including financing for foreign airlines. Baiterek National Holding remains the sole shareholder of the state.

New functions for KazakhExport: The agency, which plays a crucial role in creating the republic's export potential, will receive new functions, guaranteed export transactions, and a subsidy on interest rates for trade financing. For support, it will allocate 100 billion tenge, for guarantees, 400 billion tenge.

2. Role of Liquidity Providers:

Liquidity Providers: These are liquidity and money providers, granting patrons the ability to withdraw cash at a rapid pace and with minimal restrictions. For airlines, this commonly involves equipment and asset-backed securitization, where liquidity providers often play a key role in the process.

Trustees in Aircraft funding: Trustees are banks or trust companies that handle payments and safeguard accounts, and are the beneficiaries of creditors' security interests.

3. Residual Value Guarantors:

Residual Value Insurance: Manufacturers or third parties issue residual value insurance, which pays the difference if the aircraft's actual value at the end of the lease period is less than what was offered. Typically, this is to aid sales or raise third-party financing.

4. Securitization in Airline Financing:

Securitization: It is a process of pooling income-producing assets to transfer them to a securitization vehicle. The bonds — or debt securities — can be held and subsequently sold by the initial group of investors that purchase them.

5. Initial Public Offering (IPO) in Airline Financing:

IPO as a Financing Tool: IPO is a vital financing tool that helps airlines access a large amount of capital. A positive example is the successful IPO of AirAstana, where the airline attracted investments by selling GDRs (Global Depositary Receipts) for the company's common shares. The IPO led to the company's listing on the London Stock Exchange (LSE), Kazakhstan Stock Exchange (KASE), and Astana International Exchange (AIX) simultaneously, with a market capitalization of around $847 million.

6. Key Forms of Airline Financing:

Sources of Internal Financing: Improvement in equity financing (such as participation of shareholders), Depreciation charges, net profit, and retained earnings. This acts as a cushion against market fluctuations and ensures the stability of an airline.

There are also government subsidies, private equity, initial public offerings (IPOs), bank loans, aircraft leasing, and bond market issues. Airlines spend a

substantial amount of time managing liquidity, fleet expansion, and shocks to their markets, such as the COVID-19 pandemic.

7. Impact of the COVID-19 Pandemic:

Financial Instability: COVID-19 has severely impacted the aviation industry, with the sector facing a liquidity crisis driven by high maintenance costs, employee payrolls, and lost revenues. As the chaos ensued, airlines required additional funding to stay afloat.

8. New Investment Opportunities in Aviation Finance:

Attractiveness of Aviation Finance: Investments in popular aviation finance routes offer solid, predictable, and protected income secured by solvent individual physical assets (aircraft), which are recognizable and respected worldwide. It is also supported by international frameworks, such as the Cape Town Treaty governing asset security, he added. Moreover, aircraft assets are highly mobile, and defaulted aircraft can be collected and redelivered.

9. Key Expenses for Airlines:

Cost Management: Airlines must manage a range of costs, including startup costs, capital expenditures, storage, fuel, labor, employee benefits, depreciation, spare parts, and cash. The financial aspects are crucial for the airline's sustainability in the future.

The airline financing model, which comprises internal and external resources (including government support, loans, IPOs, equity capital, and various financial products), was significantly impacted by the COVID-19 pandemic, highlighting the need to establish sustainable financing mechanisms and effective cost management. Therefore, the backing of institutional investors, asset-backed securities, IPOs, government healthcare, and financial support programs has been essential for airlines to survive the pandemic and adjust their balance sheets post-pandemic.

This complex system of financing enables airlines to adapt to market changes, expand their operations, and remain competitive in the global aviation market. The introduction of new financing mechanisms, such as initial public offerings (IPOs) and liquidity providers, further enhances the flexibility of airlines in navigating future challenges. In Kazakhstan, the Air Astana group of airlines announced the successful completion of accepting applications for an initial public offering (IPO) on February 9, 2024. The offer price was set at $ 9.50 per GDR (Global Depositary Receipt) or 1,073.83 tenge per share. The underlying asset of the GDR will be the company's common shares, with each GDR representing four shares. Based on the offer price, the estimated market capitalization of the company will be approximately $847 million at the date of the start of conditional trading on the primary market of the LSE and AIX. The triple listing on the LSE, KASE, and AIX created an ideal platform for raising capital, allowing the IPO of Air Astana [71].

Air Astana shares are declining due to several factors:

1. IPO Outcomes and Investor Behavior: Following the initial public offering, many retail investors anticipated a rapid appreciation in the stock price and dividend payouts. But disappointment over the absence of dividends and poor financial performance triggered massive selloffs and pressure on the share price.

2. Financial Performance: In Q1 2024, Air Astana was required to refinance loans worth 17 billion tenge, which adversely affected the company's financial indicators. Further, the group's overall performance was negatively impacted by its subsidiary FlyArystan, which reported an operating loss of 10 billion tenge during this period.

3. Competition and Market Conditions: Investment in NATCA (National Air Travel Consultants) by new players such as Vietnam's SOVICO Group, which bought Qazaq Air, is increasing competition. This could raise questions about the future market share and profitability of Air Astana.

4. Shareholder structure: The significant reduction in the British BAE Systems' share of Air Astana's capital after the IPO may be perceived by the market as a signal of decreased confidence in the company's prospects, which puts additional pressure on the share price.

Thus, the combination of internal financial difficulties, increased competition, and negative investor expectations leads to a decrease in the value of Air Astana shares.

Problems and gaps in Air Astana's operations:

1. High operating costs: Rising costs of fuel, fleet maintenance, and personnel; Negative impact of the debt burden, especially in the context of currency market volatility.

2. Dependence on external factors: Economic instability in the regions of presence, as well as political and geopolitical risks.

3. Market competition: Increased competition from regional and international airlines, as well as the emergence of new players such as FlyArystan and Qazaq Air.

4. Limited resources for expansion: Slow development of new markets; Dependence on leasing of new aircraft, which increases costs.

5. Low profitability of some routes: Unprofitability of subsidiary projects (for example, FlyArystan); Insufficient profitability on several routes.

Financial instruments to improve the situation:

1. Corporate bond issue: Raising long-term capital to finance fleet expansion and route development; moderate interest rates will help alleviate pressure on short-term liquidity.

2. Debt refinancing: Utilizing low-interest loans or issuing bonds to repay current high-interest debt, thereby reducing debt servicing costs.

3. Attracting strategic investors: Selling minority stakes to large aviation or investment holdings; Increasing trust in the company and acquiring management competencies.

4. Hedging currency and fuel risks: Concluding forward contracts for the purchase of fuel and currency; Insuring against sharp fluctuations in exchange rates and fuel costs.

5. Transition to a flexible route model: Analyzing the profitability of routes using automated systems; Optimizing flight frequency to reduce losses.

6. Share buyback program: Increasing demand for shares and supporting their market value; Improving investor perception.

7. Developing additional services: Increasing revenue through premium services, such as paid baggage, priority check-in, and access to business lounges; monetizing new technologies (electronic services, on-board multimedia).

Strategic recommendations:

- Strengthen focus on the premium segment and development of highly profitable routes.
- Invest in digitalization and automation of processes.
- Optimize the cost structure by improving operational efficiency.
- Strengthen marketing efforts to enhance brand awareness globally.

Air Astana JSC demonstrates positive dynamics in its financial indicators, despite an increase in operating expenses. According to the results for the first nine months of 2024, the company's revenue increased by 13% compared to the same period in 2023.

SkyBridge Invest analysts have updated the target price of the company's shares to 1,189 tenge per share, implying a 51% growth potential from the current level, with a recommendation to "Buy". Earlier, in April 2024, the target price was 1,300 tenge per share.

Freedom Broker also recommends “Buy” Air Astana shares, setting a target price of 1,130 tenge per share, which implies an upside of 38%.

The company continues to expand its route network and fleet, which contributes to revenue growth. However, an increase in operating expenses puts pressure on net profit. In the third quarter of 2024, EBITDAR increased by 12.6% compared to the same period last year, reaching USD 128.8 million.

Overall, analysts' forecasts indicate positive dynamics for Air Astana shares, with potential for significant growth in their value.

Case study on recovering from the COVID-19 crisis

The COVID-19 pandemic has decimated airlines worldwide. Yet many of them employed financial instruments and strategic measures to weather the crisis:

1.1. Lufthansa (Germany). Issue: Revenue collapse due to border closures and falling passenger numbers. Solutions:

State aid: US$9 billion state support package; A stake in the airline (20%?) went to the German government, and it would be able to buy back the shares later.

Cost reduction: Reducing the fleet and writing off old aircraft, reducing staff, and temporarily introducing a part-time system

Diversifying income stream: Raising the share of cargo transportation — working, even during the demanding stage.

1.2. Delta Air Lines (USA). Q. What are the issues facing Myanma Airways. Astronomical losses from a lack of passenger traffic. Solutions:

Financial instruments: Asset-backed loans secured against assets such as aircraft and loyalty programs; $9 billion bond issues for operational purposes.

Invested in the future: They used the crisis as an opportunity to reexamine their cost structure and optimize routes; They developed environmental initiatives to win back customers after the crisis.

1.3. Singapore Airlines (Singapore). Challenge: Small home market, so international flights are crucial. Solutions: Shares and bonds $8.8 billion in shares and convertible bonds issued; The government: Subsidizes employee salaries; Diversified: Re-purposed passenger aircraft for cargo flights.

Examples of using financial instruments

2.1. Hedging fuel costs. The experience of British Airways: Concluding contracts for fixed prices for jet fuel, which helped protect against sharp fluctuations in oil prices; Hedging made it possible to reduce costs in an environment of unstable prices.

2.2. Attracting investment through loyalty programs. The experience of United Airlines: Utilizing the MileagePlus loyalty program as a valuable asset to attract loans. The program was valued at $21 billion, enabling the company to raise significant funds to cover operating expenses.

2.3. Corporate bond issuance. Emirates Airlines experience: A $1 billion bond issue under government guarantees; the funds were used to maintain liquidity and finance infrastructure projects.

Risk Management and Cost Reduction

3.1. Southwest Airlines (USA). Low-Cost Model: The company minimized costs by using a single aircraft type (Boeing 737), which simplified maintenance; Hedging fuel costs helped maintain stability during periods of rising oil prices.

3.2. Ryanair (Ireland). Flexible Pricing Policy: Maintaining low fares allowed the company to attract passengers after the lifting of restrictions; Reducing capital expenditures by renegotiating contracts with airports.

Revenue Diversification

4.1. Air Canada. Expanding Cargo Operations: Launching cargo flights using passenger aircraft; Investing in dedicated cargo aircraft for long-term diversification.

4.2. Qantas (Australia). Launching Innovative Products: Offering Flights to Nowhere to attract travel-hungry passengers; Selling premium wine and Qantas-branded merchandise.

The Role of Government Support

5.1. Alitalia (Italy). State-assisted restructuring: The company received significant state support to survive, including subsidies and nationalization.

5.2. Air France-KLM (France and the Netherlands). State loans: France and the Netherlands provided the airline with €10.4 billion in loans, which were used to cover operating expenses and restructure debt.

Lessons for Air Astana

1. Flexibility in financial management: Use loyalty programs or other assets to attract loans; Actively use hedging to protect against price volatility.

2. Diversification: Develop cargo transportation and additional services (e.g., cargo); Introduce non-standard products, such as domestic tourist flights or promotional packages.

3. Cost reduction: Optimize the fleet by replacing old aircraft with more efficient ones; Automate processes to reduce operating costs.

4. State support: Interact with the government to obtain subsidies or tax breaks.

Thus, to conclude the first section of the research, the airline financing system comprises two primary forms: internal and external sources of financing.

Internal sources include: own funds (net profit and depreciation charges) and equity financing (shareholder participation in capital and corporate financing). Internal sources of financing are essential to ensure the stability and sustainability of airlines, enabling them to respond to market changes and maintain their competitiveness. External sources of finance include raised funds (such as government financing, additional equity issues, and initial public offerings) and borrowed funds (including bank loans, aircraft leasing, and bond issues).

The global aviation industry faced significant deterioration due to the COVID-19 pandemic, with aircraft maintenance and employee salaries contributing to the financial instability of airlines and the subsequent need for additional financing.

In February 2023, Air Astana adopted an ESG strategy for 2023-2032, based on international standards and best practices. The plan prioritizes six of the UN Sustainable Development Goals: quality education, gender equality, decent work and economic growth, reduced inequalities, climate action, and partnerships for the goals. It also published its first GRI-based sustainability report in 2020 and continues to embed sustainability issues within its management system.

Air Astana reinforces its dedication to the principles of ESG by continually striving to address its environmental impact, engaging in socially responsible initiatives, and embracing best practices in corporate governance.

The next few years are critical for aviation finance, with a new peak in aircraft deliveries due to arrive as many traditional commercial banks remain under pressure. New investors, then, are coming to the table with a view of aviation finance as an asset class that offers attractive returns upside with hard assets.

Reasons to invest in aviation finance include:

- Uses significant capital very effectively.
- Provides relatively predictable returns, though residual value, especially with older aircraft, can be volatile.
- The globally recognized and effective aircraft-based asset.
- The investments are typically covered by “hard assets,” which are reaffirmed by international treaties like the Cape Town Treaty.

The aircraft is a highly mobile asset that can be recovered and reused in the event of any potential default. International practices for Air Astana:

1. Flexibility in financial management: Use loyalty programs or other assets to attract loans; Actively use hedging to protect against price volatility.

2. Diversification: Develop cargo transportation and additional services (e.g., cargo).

3. Cost reduction: Optimize the fleet by replacing old aircraft with more efficient ones.

4. State support: Interact with the government to obtain subsidies or tax breaks.

2 ANALYSIS OF AIRLINE FINANCING

2.1 Trends in the development of the aviation industry in Kazakhstan

The aviation industry is a collection of businesses and organizations that design, manufacture, operate, maintain, and support aircraft, as well as provide air transportation. It includes various segments related to air transport and air activities [72]. The essence of the aviation industry includes the following key aspects (Figure 24).

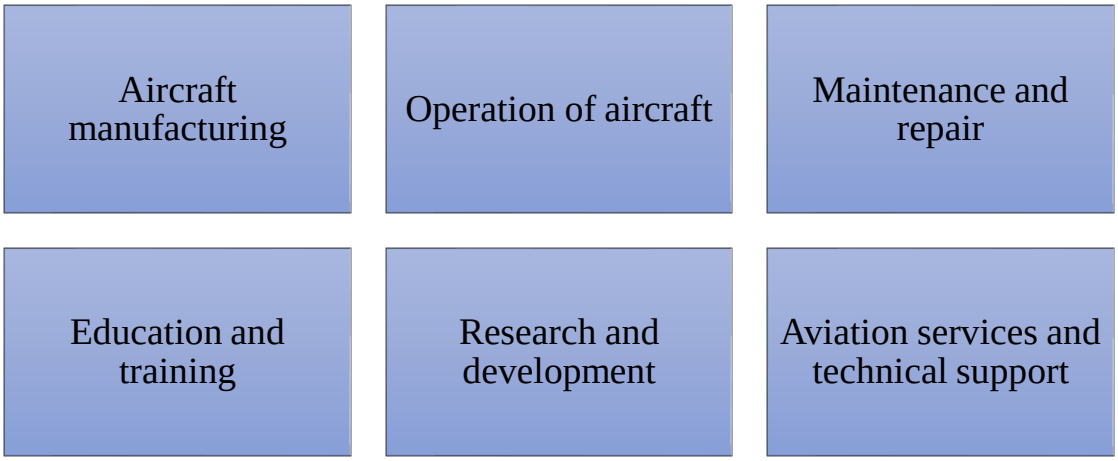


Figure 24 – Key components of the aviation industry

Note: compiled by the author based on the source [73]

1) Aircraft Manufacturing. This segment involves the development, design, and production of airplanes, helicopters, uncrewed aerial vehicles (UAVs), and other aerial vehicles. Companies engaged in manufacturing work on creating new models, as well as upgrading and servicing existing ones.

2) Aircraft Operation. Here, the companies offer passenger air transportation, operate aircraft, and provide flight safety. Among those excluded are third-party airlines that offer scheduled or charter flights and cargo air transport.

3) Maintenance and Repair. Maintenance and repair companies are responsible for ensuring the aircraft operate reliably and safely. This includes the maintenance, repair, modernization, and renewal of aircraft.

4) Education and Training. Schools educate pilots, aircraft mechanics, dispatchers, and other specialized technicians for the aviation industry.

5) Research and Development. This segment conducts research and development of new technologies, materials, and methods aimed at improving the efficiency and safety of aircraft.

6) Aviation Services and Maintenance. Companies provide various services, including air navigation support, airport services, airspace management, and fuel and equipment supplies.

The aviation industry plays a vital role in the global economy, providing international connectivity, transporting cargo and passengers, and facilitating

technological advances. It is also subject to strict safety standards and regulations to ensure the reliability of air travel.

The aviation industry is subject to significant international and domestic regulation by authorities and governments, including international conventions and bilateral agreements. Both global and national authorities monitor and enforce these regulations. The International Civil Aviation Organization (ICAO), a special UN organization, is responsible for coordinating and regulating international air traffic and has developed standards and recommendations for conduct on several issues, such as aircraft operation, personnel licensing, aviation security, accident investigation, navigation services, airport planning and operation, and environmental protection. Kazakhstan is a member of ICAO. Figure 25 shows Kazakhstan's air/rail routes (distances from Almaty) [74].

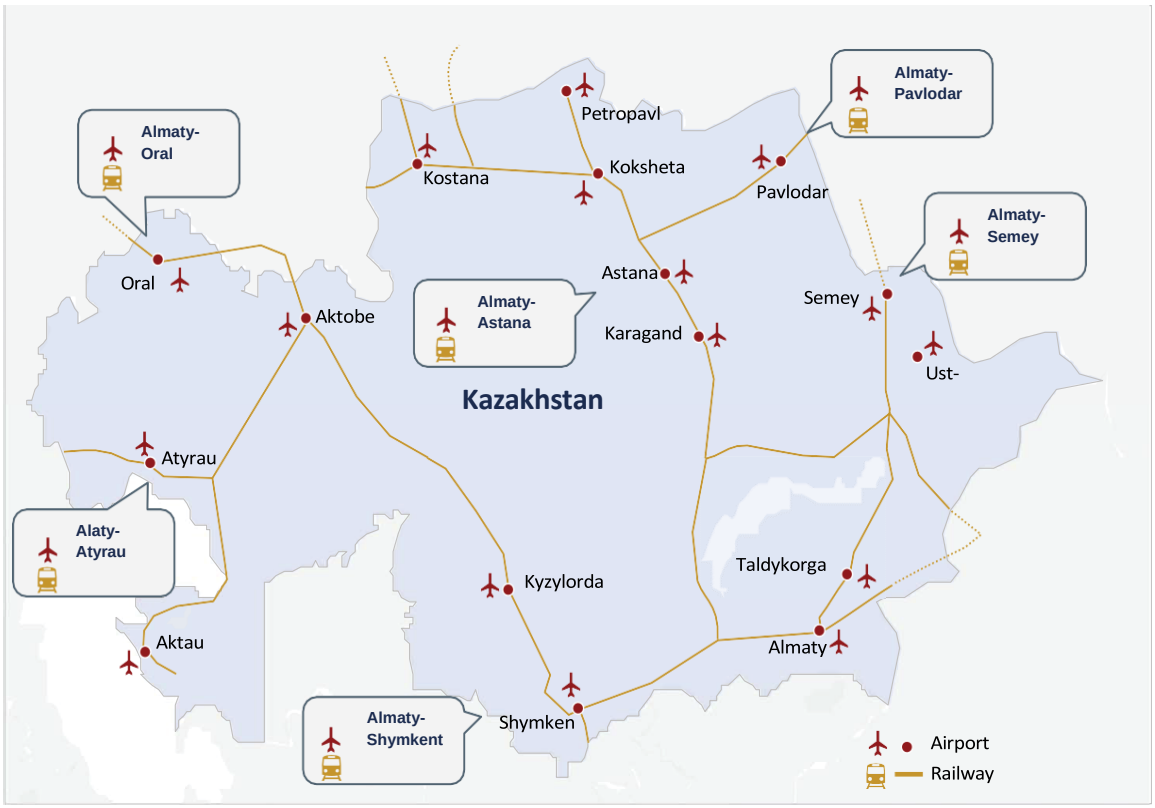


Figure 25 - Air routes in Kazakhstan

Note: Source [75]

In the same period of 2019, with Kazakhs traveling internally, domestic passenger traffic in Kazakhstan was 35% stronger than in the pre-2019 period. Civil unrest in January 2022 closed Almaty Airport for a week, resulting in a 50% year-over-year decline in domestic traffic. However, by the end of the first quarter of 2022, the domestic market had recovered to 2021 levels and remained above them for the remainder of the year.

The aviation of the Republic of Kazakhstan, by Article 6 of the Law on Aviation (Figure 26), is divided into civil, state, and experimental aviation.

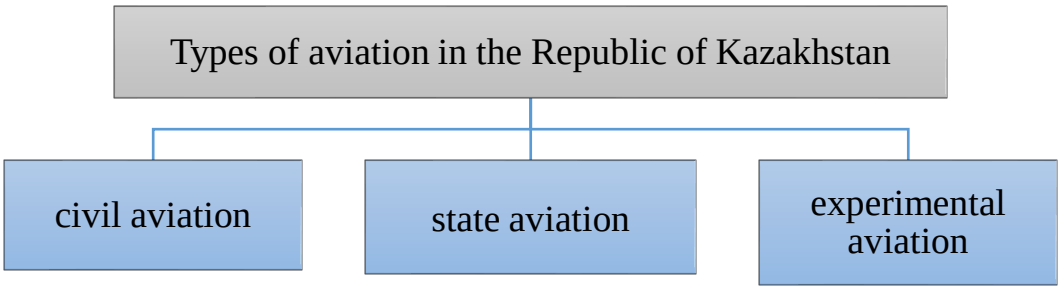


Figure 26. Types of aviation in the Republic of Kazakhstan

Note: Compiled by the author based on the source [76]

Kazakhstan does not maintain a separate register of aircraft liens and encumbrances. Information on the lien (encumbrance) on an aircraft must (and may) be reflected in the Register of Civil Aircraft only if the relevant aircraft itself is registered in the Register of Civil Aircraft [49, p.8].

According to Article 117.2 of the Civil Code, aircraft subject to state registration are equated to real estate; that is, the legal regime applicable to real estate in Kazakhstan also applies to aircraft subject to state registration in Kazakhstan [77]. Since Kazakhstan is a party to the Cape Town Convention and has ratified it, to protect the interests of foreign lessees and financiers, in the case of international leasing of aircraft, Kazakhstani lessors are advised to register a pledge (encumbrance) about the relevant aircraft in the International Registry, by the Cape Town Convention.

In addition to a pledge (encumbrance), registration in the International Registry is possible regarding the rights of other creditors, including leasing and assignment of leasing of an aircraft.

The only air carriers authorized to perform air transportation of passengers, baggage, cargo, and mail for remuneration or hire (commercial air transportation) (Article 74.1 of the Aviation Law) [49, p.9] are those whose Aircraft Operator Certificate (AOC) has been issued by the CAC by the legislation of the Republic of Kazakhstan.

An Aircraft Operator Certificate serves as a license to conduct transportation activities, providing the legal foundation for the aircraft operator to carry out its operations without requiring any additional licenses to perform transportation services.

Foreign lessors and financiers of Kazakhstan airlines prefer to register aircraft located and operated in Kazakhstan in the state registers of foreign countries, due to the following reasons:

(1) Better technical supervision: Technical inspections of aircraft are usually carried out by the authorized body of the country of registration of the aircraft. Some foreign countries, such as Aruba, are often used in international practice for the registration of aircraft, since Aruban inspectors have extensive experience and

adhere to high standards in the technical supervision of aircraft. The same practice is used in Kazakhstan. According to sociological sources, most of the aircraft fleet of Air Astana JSC, the national airline operator, is leased and registered with the competent authority of Kazakhstan. The operation of such aircraft by Kazakh operators is carried out based on bilateral agreements (by Article 83 bis of the Chicago Convention) between the CAC and the competent authority of Aruba in the field of aviation;

and (2) more effective protection of the interests of creditors. Kazakhstan has taken a significant step towards ensuring more effective protection of the interests of international creditors by ratifying the Cape Town Convention and the Aviation Protocol; however, there are still no established precedents or practices for implementing these international agreements. In addition, it is international practice to register aircraft in an "independent" country other than the country of the lessee and the lessor [49, p.10].

Kazakh legislation generally provides for two types of lease agreements: "leasing agreement" and "financial leasing agreement." Suppose a leasing agreement qualifies as a "financial leasing agreement" under the laws of Kazakhstan. In that case, certain tax benefits may be applicable, and more effective protection for creditors may be provided in the event of the lessee's bankruptcy, as described below.

To be classified as a "financial leasing agreement", a leasing agreement must comply with specific mandatory requirements of Kazakhstan law.

It should be noted that, in addition to the above requirements, the leasing agreement must be governed by the legislation of the Republic of Kazakhstan and include the mandatory provisions specified in Article 15 of the Law on Financial Leasing to be recognized as a "financial lease" under Kazakhstan's law [49, p. 11].

In November 2023, the Government of Kazakhstan approved the Concept for the Development of the Republic of Kazakhstan's Transport and Logistics Potential until 2030. This document outlines the vision for the development of all transport sectors, including rail, road, water, and air transport, as well as logistics.

As part of this initiative, the Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan will take steps to ensure the timely implementation of this project. The goal is to provide accessible, safe, and inclusive mobility, strengthen the country's competitiveness, and position Kazakhstan as a transit hub [78].

In the field of flight safety and aviation security, Kazakhstan, in collaboration with ICAO, continually monitors the aviation activities of ICAO member states through audits and validation missions. Kazakhstan's standards for flight safety and aviation security over the years of independence are comparable to those of developed countries.

The ICAO aviation security audit, dated 2017, shows that Kazakhstan's compliance with ICAO requirements stood at 83 percent, which is 21 percent higher than in 2009. Within the framework of the ICAO Coordinated Validation Mission (ICVM) in 2021, Kazakhstan achieved 84% compliance with flight safety

requirements, an increase from the previous 74%, which was 15% higher than the global average. Kazakhstani airlines are not subject to any restrictions in European countries.

These achievements were made possible through the implementation of the 68th step of the Nation's Plan—100 specific steps in transitioning to the British model of civil aviation management [79].

There are 913 aircraft registered in the state register. More than 90 aircraft are involved in regular commercial flights. Air Astana owns the largest fleet of aircraft.

Domestic air transportation is conducted on 57 routes, with a frequency of 617 flights per week. The country's international air route network comprises 111 routes, with a frequency of 499 flights per week to 28 countries [53, p. 20].

The air navigation system of Kazakhstan consists of four consolidated air traffic control centers, providing air traffic services within the entire sovereign airspace and the delegated part over the Caspian Sea, as well as 24 airfield control towers, known as "Tower," which provide control in the terminal zone of Kazakhstan's airports.

Since 2021, a steady trend of recovery from the pandemic's consequences has emerged in Kazakhstan's aviation industry.

As of 2022, 55 aircraft operators are operating in Kazakhstan.

Regular commercial flights are operated by five airlines (Air Astana Group of Companies, SCAT, Qazaq Air, Southern Sky, and Zhetisu) (Table 10) [80].

Table 10 – Airlines of Kazakhstan

	Company name	Year of creation	Fleet	Number of destinations	Headquarters
1	Air Astana	2001	50	91	Almaty
2	Fly Arystan	2019	36	17	Almaty
3	SCAT Airlines	1997	32	60	Shymkent
4	Southern Sky	2014	35	15	Shymkent
5	Qazaq Air	2015	5	25	Astana
6	Zhetysu	1994	5	2	Taldykorgan
Note: compiled by the author based on the source [81]					

Air Astana is the flag carrier of Kazakhstan, founded in 2001 [82]. FlyArystan is a low-cost subsidiary of Air Astana, established in 2019, and is already demonstrating rapid growth and high demand. FlyArystan is an independently managed and scalable low-cost carrier (LCC) [83].

SCAT Airlines is a civil aviation company of Kazakhstan, founded in 1997. The airline serves all major cities in Kazakhstan and neighboring countries, with its main base located at Shymkent Airport [84]. The airline "Southern Sky" is a subsidiary of SCAT Airlines, founded in 2014, with its head office located at the airport in Shymkent. Since its formation, "Southern Sky" has been performing aviation work and providing aviation services in the territory of the Republic of Kazakhstan. The airline's activities include operating flights in the medical aviation

sector, providing passenger charter transportation, and, since 2016, offering regular passenger transportation within the territory of the Republic of Kazakhstan. The aircraft fleet consists of An-24 and An-2 aircraft, the reliability of which has been proven by history and extensive operating experience [85]. Qazaq Air is a Kazakhstani airline founded in 2015 by the sovereign wealth fund "Samruk-Kazyna". Qazaq Air was created to enhance the safety and accessibility of interregional air traffic in Kazakhstan and the border areas of neighboring states. Today, the airline operates regular flights from its central hub in Astana and specializes in domestic flights [86].

Zhetysu Airlines is a Kazakhstani airline based at Taldykorgan Airport, founded in 1994. It operates daily flights on the Taldykorgan-Usharal route [87].

Figure 27 shows the number of passengers carried by the leading Kazakhstani airlines of the Republic of Kazakhstan in 2022.

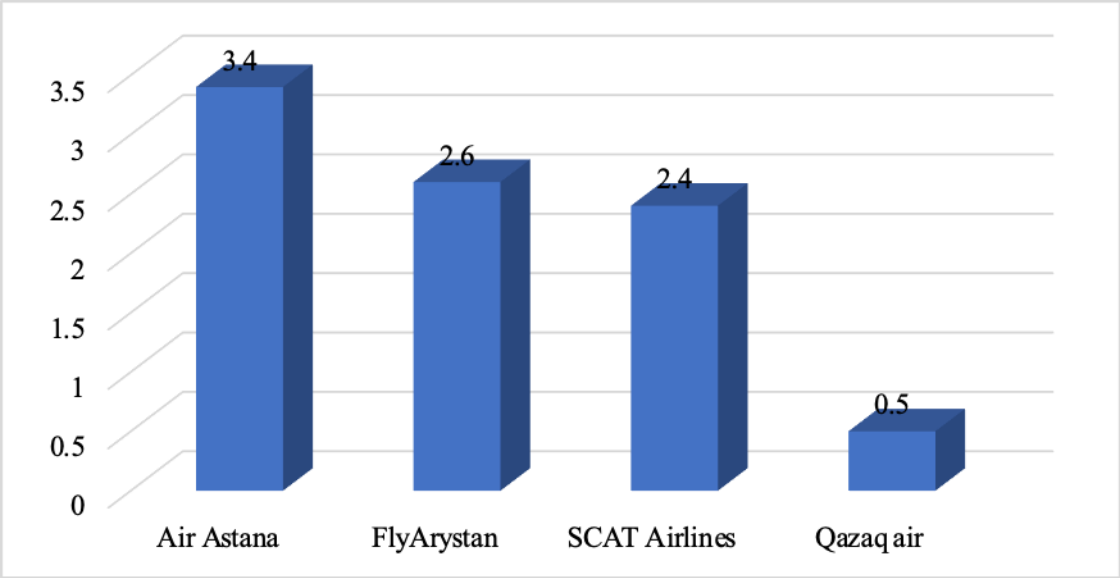


Figure 27 – Number of passengers carried by Kazakhstani airlines in 2022, million people

Note: compiled by the author based on the source [88]

Today, the leading indicators of the civil aviation industry demonstrate stable growth.

According to the results of 2022, the leading domestic airlines carried 11 million passengers, which is 17% more compared to 2021 (9.4 million passengers). The growth dynamics are expected to be maintained in 2022, with air transit continuing to grow at a high rate. In the current situation, Kazakhstan is becoming more attractive for transit flights.

Air Astana remains the leader among Kazakhstani airlines in terms of the number of passengers carried. In 2022, the company had 3.4 million people, which indicates its significant share in the air transportation market in Kazakhstan.

In 2022, FlyArystan carried 2.6 million passengers, confirming the popularity

of affordable, low-cost air travel among passengers in Kazakhstan.

SCAT Airlines is also a significant participant in the air transportation market in Kazakhstan, carrying 2.4 million passengers in 2022. The company competes successfully in the market and continues to attract passengers with its attractive offers and routes. Qazaq Air is the state airline of Kazakhstan, which carried 0.5 million passengers in 2022. Together with other Kazakhstani airlines, Qazaq Air continues to play an essential role in the development of the country's aviation industry.

Thus, the volume of flights served in 2022 amounted to 410 thousand aircraft, which is 90% higher than in 2021 (215 thousand aircraft). Based on the analysis of trends in passenger transportation, it is expected that passenger traffic will reach 14.5 million passengers per year by 2030. However, this projection may be affected by the ongoing geopolitical challenges and epidemiological restrictions, which could alter this growth trend [53, p. 23].

Kazakhstani airlines such as Air Astana, FlyArystan, SCAT Airlines, and Qazaq Air, together, provide significant passenger traffic in Kazakhstan. The expansion of aviation infrastructure and the increased availability of air travel provide passengers with more opportunities and options for traveling within the country and abroad. Information on air transportation in Kazakhstan is presented in Table 11.

Table 11 - Information on air transportation in Kazakhstan

Indicator	01.01.2019	01.01.2020	01.01.2021	01.01.2022	01.01.2023
Volume of transit air transportation, million cm.km	186,8	194,2	111,3	149,0	349,0
Income from transit air transportation, million tenge	49 024,2	57 795,0	37 607,9	52 066,3	122 944,0
Note: compiled based on source [89]					

The volume of transit air traffic in Kazakhstan has had some fluctuations from 2018 to 2022. In 2022, the volume of transit air traffic increased significantly, reaching 349.0 million aircraft-kilometers. This indicates an increase in the number of transit passengers who use Kazakhstan airports as a transfer point. The revenue from transit air traffic in Kazakhstan has also been growing over time. From 2015 to 2022, the revenue from transit traffic increased significantly, especially in 2022, when it reached 122,944.0 million tenge. This indicates the growing importance of transit traffic for the aviation industry and Kazakhstan's economy [53, 25]. The growth in the volume of transit air traffic and the revenue from it indicate an increased interest in Kazakhstan as a transit point. Kazakhstan's airports offer convenient transfer conditions and attractive options for transit passengers. The

growing volume of transit traffic and the corresponding increase in revenue indicate the development of the transit sector within Kazakhstan's air industry. This may be due to the development of aviation infrastructure, the conclusion of international agreements on transit traffic, and improvements in conditions for transit passengers. Air transport is of significant economic importance for Kazakhstan in terms of transit traffic. An increase in revenue from transit traffic contributes to economic growth, job creation, and the development of tourism in the country. The growth in the volume of transit air traffic and revenue from it indicates the increasing role of Kazakhstan as a significant transit point in international aviation. The development of the transit sector contributes to the strengthening of the aviation industry and the country's overall economy. Passenger transportation by public air transport is presented in Figure 28.

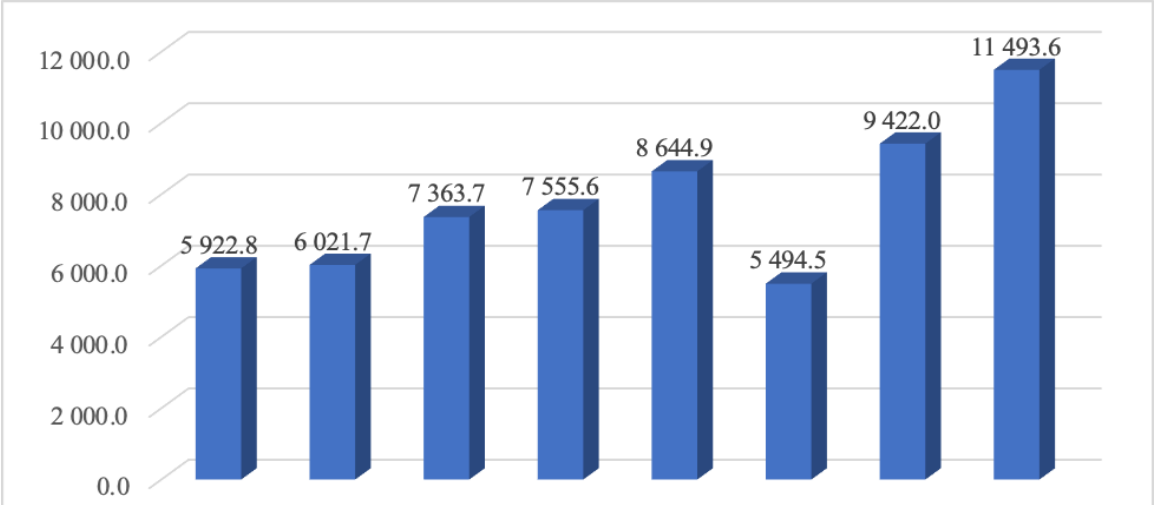


Figure 28 - Passenger transportation by public air transport, thousand people, 2015-2022

Note: compiled based on source [88]

The total number of passengers carried by public air transport in Kazakhstan increased steadily from 2015 to 2022. In 2022, the number of passengers reached 11,493.6 thousand people, representing a significant increase from 2015. There is a gradual increase in air passenger traffic every year. Particularly significant growth was noted in 2021 and 2022, when the number of passengers carried increased by 3,927.5 thousand and 2,071.6 thousand people, respectively [53, p. 63]. In 2020, passenger traffic experienced a noticeable decline due to the COVID-19 pandemic, significantly impacting the aviation industry. Growing passenger traffic is the result of the development of aviation infrastructure, expansion of routes, improvement of the quality of passenger service, and increasing availability of air travel.

Passenger traffic is the movement of passengers in one direction along the route. Passenger traffic can flow in both forward and reverse directions.

Passenger traffic by public air transport is shown in Figure 29.

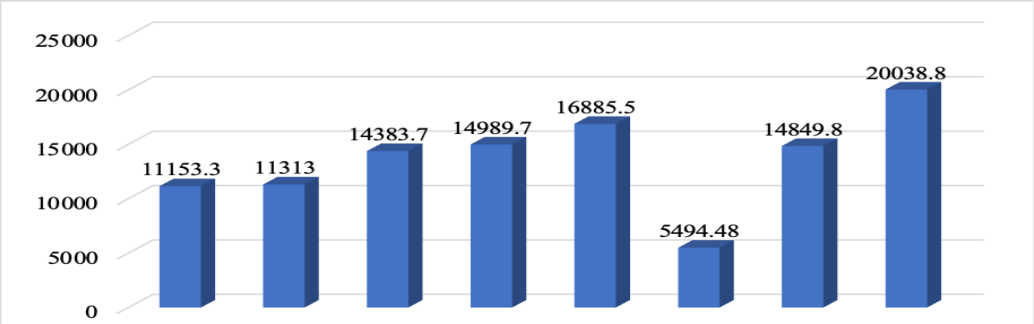


Figure 29 – Passenger turnover of public air transport, million pkm 2015-2022

Note: compiled based on source [90]

The total passenger turnover of public air transport in Kazakhstan increased steadily from 2015 to 2022. In 2022, passenger turnover reached 20,038.8 million passenger-kilometers, representing a significant increase from 2015. Each year, there is a gradual increase in air transport passenger turnover. Particularly noticeable growth was noted in 2021 and 2022, when passenger turnover increased by 9,355.3 million passenger-kilometers and 5,189 million passenger-kilometers, respectively [53]. In 2020, passenger turnover decreased significantly due to the COVID-19 pandemic, resulting in restrictions and a decline in air travel. However, in 2021, passenger turnover began to recover, and in 2022, a significant increase in passenger turnover was observed. Growing passenger turnover indicates the development of the aviation industry in Kazakhstan.

The cargo turnover of public air transport is presented in Figure 30.

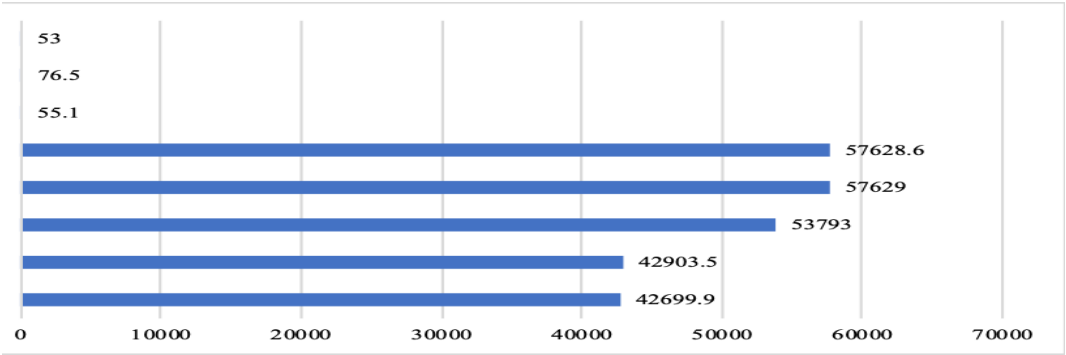


Figure 30 - General air transport cargo turnover in Kazakhstan, thousand km, 2015-2022

Note: compiled based on source [91]

Total general air cargo turnover in Kazakhstan showed some variability between 2015 and 2022, but remained relatively stable overall. In 2022, cargo

turnover totaled 53,000 tonne-kilometers. There are fluctuations in annual cargo turnover, especially between 2015 and 2019. However, in 2020, there was a significant decrease in cargo turnover due to the COVID-19 pandemic and the reduction in international and domestic cargo transportation. Cargo turnover also remained low in 2021 and 2022. The aviation cargo sector has been severely affected by the COVID-19 pandemic. Restrictions on international trade and demand for cargo transportation contributed to the decline in air cargo turnover in 2020 and beyond. A gradual recovery of the aviation cargo sector is expected after the COVID-19 pandemic. The gradual lifting of restrictions and the restoration of international trade may contribute to the resumption of cargo transportation and an increase in air cargo turnover [53, p.22].

The resumption of cargo transportation and an increase in general air transport turnover in Kazakhstan may contribute to economic growth, trade development, and the expansion of ties with other countries.

This reflects the growing importance of aviation in international and domestic passenger and cargo transportation in Kazakhstan.

Overall, general air transport turnover in Kazakhstan has experienced some fluctuations in recent years, including a significant decrease due to the COVID-19 pandemic. However, with the gradual recovery of the economy and the restoration of international trade, air cargo turnover is also expected to increase [53, p.25].

The development of the civil aviation industry is carried out in three directions (Figure 31).

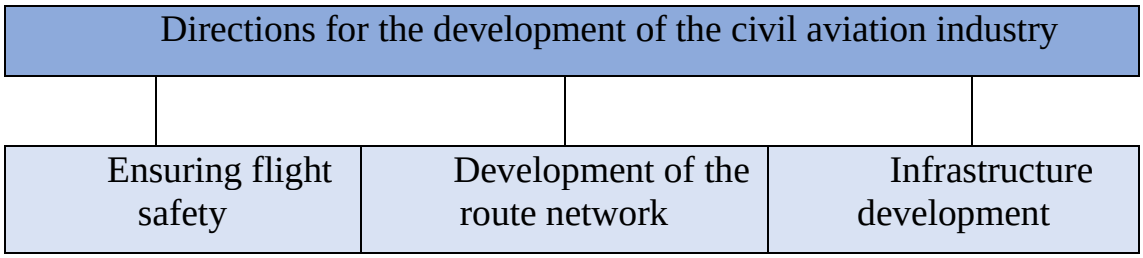


Figure 31 – Directions of development of the civil aviation industry

Note: compiled based on the source [92]

First Focus - Flight Safety. The compliance level with flight safety standards in Kazakhstan is 82%, the highest among CIS countries [93]. Kazakhstan is comparable to European Union countries such as Denmark and Poland. Comprehensive reform of the civil aviation system, based on the European model, was implemented in 2019 to ensure the continuous improvement of safety levels.

With the involvement of internationally renowned experts, it laid the groundwork in 2019 for the establishment of the Civil Aviation Committee (AAC), enabling the transition to a European GU flight safety regulatory framework. Experts from foreign countries were involved at a high level, and a direct partnership was established with the European Union Aviation Safety Agency (EASA) [60, p. 3].

The AAC is the entity responsible for technical control and supervision in matters of flight safety and civil aviation safety. The organization consistently conducts flight safety work following the best international practices. At the end of October 2023, the AAC had conducted 934 inspections and certifications and had issued around 1,500 flight operation permits since its inception.

As of today, the State Civil Aviation Registry lists 915 aircraft, with 55 Kazakhstani operators, and over 90 aircraft from 5 airlines are engaged in regular passenger transportation. Since the introduction of the new model (2020-2022), there has been a significant decrease in aviation incidents.

Second Focus - Development of the Route Network

Domestic Network Development

Currently, five Kazakhstani carriers operate domestic services: the Air Astana group, SCAT, Qazaq Air, Southern Sky, and Zhetysu. There are 706 weekly flights on 56 domestic routes. To improve flight accessibility and promote domestic tourism, route subsidies are applied. For the current year, 7.2 billion tenge has been allocated from the national budget to subsidize 23 routes in 7 regions. Priority is given to domestic tourist destinations [60, p.5].

International Network Development

To enhance international passenger air transportation, the "open sky" regime was introduced in 2017, and new international routes are launched annually. Currently, international services are provided to 27 countries with 103 routes by 3 domestic and 26 foreign airlines, exceeding pre-pandemic levels. In the current year, 18 international routes are planned, with 9 already operational. By 2025, flights are scheduled to Mumbai, Hong Kong, Vienna, Tokyo, Singapore, New York, and other cities.

Third Focus - Infrastructure Development

To support transit flights, enhance flight safety in accordance with ICAO standards, and improve service quality at domestic airports, infrastructure modernization efforts are underway. Over the years of independence, 22 airports have undergone runway reconstruction and construction, and passenger terminals have been reconstructed or built at 16 airports.

In 2022, five projects were completed, including terminal renovations at Uralsk and Kostanay airports, as well as runway upgrades at Ust-Kamenogorsk, Usharal, and Urjar airports. This year, four projects are underway in Almaty, Shymkent, Kyzylorda, and Kostanay. Additionally, as per the Head of State’s directive, the reconstruction of the Pavlodar airport runway and the Balhash airport apron is underway.

Passenger traffic in Kazakhstan increased for the first time since independence in 2022, surpassing 10 million people.

Kazakhstan → The liberalization of the country's aviation sector, from the growth of the domestic airline industry, from the visa-free programs, and the “open sky" policy since 2009 [94]. This was given a further boost when FlyArystan was launched in 2019. The low-cost carrier (LCC) market in Central Asia was expanded three times between 2019 and 2022, making Central Asia the fastest-growing low-

cost market in the world, according to the Saxon study. However, the Kazakh aviation market very well showed a high resilience and post-COVID-19 pandemic rate of recovery [95].

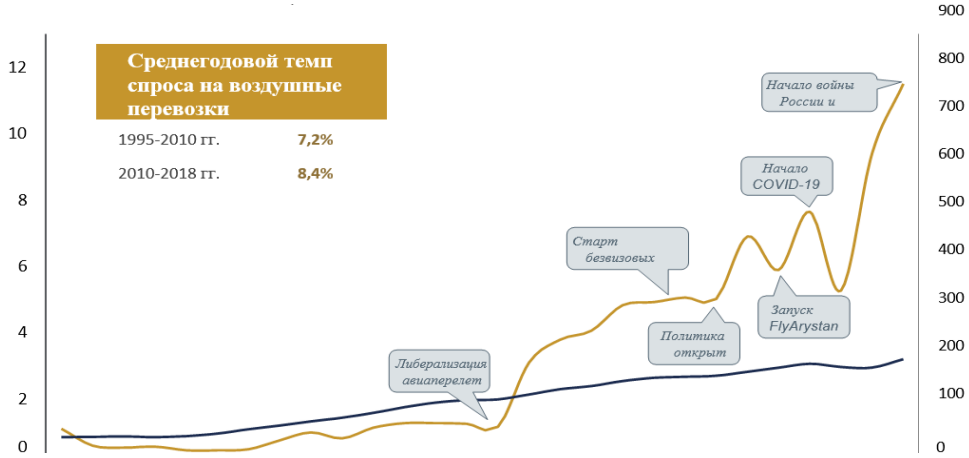


Figure 32 – GDP vs Demand for Air Travel in Kazakhstan, 1995 to 2022

Note: compiled based on source [96]

Average annual passenger growth was 6.7% from 2015 to 2019, and the post-pandemic CAGR was slightly lower at 6.0% between 2019 and 2022, reaching total passenger numbers of 13.0 million in 2022, exceeding pre-pandemic levels of 10.9 million in 2019. This was further aided by the end of 2019, both by a willingness to travel more widely around Kazakhstan at that time.

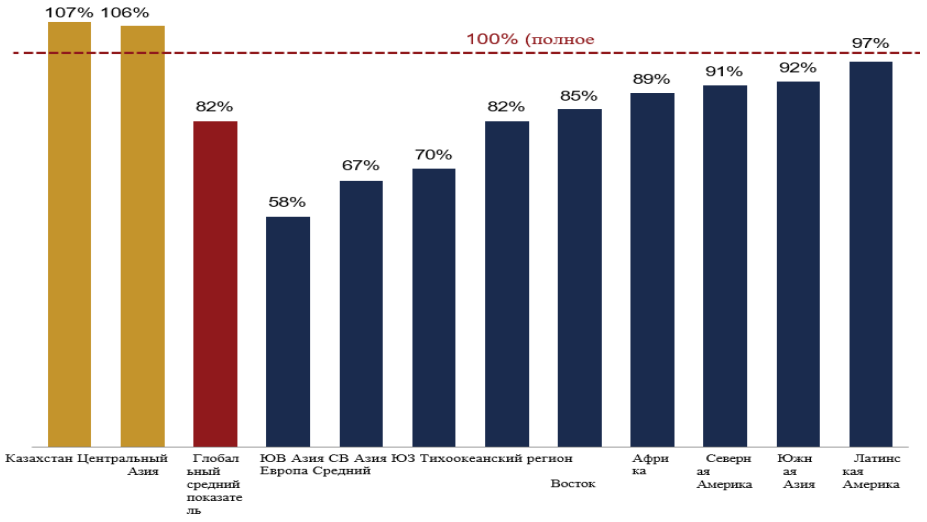
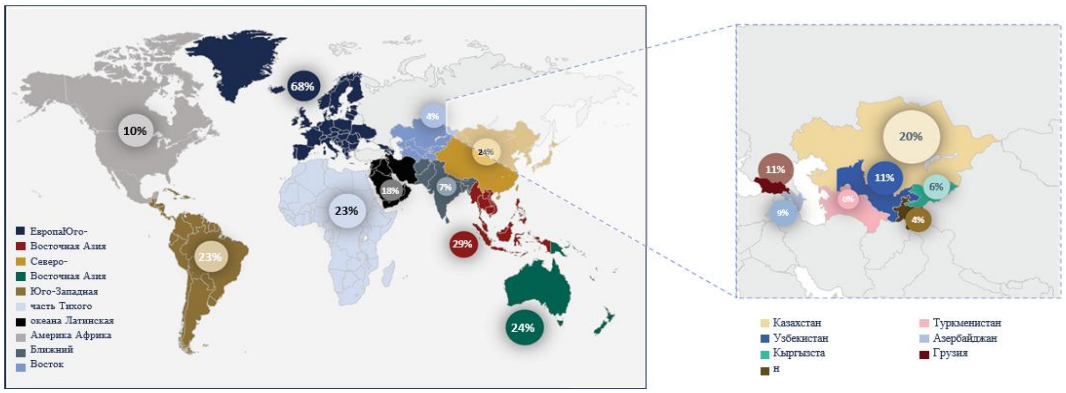


Figure 33 – Recovery in the number of seats (2022 compared to 2019)

Note: compiled based on source [97]

Over the years, Central Asia has had the least developed intra-regional air connectivity of all regions (Figure 34), with only 4% of international air capacity utilized for intra-regional air traffic [98].



Источник: Отчет АБР.

Figure 34 – Intraregional communication by region (2022)

Note: compiled based on source [99]

However, the Russia-Ukraine conflict led to international passenger capacity disruptions as some domestic airlines suspended routes to or over the countries. For example, Air Astana ceased flying to these countries after the conflict.

As of September 2023, Kazakhstan had 27 commercial airports. The five bases from which Air Astana and FlyArystan operate account for a significant portion of these airports' capacity [100]. The aviation industry is therefore critical to the national economy, which requires speed and reliability of delivery. To enhance aviation security in Kazakhstan, an independent single operator will be established, with all aviation security functions transferred from airports. Additionally, the methodology for calculating the aviation security fee will be revised.

The route network of international air transportation by 2030 will comprise approximately 150 destinations, including direct flights to major global financial centers.

2.2 Analysis of the activities and financial condition of JSC "Air Astana"

Air Astana Group is the largest airline in Eurasia by revenue and fleet size, comprising the Air Astana and FlyArystan brands. The Group is a significant competitive player in point-to-point air passenger transportation in Kazakhstan and Central Asia, operating 39 destinations on regular domestic and international routes from two hubs in Almaty and Astana (Table 12). Drawing on resilience, determination, and innovation, Air Astana Group is navigating challenging times to deliver the best possible quality of safety and efficiency to its passengers [101].

Table 12 - Key financial indicators of Air Astana Group in 2022

Airline	Number of passengers carried	Number of routes	Number of aircraft	Years of operation	Number of employees	Avg. age of fleet
Air Astana	4,1 million	48	29	20	5565	3,9 years
FlyArystan	3,2 million	40	16	3	619	7,9 years
Note: based on source [102]						

JSC Air Astana organizes air transportation of passengers, cargo, and mail based on domestic flights (inside Kazakhstan) and International flights. Air Astana commenced operations on May 15, 2002, with its inaugural flight, a Boeing 737 from Almaty to Astana. In 2022, Air Astana Group's route network (except code-share flights) covered five geographic regions and 78 destinations. For Air Astana, its network has grown to 48 routes, and for FlyArystan, 40 [103].

Table 13 - Air Astana Group Market Share in 2022

	Domestic flights		International flights	
№	Airline	Market share	Airline	Market share
1	Air Astana	32%	Air Astana	33%
2	FlyArystan	38%	FlyArystan	9%
3	SCAT	22%	SCAT	10%
4	Qazaq Air	7%	Turkish Airlines	10%
5	Other companies	1%	Flydubai	6%
			Other companies	32%
Note: based on source [104]				

The market position and brand strength of the Air Astana Group could pose significant risks to its business, prospects, performance, and financial health (Table 13). As the affordable airborne travel develops throughout Kazakhstan's territory, an increasing demand for air services may also bring new competitors to the local share: low-cost carriers, ultra-LCCs, or other so-called "market" carriers and their investors wanting to join the game, possibly with government assistance. FlyArystan would be the only player on the market on most international routes; however, as soon as competitors open their routes (both new entrants and already existing airlines), the global competition becomes more thorough and creates less pressure, especially on new routes [105].

We expect FlyArystan, as a low-cost airline, to gradually face increasing competition on its direct and medium range routes from established LCCs, as well as potential new entrants on the Central Asian market.

Information about the asset value and liabilities of the organization is reflected in the company’s balance sheet. We will perform a vertical analysis of JSC "Air Astana" for the years 2020-2022 in Table 14.

Table 14 - Structure of assets of Air Astana JSC for 2020-2023

Balance Sheet Item	01.01.2021		01.01.2022		01.01.2023	
	in thousands of tenge	%	in thousands of tenge	%	in thousands of tenge	%
Assets	296 788 692	67,21%	311 845 960	65,52%	378 255 700	65,36 %
Intangible assets	692 818	0,16%	659 790	0,14%	718 495	0,12%
Advances paid	5 199 501	1,18%	7 037 908	1,48%	7 178 940	1,24%
Security deposits	8 590 773	1,95%	7 761 173	1,63%	13 657 428	2,36%
Deferred tax assets	3 691 802	0,84%	1 170 610	0,25%	8 553 011	1,48%
Trade and other accounts payable	1 382 689	0,31%	1 559 230	0,33%	601 445	0,10%
Total long-term assets	316 346 275	71,64%	330 034 671	69,35%	408 965 019	70,67 %
Inventories	19 518 018	4,42%	22 261 449	4,68%	22 750 814	3,93%
Advances paid	6 476 121	1,47%	11 457 381	2,41%	9 720 739	1,68%
Income tax prepayment	1 374 692	0,31%	1 135 634	0,24%	4 153 672	0,72%
Trade and other accounts payable	4 301 700	0,97%	6 103 061	1,28%	9 857 684	1,70%
Other tax prepayment	6 383 521	1,45%	3 328 746	0,70%	3 876 082	0,67%
Security deposits	2 447 171	0,55%	677 062	0,14%	1 626 677	0,28%
Cash and cash equivalents	84 751 912	19,19%	97 740 953	20,54%	116 998 633	20,22 %
Other financial assets	0	0%	3 187 979	0,67%	767 999	0,13%
Total current assets	125 253 135	28,36%	145 892 265	30,65%	169 752 300	29,33 %
Total assets	441 599 410	100%	475 926 936	100%	578 717 319	100%
Note: compiled by the author based on the source [106, p.42]						

Table 14 data show that fixed assets accounted for 65.4% of Air Astana JSC's assets in 2022, occupying a significant share.

If FlyArystan’s cost structure increases or it loses its competitive edge, it could adversely affect the airline’s performance, financial condition, and prospects. Additionally, an oversupply of competitor capacity could lead to market imbalances, altered competitive dynamics, and price reductions, which may harm profitability.

Air Astana Group needs to carefully manage its growth strategy. If it does not correctly measure demand, capacity, and fare structures or if unprofitable routes are not closed, the resulting penalties can strong damage the group’s financial and perspective position [106]

The Air Astana Group's growth strategy includes adding new aircraft to both Air Astana and FlyArystan fleets, increasing flight frequencies, and expanding into new markets. While these efforts aim to boost the group's market presence, new routes often experience lower passenger load factors and higher marketing costs compared to established routes. Consequently, FlyArystan may sacrifice some short-term profitability in favor of growth. According to [107], there is a possibility that new routes may face more direct competitors than initially expected, which could exceed the group's expectations.

The COVID-19 pandemic had a significant impact on the Air Astana Group's operations, with travel restrictions and lockdowns resulting in a sharp decline in air travel demand. In response to the pandemic, Kazakhstan suspended domestic flights in March 2020 and international flights in April 2020, mirroring global trends. This resulted in a 27% decline in passenger numbers, from 5.1 million in 2019 to 3.7 million in 2020, and a 55.5% decrease in revenue, amounting to $400.3 million compared to $898.7 million the previous year [108].

The asset structure of Air Astana JSC for 2020-2022 is presented in Table 14. Fixed assets remain stably high, accounting for approximately 65-67% from 2020 to 2022. Long-term assets also remained high, accounting for approximately 70% of the total in 2022.

The decrease in the share of inventories, from 4.42% in 2020 to 3.93% in 2022, may indicate an optimization of inventory management or changes in the company's strategy. Current assets, primarily cash, remain relatively stable at 28-30%. A high share of cash and cash equivalents may indicate that Air Astana JSC has significant cash reserves to cover its current operations and liabilities. The company may also adopt a conservative financial management strategy, prioritizing significant cash reserves to protect against financial crises or unexpected expenses.

To maximize its capacity utilization, the Air Astana Group focuses on high fleet utilization, measured by available seat miles, available seat kilometers, and the number of seats sold. Factors such as route selection, timing, airport slot availability, and economic and competitive conditions influence the number of passengers purchasing tickets.

The airport infrastructure of Kazakhstan will serve as the backbone of the Air Astana Group, with the top three airports located in Almaty, Astana, and Shymkent. These airports are crucial to the group’s development, enabling it to expand and meet consumer needs with exceptional services. As of 30 September 2023, 31 of the group's

aircraft were based at the airport, which has the capacity to handle 7 million passengers per year [109].

Table 15 – Dynamics of changes in assets of Air Astana JSC for 2020-2023

Balance Sheet Item	01.01.2021 in thousands of tenge	01.01.2022 in thousands of tenge	Change in %	01.01.2023 in thousands of tenge	Change in %
Assets	296 788 692	311 845 960	5,07%	378 255 700	21,30 %
Intangible assets	692 818	659 790	-4,77%	718 495	8,90%
Advances paid	5 199 501	7 037 908	35,36%	7 178 940	2,00%
Security deposits	8 590 773	7 761 173	-9,66%	13 657 428	75,97 %
Deferred tax assets	3 691 802	1 170 610	-68,29%	8 553 011	630,6 5%
Trade and other receivables	1 382 689	1 559 230	12,77%	601 445	-61,43%
Total non-current assets	316 346 275	330 034 671	4,33%	408 965 019	23,92 %
Invntories	19 518 018	22 261 449	14,06%	22 750 814	2,20%
Advances paid	6 476 121	11 457 381	76,92%	9 720 739	-15,16%
Income tax prepayments	1 374 692	1 135 634	-17,39%	4 153 672	265,7 6%
Trade and other receivables	4 301 700	6 103 061	41,88%	9 857 684	61,52 %
Other tax prepayments	6 383 521	3 328 746	-47,85%	3 876 082	16,44 %
Security deposits	2 447 171	677 062	-72,33%	1 626 677	140,2 6%
Cash and cash equivalents	84 751 912	97 740 953	15,33%	116 998 633	19,70 %
Other financial assets	0	3 187 979	100%	767 999	-75,91%
Total current assets	125 253 135	145 892 265	16,48%	169 752 300	16,35 %
Total assets	441 599 410	475 926 936	7,77%	578 717 319	21,60 %
Note: compiled by the author based on the source [110]					

The data in Table 15 demonstrates a noticeable increase in fixed assets of 21.3% from 2021 to 2022, which may indicate strategic investments in aviation resources, crucial for fleet modernization and ensuring competitiveness. Security

deposits on leased aircraft include those for open aircraft lease agreements, intended to provide the performance of Air Astana JSC's lease payment obligations. Their increase by 75.97% from 2021 to 2022 indicates changes in the strategy for financing or attracting credit resources for leasing aircraft.

The decrease in the share of inventories may be due to the optimization of spare parts and materials inventory management, a critical aspect in the aviation industry that ensures the uninterrupted operation of the aircraft fleet.

Table 16 - Air Astana JSC Liabilities Structure for 2020-2023

Balance Sheet Item	01.01.2021		01.01.2022		01.01.2023	
	in thousands of tenge	%	in thousands of tenge	%	in thousands of tenge	%
Loans	22 309 914	5,14%	2 054 936	0,46%	1 925 549	0,38%
Leasing Liabilities	240 896 053	55,52%	250 676 740	55,92%	265 658 719	52,27%
Aircraft Maintenance Provision	19 166 979	4,42%	37 331 701	8,33%	54 573 269	10,74%
Employee Compensation	656 199	0,15%	701 675	0,16%	1 049 290	0,21%
Total Long-Term Liabilities	283 029 145	65,24%	290 765 052	64,86%	323 206 827	63,59%
Loans	46 724 798	10,77%	24 840 159	5,54%	3 670 665	0,72%
Leasing Liabilities	55 703 229	12,84%	63 195 657	14,10%	73 373 051	14,44%
Deferred Revenue	16 041 722	3,70%	24 724 868	5,52%	37 082 323	7,30%
Aircraft Maintenance Provision	15 798 015	3,64%	17 578 578	3,92%	33 165 065	6,53%
Trade and Other Payables	16 554 811	3,82%	27 198 650	6,07%	37 662 023	7,41%
Other Financial Liabilities	0	0%	0	0%	110 573	0,02%
Total Current Liabilities	150 822 575	34,76%	157 537 912	35,14%	185 063 700	36,41%
Total Liabilities	433 851 720	100%	448 302 964	100%	508 270 527	100%
Note: compiled by the author based on the source [111]						

Table 16 shows that the bulk of Air Astana JSC's liabilities are related to long-term liabilities, which remained at approximately 64-65% during the period from

2020 to 2022. This may indicate the presence of long-term financial strategies and investments in the company's development.

The Air Astana Group operates its business in two segments: Air Astana and FlyArystan. The management uses these segments to assess performance and allocate resources. Since both operate under the same legal entity and compliance certificate, the group does not lease aircraft separately for each segment.

To gain a clearer understanding of the sources of financing for the "Air Astana" group, the focus will be on the operating segment and the object of the study—JSC "Air Astana"—and an analysis of the company's assets, liabilities, and equity, as well as calculations of financial stability and solvency will be conducted.

Table 17 - Dynamics of changes in Air Astana JSC liabilities for 2020-2023

Balance Sheet Item	01.01.2021 in thousands of tenge	01.01.2022 in thousands of tenge	Change in %	01.01.2023 in thousands of tenge	Change in %
Loans	22 309 914	2 054 936	-90,79%	1 925 549	-6,30%
Leasing Liabilities	240 896 053	250 676 740	4,06%	265 658 719	5,98%
Aircraft Maintenance Provision	19 166 979	37 331 701	94,77%	54 573 269	46,18%
Employee Compensation	656 199	701 675	6,93%	1 049 290	49,54%
Total Long-Term Liabilities	283 029 145	290 765 052	2,73%	323 206 827	11,16%
Loans	46 724 798	24 840 159	-46,84%	3 670 665	-85,22%
Leasing Liabilities	55 703 229	63 195 657	13,45%	73 373 051	16,10%
Deferred Revenue	16 041 722	24 724 868	54,13%	37 082 323	49,98%
Aircraft Maintenance Provision	15 798 015	17 578 578	11,27%	33 165 065	88,67%
Trade and Other Payables	16 554 811	27 198 650	64,29%	37 662 023	38,47%
Other Financial Liabilities	0	0	0%	110 573	100%
Total Current Liabilities	150 822 575	157 537 912	4,45%	185 063 700	17,47%
Total Liabilities	433 851 720	448 302 964	3,33%	508 270 527	13,38%

Note: compiled by the author based on the source [112]

The significant 90.79% decrease in long-term loans for 2021 (Table 17) suggests that the company has successfully repaid or refinanced its loans, which could lead to a reduced financial burden and enhanced economic stability. Additionally, the long-term reserve for aircraft maintenance saw a notable increase of 94.77% in 2021, followed by an 88.67% increase in 2022. The 630.65% increase in deferred tax assets from 2021 to 2022 may be the result of a revision to the

company's tax strategies. An increase in deferred tax assets leads to a rise in corporate income tax liabilities, and accordingly, to a decrease in the financial result for the period. The significant increase in short-term trade receivables by 61.52% from 2021 to 2022 indicates.

A general view of the asset structure can provide insights into how much Air Astana JSC invests in fixed and long-term strategies, and whether that would make a difference regarding their long-term sustainability and ability to grow and continue activities in the future. Given the specifics of the aviation industry, a high share of fixed assets may indicate the presence of a substantial aircraft fleet, including both aircraft and technical equipment. This may indicate the strategic importance of modernizing and maintaining a modern aircraft fleet for Air Astana.

Lease liabilities remain significant, accounting for more than half of total liabilities, but decreased from 55.52% in 2020 to 52.27% in 2022. The bulk of lease liabilities are for aircraft leases. The increase in the aircraft maintenance reserve from 4.42% in 2020 to 10.74% in 2022 may indicate that the company is making more active efforts to ensure the technical readiness of its fleet. This may be a strategic decision aimed at maintaining flight safety, complying with safety standards, and reducing the risk of potential incidents.

Table 18 - Structural analysis of Air Astana JSC equity for 2020-2023

Balance Sheet Item	01.01.2021		01.01.2022		01.01.2023	
	in thousands of tenge	%	in thousands of tenge	%	in thousands of tenge	%
Share Capital	2 501 550	11,07%	2 501 550	6,36%	2 501 550	3,17%
Additional Paid-in Capital	48 996	0,22%	48 996	0,12%	48 996	0,06%
Reference Currency Translation Reserve	8 738 645	38,67%	10 002 799	25,42%	11 930 890	15,13%
Retained Earnings	11 308 997	50,04%	26 794 565	68,10%	64 377 463	81,64%
Total Equity	22 598 188	100%	39 347 910	100%	78 858 899	100%
Note: compiled by the author based on the source [113]						

Table 18 shows that retained earnings constitute a significant share of equity and exhibit a positive trend of increase, rising from 50.04% in 2020 to 81.64% in 2022. This indicates the company's successful financial management and profit accumulation.

The share of the currency translation reserve in the capital structure decreases from 38.67% in 2020 to 15.13% in 2022. The share of shareholders' equity also decreases from 11.07% in 2020 to 3.17% in 2022.

Table 19 - Dynamics of changes in equity capital of Air Astana JSC 2020-2023

Balance Sheet Item	01.01.2021 in thousands of tenge	01.01.2022 in thousands of tenge	Change in %	01.01.2023 in thousands of tenge	Change in %
Share Capital	2 501 550	2 501 550	0,00%	2 501 550	0,00%
Additional Paid-in Capital	48 996	48 996	0,00%	48 996	0,00%
Registration Reserve	8 738 645	10 002 799	14,47%	11 930 890	19,28%
Hedging Instruments Reserve, Net of Tax	(14 850 498)	(11 723 938)	-21,05%	(8 412 107)	-28,25%
Retained Earnings	11 308 997	26 794 565	136,93%	64 377 463	140,26%
Total Equity	7 747 690	27 623 972	256,54%	70 446 792	155,02%
Note: compiled by the author based on the source [114]					

Table 19 shows an increase in the currency translation reserve of 14.47% in 2021 and 19.28% in 2022, which may be attributed to changes in exchange rates and the company's volume of foreign exchange transactions. The increase in this reserve may indicate an increase in Air Astana's exposure to foreign exchange risk.

The increase in retained earnings by 136.93% in 2021 and 140.26% in 2022 indicates a significant increase in the company's profits that were not used to pay dividends or for other purposes.

In 2019-2020, the volume of retained earnings decreased significantly due to the pandemic.

However, in subsequent years, there has been a recovery in the volume of retained earnings, approaching the levels characteristic of the pre-pandemic period. The total increase in equity by 256.54% in 2021 and by 155.02% in 2022 indicates a significant improvement in the airline's financial stability and capitalization. This is a result of profit growth and the accumulation of retained earnings.

The key ratios will be analyzed in Table 20, including swift and current liquidity, maneuverability of equity capital, solvency under current conditions, and capital safety. We can analyse these indicators to understand the organisation's readiness to solve various financial challenges and its financial stability.

Here’s a closer look at each of the ratios we’re considering and how they’re changed over time.

Therefore, this analysis will serve as a key understanding of the financial outlook of Air Astana JSC, and we can propose recommendations to enhance its financial stability.

Table 20 - Financial solvency ratios of Air Astana JSC for 2020-2023

Indicator	Method of calculation	Normal limitation	01.01.21	01.01.22	01.01.23
General solvency indicator	$R = \frac{A}{O}$	≥ 2	1,01	1,06	1,13
Abs. liquidity ratio	$R = \frac{C + R}{O}$	≥ 0,2	0,57	0,62	0,64
Quick liquidity ratio	$R = \frac{C + R + I}{O}$	≥ 1	0,58	0,63	0,64
Current liquidity ratio	$R = \frac{OA}{RO}$	≥ 2	0,83	0,92	0,91
Maneuverability coefficient	$R = \frac{COC}{C}$	≥ 0,5	- 3,3	- 0,42	- 0,21
Current liabilities payment ratio	$R = \frac{RO}{B}$	< 3	11,12	5,81	4,64
Property funds coverage ratio	$R = \frac{C - BA}{OA}$	≥ 0,1	- 2,46	- 2,07	-1,99
Note: compiled by the author based on [115]					

Air Astana JSC's solvency ratio values have increased over the past three years (2020-2022) (Table 20) and remain below the standard value. Although the values improved from 2022 to 2020, the numbers remain below the recommended level of 2. It may indicate a potential risk to the company's ability to meet its current liabilities. The dynamics of Air Astana JSC's liquidity ratios from 2020 to 2022 are shown in Figure 35.

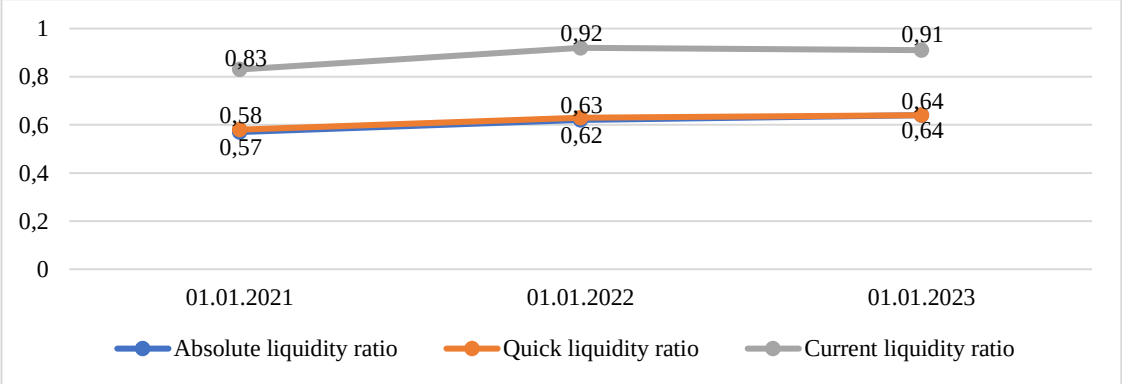


Figure 35 - Dynamics of liquidity ratios of Air Astana JSC for 2020-2023

Note - compiled by the author based on [Table 18]

The absolute liquidity ratio values from Figure 35 also show an upward trend, but are only approaching the standard value of 0.2. It may be a sign that the company lacks sufficient liquidity to meet these obligations in the near term.

Although the values of the quick liquidity ratio show an upward trend from 2020 to 2022, they still do not exceed the standard level of 1. That could suggest the company has limited means to quickly pay off current liabilities without selling

inventory. The current liquidity ratio values also stay far below the standard value of 2. This could mean that the company would struggle to pay off its current liabilities.

Negative values of the equity maneuverability ratio for 2020-2022 (Table 20) may testify to the problems that the company faces in managing its equity capital to maintain financial maneuverability. The current solvency ratio has decreased significantly from 2020 to 2022, indicating the company's increased difficulty in paying off current liabilities in the short term.

Let us examine the key aspects of inventory formation in relation to Air Astana's financial stability. We will consider various sources that influence the inventory creation process and identify their impact on the organization's financial stability. In addition, we will determine the types of financial stability of Air Astana, originating from strategic inventory management, to examine the relationship between inventory management and the airline's financial stability (Table 20).

Table 21 - Three-dimensional indicator of financial stability of Air Astana JSC for 2019-2022, million tenge

Indicator	Method of calculation	in million tenge			
		01.01.20	01.01.21	01.01.22	01.01.23
Availability of own working capital	$Sos = S - B$	8 340	- 25 569	- 11 645	- 15 311
Availability of own and long-term sources of financing of reserves	$Sdi = \text{C} + \text{O}$	226 243	257 459	279 119	307 895
Total value of the main sources of formation of reserves	$O = Sdi + \text{O}$	348 620	408 282	436 657	492 959
Reserves	–	19 129	19 518	22 261	22 750
Shortage (surplus) of SOS	$\Delta Sos = S - Goods$	- 10 789	- 45 087	- 33 907	- 38 062
Shortage (surplus) of SDI	$\Delta Sdi = Sdi - Goods$	207 114	237 941	256 858	80 387
Shortage (surplus) of O	$\Delta O = \text{O} - Goods$	329 491	388 764	414 396	265 451
Three-dimensional indicator of the type of financial stability	–	(0;1;1)	(0;1;1)	(0;1;1)	(0;1;1)
Note: compiled by the author based on the source [118]					

Analytical conclusions based on the data presented in Table 21: The indicator for availability (own working capital) as of the end of the accounting period at its disposal compared to borrowing, from the beginning of the study until the end of (2019), shows positive dynamics, indicating the presence of sufficient internal funds (working capital) in circulation. This indicator, however, turned negative during the

pandemic in 2020 and the post-pandemic years 2021-2022, indicating that the company's working capital is insufficient. This shows that, between 2020 and 2022, the firm was unable to utilize its working capital to service its inventories and had to resort to external financing. Having no working capital of its own and forming inventories at the expense of borrowed funds forms the following financial risks:

1. Liquidity risks. In the event of unexpected changes in the economic environment or a decline in profitability, the company may face difficulties in repaying loan obligations, thereby increasing liquidity risks.

2. Increased financial risk. An increase in the share of borrowed funds in Air Astana JSC's capital increases its overall financial risk, especially in volatile market conditions or economic difficulties. 3. Dependence on external sources. Constant borrowing makes the company more dependent on external financial markets. Changes in interest rates or the availability of credit may affect financial stability.

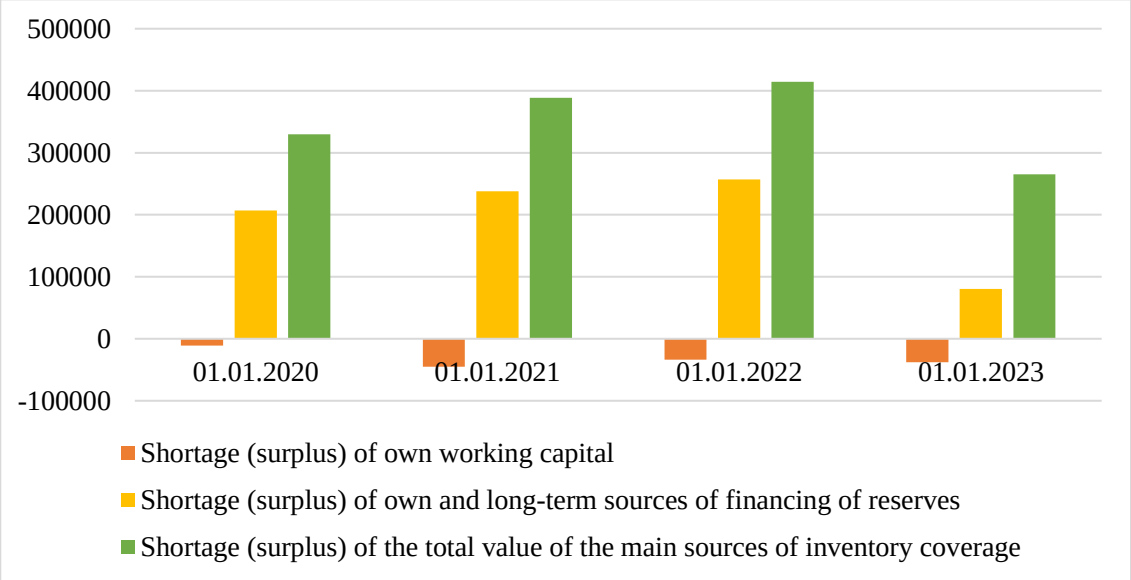


Figure 36 - Financial stability indicators of Air Astana JSC for 2019-2022

Note: compiled by the authors based on [Table 21]

Based on the three-dimensional indicator of financial stability type (Figure 36), we can conclude that Air Astana JSC maintains normal financial stability.

Below is a detailed analysis of each coefficient (Table 22), including its dynamics over the period, which will enable us to identify trends, assess risks, and provide recommendations for enhancing financial stability.

Let's consider how these indicators interact and what conclusions we can draw about the long-term sustainability of the organization in a changing economic environment.

Table 22 - Financial stability ratios of Air Astana JSC for 2020-2022

Indicator	Calculation	Normal limitation	01.01.2021	01.01.2022	01.01.2023
Financial leverage ratio	$R = \frac{L}{K}$	1 (not higher than 1.5)	7,21	7,21	7,21
Current assets in circulation	$R = К - ВА$	An increase in the indicator is a positive trend	- 308 billion tenge	- 302 billion tenge	- 338 billion tenge
Reserves security ratio	$R = \frac{S}{Goods}$	0.5 and more	- 1,31	- 0,52	- 0,67
Autonomy ratio	$R = \frac{СК}{А}$	0.4-0.6 (varies depending on the industry)	0,02	0,06	0,12
Financing ratio	$R = \frac{СК}{К}$	≥ 1	0,02	0,06	0,14
Financial stability ratio	$R = \frac{СК + О}{А}$	0,8-0,9	0,66	0,67	0,68
Immobilization ratio	$R = \frac{ВА}{ОА}$	The lower the value, the better	2,53	2,26	2,4
Note: compiled by the author based on the source [119]					

Based on the data provided in Table 22, we see that the financial leverage ratio decreases from 55.99 in 2020 to 7.21 in 2022. This may indicate a decrease in the company's financial risk and a more stable financial position.

The gradual increase in the autonomy ratio reflects an increase in dependence on equity to finance assets. This may be a positive phenomenon, indicating an increase in financial independence. Companies with a high share of equity are more attractive to creditors, which is undoubtedly a positive aspect.

The financing ratio gradually increases from 0.02 in 2020 to 0.14 in 2022. However, all values remain below the regulatory level, which should be equal to or greater than 1. This may suggest that the company allocates a limited amount of financial resources to its activities.

In general, Air Astana has the potential for long-term sustainability. Still, it is essential to pay attention to asset optimization, debt management, and ensuring sufficient liquidity to overcome financial challenges.

Operating leverage (OL) measures the relationship between the growth in revenue and the growth in EBIT. It mirrors the cost structure of the company, and the mix between fixed costs: OL > 1 Indicates a High sensitivity of EBIT to changes in revenue, while OL < 1 indicates a low sensitivity of EBIT to changes in revenue; a negative OL indicates a loss or a sharp imbalance between costs and income.

Analysis by year in JSC Air Astana: 2020 (OL = 0.43): A 47.84% decline in revenue was accompanied by a 20.80% decrease in EBIT. Low OL indicates that the company was able to reduce some of its fixed costs to soften the blow to operating profit. 2021 (OL = 0.29): A 124.51% increase in revenue caused EBIT to increase

by only 35.92%. This suggests that the company's expenses have grown faster than its revenues, reducing operating efficiency. 2022 (OL = -19.49): A slight decline in revenue of 6.43% was accompanied by a sharp increase in EBIT by 125.36%. This indicates a significant change in the company's expense structure, possibly due to optimization of operating processes or a reduction in variable costs.

Financial leverage (FL) shows how much changes in EBIT affect changes in net income. It reflects the company's debt load and use of borrowed capital: FL > 1: Net income is highly dependent on changes in EBIT; FL < 1: Net income is stable relative to EBIT; Negative FL: Indicates losses or changes that have a significant impact on net income.

• Analysis by year in JSC Air Astana: 2020 (FL = 16.29): A sharp decline in EBIT by 20.80% led to a drop in net income by 338.93%. A high FL value shows that financial liabilities have a significant impact on the company's net income. 2021 (FL = -3.67): A 35.92% increase in EBIT was accompanied by a 131.95% decrease in net income. A negative FL value indicates an unstable financial structure, where changes in EBIT do not lead to the expected profit growth. 2022 (FL = -0.65): A sharp increase in EBIT by 125.36% was accompanied by a decrease in net profit by 82.00%. Low FL and a negative value indicate that the company is experiencing difficulties in transforming operating profit into net profit due to high costs or taxes.

Operating leverage is somewhat better in 2022, despite lower revenues. This could be for cost optimization. Financial leverage: were significantly overleveraged in 2020. The current low net profit, however, suggests that the financial strategy needs to be reevaluated. By 2022, things had settled down.

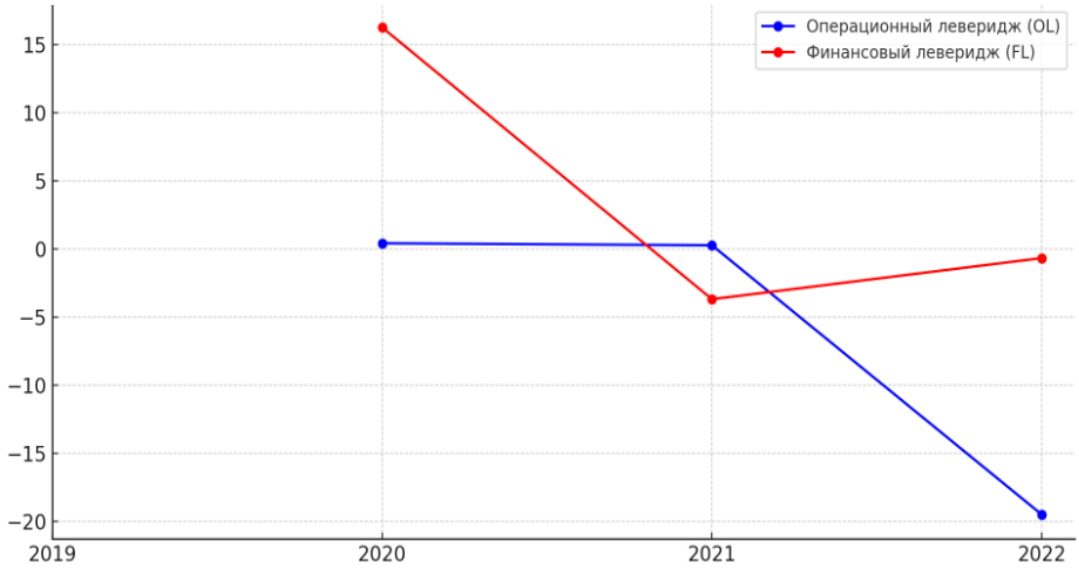


Figure 37 - Operating and financial leverage in JSC Air Astana 2019-2022

Note: compiled by the authors based on Source [120]

In Figure 37, the blue line shows the dynamics of operating leverage (OL). In 2022, its sharp decline is due to a change in the cost structure. The red line represents the dynamics of financial leverage (FL), exhibiting significant fluctuations due to changes in net income relative to EBIT.



Figure 38 - Percentage changes in indicators in JSC Air Astana 2019-2022

Note: compiled by the authors based on Source [121]

In Figure 38, green bars show changes in revenue, orange bars show changes in EBIT, and purple bars represent changes in net income, which fluctuated the most.

Financial multipliers are shown in Table 23. Used to analyze business, evaluate the efficiency and value of companies:

- P/E (Price-to-Earnings) – the ratio of the share price to the company's earnings per share.
- P/B (Price-to-Book) – the ratio of the company's market price to its book value.
- EV/EBITDA – company valuation through the enterprise value (Enterprise Value) to its EBITDA (earnings before interest, taxes, depreciation, and amortization).
- Debt/Equity – the ratio of debt to equity.
- ROE (Return on Equity) – return on equity.

Table 23 – Ratios in JSC Air Astana 2019-2023

	Company	Industry
Valuation multiples		
Price/Earnings Ratio	11,57	10,65
Price/sales volume ratio	0,46	0,49
Price/cash flow ratio	1,78	0,04
Price/Free Cash Flow Ratio	4,68	2,17
Price/book value ratio	1,48	1,72
Price/tangible book value ratio	1,5	1,76
Profitability		
Gross Profit	32,08%	31,43%
Operating margin	8,21%	8,41%
Pre-tax profit margin	5,16%	5,02%
Profitability ratio	3,83%	3,97%
Data per share		
Earnings per share	3,73	5,31
Basic Earnings Per Share	0,22	0,25
Diluted earnings per share	0,22	0,25
Book value per share	1,11	0,77
Tangible book value per share	1,1	0,53
Cash per share	1,35	1,17
Cash flow per share	0,96	0,94
Management efficiency		
Return on Equity	15,92%	19,25%
Profit on total assets	4,16%	3,23%
Return on Investment	5,96%	7,76%
Growth		
Earnings per share for the latest quarter compared to the quarter a year ago	-14,86%	-36,44%
Earnings per share for the last 12 months vs. the same period a year ago	-51,54%	-50,57%
5 Year EPS Growth	66,61%	64,63%
Sales for the last quarter compared to quarterly sales a year ago	9,5%	8,62%
Sales for the last 12 months compared to the same period a year ago	7,48%	7,52%
Sales growth over the last 5 years	6,82%	6,74%
Capital expenditure growth over the past 5 years	10,8%	10,37%
Note: compiled by the author based on the source [122]		

Next, we will analyze business activity and key indicators that enable us to assess the efficiency of utilizing Air Astana assets. Studying these ratios will provide us with a deeper understanding of how the airline manages its resources to achieve its business goals. Let's consider the main business activity ratios (Table 24).

Table 24 - Business activity ratios of Air Astana JSC for 2020-2023

Indicator	Method of calculation	01.01.2021	01.01.2022	01.01.2023
General turnover indicators				
Total capital turnover ratio	$R = \frac{Revenue}{Cct}$	0,37	0,69	0,89
Total capital turnover ratio	$R = \frac{Revenue}{Cct}$	1,21	2,35	2,99
Intangible assets return ratio	$R = \frac{Revenue}{Cia}$	232,24	472,5	685,46
Asset return ratio	$R = \frac{Revenue}{Ca}$	0,58	0,69	1,37
Return coefficient	$R = \frac{Revenue}{Crc}$	6,59	18,06	9,63
Asset management indicators				
Stock turnover	$O = \frac{Cst \times T}{Revenue}$	42,56	21,48	17,18
DS turnover	$O_{DC} = \frac{Cds \times T}{Revenue}$	170,76	102,50	81,99
Cash loan turnover	$O_D = \frac{Ccl \times T}{Revenue}$	21,96	7,49	6,92
Asset turnover	$T = \frac{Ca \times T}{Revenue}$	898,50	515,37	402,67
Note: compiled by the author based on the source [123]				

A significant increase in this total capital turnover ratio from 0.37 in 2020 to 0.89 in 2022 indicates a more efficient use of assets by the company to generate revenue. A similar upward trend is observed with the working capital turnover ratio. The ratio increased from 1.21 in 2020 to 2.99 in 2022, indicating a faster turnover of working capital.

The intangible asset return ratio is relatively high and has increased significantly over the period, indicating a more efficient use of intangible assets to generate revenue.

A sharp increase in the return on assets from 0.58 in 2020 to 1.37 in 2022 may indicate a more efficient use of fixed assets in investment projects.

Despite the growth in 2021, the return on equity ratio decreased in 2022, which may necessitate closer attention to the efficient use of equity capital. In general, the increase in most ratios indicates positive dynamics in the company's resource efficiency. Still, it is also essential to consider additional contextual factors and circumstances for a deeper understanding of the enterprise's financial condition.

A significant decrease in inventory turnover, from 42.56 in 2020 to 17.18 in 2022, indicates that the company has become more efficient in managing its inventory and warehouse stocks. There is also a decrease in cash turnover from 170.76 in 2020 to 81.99 in 2022. This could be a sign of increased cash utilisation, potentially due to better liquidity management.

A decrease in the accounts receivable turnover ratio is also noted, dropping from 21.96 in 2020 to 6.92 in 2022, which, in general, could suggest an enhancement of lending policy and a shortening of payment terms. The drop in asset turnover, from 898.5 to 402.67, though significant, is simply an indication of overall reduced turnover, which raises questions about asset structure or reflects complex variations in resource management.

These changes in turnover ratios indicate dynamics in the efficiency of inventory, cash, and accounts receivable management. Lower values may indicate a more efficient use of resources and improved financial stability for the company.

Thus, Air Astana JSC, as Kazakhstan's national air carrier, has demonstrated stability and a strong aspiration for development in a dynamic industry. Considering the structure of assets and liabilities, the dynamics of financial indicators, as well as solvency and financial stability ratios, allows us to draw meaningful conclusions about the company's current financial position.

Given some positive trends, such as the growth of fixed assets and an increase in retained earnings, the need for careful management of liabilities and ensuring sufficient liquidity should be emphasized. Additionally, the observed changes in the financing structure and autonomy ratios suggest a desire for financial stability and independence. However, the identified risks, such as negative inventory coverage values and relatively low solvency ratios, require attention and, possibly, adjustments to the strategy in certain areas.

Overall, the company exhibits some positive trends in asset development and liability management; however, risks in the areas of solvency and financial stability require attention and, possibly, corrective measures.

Inventory management, optimization of the financing structure, and allocation of much-needed liquidity to avoid bankruptcy should also be focused on. Financial decision-making on strategic issues can help strengthen the company's financial stability and ensure its successful development in the future. A comprehensive, integrated approach to financial management, strategic planning, and risk management is crucial for the long-term sustainability of the business.

Thus, Air Astana JSC, being one of the major players in the aviation industry, with expertise in industrial, economic, and financial management, and in finding sources of financing, can play a leading role not only in the development of the company but also in the development of the aviation industry in Kazakhstan as a whole.

2.3 Specifics of financing for JSC "Air Astana"

The financing structure of Air Astana JSC includes both internal and external sources. Internal financing consists of share capital, operating profits, net profits, and depreciation, while external sources include operating leases, financial leases, bank loans, and proceeds from an initial public offering (IPO).

The FMRDA registered this issue of shares on December 28, 2023. The split of the issued and placed Shares, as well as the additional number of declared undistributed Shares, was registered by the Central Depository of Kazakhstan in the register of shareholders of the Company on January 9, 2024 [67].

Table 25 – EPS and number of shares of Air Astana for 9 months

№	Earnings and Number of Shares	2022	2023
1	Earnings for the Period	60 967	73 392
2	Number of Common Shares	17 000	17 000
3	Earnings Per Share	3586	4258
Note: compiled by the author based on the source [124]			

Dividends declared in 2023 were in the amount of 442 thousand tenge (0.99 thousand US dollars) per share (2022: nil) (Table 25).

The value of Air Astana planes is presented in US dollars.

Table 26 provides estimated useful lives for the current and previous periods:

Table 26 — Depreciation of fixed assets of Air Astana JSC

Fixed assets	Years
Aircraft (excluding individual asset components)	25
Buildings and premises	14-50
Rotating spare parts	3-10
Office equipment and furniture	4-7
Vehicles	7-9
Other	5-10
Note: compiled by the author based on source [125]	

Depreciation is charged in such a way as to allocate the cost of assets (except for freehold land, assets in construction, and individual aircraft components) less their estimated residual values over their estimated useful lives.

Straight Line Method — Calculate Useful Life: Aircraft components are written off individually based on their average useful life (in flight hours or cycles) before the next scheduled heavy maintenance visit.

Table 27 – Dynamics of depreciation and amortisation of JSC Air Astana

Fixed assets	01.01.2023	01.01.2022	01.01.2021
Depreciation of fixed assets	61 952 208	51 204 529	41 372 802
Depreciation of intangible assets	291 645	279 641	362 289
Total	62 243 853	51 484 170	41 735 091
Note: compiled by the author based on the source [126]			

Each part of an asset is measured separately, and depreciation is charged to profit or loss on a straight-line basis over the estimated useful lives of each asset (Table 27).

Air Astana aims to be as high revenue-generating as possible by controlling capacity, fare levels, and route choice.

When analyzing revenue metrics, Air Astana examines the following metrics.

- capacity, or the number of available seats multiplied by the distance flown, measured in Available Seat Kilometres (ASK);
- RPK, traffic, or the number of passenger kilometers flown by paying passengers.
- Load Factor — the ratio of Air Astana Group capacity used by fare-paying passengers, calculated as RPK (traffic) / ASK (passenger-kilometers);
- Profitability, or how much money is made per RPK, is found by dividing total and other revenue by RPK;
- Revenue Unit, RASK (breakeven seating capacity) – the revenue earned for each ASK, calculated as total revenue and other revenue divided by ASK.

Table 28 presents, among other things, the above-described indicators for the specified periods.

Table 28 – Key Indicators in Revenue Analysis of Air Astana JSC

Operational Data	2023	2022	2022	2021	2020
ASK (billions)	13.2	11,7	15,9	13.1	8.1
Average Aircraft in Service	40	36	37	31	28
Aircraft - End of Life	43	36	39	36	32
Average Daily Aircraft Loading (hours)	10.1	10,0	10.1	9,6	7.2
RPK (billions)	11.1	9,7	13.2	10.4	5,8
Load Factor (%)	84	83	83	80	71
Revenue (US cents)	8.1	7,7	7,8	7.3	6,9
RASK (US cents)	6,8	6.4	6,5	5,8	4,9
Note: Source [127]					

Passenger revenue is significantly affected by the competitive forces at play in the airline industry. This makes sense, as existing databases do reveal key data points about market conditions; however, numerous other competitive factors can later determine how an airline's market share ultimately shakes out, including

ticket price, total price, flight schedule, and others [128].

Let's take a closer look at the key indicators in the analysis of Air Astana's revenue.

1. The first indicator is ASK (capacity), which represents the number of offered seats in kilometers. Table 29 displays the capacity of the Air Astana Group by route type for the specified periods.

Table 29 - ASK (capacity) or the number of offered seats in kilometers

ASK (in millions)	30.09. 2023	30.09. 2022	31.12. 2022	31.12.2021	31.12. 2020
Domestic routes	5674	5,287	7,279	7550	4576
International routes	7,556	6,386	8,642	5,513	3547
Note: Source [129]					

Traffic Indicator (RPK)

Another vital measure is traffic (Revenue Passenger Kilometers, RPK, the number of kilometers flown by paying passengers). Demand for Air Astana and FlyArystan flights remains the primary driver of traffic. This demand is influenced by various factors, including the general state of the economy, consumer sentiment, foreign exchange rates, the desire for air travel, global political events, and transient impacts that affect air travel in some way (Table 30 below).

Table 30 – RPK – Number of passenger-kilometres by paying passengers

RPK (billions)	30.09. 2023	30.09. 2022	31.12. 2022	31.12.2021	31.12. 2020
Domestic routes	5,201	4697	6,442	6,368	3585
International routes	5,917	4982	6717	4042	2176
Note: Source [130]					

A clarity in identified passenger and cargo-related traffic, contributing to a growth plan, both domestic and international. The company also intends to keep investing in its fleet to propel this growth.

3. Yield

Yield: Revenue generated per RPK (Revenue passenger kilometer). This is calculated by dividing total revenue (including other revenues) by RPK. Yield is mainly driven by pricing. Air Astana Group sets prices on all international and domestic routes based on econometric assessments of various parameters, including supply and demand, competitor pricing, and route-specific characteristics.

Demand will underpin higher fares on some sectors, and Air Astana Group has found the going easier from an international routing perspective.

Table 31 — Number of passengers on domestic and international routes on Air Astana Group's regular and charter flights by direction of traffic

Route Types	2023	2022	2022	2021	2020
Total Routes:					
Passengers	6.1	5.4	7.3	6.6	3.7
- Domestic	4.3	3,9	5.3	5.3	3.1
- International	1,8	1,5	2.0	1.3	0,7
Scheduled Routes:					
Passengers	5,9	5.2	7.1	6.4	3.6
- Domestic	4.3	3,9	5.3	5.3	3.0
- International	1,6	1.3	1,8	1.1	0,6
Note: Source [131]					

Below, Table 32 presents the average fares of Air Astana and FlyArystan, along with the ancillary revenues per passenger for the specified periods. Ancillary revenues are included in passenger revenues in the Air Astana Group's results of operations.

Table 32 - Average Fares of Air Astana and FlyArystan

Fares (US$ per passenger)	2024	2023	2022	2021	2020
Average Fares	124	114	115	89	80
Air Astana	176	164	167	134	115
FlyArystan	57	51	49	38	29
Additional Revenue	5.1	4.0	4.0	3.4	2.3
Air Astana	3.4	2.6	2,7	2.3	1,4
FlyArystan	7.2	5,8	5,7	4.6	3,5
Note: Source [132]					

Operations: Load Factor (Passenger) = Scheduled passenger revenue / Scheduled passengers. Scheduled passengers = Revenue passenger kilometers / Scheduled passenger kilometers.

4. Unit Revenue (RASK) - Air Astana Group evaluates unit revenue to determine the optimal balance between load factor and profitability.

Table 33 presents Air Astana Group unit revenue by route type and airline brand for the periods indicated [67].

Table 33 - Air Astana Group Unit Revenue by Route Type and Brand

RASK (US cents)	2023	2022	2022	2021	2020
Domestic routes	5,97	5.08	5.07	4.14	3,86
—Air Astana	6.51	5,56	5,61	4,57	4.41
— FlyArystan	5.43	4,58	4.50	3,68	3.05
International routes	7.38	7.47	7,65	8.03	6.02
—Air Astana	7,64	7,67	7,87	8.26	6.09
— FlyArystan	5,73	6.02	5,95	5.23	2.19
Note: Source [133]					

In 2021 and 2022, the company resumed operations on 22 routes and received nine additional aircraft (net), resulting in increased capacity on both international and domestic routes.

Table 34 – Air Astana Group revenues in 2022-2023 according to the reported data, million tenge

№	Indicator	Air Astana			FlyArystan		
		01.01.2022	01.01.2023	%	01.01.2022	01.01.2023	%
1	Revenue	151382	281365	85,8	23311	66730	186
2	Net profit	-21821	40170	184	-6559	28486	434
Note: compiled based on source [134]							

The analyzed companies are seeing revenue and net profit growth in 2022. The revenue of Air Astana JSC in 2021-2022 increased by 85.8%, and net profit by 184%. The revenue of FlyArystan JSC in 2021-2022 increased by 186%, and net profit by 434%.

Let's analyze the leading financial indicators of Air Astana JSC for 2019-2022, presented in Table 35, in million tenge dynamics over the 4-year period.

Table 35 - Financial indicators of Air Astana JSC for 2019-2023

Indicator	01.01.2020 In million tenge	01.01.2021 In million tenge	Change in %	01.01.2022 In million tenge	Change in %	01.01.2023 In million tenge	Change in %
Revenue	343 988	162 716	-52,70%	324 906	99,68%	477 981	47,11 %
Profit	11 494	- 38 672	- 436,44	15 485	146,8%	37 582	142,70%
Equity	39 476	7 747	-80,37%	27 623	256,54%	70 446	155,02%
Assets	379 756	441 599	16,28%	475 926	7,77%	578 717	21,60 %
Liabilities	340 280	433 851	27,50%	448 302	3,33%	508 270	13,38 %
Note: compiled by the authors based on the source [135]							

Analyzing the dynamics of financial indicators of Air Astana JSC for the specified periods in Table 35, the following key findings can be highlighted: A significant decrease in revenue by 52.7% from 2019 to 2020 is due to the impact of the pandemic or other economic factors. A sharp increase in revenue by 99.68% from 2020 to 2021 and a further increase of 47.11% from 2021 to 2022 indicate recovery and possibly successful growth strategies of the company. A significant 436.44% decrease in profit from 2019 to 2020 is a consequence of the economic difficulties associated with the COVID-19 pandemic during the specified period.

The recovery and profit growth of 146.8% from 2020 to 2021 and 142.7% from 2021 to 2022 demonstrate the effectiveness of measures taken to improve the company's financial position.

Table 36 – Income Statement of Air Astana JSC

Titles	2024	2023	2022	2021	2020
Revenue and Other Income					
Passenger Revenue	877,9	727,0	998,1	715,8	358,4
Freight and Mail Revenue	15,7	15,6	22.1	33,6	24,6
Other Income	7.0	4.6	12.1	7,8	11,0
Gain from Sale and Leaseback	—	—	—	4.6	6.3
Total Revenue and Other Income	900,6		1032,4	761,8	400,3
Operating Expenses Fuel and Oil Expense	(208,8)	(163)	(231)	(136)	(89,2)
Employee and Crew Costs	(143,6)	(110,1)	(148,9)	(116,3)	(87,1)
Depreciation and Amortization	(118,4)	(98,9)	(135)	(120)	(101)
Engineering and Maintenance	(83,2)	(81,9)	(125,9)	(94,6)	(43,2)
Processing, Landing, and Route Fees	(77,4)	(61,1)	(84,9)	(70,1)	(47,2)
Passenger Handling	(75,9)	(59,4)	(80,3)	(60,9)	(36,6)
Selling Expenses	(30,3)	(23,8)	(33,3)	(25,1)	(17,1)
Insurance	(8.1)	(5,8)	(8,3)	(8.1)	(6.2)
Information Technology	(4,9)	(4.2)	(5,7)	(4,6)	(4.2)
Consulting, Legal, and Professional Services	(3,6)	(3.4)	(4.3)	(3.4)	(3.3)
Aircraft Lease Cost	(2.3)	(3.1)	(3,9)	(3,7)	(3.4)
Property and Office Expenses	(2,7)	(1,8)	(2,5)	(2,6)	(2.4)
Taxes Other than Income Tax	(2,9)	(1,0)	(1,4)	(2,5)	(4.2)
Impairment Loss on Trade Receivables	(0,1)	(0,1)	(0,4)	(0,1)	(0,1)
Other Operating Expenses	(9,6)	(13,3)	(16,8)	(10,4)	(24,4)
Operating Expenses	(771,7)	(631,3)	(883,7)	(659,7)	(469)
Operating Profit/(Loss)	128,9	115,9	148,7	102,2	(69,3)
Financial Income	10,8	3.7	7.0	2.4	1,4
Financial Costs	(36,7)	(28,4)	(39,3)	(47,1)	(36,1)
Foreign Exchange Loss, Net	(12,9)	(13.1)	(15.1)	(12,5)	(12,7)
Earnings/(loss) before tax	90,0	78,0	101,4	45,0	(116,6)
Income tax (expense)/payments	(17,6)	(17,1)	(23,0)	(8,8)	22,7
Earnings/(loss) for the period	72,4	61,0	78,4	36,2	(93,9)
Basic and diluted earnings/(loss) per share (in US dollars)	4258	3586	4613	2127	(5525)
Note: Source [136]					

From 2019 to 2020, equity declined by 80.37%, primarily due to the onset of the pandemic in 2020. The overall increase in equity by 256.54% in 2021 and 155.02% in 2022 indicates a significant improvement in the airline's financial

stability and capitalization. This is a result of profit growth and the accumulation of retained earnings.

The overall trend indicates that Air Astana JSC successfully coped with the challenges of 2020, recovered, and continues to show growth in both revenue and profit, which may suggest the sustainability and adaptability of its business strategy. Air Astana Group derives revenue primarily from the sale of passenger seats, and the income statement is presented in Table 36.

Due to all the above-mentioned factors the "Air Astana" group reported an operating profit of $128.9 million for the nine months ended September 30, 2023, up by $13.0 million, or 11%, versus the operating profit of $115.9 million recorded for nine months ended September 30, 2022 [137].

Like other traditional passenger airlines worldwide, the Air Astana Group operates on a high fixed cost structure, which is primarily driven by aircraft leasing and personnel costs. Because flying a plane costs a fixed amount, independent of the number of passengers on the flight, differences of only a few hundred passengers in ticket price and type of service offered can make or break profitability. That's because fixed costs, by their nature, cannot be reconfigured quickly.

Air Astana Group aims to minimise its costs by achieving higher aircraft utilization, replacing older fleets with new, more efficient narrow-body aircraft, and attempting to reduce fuel costs through local direct supplies wherever feasible in Kazakhstan. The company also tries to simplify the maintenance program while also improving productivity.

Further cost-saving measures for FlyArystan are achieved through high load factors, negotiated landing and handling fees at airports, low operational staff requirements due to efficient crew utilization, and a reliance on direct sales.

Table 37 shows the share of total revenue, other income, and operating expenses

Millions of USD	30.09.2023	30.09.2022	31.12.2022	31.12.2021	31.12.2020
Total revenue and other income	900,6	747,2	1032,4	761,8	400,3
tenge	333,8	265,5	349,8	386,8	249,2
US dollars	441,2	389,1	553,5	268,8	102,9
Euro	61,7	52,1	68,1	69,1	19,9
Other currencies	64,0	40,5	61,0	37,1	28,2
Total operating expenses	(653,3)	(537,5)	(748,5)	(538,8)	(368,5)
tenge	(362,4)	(267,5)	(384,4)	(290,9)	(206,0)
US dollars	(215,2)	(213,5)	(289,4)	(196,6)	(119,9)
Euro	(47,1)	(40,0)	(50,0)	(29,8)	(27,3)
Other currencies	(28,7)	(16,5)	(24,7)	(21,5)	(15,3)
Note: Source [138]					

Next, we analyze Air Astana's operating expenses in more detail in Table 38.

Table 38 – Air Astana JSC Operating Expenses

№	Operating expenses	2019	2020	01.01.2022	01.01.2023	Absolute change, +/-	
						2021	2022
1	2	3	4	5	6	7	8
1	Depreciation and amortization	31138626	41735	51484	54631	9749	3147
2	Fuel	79458517	36023	61695	69741	25672	8046
3	Employee expenses	39476452	29777	44675	47520	14898	2845
4	Airport services	41873616	19076	29880	34785	10804	4905
5	Engineering and technical services	36134279	17260	40324	45612	23064	5288
6	Passenger services	35031959	14771	25962	26741	11191	779
7	Selling expenses	16213290	6927	10686	11423	3759	737
8	Crew expenses	13521409	5985	5318	6420	-667	1102
9	Insurance	3484556	2383	3027	4523	644	1496
10	Information technology	1537890	1743	1952	2541	209	589
11	Taxes	657565	1721	1066	1963	-655	897
12	Aircraft rental expenses	5266640	1386	1562	1742	176	180
13	Consulting services	1490046	1334	1448	1560	114	112
14	Asset rental expenses	951134	995	1124	1640	129	516
15	Impairment losses on accounts receivable	282470	51	49	55	-2	6
16	Other expenses	7348035	9930	4456	6741	-5474	2285
17	Total	313866484	191097	284708	317638	93611	32930
Note: compiled based on source [139]							

The operating expenses of JSC "Air Astana" increased significantly between 2020 and 2022. The total expenses increased by 93,611 million tenge, representing a 48.8% rise compared to 2020. The most significant cost categories include depreciation and amortization, fuel costs, personnel expenses, and airport services. These costs account for the majority of the company's operating expenses.

Apart from crew expenses and taxes, all major cost items were higher in 2021 and 2022 than in 2020. Since October 2023 marks the recovery of the aviation

industry following the COVID-19 pandemic and the rebound in air travel, this trend is not surprising.

The highest growth in absolute terms was observed in such categories as fuel costs, engineering and technical maintenance, and airport services. Crew expenses fell at the same time.

In 2021, tax expenses fell out, only to rise again in 2022. This may be attributed to changes in tax law or the economy.

There is some volatility in other expenses over the three years. More detail in 2020, but decreased in 2021, and rose in 2022.

In general, JSC "Air Astana" also increased its operating expenses, likely due to the recovery of the aviation sector and an increase in air traffic volumes. Controlling these costs and finding effective ways to manage operating expenses is an essential task for the company to continue developing sustainably while maintaining continuous growth.

Cash guarantees for leased aircraft represent deposits that secure JSC Air Astana's obligations stemming from payments in connection with the lease agreements. Such guaranteed deposits are usually in U.S. dollar denominations.

Benchmarking is the process of studying the best practices of competitors and other market leaders to improve your performance. For Air Astana, the key benchmarking areas include:

Service Quality: Qatar Airways and Singapore Airlines are the gold standards of premium service.

Application: Investing in improving customer experience (for example, expanding multimedia systems, improving in-flight menus); Regular staff training to meet world service standards.

Route Network & Connections: Turkish Airlines and Emirates.

Application: Building a hub in Almaty to attract transit flows from Europe to Asia; Optimizing connecting flights in the hub to ensure minimum waiting times

Operational Processes: Ryanair and Southwest Airlines have pioneered cost-optimized operational processes.

Application: Maintenance is a costly affair. The use of predictive maintenance systems can help reduce the overall cost. Implemented- Baggage loading & unloading.

Airline Fare Policy: FlyDubai & Pegasus Airlines

Application: Develop branded fares with the selection of add-ons (baggage, meals, seat selection). Implement promotions and offers to increase demand during the low season.

Environmental sustainability: Lufthansa and Delta Air Lines.

Application: Use more fuel-efficient aircraft with lower CO_2 emissions; Participate in environmental programs, such as carbon offsetting.

Benchmarking-based recommendations for Air Astana

1. More aggressive expansion in the international arena: In code-sharing agreements and strategic alliances, to add to the number of regional flights with more transit volume.

2. Promote premium passengers: Touch on the higher offers in business class, such as private lounges or exclusive service; Build the Nomad Club loyalty program to preserve essential customers.

3. Low-cost segment development: Further investments in FlyArystan's development to strengthen its position in the low-cost segment and launch a hybrid format with low-cost fares on select routes.

4. Increased environmental responsibility: Actively promoting and implementing the ecological compensation program; Acquisition of new aircraft with more advanced energy-saving characteristics.

5. Digitalization: Utilization of AI in revenue management and demand forecasting; Development of a modern mobile app that enables customers to book and manage their flights.

Hedging currency and fuel risks for Air Astana

Hedging is an effective tool for managing risks associated with volatility in fuel costs and exchange rate fluctuations. For airlines such as Air Astana, this is especially important, as a significant portion of expenses (such as fuel and lease payments) are denominated in foreign currencies, most often US dollars.

1. Hedging currency risks. The problem: A large share of expenses (aircraft leasing, maintenance, and fuel purchases) is denominated in US dollars. The company's revenues are partly denominated in tenge (KZT), which makes it vulnerable to a decline in the national currency.

Solutions:

1. Forward contracts: Entering into contracts with banks to purchase currency at a fixed rate in the future; Allows you to fix the rate for a specific period, which reduces uncertainty.

2. Currency options: Purchasing the right (but not the obligation) to purchase currency at a pre-agreed rate; A more flexible instrument than forwards, but with additional costs (payment of a premium for the option).

3. Currency swaps: Exchanging fixed payments in one currency for fixed payments in another, for example, exchanging tenge for US dollars under pre-agreed terms.

4. Natural hedge: Increasing income in a currency that matches expenses. For example, expanding routes that generate income in US dollars, euros, or another stable currency.

Advantages of currency hedging: Elimination of the risks of sharp changes in exchange rates; More stable financial results and budget predictability.

2. Hedging fuel risks. Problem: The price of jet fuel is highly dependent on global oil prices, which fluctuate significantly. Fuel costs account for 30-40% of all operating costs for airlines.

Solutions:

1. Oil/fuel futures contracts: Entering into transactions to buy jet fuel or crude oil at a fixed price for a specific period; Hedging through exchanges (e.g., NYMEX) or intermediaries.

2. Fuel swaps: Exchanging a fixed fuel price for a variable one. If fuel prices rise, the company pays less, but if prices fall, it may lose some of the savings.

3. Fuel options: Purchasing the right to buy fuel at a fixed price. This protects against price increases while retaining the ability to take advantage of a decrease.

4. Price indexation in contracts with suppliers: Including in contracts a mechanism for adjusting the cost of fuel based on market prices. For example, a fixed premium on the average market price.

5. Natural hedge: Using modern aircraft with low fuel consumption (e.g., Airbus A321LR), which reduces consumption.

Benefits of fuel hedging: Reduced dependence on oil price volatility; Possibility of long-term planning of expenses.

3. Technical implementation of hedging

1. Defining the strategy: Setting risk limits (e.g., hedging 50-70% of fuel and currency expenses); Analysis of historical data on market volatility.

2. Choice of instruments: An optimal blend of forwards, options, and futures, using exchange (ICE, NYMEX) and over-the-counter products.

3. Real-time monitoring and revision: Adapting strategy based on external market movements and internal company needs.

4. Getting professional partners: Work with banks, brokers, or specialized financial institutions

Example:

Air Astana predicts it'll need 1 million barrels of aviation fuel next year. To hedge against increasing prices, it purchases fuel options with a $90 barrel strike price. If the fuel price rises to $100, the company saves $10 for every barrel. If the price drops below $90, it simply lets the option expire and purchase fuel on the market for a lower price.

Benefits for Air Astana:

- Financial stability: less fluctuation of operating costs.
- Higher investor confidence: predictability of profits enhances the company's image.
- Cost optimization — lower adverse effects of external factors on business.

Any international airline seeking to mitigate threats from currency and fuel fluctuations and enhance financial predictability must hedge.

Financing from other sources (Example: Air Astana)

Additionally, the following methods are available: bank loans, leasing (operational and financial), and raising capital through the primary placement of the airline's shares (IPO).

On August 12, 2019, "Air Astana" entered into a credit agreement with JSC "Halyk Bank of Kazakhstan" for $ 40 million for 3 years to finance working capital. The credit line would be increased to $160 million in 2020, and the term would be extended to September 10, 2025.

Credit line of JSC "Halyk Bank". The credit line is in tenge and U.S. dollars. In 2022, the Group fully repaid the total borrowings owed to JSC "Halyk Bank of

Kazakhstan". For those areas that referenced the Aviation Technical Center in the above, the land is split into two. The location of the Aviation Technical Center is also the general land mortgaged to the JSC "Halyk Bank" until the completion of the credit line - 2025 [140].

This line is provided to JSC "Air Astana" through a multi-currency revolving credit line for short-term bank loans, overdrafts, guarantees, and letters of credit.

– Credit Line with JSC "Citibank Kazakhstan"

"Air Astana" is also a participant in a revolving credit line with JSC "Citibank Kazakhstan" for $47.8 million, which was recalculated as of March 28, 2019, and the last amendment was made on November 24, 2022, to cover working capital, overdrafts, guarantees, and letters of credit.

– Altyn Bank – Letters of Credit

"Air Astana" is a participant in a revolving credit line of $15 million, dated March 15, 2017, with the latest amendments effective as of January 25, 2023, and with "Altyn Bank" for the issuance of guarantees and letters of credit. As of September 30, 2023, $13.3 million had been utilized [141].

The whole table detailing external financing sources is included in Table 39.

Table 39 – Borrowed funds of JSC "Air Astana" for the 9 months of 2022-2023

№	Loans	2022	2023
1	Long-term loan, thousands of US dollars	4162	105
2	Current portion of the loan + interest payable	7934	406
Note: compiled by the author based on the source [142]			

The risk arising from Air Astana Group's debt is monitored by the management in light of the short-term, medium-term, and long-term financial and liquidity requirements every quarter, as to the Treasury Committee, the Strategic Planning Committee, and the Board of Directors of Air Astana. These involve ensuring that there are sufficient reserves and bank facilities by monitoring forecast and actual cash flows regularly and matching the maturity profiles of financial assets and liabilities.

Table 40 – Outstanding debt of Air Astana JSC

External sources of financing	30.09.23	31.12.22	31.12.21	31.12.20
Bank loans and leases	697,5	744,9	789,2	868,7
Of which				
Bank loans	0,5	12.1	62,3	164,0
Aircraft lease liabilities	697,0	732,8	726,9	704,7
Note: Source [143]				

Finance leases cover between 75% and 85% of the total cost of the aircraft, including deferred payments, maintenance assets, and accrued interest at an average

rate of 2.5% to 3.4%, repayable over 12 years. At the end of the finance lease, the Air Astana Group has the option to purchase the aircraft for a nominal amount.

Both operating and finance leases are secured at fixed rates established at the time of delivery of the relevant aircraft. From time to time, Air Astana sells its aircraft on finance leases. It leases them back on operating leases with the lessor's consent, to realize opportunistic profits from sale prices that exceed the cost at which the aircraft is carried on the balance sheet. It's financial statements.

Air Astana acquires aircraft and plans to continue acquiring them under operating and finance leases (leasing). If Air Astana Group breaches its existing leases or fails to enter into leases for its anticipated fleet plan, it could result in repossession of its aircraft or have a material adverse effect on its growth strategy" [67].

Air Astana's transferable leases contain covenants that limit certain transactions, including, but not limited to, limiting indebtedness. Certain covenants in these transferable leases pertain to changes of ownership of Air Astana. These conditions were satisfied on September 30, 2023, and September 30, 2022.

Other aircraft lease agreements that are included are executed without purchase options.

The lessor's title to the leased assets secures Air Astana's obligations under these leases. The carrying value of these leased assets as at 30 September 2023 was US$711,228 thousand (US$625,701 thousand as at 30 September 2022) [67].

The aircraft have lease terms of between 3 and 12 years. The leases include market review clauses, allowing both parties to agree on an extension of the lease. At the end of the lease term, Air Astana might not have the option to buy the leased aircraft.

Both payment types (fixed & variable) are denominated and calculated in US dollars, which is the internationally accepted currency for aircraft operating leases.

Fleet commitments (including aircraft lease commitments) on a delivery basis over the period 4Q 2023-2025 (Table 41).

Table 41 – Aircraft lease commitments of JSC Air Astana

Lease terms, thousands of US dollars	31.12.2022	30.09.2023
Within one year	14 070	21 470
After one year, but not more than 5 years	406 869	529 275
More than 5 years	747 355	922 309
Total	1 168 294	1 168 294
Note: compiled by the author based on the source [144]		

Lease liabilities shall be measured at amortized cost using the effective interest method. Liabilities are remeasured whenever changes in index or a rate results in a change in future lease payments or if Air Astana amends its estimate of the expected payment to settle the amounts due under the residual value guarantee or adjusts its estimate as to the exercise of options to purchase, extend or terminate a lease or refine its fixed lease payments.

Let's consider the structure of expenses for leasing the Air Astana JSC aircraft in Table 42.

Total aircraft lease expenses increased in 2021 and remained approximately flat in 2022 compared to 2020. In absolute terms, total lease expenses increased by KZT 176 million, representing a 12.7% increase compared to 2020.

Air Astana's aircraft rental expenses structure comprises several elements: fixed lease payments, spare parts lease, engine lease expenses, airplane return expenses, variable lease payments, and the payment deferral impact of COVID-19.

Table 42 - Structure of expenses for the lease of aircraft of Air Astana JSC in 2020-2022, million tenge

№	Aircraft lease expenses	2019	2020	01.01.2022	01.01.2023	Absolute change, +/-	
						2021	2022
1	2	3	4	5	6	7	8
1	Fixed lease payments for aircraft and engines	3599764	903	0	7	-903	7
2	Aircraft and engine spare parts leases	589818	581	601	675	20	74
3	On-wing engine lease expenses	668282	404	279	330	-125	51
4	Aircraft return expenses	373181	277	161	175	-116	14
5	Variable lease payments	35595	54	141	153	87	12
6	Effect of COVID-19-related lease payment deferrals	-	-835	377	402	1212	25
7	Total	5266640	1385	1561	1742	176	181
Note: compiled based on source [145]							

Fixed lease payments under significant contracts for 2020 amounted to KZT 903 million. However, these payments fell to zero in 2021 and only amounted to KZT 7 million in 2022.

In 2020, the company was negatively affected by KZT 835 million as a result of the COVID-19 deferment of lease payments. In 2021 and 2022, however, the situation was reversed, with the company experiencing a positive impact from the deferral of payments in the amounts of KZT 377 million in 2021 and KZT 402 million in 2022.

Except for aircraft return expenses, all lease expense items increased moderately in 2021 and 2022 compared with 2020. The most significant alteration was recorded in the 'variable lease payment' item (87 million tenge).

The effect of deferral of payments related to COVID-19 had a significant impact on aircraft lease expenses. At the beginning of the pandemic, there were adverse effects; however, in subsequent years, the company experienced positive effects from the deferral of payments.

In general, the aircraft lease expenses of Air Astana JSC vary in different components. The change in the cost structure and the effects associated with COVID-19 impact the financial component of the company related to aircraft leasing. Managing these costs and finding effective strategies in aircraft leasing remain essential tasks for the company in its pursuit of financial stability and growth. Under the aircraft leasing agreement without transfer of title, the contract term is 5 is up to 10 years. Currently, the company does not have the option to buy out the lease when it expires. Various factors and components influence the aircraft lease expenses of Air Astana JSC. Changes in the cost structure, coupled with the financial impact of COVID-19, have significantly affected the company's leasing-related financial operations. Effectively managing these expenses and adopting strategic approaches to aircraft leasing remain critical to ensuring the company's financial stability and long-term growth.

The arrangements in place for aircraft leasing, where the title is not transferred, generally feature terms that last between 5 and 10 years.

Finally, the cash payments for the lease itself, when made, and the fixed amount of variable lease payments are made in US$. TRAC Group's expertise is utilized in this currency, which is the most common for cross-border transactions in aircraft operating lease settings. Operating lease conditions for planes with an operating lease between 2021 and 2023 are shown in Table 43 [148].

Table 43 - Irrevocable obligations under the operating lease of aircraft in use by Air Astana JSC, million tenge

№	Indicator	2019	2020	01.01.2022	01.01.2023	Absolute change, +/-	
						2021	2022
1	2	3	4	5	6	7	8
1	Within one year	9196316	3770	4146	5286	376	1140
2	After one year, but not more than five years	72853170	55242	27848	25410	-27394	-2438
3	More than five years	55653837	54587	23960	19452	-30627	-4508
4	Total	137703323	113600	55855	50148	-57745	-5707
Note - compiled based on source [146]							

Total undiscounted non-cancellable (minimum) obligations applying to aircraft operating leases for future financial years decreased from 2020 levels in both 2021 and 2022. The total amount of non-cancellable liabilities decreased by KZT 57,745 million, or 50.7% compared to 2020.

Non-cancellable liabilities are classified into three categories according to the period of fulfillment. These consist of liabilities under one year, those between one and five years, and those over five years.

The reduction in non-cancellable liabilities for aircraft operating leases has a positive impact on the company's financial position. Reducing liabilities can reduce the financial burden and increase flexibility in capital management.

A significant portion of non-cancellable liabilities relates to long-term liabilities for more than five years. A reduction in this category may indicate strategic changes or a revision of the company's long-term aircraft leasing plans.

In general, the reduction in non-cancellable liabilities for operating leases of Air Astana JSC aircraft indicates the company's commitment to optimizing its leased aircraft portfolio and managing financial risks. This may be the result of the review and restructuring of lease agreements, as well as the company's strategic decisions regarding the use and renewal of its aircraft fleet.

On February 9, Air Astana JSC held an initial public offering (IPO). The shares of the air carrier Air Astana JSC are owned by the Kazakhstani National Welfare Fund Samruk-Kazyna (51%) and the British company BAE Systems PLC (49%). According to Bloomberg, both shareholders plan to reduce their stake to about 50% in total, and Air Astana also plans to issue new shares. Trading in Air Astana shares will be structured so that control over them remains in the hands of Kazakh citizens or legal entities, so that the company retains its preferential status as a national carrier. As a result of the IPO, Air Astana may be valued at approximately $1 billion.

During the IPO, Air Astana JSC attracted 49.2 billion tenge (equivalent to $108.9 million) on KASE, or 76% of the volume of common shares offered on the local market [147].

The demand on KASE was 186% of the volume of common shares offered on the local market. A total of 19 members of the KASE stock market took part in the placement.

As a result of the placement, securities worth 24.3 billion tenge, or 49.4% of the volume of placement on KASE, were received into the accounts of individuals. The volume of satisfied applications submitted by institutional investors totaled 24.9 billion tenge, accounting for 50.6% of the placement volume [149].

The exchange website states that upon the end of the application acceptance period and registry verification by KASE and the Central Securities Depository, as well as reconciliation with KASE members, 36,899 applications with a total volume of 120.6 billion tenge (equivalent to $ 266.8 million) were accepted. At the same time, the number of active applications received from individuals totaled 36,832, with a total volume of 46.4 billion tenge (38.5% of the total volume of applications received). These applications were submitted from 1,999 sub-accounts of holders and 27,431 personal accounts recorded through omnibus accounts [150].

Demand from institutional investors amounted to 50.8 billion tenge (42.1% of the volume of applications received), second-tier banks - 15.2 billion tenge (12.6% of the volume of applications received), broker-dealer organizations - 4.7 billion tenge (3.8% of the volume of applications received) and other legal entities - 3.6

billion tenge (3.0% of the volume of applications received) [151]. Following the public offering on KASE, the issuer satisfied 36,283 applications to purchase 45,855,827 shares for 1,073.83 tenge per share. Later, the exchange clarified that from February 9 to 14, 2024, 974 transactions with 352,190 shares with a total volume of 409.3 million tenge were concluded as part of the pre-market on KASE. The price per share varied in the range of 1,074-1,275 tenge. The price of the last transaction was 1,170 tenge per share, which is 9% higher than the placement price (1,073.83 tenge). The bank became the owner of 5% of the shares [152]. Next, we will conduct a comparative analysis of the IPO results of Air Astana JSC with those of companies that also participated in the People's IPO program, including KazTransOil JSC, KEGOC JSC, NAC Kazatomprom JSC, and NC KazMunayGas JSC.

According to the exchange's website, after completing the application acceptance period and verifying the registry with KASE, the Central Securities Depository, and reconciling with KASE members, a total of 36,899 applications were received, amounting to 120.6 billion tenge (approximately 266.8 million USD). Of these, 36,832 active applications were submitted by individual investors, representing a total volume of 46.4 billion tenge (38.5% of the total application volume). These applications originated from 1,999 sub-accounts of holders and 27,431 personal accounts recorded via omnibus accounts [153].

Table 44 - Results of IPO companies within the framework of the People's IPO program

	KazTransOil	KEGOC	Kazatomprom	KazMunaiGas	Air Astana
Year of IPO	2012	2014	2018	2022	2024
Price per share, tenge	725	505	4 343,85	8 406	1 073,83
Total demand in Kazakhstan, billion tenge	59,4	108,5	341	181,5	216,7
Attracted funds, billion tenge	27,8	38,7	202,3	153,9	53,8
Number of shares issued, pcs	38 463 559	25 999 999	16 250 000	18 303 584	50 526 315
Share of company shares in free float	9,99%	9,99%	15%	3%	43,7%
Note: compiled by the authors					

Based on the data presented in Table 44, it can be argued that the shares of JSC NAC Kazatomprom and JSC NC KazMunayGas are the most expensive, 4,343.85

tenge and 8,406 tenge, respectively. In contrast, the shares of JSC KEGOC and JSC KazTransOil can be classified as the least costly, 505 tenge and 725 tenge, respectively. However, it is essential to consider the differences in market conditions between 2012 and 2024. The level of interest rates, inflation, geopolitical situation, the state of the global and local economy, and other factors significantly affect stock prices and the overall dynamics of the market. Based on the total volume of demand, it can be concluded that the shares of JSC Air Astana and Kazatomprom were in the most significant demand among investors. While the shares of KazTransOil and KEGOC were in less demand. Therefore, the most significant amount of funds was raised by the companies Kazatomprom and KazMunaiGas.

Following, let's look at the distribution of shares among investors within the framework of the IPO conducted by these companies:

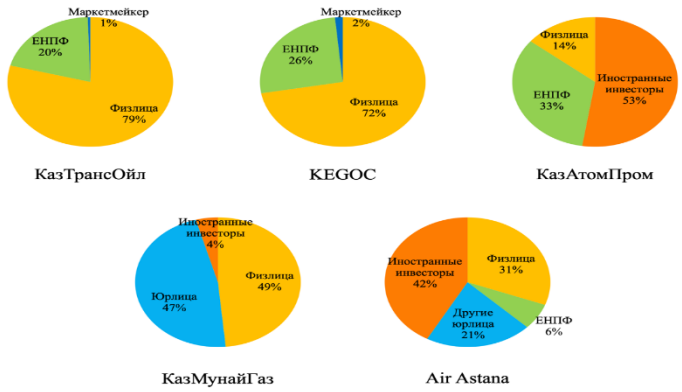


Figure 39 - Distribution of shares among investors within the IPO

Note: compiled by the authors based on Source [154]

Figure 39 illustrates the dominance of individuals in the distribution of shares among investors in initial public offerings conducted under the People's IPO program. In three out of five cases, individuals are the majority group of investors. This indicates a high level of interest among the population of Kazakhstan in investing in shares.

To understand the factors influencing the success of Air Astana JSC's IPO, we conducted a comparative analysis of the results of other IPOs. We have included the price of the placement, placement on international stock exchanges, the level of technical organization of the IPO process, the share of the company's shares in free circulation (free float), as well as the information transparency of the issuer in the factors that can affect the success of the initial public offering of shares. Let's look at the results of the analysis.

Analysis of IPO Factors for JSC "Air Astana". Share Price Accessibility. The accessibility of the offering price can significantly influence investor demand, especially from retail investors. If the offering price is attractive and accessible to a wide range of investors, it may lead to an increased demand for the company’s shares. In the case of JSC "Air Astana" IPO, where the offering price was accessible

and appealing, it resulted in a massive demand from retail investors, making it one of the largest IPOs in the history of the Kazakhstan stock market. Therefore, the accessibility of the share offering price is a crucial factor that can impact the success of the IPO and investor attraction.

Table 45 - Comparative analysis of factors that can affect the success of an IPO

Factors	KazTransOil	KEGOC	Kazatomprom	KazMunaiGas	Air Astana
Availability of the share placement price					
Placement on international stock exchanges					
Level of technical organization of the IPO process					
Share of company shares in free circulation (free float)					
Information transparency of the issuer					
Note: compiled by the authors based on Source [155]					

Listing on international stock exchanges, such as the London Stock Exchange (LSE) or other global trading platforms, can have a significant impact on a company. It provides access to global investors, increasing international visibility and attractiveness. Additionally, listing on international exchanges can enhance liquidity and contribute to the diversification of the investor base. In the case of JSC "Air Astana" and Kazatomprom, listing their shares and GDRs on the LSE opens access to international investors and enhances the company’s appeal for investment.

The technical organization of the IPO process plays a key role in its success. This includes aspects such as effective planning and execution of all IPO stages, conducting thorough audits and financial analysis, and coordinating with regulators and investment banks. In the case of KEGOC, bureaucratic issues led to delays in the IPO process, creating additional challenges in the planning and execution of the share offering. As a result, the IPO was delayed, initially planned for the second half of 2013, and did not take place until 2014.

The proportion of shares in free float is crucial for the success of an IPO, as a large volume of shares in free float ensures high market liquidity, attracting more investors during the IPO. Investors prefer companies with sufficient liquidity, as it provides the ability to freely buy and sell shares without significantly affecting the price.

Information transparency plays a vital role in the IPO process. A high level of transparency fosters investor confidence, provides a more objective assessment of share value, and reduces investment risks. As part of an IPO, the issuer must provide

detailed information about its business model, development strategy, financial performance, competitive environment, and other aspects that may influence investment decisions.

In addition to the factors mentioned above, favorable external economic conditions also affect the success of an IPO and investor interest. Some of these factors include stable market conditions, growth in investment activity, increasing interest in the sector, and regulatory support.

Air Astana — share buyback program

Share buybacks refer to a corporate financial strategy in which a company purchases its stock shares from the market. Such a measure helps buoy the share price, increase returns to shareholders, and enhance a company's performance as viewed by investors.

Reasons buyback: Supporting the market price of shares: When the shares are undervalued, buybacks serve to limit the availability of shares in the market, thereby allowing for price growth due to reduced supply; Buoying earnings per share (EPS): When fewer shares are in circulation, EPS soars—which enhances a company's bottom line; Increasing investment allure: When a company conducts a share buyback, it conveys to the market that the management believes in the long-term financial health and growth potential of the company; Shareholder flexibility: By retiring shares via a buyback, rather than distributing dividends to shareholders, companies are under no legal obligation to pay dividends and shareholders also have the option to sell shares (which would not generate income) or keep them; Optimize your capital structure: Buybacks can be a good way to utilize excess cash.

Potential risks and downsides of a buyback:

1. Less liquidity: A return of shares through the buyback decreases the trading of shares, making it harder for investors.
2. Higher leverage: If the buyback is funded by debt, it can make the company financially weaker.
3. Bad timing: Share repurchases can lead to a loss of value for the company if the shares are repurchased at a premium price.
4. Investor criticism: Some investors may believe that the money would be better spent on business expansion or dividend payments.

Implementation of a buyback for Air Astana

Goals: Provide support for shares after declining on negative news; Restore investor confidence and consequently improve financial performance; Optimize capital structure, particularly in the event of surplus funds.

Possible scenario:

1. Air Astana declares the share buyback program targets to repurchase up to 10-15% of the total number of shares outstanding
2. Such companies place a limit on the maximum price at which they will buy back shares (e.g., 120% of the current market price).
3. The programme is funded from reserves and cheap long-term loans.
4. It reduces the total number of shares outstanding, effectively increasing the value of remaining shares.

Calculation example:
Current number of shares: 100 million
Price per share: $10
Amount allocated for repurchase: $50 million
Number of repurchased shares: $50 million / $10 = 5 million
Remaining number of shares: 100 million - 5 million = 95 million
EPS before repurchase: $100 million (net income) / 100 million shares = $1.00
EPS after repurchase: $100 million / 95 million shares = $1.05
Result: EPS increases by 5%, which investors positively perceive.

Buyback alternative: If a buyback proves unsuitable due to liquidity or debt constraints, the company may consider increasing dividends or reinvesting funds in new areas for growth. This will also increase the attractiveness of Air Astana for investors.

Fly Arystan, a low-cost carrier under the management of Air Astana, has been established to provide travelers with affordable air travel both within Kazakhstan and overseas. But regarding a separation, it may have to do with the fact that:

1. Brand Identity Reinforcement: Air Astana might want to establish a more distinct separation between its brand identities. This enables FlyArystan to concentrate on its low-cost strategy and Air Astana to focus on premium quality service.
2. Target various market segments: FlyArystan caters to price-sensitive customers by offering lower rates through bundled basic services. By decoupling the brands, the companies avoid consumer confusion and give both firms stronger footholds in different market segments.
3. Legal/regulatory: Separating companies can be required by regulation, or making the stock structure optimal, which can make management easier and bring greater transparency.
4. Financing independence: If FlyArystan wants to raise funds or expand its business, spinning off into a separate company would help attract investments.

On 11 October 2023, the government of Kazakhstan created a multi-stage plan for the separation of FlyArystan from Air Astana. As part of this plan, FlyArystan was restructured into an independent joint stock company in Autumn 2023 and became the holder of its own Air Operator Certificate as of 1 April 2024. As of 1 January 2025, FlyArystan fully transitioned to its own Air Operator Certificate and commenced operating as a separate airline under the IATA code FS. At the same time, FlyArystan JSC will remain a wholly owned subsidiary of the Air Astana group. This separation allows FlyArystan to act independently as a defendant in lawsuits related to its activities, indemnifying Air Astana from liability for such claims. Thus, FlyArystan remains part of the Air Astana group, but operates as a separate legal entity with its own Air Operator Certificate and IATA code.

Thus, the following conclusions can be drawn from the second chapter. The Air Astana Group has demonstrated operational and financial resilience during the double crisis of the COVID-19 pandemic and the Russia-Ukraine conflict. For example, the company reallocated capacities to new "educational" destinations and

expanded its presence in the "near home" markets of Central Asia and the Caucasus. As a result, Air Astana recovered more quickly than the global average. From 2018 to 2022, the group experienced an average annual growth rate of 27% in domestic traffic, while international traffic declined by 3% per year.

The IPO of JSC "Air Astana" was one of the most significant events in Kazakhstan's stock market and also one of the largest IPOs in the history of the Kazakh stock market. Based on the conducted analysis, we conclude that the success of JSC "Air Astana's" IPO was influenced by factors such as the share offering price, listing on international stock exchanges, the level of technical organization of the IPO process, the share of the company in free float, the information transparency of the issuer, and favorable external economic factors. The combination of these factors, along with JSC Air Astana's strong reputation, generated significant interest in the IPO from both domestic and international investors. This provided the company with access to capital, enhanced its public recognition, and offered investors the opportunity to be part of its success.

Financial instruments to improve the situation:

1. Corporate bond issue: Raising long-term capital to finance fleet expansion and route development; moderate interest rates will help alleviate pressure on short-term liquidity.

2. Debt refinancing: Utilizing low-interest loans or issuing bonds to repay current high-interest debt, thereby reducing debt servicing costs.

3. Attracting strategic investors: Selling minority stakes to large aviation or investment holdings; Increasing trust in the company and acquiring management competencies.

4. Hedging currency and fuel risks: Concluding forward contracts for the purchase of fuel and currency; Insuring against sharp fluctuations in exchange rates and fuel costs.

5. Transition to a flexible route model: Analyzing the profitability of routes using automated systems; Optimizing flight frequency to reduce losses.

6. Share buyback program: Increasing demand for shares and supporting their market value, thereby improving investor perception.

7. Developing additional services: Increasing revenue through premium services, such as paid baggage, priority check-in, and access to business lounges; monetizing new technologies (electronic services, on-board multimedia).

Strategic recommendations:

- Strengthen focus on the premium segment and development of highly profitable routes.
- Invest in digitalization and automation of processes.
- Optimize the cost structure by improving operational efficiency.
- Strengthen marketing efforts to enhance brand awareness globally.

3 IMPROVEMENT OF AIRLINE FINANCING INSTRUMENTS IN KAZAKHSTAN

3.1 Alternative sources of financing for JSC "Air Astana": conceptual roadmap

The global aviation industry has experienced significant growth over the last decade, with the Middle East now emerging as the fastest-growing region for aviation. With the growing demand for air travel, there is a need for additional ways to provide aviation finance; one solution is Islamic finance. Islam is currently the fastest-growing religion in the world, and Islamic finance is one of the fastest-growing areas of banking, providing financial stability; however, it comes with legal instability. Due to the unique risk-sharing aspect of Islamic finance, it has not only survived the global economic crisis but has also expanded as other financial institutions have deteriorated.

Islamic finance can help diversify funding sources, making it even more attractive to aviation finance lessors.

Islamic banks and lending institutions differ from their Western counterparts. Islamic banks deal with tangible goods and titles to the assets that their clients purchase. Islamic banks use money as a medium of exchange to purchase, lease, or sell goods, thereby generating a profit or income. An example of this would be a bank purchasing an aircraft itself and then reselling it to an airline for a profit, where the buyer would pay less for the aircraft. In this example, there would be strict rules, such as the prohibition on late payment penalties, as this would constitute riba. Additionally, if the airline fails to pay for the aircraft, a strict default will occur. More conventional banks deal with larger amounts of money. For example, when lending money, the lender provides the customer with a loan to purchase an asset, and the customer must then repay the amount lent, plus interest. In this case, the bank will not retain the actual asset or property, unlike an Islamic bank. Using the same example, if the transaction were conducted with a US bank, the bank would most likely lend the airline the money it needed to purchase the aircraft, and the airline would have to repay the loan in installments, along with additional interest. Another type of Islamic financial instrument is Ijarah, also known as leasing. This is not a typical lease, and several significant differences should be considered.

The bank will receive a profit on the amount accrued on the value of the leased asset, which should be included in any expenses as part of the payments to the bank [111]. A key component of the stability and continued growth of the airline industry is access to a wide range of financing options. The financial crisis has caused uncertainty in many traditional financial structures [156]. Due to the strength and growing presence of Islamic finance during the financial crisis, it has become another alternative to aviation finance and leasing. The Middle East region is experiencing a boom in international travel. Figure 40 presents the main advantages and disadvantages of Islamic airline finance.

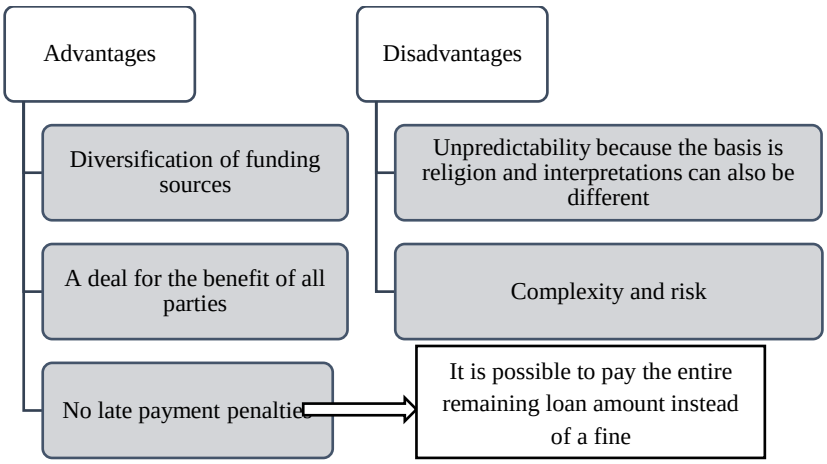


Figure 40 – Islamic Finance of Airlines: Advantages and Disadvantages of Application in Kazakhstan

Note: compiled by the authors based on [157]

Islamic aviation finance has advantages in terms of diversification of funding sources, concern for the interests of all parties to the transaction, and penalties for late payments (the borrower may be offered to pay the entire amount that the client of the Islamic bank owes, instead of a penalty). The main disadvantage of Islamic finance lies in its complexity, unpredictability, and the risk associated with using religion as the foundation of its principles. However, despite these challenges, Islamic finance is expected to continue growing and should be considered by Kazakhstani companies involved in aviation financing and leasing.

Although there is currently no reason to entirely abandon traditional methods of aviation financing and leasing entirely, integrating Islamic finance in Kazakhstan is likely to continue growing as a diversification option in the aviation industry. If implemented effectively, Islamic aviation financing and leasing can experience a successful "takeoff" rather than an "emergency landing."

The second type of alternative financing for aviation companies is "green" finance. Green finance refers to investments and financial instruments that support environmentally friendly, energy-efficient, and low-carbon projects. Key instruments in green finance include "green" bonds, concessional lending, subsidies for "green" projects, and others. These financial tools enable the development of green projects that would not be possible under traditional financing conditions.

“Green” financial instruments, which are part of the capital market, extend the range of financial instruments and, accordingly, the opportunities for investors. Green bonds are debt instruments, the proceeds of which are used exclusively to finance or refinance (in whole or in part) new and existing green projects.

The development of green bonds has evolved far beyond expectations and is becoming a rapidly growing segment among global financial instruments. This strong growth is indicative of the rapid changes in the energy industry and the increasing confidence in “green” technologies from the financial sector and traders.

Green financing is the second key alternative source for airlines. It aims to support environmentally friendly, energy-efficient, and low-carbon projects through tools such as green bonds, concessional loans, and subsidies. These mechanisms provide access to financing for projects that are not available on traditional terms.

"Green" bonds, as part of the capital market, are debt instruments whose proceeds are exclusively allocated to finance or refinance environmental projects. This segment is showing explosive growth, reflecting both the rapid changes in the energy sector and the growing confidence of the financial industry in green technologies.

The Climate Bonds Standard and Certification Scheme: In December 2011, the Climate Bonds Initiative (CBI) published its first voluntary standard for climate bonds, along with its associated certification scheme.

Against this background, assessing the demand of Kazakhstani and foreign investors for the potential placement of green bonds is of great importance. This involves exploring investor demand for climate-friendly and green initiatives and evaluating the potential for green bonds to provide a sustainable source of funding for such projects. Investors for the product are found by the issuer himself or through AIX trading members.

There are 2 options for the type of bond placement:

– open placement – issuance of bonds addressed to the entirety of the public. Suitable for placement volumes, particularly for large volumes. Therefore, it is significantly more expensive with a closed placement, as it will be necessary to prepare a comprehensive prospectus and hire consultants, among other expenses. Therefore, the entire preparation time is approximately 1.5 to 2 months.

— closed placement — advice to appoint to a narrow circle of investors with whom arrangements were reached for the purchase of bonds. For placement under closed subscription, issuance of a simplified issue prospectus is sufficient, which can be prepared independently by the issuer. The closed placement process takes about 2-3 weeks, provided that all listing documents are complete.

Green Bond Framework — Issuers' methodology for implementing and principles for placing funds raised as part of the issue of green bonds. Fin: Determination of the method of independent assessment: one of four types (second opinion, verification, certification, rating)

Issuer's green bond policy compliance assessment (second opinion) — opinion of the independent consultant on the compliance of the issuer's green bond policy with the principles of green bonds, drawn up by specialists who know a particular industry in which the issuer's project is planned to be realized.

− Verification − verification of compliance of the issuer's green bonds policy with the principles of green bonds, performed by audit companies and/or assessed by recognized bodies by the Climate Bonds Initiative (CBI). An evaluation is issued to the issuer based on a pre-defined set of metrics, generally pertinent to business processes and/or environmental metrics.

For certification by the Climate Bonds Initiative (CBI), confirmation of compliance (code: verification) prepared by a CBI-registered verification agency must be submitted to CBI for accreditation.

- Rating (evaluation) - Rating agencies, based on the green bond principles, assign ratings using their respective methodologies.

Since 2013, we can see a rapid growth in the issuance of “green” bonds on the market (Figure 41)



Figure 41 - Green Bond Issues 2012–2020, USD billion.

Note: compiled by the authors based on source [158]

The figure above illustrates the increasing recognition of "green" bonds worldwide. Currently, government authorities need to take steps to regulate this market and facilitate its formation. These measures include:

· Formulating industry strategies and action proposals for green finance.

· Set Up Committees for Green Bond Market Development

· Government for guidelines and standards for green bonds and green projects, reporting and accounting standards in the use of green financing mechanisms.

· Providing access to information on green financing.

· Facilitate coalitions (platforms) of participants in the green bond market to facilitate collaboration and acceleration

· Undertaking significant bond issuances further to position green bonds as an effective means of financing [159].

These steps are crucial to establishing a stable and effective green bond market, encouraging both domestic and international investors to participate in funding environmentally sustainable projects.

Table 46 presents the roadmap, which was developed in accordance with international practices for implementing sustainable development principles. The document outlines specific steps for the issuance of green bonds, including, for example, the decision-making process, approval, and public placement of green bonds. In addition, the preparation of the issue prospectus and its registration.

Table 46 – Roadmap for the issuance of green bonds

Indicators	Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2025	Q2 2025	Q3 2025	Q4 2025	2026–2029
1	2	3	4	5	6	7	8	9	10
STAGE 1. Preliminary check									
1) Preliminary consulting on attracting financing through the issue of green bonds on the Astana International Financial Center Exchange. Expenses: $50,000 Result: Formation of a strategy for issuing green bonds.	Decision on the placement of green bonds	-	-	-	-	-	-	-	-
2) Verification of compliance with the requirements of the Rules for the issue of green bonds on AIX and international standards by employees of the Green Finance Center of the Astana International Financial Center. Expenses: $20,000 Result: Confirmation of compliance of bonds with international standards.	-	Approval of the decision to issue green bonds	-	-	-	-	-	-	-
3) Determine demand from Kazakh and international investors for the proposed green bond issue. Cost: $30,000 Result: Preliminary understanding of investor interest.	-	The public offering is an offering of green bonds to the general public.	-	-	-	-	-	-	-
STAGE 2. External review	-	-	-	-	-	-	-	-	-

Continuation of Table 46

1	2	3	4	5	6	7	8	9	10
1) Development of the procedure and principles for the placement of funds raised through the issuance of green bonds (Green Bond Framework). Costs: $40,000 Result: Approved principles for the distribution of funds.	-	-	Preparation of the prospectus	-	-	-	-	-	-
2) Determining the method of independent assessment: one of four types (second opinion, verification, certification, rating). Costs: $50,000 Result: Confirmation of compliance with the principles of green bonds.	-	-	An independent consultant's opinion (second opinion) is an assessment of the compliance of the issuer's green bond policy with the principles of green bonds, prepared by consultants with expertise in the specific industry in which the issuer's project is planned to be implemented.	-	-	-	-	-	-
STAGE 3. Preparation for listing and admission to trading	-	-	-	-	-	-	-	-	-

Continuation of Table 46

1	2	3	4	5	6	7	8	9	10
1) Preparation of the issue prospectus according to the requirements of AIX.	-	-	-	Registration of the prospectus and the decision to issue green bonds	-	-	-	-	-
2) Preparation of documents for listing and admission to trading, following AIX requirements. Costs: $30,000 Result: Preparation of the issue prospectus.	-	-	-	Preparing for the placement of green bonds	-	-	-	-	-
3) Review and approval of the prospectus and documents by the AIX Exchange. Cost: $20,000 Result: Marketing campaign for the placement.	-	-	-	Approval for the placement of green bonds	-	-	-	-	-
4) Obtaining an ISIN code through the Central Securities Depository of Kazakhstan. Costs: $20,000 Result: Obtaining an ISIN code.	-	-	-	-	Placement of green bonds	-	-	-	-
STAGE 4. Crediting green bonds to investors' accounts and receiving funds from the issuer	-	-	-	-	-	-	-	-	-
1) Registration of the report on the results of the issue of green bonds	-	-	-	-	-	Green Bonds Issue Results Report	-	-	-

Continuation of Table 46

1	2	3	4	5	6	7	8	9	10
2) After the official disclosure of information, investors have the right to make transactions with the issuer's green bonds on the secondary market. Costs: $30,000 Result: Attracting funds from investors.	-	-	-	-	-	-	The emission process is complete	-	-
3) Issue of green bonds Costs: $10,000 Result: Official completion of the issue.	-	-	-	-	-	-	-	The need to increase investment in infrastructure development, the funds raised will go towards financing "green" projects in the aviation sector	-
4) Green Bond Interest Payments Cost: $1,695,000 Result: Payments over 3 years at 5.65% per annum.	-	-	-	-	-	-	-	-	Payment of dividends on green bonds for 3 years
Note: compiled by the author based on source [160]									

1. Bond issue amount: USD 10 million.

2. Interest rate (coupon yield): The coupon rate of the bonds was set at 5.65% with semi-annual coupon payments.

3. Bond maturity: The bond maturity was set at 3 years.

4. Bond issue expenses:

- Consulting services and documentation development: approximately USD 100,000.
- Independent appraisal (Second Party Opinion): approximately USD 50,000.
- Listing and admission to trading expenses: approximately USD 30,000.
- Marketing and administrative expenses: approximately USD 20,000.

Total: approximately USD 200,000.

5. Coupon interest payments: With an issue size of $10 million and a coupon rate of 5.65%, annual fees will be $565,000. Considering semi-annual payments, each of them will be equal to $282,500.

6. Total debt servicing costs for 3 years:

- Coupon payments: $565,000 × 3 years = $1,695,000.
- Expenses associated with the bond issue: $200,000.

Total: $1,895,000.

7. Net funds raised:

- Issue size: $10,000,000.
- Issue expenses: $200,000.

Total: $9,800,000.

8. Use of raised funds. The funds are used to finance the airline's green projects, such as:

- Modernization of the aircraft fleet to increase energy efficiency - 50% ($4,900,000);
- Implementation of technologies to reduce carbon emissions - 30% ($2,940,000);
- Development of infrastructure for biofuel use - 20% ($1,960,000).

Appendix I provides more detailed calculations for the issuance of green bonds. Table I.1 shows percentage share, modified duration, and convexity. Table I.2 shows accumulated interest, accumulated repayment, and percentage of interest in payment.

To summarize, the analysis of the green bond issue revealed the characteristic features of the green economy and green finance, as well as their relationship with the concept of sustainable development. The above enables us to establish a foundation for understanding the theoretical and methodological foundations of the green bond issue.

At stage 1, a preliminary check is carried out, in which it is necessary to conduct initial consultation on attracting financing through the issue of green bonds on the Exchange of the International Financial Center "Astana", then perform a check of compliance with the requirements of the rules for the issue of green bonds on AIX and international standards by employees of the Green Finance Center of the

International Financial Center "Astana". After the above procedures, assess the demand from Kazakhstani and international investors for the proposed issue of green bonds.

At stage 2, conducting an external assessment of the green bonds: formation of the procedure and principles of use of means attracted under the issue of green bonds (Green Bond Framework). Need to decide on an independent assessment method (2nd opinion, verification, certification, rating).

At stage 3, Preparations for Listing/Admission to Trading. The prospectus for the issue is being prepared in accordance with AIX requirements. Next, the documents for listing and admission to trading are prepared per the AIX's requirements, following a review of the prospectus and documents by the AIX Exchange and their subsequent approval. This enables the receipt of the ISIN code through the Central Securities Depository of Kazakhstan.

At stage 4, upon receiving the code, green bonds are credited to the investors' accounts, and the issuer gets capital. Then, a report on the results of the green bond issue is registered. Following the official disclosure of information, investors have the right to engage in transactions with the issuer's green bonds on the secondary market. Upon completion of all procedures, green bonds are issued, and remuneration for green bonds is paid. Almost half of all airline or aircraft-related green and sustainability-related issuances to date have occurred in 2023, which could make 2024 an even busier year for these types of deals as investors and issuers increasingly look to green finance. Overall, the aviation industry is taking steps to meet climate goals and promote sustainable growth. Addressing these challenges will require significant efforts from aviation companies, investors, regulators, and other stakeholders to transition the industry to a more sustainable future.

Various characteristics, including asset type, maturity, risk level, and other relevant criteria, can be used to classify financial instruments. Devise a financial instruments matrix that systematizes them by specific traits, making the selection of the best one for a particular situation more visual and convenient. An example of such a matrix, divided by asset type and maturity, is illustrated below. Below is a matrix that Air Astana JSC can use accurately if it plans to list on the stock market or raise funds through other financial instruments.

- They may issue commercial paper or short-term bonds to fund operating activities.
- Medium-term instruments: Fixing the investment, including issuing the company’s bonds or shares.
- Long-term instruments such as strategic corporate bonds, mortgage-backed bonds, or shares to capture long-term investment in the company.

Accelerated depreciation under new leasing models may apply to airlines, including Air Astana, depending on the legal, tax, and economic conditions in Kazakhstan and the countries where the company operates.

Accelerated depreciation allows the cost of fixed assets (such as aircraft) to be written off faster than using standard depreciation methods. This provides tax benefits in the early years of the asset's use, which may be beneficial to lessees.

Applicability of accelerated depreciation for Air Astana: Kazakhstan regulations: Accelerated depreciation is regulated by tax legislation. If the lessee (Air Astana) is entitled to apply accelerated depreciation under financial lease agreements, this may reduce the company's tax burden in the short term; Lease type: For financial leases (not operating leases), accelerated depreciation may be more applicable, since the asset is recognized on the company's balance sheet.

Table 47- Financial Instruments Matrix

Instrument Type	Short-term instruments	Medium-term instruments	Long-term instruments
Debt Instruments	Bills	Bonds (government, corporate)	Long-term bonds
Equity (Stocks)	No short-term instruments	Preferred shares	Common stocks
Fixed Income Products	Treasury bills	Corporate bonds	Mortgage-backed securities bonds
Derivatives	Futures, options, swaps	Long-term contracts for difference (CFD)	Options and option packages
Cash	Short-term deposits, savings accounts	REPO transactions (reverse repo)	Long-term loans
Commodities and Raw Materials	Contracts for the delivery of goods within a year	Long-term contracts with fixed prices	Strategic long-term commodity contracts
Investment Funds	Money markets, short-term bonds	Bonus shares, bond funds	Real estate funds, pension funds
Individual Instruments	Repayment of loans, borrowings	Convertible debt obligations	Special investment accounts (e.g., P2P loans)
Note: compiled by the author based on the source [161]			

Experience of foreign countries. USA: As part of the US economic stimulus program (for example, the Tax Cuts and Jobs Act), companies can apply accelerated depreciation to new assets. This is popular in the aviation industry, as it helps optimize tax liabilities. EU: In the EU, accelerated depreciation is possible under certain conditions, for example, for leasing environmentally friendly aircraft or modernizing the fleet. Singapore and Hong Kong offer incentives for accelerated depreciation to stimulate investment in new technologies and equipment, including aircraft. Russia: Legislation allows for accelerated depreciation rates (up to 2 times) for assets acquired through lease.

Advantages: Lower tax payments in the first years of operation of the asset; Higher liquidity of the company; Faster renewal of the aircraft fleet.

Adverse Effects: Higher tax cost in the future; High difficulty in accounting for international transactions

Suggestions to Air Astana:

1. Tax legislation analysis: Use of accelerated depreciation in Kazakhstan and the countries of registration of the lessor.

2. Part of the work: Assessment of the leasing model: financial or operational leasing.

3. Hire international lawyers and accountants: To enable the practical setting up of a tax strategy based on global experience.

Securitization of securities is the process of issuing new financial instruments that are backed by assets to raise capital. In the case of airlines such as Air Astana, securitization can be used to finance operations, purchase aircraft, or expand business.

Foreign Experience

USA: Enhanced Equipment Trust Certificates (EETCs): EETCs are widely utilized by US airlines as a means to finance aircraft acquisitions. It is a mechanism whereby assets (vessels) serve as collateral, which guarantees the high reliability of securities. Benefit: Raise capital in preferred terms; Above all, investors are secured in the event of default. For example, American Airlines and Delta Air Lines leverage EETCs to finance their fleet.

Europe: Asset-Backed Securities (ABS). European trends: European developments include the securitization of proceeds from aircraft leaseback transactions. Companies such as AerCap and Avolon issue ABS, secured by the payment streams of airlines. Advantages: Diversification of risk; Obtaining investors with different profiles. For example, Lufthansa, which used structured bonds backed by future revenue.

Asia: Enhancing the Use of Securitization in Emerging Markets. A notable feature is that airlines in China and India utilize securitization as a financing tool, particularly in connection with fleet expansion. known: China Eastern Airlines placed secured bonds (secured by assets (aircraft)) to finance leasing agreements.

Securitization Potential for Air Astana

1. Stable Company Growth: Air Astana shows steady growth, creating favorable conditions for securities issuance.

2. Advantages of Securitization: Raising long-term capital, optimizing the cost of fleet financing, and accessing international capital markets.

3. Risks and Challenges: Revenue, stability, and risk management dependence; infrastructure and regulatory conditions in Kazakhstan.

Recommendations:

- Leverage EETCs or ABS experience to finance new aircraft acquisitions or route network expansion.
- International banks' cooperation: Attracting foreign financial institutions to structure the transaction.
- Build a favorable regulatory climate: The Development of the capital market in Kazakhstan is a background condition for successful securitization in Kazakhstan.

The Implementation Act has been received for Chapter 3.1 (Appendix J).

3.2 Business plan development as part of digitalization and technological transformation for JSC "Air Astana"

We live in a technologically advanced society, unlike any that has existed before. We can now complete a task in less time. The presence of technology is felt everywhere and continues to enhance the operations of businesses of all kinds. Thus, with the advancement of technology, the aviation industry continues to grow, becoming an even more straightforward process for passengers to fly. Airlines should have a more efficient and easier-to-operate commercial flight system. From online ticketing, check-in, baggage claim, and waiting to board a flight, there is always room for improvement in the customer experience. With the emergence of numerous new trends, this is becoming increasingly possible. Airlines need to know which models will help improve business efficiency as well as enhance customer experience. Thus, the Internet of Things (IoT), automation, Virtual Reality (VR), and Big Data are among the most significant trends shaping the way air travel is conducted today. The Internet of Things (IoT) has become one of the leading advancements in the aviation industry. IoT refers to the concept of connecting all physical objects through a network. A system of interconnected computing devices, mechanical and digital machines, objects, animals, or people, provided with unique identifiers. The identifiers can transmit data over a network, allowing for seamless collection and exchange of data without the need for human-to-human or human-to-computer interaction. With this advancement, IoT enables the delivery of the best possible customer service, making flights safer, more efficient, and more enjoyable for passengers. Kazakhstan Airlines also utilizes automation, which enables airlines to expand their services.

The use of automation provides a faster and more convenient travel with fewer tedious manual processes. Moreover, automation has proven to be useful in many areas of the aviation industry, with the most critical applications including air ticket reservations, ticket processing, cargo management, and in-flight services. Therefore, automation has already had a significant impact on the industry, and airlines are already leveraging this trend. For example, all airlines, including those in Kazakhstan, now offer automatic check-in [92, p. 110]. Additionally, virtual reality has also had a lasting impact on the industry and has not only made things more fun but has also made it easier for airlines to collect customer data, giving them a competitive advantage when developing offers. One carrier in particular that has taken advantage of this technology is Qantas, an Australian airline that has partnered with Samsung to offer devices to passengers on their flights. Now, passengers are immersed in movies, games, and more – all from 40,000 feet in the air. It also offers a new and exciting way to view destinations. Additionally, Big Data has shown that it sends personalized offers to customers in real-time and bases these offers on acquired industry information, travel routes, and search trends, to name a few. Even more important is the ability to help detect when something may be wrong with the aircraft, before it goes bad. Additionally, the most efficient flight path is calculated, taking into account timing, safety, and fuel consumption. While airlines have always been excellent at capturing data, they are only now leveraging it to their advantage

and that of their customers. One airline that is leveraging this technology is the American carrier United Airlines. They are focused on the individual customer and their preferences for personalized travel services and products. To obtain this data requires constant analysis of data at every touchpoint within the airline. From check-in to baggage claim, data is collected to offer the best possible service to that individual passenger.

Innovation in aviation technology continues to change the way we fly and engage with airlines at an unprecedented pace. Technology, instead of being just another passenger taking a seat on a plane, has enabled the origins, context, and very needs of everyone to characterize and guide the way we meet that customer at that customer's touchpoint. All in all, this has made flying more convenient and productive for both workers and customers. Flying only gets better as technology improves [93, p.56]. Most aviation companies, aviation flight schools, aircraft repair companies, and aircraft manufacturers will at some point seek debt financing to help cover the costs of operations, company expansion (including acquisitions), refinancing, debt consolidation, and general working capital needs. Below, we will examine some of the financing options available to Kazakhstan's aviation companies as part of developing a methodology for identifying sources of financing. In this doctoral dissertation, we describe a business model, specifically how to provide a stable Wi-Fi connection on board aircraft, as well as facilities for children and people with disabilities, at Air Astana JSC. The wireless network coverage area is 50 aircraft.

The goal of the project is to improve the comfort and accessibility for passengers of Air Astana JSC by:

- Implementing Wi-Fi on board aircraft.
- Creating specialized areas for children.
- Providing adapted seats for passengers with disabilities.

The project aims to strengthen the company's reputation, enhance customer experience, and expand market share by attracting new categories of passengers.

Initial data

Air Astana was registered in 2001. Today, the Air Astana fleet consists of 50 Western-made aircraft, with an average operating age of 5.2 years. The route network includes more than 40 domestic and international flights.

On the plane, the Internet is needed not only for entertainment, but also for work, solving business issues. Accordingly, many people, when choosing an airline, pay close attention to this aspect. Now Wi-Fi is present on board almost every modern airliner. As a source of additional income, the introduction of Wi-Fi routers is a relevant business strategy for Air Astana JSC.

ATG Internet on the plane

"ATG" involves placing stations on the ground, which will provide a stable connection with the aircraft. In general, the principle of operation is identical to mobile communications. The station sends a signal to the plane, which already acts as a router.

During the flight, the aircraft, as it enters the tower's coverage area, automatically connects to it. Data transmission occurs using special handovers. This

technology is now the most widespread. You cannot catch such a signal from a regular phone, since a special encryption scheme is in effect. It can only be received by equipment installed on the aircraft (Figure 42).



Figure 42 - ATG Internet on the plane

Note: compiled by the authors based on the source [162]

The advantage of the stations is their large coverage area, which spans up to 100 sq. km. They are located only in those areas where the main routes are laid. Due to this, there is no need to install them everywhere. There is one significant disadvantage. ATG towers are installed only on the ground. As soon as the plane starts flying over the ocean or sea, the signal will immediately disappear. Accordingly, all passengers will lose the ability to connect to the Internet from their phones.

Satellite Internet on the plane

To operate this type of communication, special repeater satellites were launched into orbit. They provide a stable signal transmission from the towers to the plane. The coverage area is vast, the system works stably, and the connection is stable (Figure 43).

Satellite transmission of the Internet signal provides speeds ranging from 50 to 100 Mbit. It looks solid, but everything is not so simple. Not every user on the plane gets this speed, but all together. As a result, the more users connect to Wi-Fi, the lower the speed. According to reviews, it is enough to visit social networks or various sites. However, for more serious tasks, the speed is not enough. There are two disadvantages: large equipment and high fuel consumption. The antennas are large and require proper installation. Impressive dimensions significantly worsen the aerodynamic properties of the aircraft. Against this background, fuel consumption increases, which is also needed for the operation of these antennas. Tickets for planes with such Internet will cost significantly more than for regular flights.

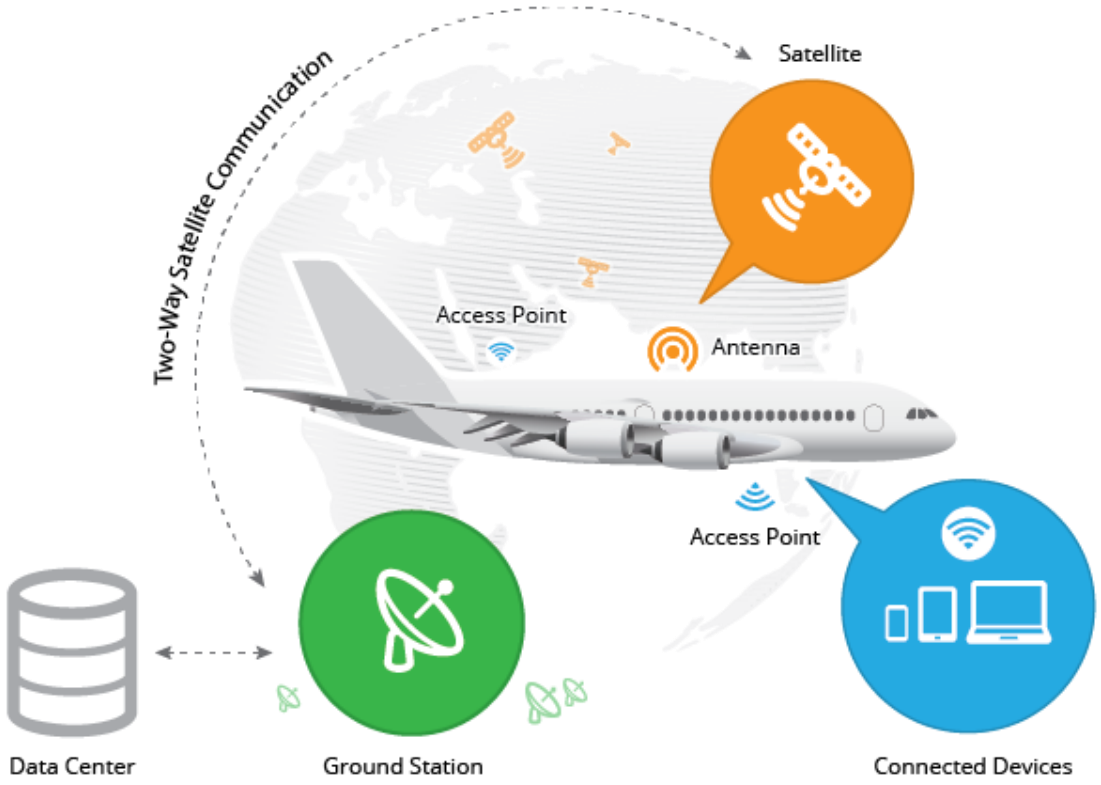


Figure 43 - Satellite Internet on an airplane

Note: compiled by the authors based on the source [163]

To begin with, the financial model for the project was structured. The structure of the financial model (Finmodel) is typically represented as an Excel table that consists of several sheets. The number of sheets depends on the project's scale and the required level of detail. However, specific components are standard in any financial model, including initial data, calculations, performance assessment, and risk analysis.

Project goals and objectives

- Provide wireless Internet on 80% of flights by 2026.
- Create comfortable conditions for children and their parents on all international flights.
- Ensure compliance with accessibility standards for passengers with disabilities.
- The creation of a financial and economic model for the project is carried out step by step, with specialists performing a series of tasks:
- Studying the specifics of the enterprise's activities and the characteristics of the niche market.
- Collecting the necessary information, including data on taxation, investments, general costs, and other relevant factors.
- Systematizing and analyzing the data to ensure its accuracy and relevance.

- Creating strategies to optimize and improve the situation, identifying areas where adjustments or improvements could lead to better outcomes.
- Presenting the results in the form of reports, summarizing the analysis, findings, and recommendations for stakeholders.

Market analysis

- Need for Wi-Fi on board: According to research, 60% of passengers choose an airline that provides Wi-Fi.
- Families with children: About 25% of passengers are families with children.
- Disabled and low-mobility passengers: The share of passengers with disabilities is about 10% of the total passenger flow.

Competitors such as Lufthansa and Emirates already offer Wi-Fi and special areas for children, which poses a challenge for Air Astana.

This structured approach enables the creation of a detailed and accurate financial model that informs decision-making and enhances the project's financial outcomes.

The result is a financial and economic model that accurately reflects all the financial nuances of the company's operations.

Implementation plan

1. Wi-Fi implementation

Technologies: Use of satellite communications (e.g., Viasat or Inmarsat); Placement of compact routers in the cabin.

Stages:

1. Conclusion of an agreement with the supplier.
2. Testing of equipment on 5 aircraft.
3. Scaling to the entire fleet.

Timeframe: 2025-2026.

Budget: $5 million.

Table 48 - Wi-Fi implementation schedule

Year	Stage	Number of aircraft
2025	Testing	5
2026	Scaling	80% (40 aircraft)
Note: compiled based on source [164]		

2. Creation of zones for children

- Features of the zones:
  - Play sets (coloring books, toys).
  - Screens with cartoons.
  - Increased space for parents with babies.
- Stages:
  1. Development of the design of the zones.
  2. Installation on long-haul flights.
- Deadlines: 2025.
- Budget: 2 million dollars.

Table 49 - Budget structure for zones for children

Expense item	Sum (in $)
Play sets	500,000
Design development	300,000
Installation of equipment	1,200,000
Note: compiled based on source [165]	

3. Adaptation of seats for disabled persons
   - Measures: Widen aisles; Installed handrails and adapted seats; Boarding lifts.
   - Stages:

1. Conduct an audit.
2. Modernize 30% of aircraft in the first year.
   - Timeframe: 2025-2027.
   - Budget: $3 million.

Table 50 - Budget structure for zones for children. Schedule for the modernization of seats for disabled persons

Year	Percentage of aircraft upgraded
2025	30%
2026	60%
2027	100%
Note: compiled based on source [166]	

Financial plan
- Total costs: $10 million.
- Expected income: Increase in revenue by 8% due to the attraction of new passengers; Additional income from the sale of premium Wi-Fi access (up to $2 million annually).

Table 51 - Financial flow forecast

Year	Costs ($)	Income ($)	Net profit ($)
2025	5,000,000	1,000,000	-4,000,000
2026	3,000,000	3,500,000	500,000
2027	2,000,000	6,000,000	4,000,000
Note: compiled based on source [167]			

Expected Results
- Increase in passenger satisfaction by 20%.
- Attract families with children and passengers with disabilities.
- Strengthen Air Astana's position in the international market.

Cost Distribution Diagram:
- Wi-Fi: 50%.

- Children's areas: 20%.
- Disabled seats: 30%.

Monitoring and Evaluation

- Metrics: Number of passengers who used Wi-Fi; Feedback on children's areas and disabled seats.
- Reporting: Quarterly assessment of plan implementation and adjustments.

Risk Management

1. Potential Risks

- Technical Risks: Failures in the operation of Wi-Fi equipment; Unforeseen delays in installation and testing.
- Financial Risks: Exceeding the planned budget; Insufficient demand for paid Wi-Fi.
- Reputational Risks: Negative feedback from passengers in case of poor service quality.
- Operational risks: Difficulties in training personnel; Non-compliance of installed equipment with international standards.

Risk management measures

- Technical risks: Concluding contracts with reliable equipment suppliers; Conducting regular maintenance.
- Financial risks: Creating a reserve fund (10% of the budget); Conducting marketing research before launching paid services.
- Reputational risks: Constantly monitoring reviews and promptly resolving problems; Testing the quality of Wi-Fi before implementation.
- Operational risks: Developing a training program for personnel; Involving experts to assess compliance with standards.

8.3. Action plan when risks arise

- Creating a working group for prompt response.
- Regularly updating and revising the risk management plan.
- Conducting audits every 6 months to assess current risks.

The project financing plan is presented in Table 52. The plan includes a budget, a list of expected income and expenses, and a description of the project's risks and opportunities. In this case, we used the following parameters: equipment costs, satellite communications costs, data transmission costs, labor costs, equipment installation, equipment maintenance, and upgrades. The conversion to dollars was carried out at 470 tenge per 1 US dollar. In this case, antennas were calculated that are installed not at the bottom, but at the top of the aircraft and receive a signal from satellites that orbit the Earth. However, since the satellite and the aircraft move at enormous speeds and are at a great distance from each other, the antennas must constantly adjust their position to receive signals. In addition to the built-in server and Wi-Fi access points, this system features a specialized device that controls the antenna's movement based on the aircraft's location and speed. The satellites communicate with ground stations that are also connected to the provider's operational centers.

Table 52 – Financing plan for the project “Implementation of Wi-Fi modules, places for children and places for the disabled on board aircraft (using Air Astana JSC as an example)

Funding goals	At our own expense		At the expense of the bank	
	planned		planned	
	in tenge	in USD	in tenge	in USD
Equipment costs	52 145 000	110 947	100 000 000	689 655
Satellite communication costs	1 880 000	4 000		
Creating specialized areas for children	2 300 000	4 894		
Providing adapted seats for passengers with disabilities	10 810 000	23 000		
Installation of equipment (Wi-Fi modules)	10 810 000	23 000		
Maintenance and modernization of equipment (Wi-Fi modules)	4 600 000	9 787		
Total	82 545 000	175 628	100 000 000	689 655
Grand total	82 545 000	175 628		
Note: compiled based on source [168]				

According to the financing plan, we were able to draw up a loan repayment schedule by month, which is presented in Appendix D.

The following workforce was used to implement this project: technical specialist, technical specialist (Table 53).

Table 53 – Financing plan for the project "Implementation of Wi-Fi modules, places for children and places for the disabled on board aircraft (using Air Astana JSC as an example)"

Position	Quantity of units	Official salary, tenge	Monthly payroll, tenge
Technical specialist (Wi-Fi module installer, Wi-Fi module maintenance)	3	250 000	750 000
Staff who will look after children and disabled people	2	240 000	480 000
Total	5		1 230 000
Note: compiled based on source [169]			

Table 54 – Current costs for the project to implement Wi-Fi modules, places for children, and places for the disabled on board aircraft of Air Astana JSC

	1m	1y	2y	3y	4y	5y	10y
Wages	1 230 000	14 760 000	15 055 200	15 356 304	15 663 430	15 976 699	17 639 566
Social tax + Social contributions	50 246	602 946	615 005	627 305	639 851	652 648	720 576
Equipment costs (Wi-Fi modules)	4 345 417	52 145 000	53 187 900	54 251 658	55 336 691	56 443 425	62 318 102
Satellite communication costs	156 667	1 880 000	1 917 600	1 955 952	1 995 071	2 034 972	2 246 774
Creating specialized areas for children	191 667	2 300 000	2 346 000	2 392 920	2 440 778	2 489 594	2 748 713
Providing adapted seats for passengers with disabilities	500 833	6 010 000	6 130 200	6 252 804	6 377 860	6 505 417	7 182 506
Installation of equipment (Wi-Fi modules)	500 833	6 010 000	6 130 200	6 252 804	6 377 860	6 505 417	7 182 506
Maintenance and modernization of equipment (Wi-Fi modules)	383 333	4 600 000	4 692 000	4 785 840	4 881 557	4 979 188	5 497 426
Other expenses	100 000	1 200 000	1 224 000	1 248 480	1 273 450	1 298 919	1 434 111
Total	7 458 996	89 507 946	91 298 105	93 124 067	94 986 548	96 886 279	106 970 281
Note: compiled based on source [170]							

The project's revenue for the next 2 years was calculated and presented in Appendix H. The revenue from using the Wi-Fi module for 1, 2, and 3 hours, respectively, was taken as the basis. The average price for 1 hour of Internet use in tenge was 3,760 tenge. This price will vary depending on the amount of time passengers use Wi-Fi on board the aircraft. The more hours, the lower the cost per hour. In subsequent years, the price may vary depending on the demand for Wi-Fi. Current costs were also calculated in Table 54, including administrative and general business expenses, such as wages, social tax, social contributions, equipment costs, satellite communications costs, data transmission costs, labor costs, equipment installation, equipment maintenance and upgrades, and other related expenses. These costs are considered over 10 years. We have shown the income statement for this project in Appendix E. Additionally, the forecast of the cash flow statement is

presented in Appendix F, which primarily outlines the economic efficiency of the project, including the definition of Net Present Value (NPV). The discount rate is 12%. In Table 55, we calculate the current value of 1 tenge at an annual rate of 18%.

Table 55 – Definitions of the current value of 1 tenge at a rate of 18% for the project "Implementation of Wi-Fi modules, places for children and places for the disabled on board aircraft (using Air Astana JSC as an example)"

Year	1	2	3	4	5	6	7	8	9	10
$(1+r)^{-n}$	0,8929	0,7972	0,7118	0,6355	0,5674	0,5066	0,4523	0,4039	0,3606	0,3220
Note: compiled based on source [171]										

Next, in Table 56 we determine the current value of income.

Table 56 – Determining the current value of income for the project "Implementation of Wi-Fi modules, places for children and places for the disabled on board aircraft (using Air Astana JSC as an example)"

Period	Cash receipts	Discount factor	NPV
Year 0	0	1	0
Year 1	-15 780 561	0,8928571	-14 089 786
Year 2	2 777 550	0,7971939	2 214 246
Year 3	6 734 672	0,7117802	4 793 606
Year 4	10 892 654	0,6355181	6 922 479
Year 5	15 266 274	0,5674269	8 662 494
Year 6	19 871 358	0,5066311	10 067 448
Year 7	24 724 855	0,4523492	11 184 269
Year 8	29 844 914	0,4038832	12 053 860
Year 9	35 250 973	0,3606100	12 711 854
Year 10	40 963 841	0,3219732	13 189 261
NPV	170 546 530		67 709 731
Note: compiled based on source [172]			

In Table 57, we calculate the internal rate of return IRR. To determine the IRR, we model the situation r1 = 0.9 and r2 = 1.

Table 57 – Determining the internal rate of return IRR for the project

Year	1	2	3	4	5	6	7	8	9	10
$(1+r)^{-n}$	0,5263	0,2770	0,1458	0,0767	0,0404	0,0213	0,0112	0,0059	0,0031	0,0016
$(1+r)^{-n}$	0,5000	0,2500	0,1250	0,0625	0,0313	0,0156	0,0078	0,0039	0,0020	0,0010
Note: compiled based on source [173]										

Tables 58 and 59 present NPV1 and NPV2, respectively, for r1 and r2. Provided that IRR = 0.25%.

Table 58 – Determining NPV 1 according to r1 for the project "Implementation of Wi-Fi modules, places for children and places for the disabled on board aircraft (using Air Astana JSC as an example)"

Period	Cash receipts	Discount factor	NPV
Year 0	0	1	0
Year 1	-15 780 561	0,5263	-8 305 558
Year 2	2 777 550	0,2770	769 404
Year 3	6 734 672	0,1458	981 874
Year 4	10 892 654	0,0767	835 833
Year 5	15 266 274	0,0404	616 545
Year 6	19 871 358	0,0213	422 383
Year 7	24 724 855	0,0112	276 604
Year 8	29 844 914	0,0059	175 728
Year 9	35 250 973	0,0031	109 242
Year 10	40 963 841	0,0016	66 814
NPV 1			-4 051 132
Note: compiled based on source [174]			

The payback period of the entire project (simple and discounted) is presented in Table 59. The payback period of the project = n + /CFn+1// (/CFn/ + /CFn + /)). The simple payback period of the project = 3.93 years (47 months). The discounted payback period of the project = 4.02 years (48 months).

Table 59 – Determination of NPV 2 according to r2 for the project “Implementation of Wi-Fi modules, places for children and places for the disabled on board aircraft (using Air Astana JSC as an example)”

Period	Cash receipts	Discount factor	NPV
Year 0	0	1	0
Year 1	-15 780 561	0,5000	-7 890 280
Year 2	2 777 550	0,2500	694 388
Year 3	6 734 672	0,1250	841 834
Year 4	10 892 654	0,0625	680 791
Year 5	15 266 274	0,0313	477 071
Year 6	19 871 358	0,0156	310 490
Year 7	24 724 855	0,0078	193 163
Year 8	29 844 914	0,0039	116 582
Year 9	35 250 973	0,0020	68 850
Year 10	40 963 841	0,0010	40 004
NPV2			-4 467 109
Note: compiled based on source [175]			

Table 60 – Payback period of the entire project (simple and discounted) for the implementation of Wi-Fi modules, places for children, and places for the disabled on board the aircraft of Air Astana JS

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Investments	0							
Net income		-15 781	2 778	6 735	10 893	15 266	19 871	24 725
Financial costs								
Cash flow	0	-15 781	2 778	6 735	10 893	15 266	19 871	24 725
Cumulative cash flow	0	-15 781	-13 003	-6 268	4 624	19 891	39 762	64 487
Discount factor at 18%	1,000	0,893	0,797	0,712	0,636	0,567	0,507	0,452
Discounted cash flow	0	-14 090	2 214	4 794	6 922	8 662	10 067	11 184
Cumulative discounted cash flow	0	-14 090	-11 876	-7 082	-159	8 503	18 570	29 755
Note: compiled based on source [176]								

Having calculated all the data, we presented a comprehensive financial model for the implementation of Wi-Fi modules, facilities for children, and facilities for the disabled on board the aircraft of JSC Air Astana. Our graph also shows the Break-Even Point, which is the minimum amount of gross revenue required to cover all fixed and variable costs. Appendix H presents our deviations from TB in absolute terms, along with the safety margin for the break-even point. Figure 44 shows the Break-Even Graph. According to our model, starting from the second year of implementing Wi-Fi modules, specifically in places for children and those for the disabled, this project will have a positive impact on the company's financial position. Shortly, all aircraft will have access to the network. In this regard, our business plan is relevant today.

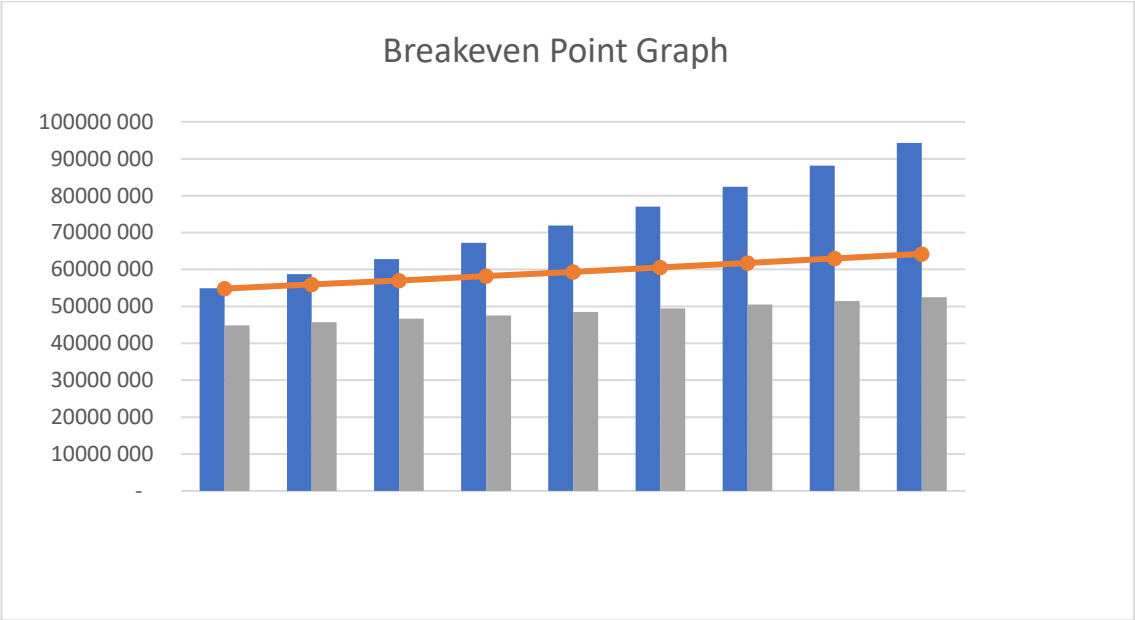


Figure 44 - Break-even chart for the project "Implementation of Wi-Fi modules, places for children and places for the disabled on board aircraft (using Air Astana JSC as an example)"

Note: compiled by the authors based on the source [177]

In the context of forming sources of financing for airlines, it is essential to consider the main properties of aircraft, as the acquisition of aircraft is a primary reason for airlines to seek funding. Aircraft have the following physical and economic characteristics [122, p. 44]:

- Asset: Aircraft themselves are reliable assets with long economic lives.

It could be a Predictable Product Profile — they have a predictable product profile.

- Depreciation and Cash Flow: Aircraft are expendable assets with a well-defined depreciation schedule that corresponds to an anticipated cash flow schedule.
- Production Cycle: The aircraft industry has a long production cycle and high entry barriers involved in the manufacturing process.
- Global Market: Aircraft are sold in US dollars and are globally accepted and utilized.
- Mobility: Red forces are highly mobile and can be redeployed with relative ease.
- Interchangeability: Aircraft are interchangeable assets due to their mobility and predictable profiles.
- Price Range: A new commercial airplane can cost between $40 million $200 million, depending on the model and technology.
- Capital Expenditure: The Purchase of an aircraft is a significant capital outlay for the airlines, considering their expensive nature.
- Financing: Aircraft are typically financed with substantial debt levels.

- Aircraft are a technology with obsolescence risks, but they also form a basis for new designs and technologies, and typically have long lead times so that risk can be managed.
- Legal Framework: The Cape Town Treaty has established a recognized legal framework governing international transactions in movable property, covering everything from registration of contracts of sale and security interests through leases and conditional agreements of sale.

Aerospace is one of the largest economic sectors in the world, employing 56 million people across the entire aviation and related tourism industry. The global economic impact of aviation amounts to US$2.2 trillion. As such, air travel is a key catalyst for economic growth, and economic growth in turn is a catalyst for increased aircraft demand. Typically, 60-80% of economic activity is correlated with air travel demand.

As the pandemic spread rapidly, the aviation industry faced significant deterioration, with high pressure on airlines that needed to pay for their aircraft and employees. Consequently, the financial stability of most airlines was severely disrupted [124, p. 21].

Investors with experience in aviation assets know they are unique investments that cannot be directly compared to a listing market. Condor has stated that the risk of investing in aircraft is similar to that of high-yield bonds, due to the sector's strong returns. Based on these characteristics, aircraft leasing investments can be compared to debt, secured, amortizing bonds.

Aircraft investments offer investors the opportunity to grow in emerging markets through a less volatile global asset class, thereby avoiding the currency issues that often arise with infrastructure and real estate investments in emerging markets.

As with infrastructure and real estate, investors can access the aircraft leasing sector through various structures, including funds (open or closed), individual mandates, and direct investments. However, availability, particularly of managed offerings, currently lags significantly behind that of real estate and infrastructure.

Each of these structures has its advantages and disadvantages, which can potentially significantly impact the investment outcome. Investors can also invest through a variety of strategies, debt or equity, and invest in strategies with varying levels of risk (aircraft age, leverage).

There are two ways to invest:

1) Closed-end structure. A closed-end structure can offer investors the following advantages:

- A "closed-end structure" can provide diversification from traditional investment markets by preventing capital inflows and redemptions during the life of the fund;

- It can offer a clearly defined timetable for investing and disposing of capital. This allows the investor to re-evaluate the opportunity set and make proactive decisions about allocating funds to the sector;

- the structure with its cyclical nature, known lease terms, and the fact that aircraft assets are spending assets of fairly predictable value, lends well to the structure;

- perhaps increased transparency and accountability, especially regarding fee calculations and periodic valuations;

- whence, based on a known initial aircraft portfolio, can provide lower transaction costs, greater pricing efficiency, risk and return analysis, and cenaries.

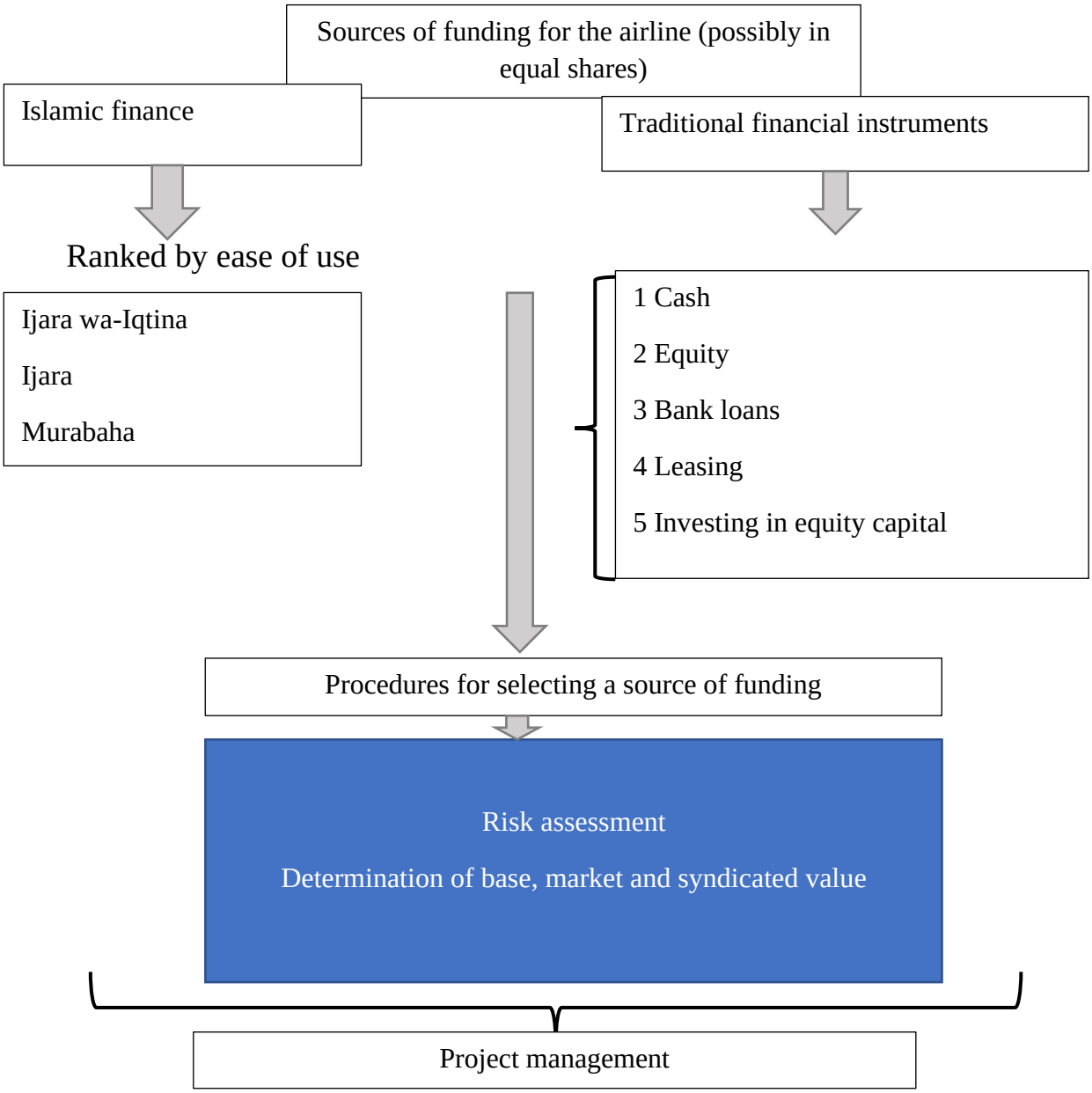


Figure 45 – Airline Financing Methodology

Note: compiled by the author himself

The most significant disadvantages of closed-end funds are twofold:

- A consortial / schedule structure can stack up pressures on the GPS to commit and ultimately deploy capital, and can lead to both overpayment and/or forced selling;

- depending on the fund structure, investors may have to create a "blind pool" instead of being able to review the initial holdings and/or the existing portfolio.

2) Open-ended Structure. There are also many benefits to adopting an open-ended structure:

- a buy-and-hold strategy can potentially provide more strategic long-term diversification by smoothing investors 'allocation against broader economic market cycles and specific aviation cycles;

- it can provide greater amortization of capital expenditures over a more extended time, which in turn will reduce residual value risk when selling or remarketing aircraft;

- an open-ended structure can reduce the pressure to both buy aircraft at inflated prices and to sell assets at reduced market values;

- by investing in aircraft over successive lease cycles, investors can benefit from the increased cash flow yields generated by rising lease rates, which are further enhanced by the debt amortization process.

In general, the airline financing scheme can be illustrated as follows (Figure 45).

The proposed methodology for financing airlines involves utilizing a combination of funding sources, including Islamic finance and conventional financial instruments, in equal shares. At the same time, it is essential to follow the appropriate procedures before selecting a funding source, including risk assessment and calculation of actual and market values. It is necessary that the financing process itself be carried out in the form of a project and that project management tools be applied.

In turn, there are several disadvantages associated with open structures:

- This may lead to greater investor uncertainty regarding future investments and portfolio returns;

- as a combined strategy, this may create problems with liquidity and exit mechanisms;

- this may expose investors to greater risk of re-leasing, resale and refinancing due to the potential ownership of old aircraft. Thus, asset and credit risk may increase, but they can be mitigated by ongoing investment in new aircraft.

Due to the smaller scale of assets and lower capital requirements for individual mandates, the asset class is suitable for providing customized portfolios with different risk profiles. However, highly complex structures mustn't compromise the overall transparency.

Risk management for Air Astana JSC plays a key role in ensuring the sustainability and safety of the company, given the high risks inherent in the aviation industry.

Financial risks

1.1. Currency risks: The company's primary income and expenses may be in different currencies (e.g., income in tenge, fuel expenses in dollars).

Management measures: Hedging exchange rates through forward contracts and option strategies; Diversification of foreign exchange earnings (increasing the share of income in the currency that matches expenses); Constant monitoring of exchange rate changes.

1.2. Liquidity risks: Not enough cash for day-to-day expenses or payments on liabilities.

Management measures: establishment of a liquidity reserve fund, utilization of short-term credit lines, and sustainable cash flow forecasting to avoid cash gaps

1.3. Aviation fuel price risk: A change in the price of aviation fuel can have a substantial impact on costs.

Management measures: Establishing long-term fuel supply contracts at fixed prices; Fuel price hedging through financial instruments (futures, options, etc.)

Operational risks

2.1. Technical and operational risks: Potential failures of aircraft, including failure to operate a gear or system.

Management measures: Schedule-led and planned regular phase maintenance and fleet recovery of aircraft; introduction of real-time aircraft health management (HM) systems (prognostic maintenance); contracting reliable suppliers and MRO organizations.

2.2. Interruption of operations due to weather conditions, strikes, or emergencies.

Management measures: Developing contingency plans (Business Continuity Plans); Use of reserve aircraft and crews; Force Majeure insurance.

Regulatory and legal risks

3.1. Changes to the legislation: Changes to aviation standards or tax legislation.

Management measures: Active tracking of changes to legislation; Communication with governmental authorities to reduce the non-compliance risk; In-house lawyers' services to evaluate new rulings.

3.2. Lack of Safety Standards Compliance: Risks Arising from Non-Compliance with International Standards (IATA, ICAO).

Control Measures: Scheduled/continuing internal audits and inspections; Employee training and International compliance; IOSA (IATA Operational Safety Audit) programs

Market risks

4.1. Competition: Increased competition from other airlines, including budget carriers.

Management measures: Diversification of the offer (new routes and types of service); service quality improvement to maintain customer loyalty; pricing flexibility and promotions.

4.2. Demand shifts: Changes in demand for air travel based on economic conditions or seasonality.

Management measures Include Marketing campaigns to boost demand, a variety of fares and loyalty programs, and the development of the cargo segment.

Security risks

5.1. Cyber risks: Threats associated with data leaks, hacker attacks, or IT system failures.

Management measures: Updating security and data encryption systems regularly; Training staff in the basics of cybersecurity; Conducting regular vulnerability tests.

5.2. Physical security: Threats of terrorism, sabotage, or incidents while on board.

Security responses: Robust security measures are in place at check-in and during security screening. Crew training focuses on responding to emergencies. Coordination is also maintained with law enforcement agencies and international institutions.

Reputation risks

6.1. Customer reviews: Complaints about the service or operational failures.

Management measures include the quick and effective resolution of complaints, gathering feedback through surveys, identifying problems, and maintaining an active online presence on social networks.

6.2. Environmental risk: Increasing demand for decreased emissions and the use of oily fuels.

Management measures: Investment in aircraft modernization to reduce emissions; Membership in environmental initiatives and CO_2 emission compensation plans.

Strategic risk management

- A risk management unit with responsibility for the analysis, monitoring, and control of all types of risks.
- Introduced the Enterprise Risk Management (ERM) system to integrate risk management with everyday business processes.
- Routine drills and simulations to challenge the company’s preparedness for all eventualities.

Apart from that, these steps will enable the company to counter potential threats and fortify its market position, thereby retaining its identity as a dependable carrier.

The Implementation Act has been received for Chapter 3.2 (Appendix J).

Let us conclude the analysis presented in Chapter 3 of the study. In Kazakhstan, there is a need to develop alternative sources of financing for airlines, including factoring, term loans, credit lines, asset-based lending, and accounts receivable financing. This is important because airlines must develop not only with the help of the state and funds, but also exist independently in market conditions. In Kazakhstan, trust companies are absent, although the practice of financing airlines is gaining popularity. In owner-trust structures, the owner-participants contribute equity capital in an amount equal to either all or part of the aircraft acquisition costs, depending on the financing structure used. In transactions involving borrowed funds, the owner-participant typically contributes between 15% and 20% of the aircraft's acquisition cost. In addition to utilizing various credit instruments and establishing a state mechanism for supporting aviation, it is also possible to employ project financing as a means of securing financing for an aviation company.

In terms of facilitating co-financing, Islamic aviation finance offers several benefits, including the potential for beneficial diversification in funding sources and compatibility between the transaction parties' interests. One of its core advantages is that ethical considerations are stressed, and all transactions are designed in a way that ensures the other parties are not exploited. For instance, Indonesia is one of the few countries in Southeast Asia where Islamic financing is available, as opposed to conventional, interest-based funding.

One central area of difference is that penalties for late payments in Islamic finance are treated differently from those in conventional systems. The borrower might not be charged a traditional penalty fee; instead, they may have to return the full amount in one lump sum. This method is designed to promote timely payment, minimize administrative overhead, and reduce costs for the borrower, offering an alternative to interest penalties. This allows for a structure that is both more congruent with Islamic values and more accommodating to borrowers experiencing temporary cash flow shortfalls.

The primary drawback to Islamic finance is the complex, uncertain, and risky nature of religion as a basis for Islamic financial transactions. Islamic finance is generally expected to continue expanding, and Kazakhstani companies interested in aviation finance and leasing should take this into account. While there are currently no grounds for abandoning traditional methods of aviation finance and leasing, the diversification of available techniques in Kazakhstan, which Islamic finance will certainly provide, should continue to develop in the aviation sector. So, Up takes off. May Islamic aviation finance and leasing be a successful flight, and not an emergency landing.

The proceeds of “green” bonds must be used exclusively to finance or refinance, in whole or in part, new and/or existing green projects. These projects are generally focused on environmental sustainability across a range of fields, including renewable energy, energy efficiency, clean transportation, water management, and other efforts that help mitigate ecological harm and facilitate climate change adaptation. The use of proceeds is closely monitored, and proceeds are only applied to projects that meet specific environmental criteria, thereby ensuring investor transparency and accountability. This assessment is based on demand from Kazakh and foreign investors for the planned issuance of green bonds. Investors are searched independently by the issuer or through AIX trading members.

Matrix that Air Astana JSC can use accurately if it plans to list on the stock market or raise funds through other financial instruments.

- They may issue commercial paper or short-term bonds to fund operating activities.
- Medium-term instruments: Fixing the investment, including issuing the company’s bonds or shares.
- Long-term instruments such as strategic corporate bonds, mortgage-backed bonds, or shares to capture long-term investment in the company.

Accelerated depreciation under new leasing models may apply to airlines, including Air Astana, depending on the legal, tax, and economic conditions in

Kazakhstan and the countries where the company operates. Suggestions to Air Astana:

1. Tax legislation analysis: Use of accelerated depreciation in Kazakhstan and the countries of registration of the lessor.
2. Part of the work: Assessment of the leasing model: financial or operational leasing.
3. Hire international lawyers and accountants: To enable the practical setting up of a tax strategy based on international experience.

Securitization of securities is the process of issuing new financial instruments that are backed by assets, thereby raising capital. In the case of airlines such as Air Astana, securitization can be used to finance operations, purchase aircraft, or expand business. Recommendations:

- Leverage EETCs or ABS experience to finance new aircraft acquisitions or route network expansion.
- International banks' cooperation: Attracting foreign financial institutions in structuring the transaction
- Build a favorable regulatory climate: The Development of the capital market in Kazakhstan is a background condition for successful securitization in Kazakhstan.

We live in a technologically advanced society, unlike any that has existed before. We can now complete a task in a fraction of the time. The presence of technology is felt everywhere and continues to enhance the operations of businesses of all kinds. Airlines need to identify which models will contribute to increased business efficiency and improved customer service. Thus, the Internet of Things (IoT), automation, Virtual Reality (VR), and Big Data are among the most significant trends shaping the way air travel is conducted today.

Based on the analysis of the business model for introducing Wi-Fi routers, facilities for children, and facilities for people with disabilities on Air Astana aircraft, it can be concluded that this digitalization is a viable investment that airlines should consider.

Strategic Recommendations for Air Astana: Depreciation, Securitization & Technology

1. Accelerated Depreciation for Leasing:

The applicability of Air Astana depends on various legal, tax, and economic factors in Kazakhstan and its operating countries.

Recommendations:

Conduct a thorough analysis of tax legislation (Kazakhstan & lesser jurisdictions) regarding accelerated depreciation.

Evaluate the specific leasing model (financial vs. operational) for optimal depreciation treatment.

Engage international legal and accounting experts to develop an effective tax strategy leveraging global best practices.

2. Securitization for Capital Raising:

Air Astana could utilize securitization (issuing asset-backed securities) to finance operations, aircraft purchases, or expansion.

Recommendations:

Leverage structures like EETCs (Enhanced Equipment Trust Certificates) or ABS (Asset-Backed Securities) for aircraft financing or route network growth.

Collaborate with international banks experienced in structuring such transactions.

Advocate for a favorable regulatory environment; developing Kazakhstan's capital market is crucial for successful domestic securitization.

3. Embracing Technology for Efficiency & Service:

Airlines must adopt technologies that enhance efficiency and customer experience. Key trends include IoT, automation, VR, and Big Data.

Air Astana's initiatives (e.g., onboard Wi-Fi, dedicated child/disabled seating) demonstrate viable digital investments that improve service and should be considered by the industry.

The Implementation Acts have been received for Chapters 3.1 and 3.2 (Appendix J).

CONCLUSION

Based on the presented research materials, we will draw the main conclusions.

The airline financing system comprises two primary forms: internal and external sources of financing.

Internal sources include: own funds (net profit and depreciation charges) and equity financing (shareholder participation in capital and corporate financing). Internal sources of financing are essential to ensure the stability and sustainability of airlines, enabling them to respond to market changes and maintain their competitiveness.

External sources of financing include raised funds (such as government financing, additional share issues, and initial public offerings) and borrowed funds (including bank loans, aircraft leasing, and bond issues).

Notably, the global aviation sector has continued to decline amid the COVID-19 pandemic, with aircraft maintenance and personnel wages being key drivers of airline financial instability worldwide, as well as the need for external funding.

The next few years will be a critical time for aviation financing, as the peak of new aircraft deliveries arrives. At the same time, many of the industry's traditional commercial banks remain under pressure. But the more expansive aviation finance space is attracting new investors; it's an asset class that can deliver attractive returns in a structure secured by an underlying physical asset.

Here are some reasons to invest in aviation finance:

- Effective use of a large amount of capital/ Efficient use of lots of capital: Aviation financing is efficient with vast amounts of capital; significant investments tend to generate steady income.
- Reasonably consistent returns: While residual values can be volatile for older aircraft, if you have a financial interest in aviation, you can achieve reasonably consistent returns.
- Aircraft-based airplanes have recognition and acceptance worldwide, which is a considerable investment advantage.
- Investment backed by "hard assets": Aviation finance investments are typically collateralized by physical assets, utilizing international instruments such as the Cape Town Treaty.

High mobility of collateral: In the case of aircraft, collateral is highly operable, allowing for its recovery in the event of a default.

Managing airline financials is a tricky and multi-faceted activity as airlines operate and manage many expenses, for example:

- Start-up costs
- Capital expenditure
- Inventory costs
- Operating costs
- Fuel costs
- Labor and employee costs
- Depreciation charges

- Aircraft spare parts costs
- Airline cash management

International practices for Air Astana:

1. Flexibility in financial management: Use loyalty programs or other assets to attract loans; Actively use hedging to protect against price volatility.

2. Diversification: Develop cargo transportation and additional services (e.g., cargo); Introduce non-standard products, such as domestic tourist flights or promotional packages.

3. Cost reduction: Optimize the fleet by replacing old aircraft with more efficient ones; Automate processes to reduce operating costs.

4. State support: Interact with the government to obtain subsidies or tax breaks.

Air Astana Group has demonstrated robust operational and financial resilience in the face of two concurrent crises: the COVID-19 pandemic and the Russia-Ukraine conflict. For example, the group was able to relocate capacity to new "educational" destinations and further develop its "near home" markets (Central Asia and the Caucasus), which puts it in a good position to recover in these regions.

As a result, Air Astana Group has outperformed the global average in its recovery. Between 2018 and 2022, Air Astana Group's domestic traffic increased at a compound annual growth rate of 27%, while its international traffic experienced a marginal 3% growth rate [11].

In February 2023, Air Astana adopted an ESG strategy for 2023-2032, based on international standards and best practices. The plan prioritizes six of the UN Sustainable Development Goals: quality education, gender equality, decent work and economic growth, reduced inequalities, climate action, and partnerships for the goals. It also published its first GRI-based sustainability report in 2020 and continues to embed sustainability issues within its management system. Therefore, Air Astana reaffirms its commitment to the principles of ESG by continually working to mitigate its environmental impact, engaging in socially responsible initiatives, and adopting best practices in corporate governance.

Air Astana Group grew from an operating loss of US$69.3 million for the year ended 31 December 2020 to an operating profit of US$148.7 million for the year ended 31 December 2022, with revenue growth rate over the three years ended 31 December 2022 of 60.6% CAGR (First period September 2023: 8.0 million), 140% of 2019 RPK level (First period September 2023: 14.6 billion) and 132% of 2019 revenue (First period September 2023: US$1,186 million) [67].

The Air Astana Group has demonstrated operational and financial resilience during the double crisis of the COVID-19 pandemic and the Russia-Ukraine conflict. For example, the company reallocated capacities to new "educational" destinations and expanded its presence in the "near home" markets of Central Asia and the Caucasus. As a result, Air Astana recovered more quickly than the global average. From 2018 to 2022, the group experienced an average annual growth rate of 27% in domestic traffic, while international traffic declined by 3% per year.

The IPO of JSC "Air Astana" was one of the most significant events in Kazakhstan's stock market and also one of the largest IPOs in the history of the Kazakh stock market. Based on the conducted analysis, we conclude that the success

of JSC "Air Astana's" IPO was influenced by factors such as the share offering price, listing on international stock exchanges, the level of technical organization of the IPO process, the share of the company in free float, the information transparency of the issuer, and favorable external economic factors. The combination of these factors, along with JSC Air Astana's strong reputation, generated significant interest in the IPO from both domestic and international investors. This provided the company with access to capital, enhanced its public recognition, and offered investors the opportunity to be part of its success.

Financial instruments to improve the situation:

1. Corporate bond issue: Raising long-term capital to finance fleet expansion and route development; moderate interest rates will help alleviate pressure on short-term liquidity.

2. Debt refinancing: Utilizing low-interest loans or issuing bonds to repay current high-interest debt, thereby reducing debt servicing costs.

3. Attracting strategic investors: Selling minority stakes to large aviation or investment holdings; Increasing trust in the company and acquiring management competencies.

4. Hedging currency and fuel risks: Concluding forward contracts for the purchase of fuel and currency; Insuring against sharp fluctuations in exchange rates and fuel costs.

5. Transition to a flexible route model: Analyzing the profitability of routes using automated systems; Optimizing flight frequency to reduce losses.

6. Share buyback program: Increasing demand for shares and supporting their market value; Improving investor perception.

7. Developing additional services: Increasing revenue through premium services: paid baggage, priority check-in, access to business lounges; Monetization of new technologies (electronic services, on-board multimedia).

Strategic recommendations:

- Strengthen focus on the premium segment and development of highly profitable routes.
- Invest in digitalization and automation of processes.
- Optimize the cost structure by improving operational efficiency.
- Strengthen marketing efforts to enhance brand awareness globally.

Hedging currency and fuel risks for Air Astana

Hedging is an effective tool for managing risks associated with volatility in fuel costs and exchange rate fluctuations. For airlines such as Air Astana, this is especially important, as a significant portion of expenses (such as fuel and lease payments) are denominated in foreign currencies, most often US dollars. Benefits for Air Astana:

- Financial stability: less fluctuation of operating costs.
- Higher investor confidence: predictability of profits enhances the company's image.
- Cost optimization — lower adverse effects of external factors on business.

Any international airline looking to limit its threats from currency and fuel fluctuations and increase financial predictability must hedge.

The third chapter of the study highlights the importance of digitalizing airline financial activities, the impact of technological transformation, and the use of alternative options, including Islamic and green financial instruments, to finance aviation companies.

In Kazakhstan, there is a need to develop alternative sources of financing for airlines, including factoring, term loans, credit lines, asset-based lending, and accounts receivable financing. This is important because airlines must develop not only with the help of the state and funds, but also exist independently in market conditions.

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Islamic aviation finance has advantages in terms of diversification of funding sources, concern for the interests of all parties to the transaction, and penalties for late payments (the borrower may be offered to pay the entire amount at once that the client of the Islamic bank owes instead of a penalty). The primary disadvantage of Islamic finance is its complexity, unpredictability, and risk associated with basing it on religious principles. In general, Islamic finance is likely to continue to grow and should be considered by Kazakhstani companies interested in aviation financing and leasing.

Due to the coronavirus pandemic, the performance of the aviation industry has deteriorated significantly, while the costs of maintaining aircraft and employee salaries have contributed to the financial instability of airlines and the need for additional financing. Green bonds are any debt instruments, the proceeds of which are used exclusively to finance or refinance (in whole or in part) new and/or existing green projects. Demand assessment from Kazakh and international investors for the planned green bonds issue. Investors are also solicited directly by the issuer or via AIX trading members. We live in a technologically advanced society, unlike any that has existed before. We can now complete a task in a fraction of the time. The presence of technology is felt everywhere and continues to enhance the operations of businesses of all kinds. Airlines need to identify which models will contribute to increased business efficiency and improved customer service.

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APPENDIX A

Consolidated statement of financial position of Air Astana JSC for 2021-2023, thousand tenge

JOINT STOCK COMPANY AIR ASTANA

Consolidated statement of financial position as at 31 December 2023

'000 USD	Notes	31 December 2023	31 December 2022	31 December 2021
ASSETS				
Non-current assets				
Property, plant and equipment	11	853,320	817,585	722,200
Intangible assets		2,836	1,553	1,528
Prepayments	15	18,451	15,517	16,299
Guarantee deposits	13	33,302	29,520	17,974
Deferred tax assets	10	37,040	18,487	2,711
Trade and other receivables	16	1,343	1,300	3,611
		946,292	**883,962**	**764,323**
Current assets				
Inventories	14	67,548	49,175	51,555
Prepayments	15	24,825	21,011	26,534
Income tax prepaid		13,259	8,978	2,630
Trade and other receivables	16	23,525	21,307	14,134
Other taxes prepaid	17	10,247	8,378	7,709
Guarantee deposits	13	1,979	3,516	1,568
Cash and bank balances	18	274,006	252,888	226,357
Other financial assets	19	763	1,660	7,383
		416,152	**366,913**	**337,870**
Total assets		**1,362,444**	**1,250,875**	**1,102,193**
EQUITY AND LIABILITIES				
Equity				
Share capital	20	17,000	17,000	17,000
Functional currency transition reserve		(9,324)	(9,324)	(9,324)
Reserve on hedging instruments, net of tax		(16,292)	(25,398)	(35,278)
Retained earnings		221,975	169,990	91,576
Total equity		**213,359**	**152,268**	**63,974**
Non-current liabilities				
Loans	24	-	4,162	4,759
Lease liabilities	25	543,896	574,211	580,539
Provision for aircraft maintenance	22	148,618	117,958	86,456
Employee benefits		623	2,268	1,625
		693,137	**698,599**	**673,379**
Current liabilities				
Loans	24	412	7,934	57,527
Lease liabilities	25	174,997	158,593	146,354
Deferred revenue	21	84,368	80,152	57,260
Provision for aircraft maintenance	22	105,170	71,685	40,710
Trade and other payables	23	91,001	81,405	62,989
Other financial liabilities		-	239	-
		455,948	**400,008**	**364,840**
Total liabilities		**1,149,085**	**1,098,607**	**1,038,219**
Total equity and liabilities		**1,362,444**	**1,250,875**	**1,102,193**

APPENDIX B

Consolidated statement of profit and loss of JSC "Air Astana" for 2021-2023, thousand tenge

JOINT STOCK COMPANY AIR ASTANA

Consolidated statement of profit or loss for the year ended 31 December 2023

'000 USD	Notes	2023	2022	2021
Revenue and other income				
Passenger revenue	7	1,143,596	998,120	715,794
Cargo and mail revenue	7	22,519	22,124	33,570
Other income	7	8,399	12,138	7,846
Gain from sale and leaseback transaction	7	-	-	4,628
Total revenue and other income		**1,174,514**	**1,032,382**	**761,838**
Operating expenses				
Fuel and oil costs*		(279,172)	(231,884)	(136,558)
Employee and crew costs	8	(193,067)	(148,907)	(116,265)
Depreciation and amortisation	12	(162,011)	(135,178)	(120,832)
Engineering and maintenance	8	(108,180)	(125,891)	(94,582)
Handling, landing fees and route charges	8	(105,727)	(84,933)	(70,097)
Passenger service	8	(101,136)	(80,321)	(60,894)
Selling costs	8	(40,431)	(33,254)	(25,075)
Insurance		(10,981)	(8,317)	(8,050)
IT and communication costs		(6,538)	(5,743)	(4,575)
Consultancy, legal and professional services		(5,729)	(4,258)	(3,392)
Taxes		(3,920)	(1,427)	(2,501)
Property and office costs		(3,865)	(2,483)	(2,641)
Aircraft lease costs	8	(2,217)	(3,893)	(3,662)
Impairment loss on trade receivables		(124)	(394)	(113)
Other operating costs		(15,435)	(16,784)	(10,428)
Total operating expenses		**(1,038,533)**	**(883,667)**	**(659,665)**
Operating profit		**135,981**	**148,715**	**102,173**
Finance income	9	14,806	6,995	2,405
Finance costs	9	(49,892)	(39,254)	(47,066)
Foreign exchange loss, net		(13,803)	(15,065)	(12,522)
Profit before tax		**87,092**	**101,391**	**44,990**
Income tax expense	10	(18,387)	(22,977)	(8,831)
Profit for the year		**68,705**	**78,414**	**36,159**
Basic and diluted earnings per share (in USD)**	20	**0.225**	**0.256**	**0.118**

*Loss on fuel options of USD 2,510 thousand was added to fuel costs for the year ended 31 December 2023. Fuel costs for the years ended 31 December 2022 and 31 December 2021 include gain of USD 12,145 thousand and USD 8,013 thousand, respectively.

**Basic and diluted earnings per share have been retrospectively recalculated to reflect the updated number of shares issued.

On behalf of the Group's management:

Peter Foster	**Ibrahim Canliel**	**Saule Khassenova**
Chief Executive Officer	**Chief Financial Officer**	**Chief Accountant**
Almaty, Republic of Kazakhstan	Almaty, Republic of Kazakhstan	Almaty, Republic of Kazakhstan

14 March 2024

APPENDIX C

Consolidated statement of cash flows of JSC "Air Astana" for 2021-2023, thousand tenge

JOINT STOCK COMPANY AIR ASTANA

Consolidated statement of cash flows for the year ended 31 December 2023

'000 USD	Notes	2023	2022	2021
OPERATING ACTIVITIES:				
Profit before tax		**87,092**	**101,391**	**44,990**
Adjustments for:				
Depreciation and amortisation of property, plant and equipment and intangible assets	12	162,011	135,178	120,832
Gain on disposal of property, equipment and other assets	7	(3,499)	(2,239)	(7,117)
Change in impairment allowance for trade receivables, prepayments, guarantee deposits and cash and bank balances	13,15, 16,18	(76)	(2,428)	(363)
Write-down of obsolete and slow-moving inventories	14	(621)	4,290	(139)
Change in vacation accrual	23	(316)	(76)	318
Accrual of provision for aircraft maintenance	8	85,830	80,514	60,818
Change in customer loyalty program provision	21	2,774	962	(1,415)
Foreign exchange loss, net		13,803	15,065	12,522
Finance income, excluding impairment	9	(14,321)	(6,274)	(1,789)
Finance costs, excluding impairment	9	49,462	39,140	46,813
Effect of COVID-19 related rent concessions	8, 25	-	-	881
Gain from early return of engine	25	-	-	(490)
Operating cash flow before movements in working capital		**382,139**	**365,523**	**275,861**
Change in trade and other receivables		(831)	(3,807)	(3,830)
Change in prepaid expenses and prepayments		(5,625)	3,271	(6,402)
Change in inventories		(16,787)	(481)	(3,515)
Change in trade and other payables and provision for aircraft maintenance		(17,993)	(732)	4,081
Change in deferred revenue		1,442	21,930	20,563
Change in other financial instruments		(129)	5,995	(7,383)
Cash generated from operations		**342,216**	**391,699**	**279,375**
Income tax paid		(42,839)	(47,003)	(3,965)
Interest received		14,081	6,274	1,627
Net cash generated from operating activities		**313,458**	**350,970**	**277,037**
INVESTING ACTIVITIES:				
Purchase of property, plant and equipment		(41,777)	(48,270)	(31,682)
Proceed from sale and leaseback transaction		-	-	8,719
Proceeds from disposal of property, plant and equipment		4,980	1,974	3,982
Purchase of intangible assets		(2,116)	(659)	(541)
Bank and Guarantee deposits placed		(9,979)	(25,286)	(4,115)
Bank and Guarantee deposits withdrawn		2,876	11,882	10,583
Net cash used in investing activities		**(46,016)**	**(60,359)**	**(13,054)**

Continued on the next page

APPENDIX D

Schedule of repayment loan funds

Table D.1 - Schedule of repayment loan funds for the project of JSC Air Astana (Year 1)

Key project indicators:			
Interest rate		19%	annual
Loan term		120	months
Borrowed funds	100 000 000	55%	
Own funds	82 545 000	45%	
Exchange rate 1 US dollar, tenge		470	

Year 1

	Loan amount	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Period	40 000 000													
Outstanding balance		40 000 000	40 000 000	40 000 000	40 000 000	40 000 000	40 000 000	40 000 000	39 122 807	38 245 614	37 368 421	36 491 228	35 614 035	
Principal payment								877 193	877 193	877 193	877 193	877 193	877 193	5 263 158
Interest accrued		1 583 333	1 583 333	1 583 333	1 583 333	1 583 333	1 583 333	1 583 333	1 583 333	1 583 333	1 583 333	1 583 333	1 583 333	19 000 000
Total due		*1 583 333*	*1 583 333*	*1 583 333*	*1 583 333*	*1 583 333*	*1 583 333*	*2 460 526*	*2 460 526*	*2 460 526*	*2 460 526*	*2 460 526*	*2 460 526*	24 263 158

Table D.2 - Schedule of repayment loan funds for the project of JSC Air Astana (Year 2,3)

Year 2

	Loan amount	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Period	34 736 842													
Outstanding balance		34 736 842	33 859 649	32 982 456	32 105 263	31 228 070	30 350 877	29 473 684	28 596 491	27 719 298	26 842 105	25 964 912	25 087 719	
Principal payment		877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	10 526 316
Interest accrued		550 000	550 000	550 000	550 000	550 000	550 000	550 000	550 000	550 000	550 000	550 000	550 000	6 600 000
Total due		*1 427 193*	*1 427 193*	*1 427 193*	*1 427 193*	*1 427 193*	*1 427 193*	*1 427 193*	*1 427 193*	*1 427 193*	*1 427 193*	*1 427 193*	*1 427 193*	*17 126 316*

Year 3

	Loan amount	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Period	24 210 526													
Outstanding balance		24 210 526	23 333 333	22 456 140	21 578 947	20 701 754	19 824 561	18 947 368	18 070 175	17 192 982	16 315 789	15 438 596	14 561 404	
Principal payment		877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	10 526 316
Interest accrued		383 333	383 333	383 333	383 333	383 333	383 333	383 333	383 333	383 333	383 333	383 333	383 333	4 600 000
Total due		*1 260 526*	*1 260 526*	*1 260 526*	*1 260 526*	*1 260 526*	*1 260 526*	*1 260 526*	*1 260 526*	*1 260 526*	*1 260 526*	*1 260 526*	*1 260 526*	*15 126 316*

Table D.3 - Schedule of repayment loan funds for the project of JSC Air Astana (Year 4,5)

Year 4

	Loan amount	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Period	13 684 211													
Outstanding balance		13 684 211	12 807 018	11 929 825	11 052 632	10 175 439	9 298 246	8 421 053	7 543 860	6 666 667	5 789 474	4 912 281	4 035 088	
Principal payment		877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	10 526 316
Interest accrued		216 667	216 667	216 667	216 667	216 667	216 667	216 667	216 667	216 667	216 667	216 667	216 667	2 600 000
Total due		*1 093 860*	*1 093 860*	*1 093 860*	*1 093 860*	*1 093 860*	*1 093 860*	*1 093 860*	*1 093 860*	*1 093 860*	*1 093 860*	*1 093 860*	*1 093 860*	*13 126 316*

Year 5

	Loan amount	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Period	3 157 895													
Outstanding balance		3 157 895	2 280 702	1 403 509	526 316	-350 877	-1 228 070	-2 105 263	-2 982 456	-3 859 649	-4 736 842	-5 614 035	-6 491 228	
Principal payment		877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	10 526 316
Interest accrued		50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	600 000
Total due		*927 193*	*927 193*	*927 193*	*927 193*	*927 193*	*927 193*	*927 193*	*927 193*	*927 193*	*927 193*	*927 193*	*927 193*	*11 126 316*

Table D.4 - Schedule of repayment loan funds for the project of JSC Air Astana (Year 6,7)

Year 6

	Loan amount	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Period	-7 368 421													
Outstanding balance		-7 368 421	-8 245 614	-9 122 807	-10 000 000	-10 877 193	-11 754 386	-12 631 579	-13 508 772	-14 385 965	-15 263 158	-16 140 351	-17 017 544	
Principal payment		877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	10 526 316
Interest accrued		-116 667	-116 667	-116 667	-116 667	-116 667	-116 667	-116 667	-116 667	-116 667	-116 667	-116 667	-116 667	-1 400 000
Total due		*760 526*	*760 526*	*760 526*	*760 526*	*760 526*	*760 526*	*760 526*	*760 526*	*760 526*	*760 526*	*760 526*	*760 526*	*9 126 316*

Year 7

	Loan amount	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Total
Period	-17 894 737													
Outstanding balance		-17 894 737	-18 771 930	-19 649 123	-20 526 316	-21 403 509	-22 280 702	-23 157 895	-24 035 088	-24 912 281	-25 789 474	-26 666 667	-27 543 860	
Principal payment		877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	877 193	10 526 316
Interest accrued		-283 333	-283 333	-283 333	-283 333	-283 333	-283 333	-283 333	-283 333	-283 333	-283 333	-283 333	-283 333	-3 400 000
Total due		*593 860*	*593 860*	*593 860*	*593 860*	*593 860*	*593 860*	*593 860*	*593 860*	*593 860*	*593 860*	*593 860*	*593 860*	*7 126 316*

APPENDIX E

Calculation of the revenue

Table E.1 - Calculation of the revenue side of the project of JSC Air Astana (Year 1)

Year 1											
Name of income items	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Income from using Wi-Fi module (per 1 hour)	5 057 200	3 763 760	3 293 760	3 545 680	3 587 040	3 346 400	3 218 560	3 545 680	2 688 400	3 004 240	41 882 640
number of passengers	1 345	1 001	876	943	954	890	856	943	715	799	11 139
average price for 1 hour of Internet use, tenge	3 760	3 760	3 760	3 760	3 760	3 760	3 760	3 760	3 760	3 760	
Income from using Wi-Fi module (per 2 hours)	1 457 083	1 084 417	949 000	1 021 583	1 033 500	964 167	927 333	1 021 583	774 583	865 583	12 067 250
number of passengers	448	334	292	314	318	297	285	314	238	266	3 713
average price for 1 hour of Internet use, tenge	3 250	3 250	3 250	3 250	3 250	3 250	3 250	3 250	3 250	3 250	
Income from using Wi-Fi module (per 3 hours)	309 350	230 230	201 480	216 890	219 420	204 700	196 880	216 890	164 450	183 770	2 561 970
number of passengers	112	83	73	79	80	74	71	79	60	67	928
average price for 1 hour of Internet use, tenge	2 760	2 760	2 760	2 760	2 760	2 760	2 760	2 760	2 760	2 760	
number of passengers	22	17	15	16	16	15	14	16	12	13	186
average price of additional services for Internet use, tenge	9 000	9 000	9 000	9 000	9 000	9 000	9 000	9 000	9 000	9 000	
Total	7 025 383	5 228 557	4 575 640	4 925 603	4 983 060	4 648 767	4 471 173	4 925 603	3 734 683	4 173 443	58 182 710

Table E.2 - Calculation of the revenue side of the project of JSC Air Astana (Year 2)

Name of income items	Year 1	*Year 2* Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Income from using Wi-Fi module (per 1 hour)	5 942 700	4 477 260	3 944 760	4 230 180	4 277 040	4 004 400	3 859 560	4 230 180	3 258 900	3 616 740	50 008 140
number of passengers	1 395	1 051	926	993	1 004	940	906	993	765	849	11 739
average price for 1 hour of Internet use, tenge	4 260	4 260	4 260	4 260	4 260	4 260	4 260	4 260	4 260	4 260	
Income from using Wi-Fi module (per 2 hours)	1 868 750	1 438 750	1 282 500	1 366 250	1 380 000	1 300 000	1 257 500	1 366 250	1 081 250	1 186 250	16 173 750
number of passengers	498	384	342	364	368	347	335	364	288	316	4 313
average price for 1 hour of Internet use, tenge	3 750	3 750	3 750	3 750	3 750	3 750	3 750	3 750	3 750	3 750	
Income from using Wi-Fi module (per 3 hours)	528 392	434 938	400 980	419 182	422 170	404 783	395 547	419 182	357 242	380 062	4 982 095
number of passengers	162	133	123	129	130	124	121	129	110	117	1 528
average price for 1 hour of Internet use, tenge	3 260	3 260	3 260	3 260	3 260	3 260	3 260	3 260	3 260	3 260	
average price of additional services for Internet use, tenge	9 500	9 500	9 500	9 500	9 500	9 500	9 500	9 500	9 500	9 500	
Total	8 742 800	6 699 440	5 956 940	6 354 920	6 420 260	6 040 100	5 838 140	6 354 920	5 000 600	5 499 560	75 207 660

Table E.3 - Calculation of the revenue side

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
VAT, 1st year:	843 046	627 427	549 077	591 072	597 967	557 852	536 541	591 072	448 162	500 813
VAT, 2nd year:	1 049 136	803 933	714 833	762 590	770 431	724 812	700 577	762 590	600 072	659 947

Year 1

Expense item name	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 9	Year 10	Total
Cost of Wi-Fi modules	894 022	665 365	582 277	626 812	634 124	591 583	475 261	531 095	7 404 093
Cost of Internet services	801 396	596 429	521 950	561 871	568 425	530 292	426 021	476 071	6 636 988
Internet services	110 963	82 583	72 270	77 798	78 705	73 425	58 988	65 918	918 968
Total	1 806 380	1 344 376	1 176 497	1 266 480	1 281 254	1 195 300	960 269	1 073 084	14 960 048

Year 2

Expense item name	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 9	Year 10	Total
Cost of Wi-Fi modules	1 078 762	820 378	726 488	776 813	785 075	737 004	605 558	668 652	9 188 809
Cost of Internet services	1 027 813	791 313	705 375	751 438	759 000	715 000	594 688	652 438	8 895 563
Internet services	221 627	191 670	180 785	186 620	187 578	182 004	166 765	174 080	2 224 021
Total	2 328 202	1 803 361	1 612 648	1 714 870	1 731 653	1 634 008	1 367 011	1 495 169	20 308 392

APPENDIX F

Income statement

Table F.1 - Income statement for the project of Air Astana JSC

	Forecast														
	1st month	2nd month	3rd month	4th month	Total 1st year	Total 2nd year	Total 3rd year	Total 4th year	Total 5th year	Total 6th year	Total 7th year	Total 8th year	Total 9th year	Total 10th year	Total for the project
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					-2 042 994										
Revenue from sales	7 025 383	5 228 557	4 575 640	4 925 603	58 182 710	75 207 660	80 472 196	86 105 250	92 132 617	98 581 901	105 482 634	112 866 418	120 767 067	129 220 762	959 019 215
Accrued VAT	752 720	560 203	490 247	527 743	6 233 862	8 057 964	8 622 021	9 225 562	9 871 352	10 562 346	11 301 711	12 092 831	12 939 329	13 845 082	102 752 059
VAT offset (reference)	843 046	627 427	549 077	591 072	6 981 925	9 024 919	9 024 919	9 024 919	9 024 919	9 024 919	9 024 919	9 024 919	9 024 919	9 024 919	88 206 198
VAT payment (reference)	-90 326	-67 224	-58 830	-63 329	-748 063	-966 956	-402 898	200 643	846 433	1 537 427	2 276 792	3 067 911	3 914 409	4 820 162	14 545 861
Revenue excluding VAT	6 272 664	4 668 354	4 085 393	4 397 860	51 948 848	67 149 696	71 850 175	76 879 687	82 261 266	88 019 554	94 180 923	100 773 588	107 827 739	115 375 680	*856 267 157*
Cost	1 806 380	1 344 376	1 176 497	1 266 480	14 960 048	20 308 392	21 729 980	23 251 078	24 878 654	26 620 160	28 483 571	30 477 421	32 610 840	34 893 599	*258 213 743*

Continuation of Table F.1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Gross profit	*5 219 004*	*3 884 180*	*3 399 143*	*3 659 123*	*43 222 662*	*54 899 268*	*58 742 216*	*62 854 172*	*67 253 964*	*71 961 741*	*76 999 063*	*82 388 997*	*88 156 227*	*94 327 163*	*700 805 473*
Operating expenses															*0*
Wages	1 230 000	1 230 000	1 230 000	1 230 000	14 760 000	15 055 200	15 356 304	15 663 430	15 976 699	16 296 233	16 622 157	16 954 600	17 293 692	17 639 566	*161 617 882*
Social tax and social contributions	50 246	50 246	50 246	50 246	602 946	615 005	627 305	639 851	652 648	665 701	679 015	692 595	706 447	720 576	*6 602 090*
Equipment costs (Wi-Fi modules)	4 345 417	750 000	750 000	750 000	12 595 417	12 847 325	13 104 272	13 366 357	13 633 684	13 906 358	14 184 485	14 468 175	14 757 538	15 052 689	*137 916 298*
Satellite communications costs	156 667	156 667	156 667	156 667	1 880 000	1 917 600	1 955 952	1 995 071	2 034 972	2 075 672	2 117 185	2 159 529	2 202 720	2 246 774	*20 585 475*
Data transmission costs	191 667	191 667	191 667	191 667	2 300 000	2 346 000	2 392 920	2 440 778	2 489 594	2 539 386	2 590 174	2 641 977	2 694 817	2 748 713	*25 184 358*
Other expenses	100 000	100 000	100 000	100 000	1 200 000	1 224 000	1 248 480	1 273 450	1 298 919	1 324 897	1 351 395	1 378 423	1 405 991	1 434 111	*13 139 665*
Total operating costs	6 958 162	3 362 746	3 362 746	3 362 746	43 948 363	44 827 330	45 723 877	46 638 354	47 571 121	48 522 544	49 492 994	50 482 854	51 492 511	52 522 362	*481 222 310*
Profit before tax	-1 739 159	521 435	36 397	296 377	-725 701	10 071 938	13 018 340	16 215 818	19 682 842	23 439 198	27 506 069	31 906 143	36 663 716	41 804 801	*219 583 163*

APPENDIX G

Forecast of the cash flow statement

Table G.1 - Forecast of the cash flow statement for the project of Air Astana JSC

	Forecast															
tenge	1st month	2nd month	3rd month	4th month	5th month	6th month	Total 1st year	Total 2nd year	Total 3rd year	Total 4th year	Total 5th year	Total 6th year	Total 7th year	Total 8th year	Total 9th year	Total 10th year
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Cash at the beginning	0	7 798 668	14 589 410	20 886 720	27 448 510	34 053 722	0	172 524 761	180 507 876	192 179 354	207 706 477	227 268 659	251 058 304	279 281 722	312 160 113	349 930 618
Cash receipts	*13 904 133*	*12 107 307*	*11 454 390*	*11 804 353*	*11 861 810*	*11 527 517*	*140 727 710*	*75 207 660*	*80 472 196*	*86 105 250*	*92 132 617*	*98 581 901*	*105 482 634*	*112 866 418*	*120 767 067*	*129 220 762*
Sales revenue	7 025 383	5 228 557	4 575 640	4 925 603	4 983 060	4 648 767	58 182 710	75 207 660	80 472 196	86 105 250	92 132 617	98 581 901	105 482 634	112 866 418	120 767 067	129 220 762
Equity funds	6 878 750	6 878 750	6 878 750	6 878 750	6 878 750	6 878 750	82 545 000									
Cash outflow	*6 105 466*	*5 316 564*	*5 157 080*	*5 242 563*	*5 256 598*	*5 174 942*	*62 939 791*	*56 698 229*	*58 274 403*	*60 051 811*	*62 044 120*	*64 265 940*	*66 732 900*	*69 461 711*	*72 470 246*	*75 777 620*
Loan issuance fee	350 000	350 000	350 000	350 000	350 000	350 000	4 200 000									
Cost price	1 806 380	1 344 376	1 176 497	1 266 480	1 281 254	1 195 300	14 960 048	20 308 392	21 729 980	23 251 078	24 878 654	26 620 160	28 483 571	30 477 421	32 610 840	34 893 599

Continuation of Table G.1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Wages	1 230 000	1 230 000	1 230 000	1 230 000	1 230 000	1 230 000	14 760 000	15 055 200	15 356 304	15 663 430	15 976 699	16 296 233	16 622 157	16 954 600	17 293 692	17 639 566
Data transmission costs	191 667	191 667	191 667	191 667	191 667	191 667	2 300 000	2 346 000	2 392 920	2 440 778	2 489 594	2 539 386	2 590 174	2 641 977	2 694 817	2 748 713
Labor costs	500 833	500 833	500 833	500 833	500 833	500 833	6 010 000	6 130 200	6 252 804	6 377 860	6 505 417	6 635 526	6 768 236	6 903 601	7 041 673	7 182 506
Maintenance and modernization of equipment (Wi-Fi modules)	383 333	383 333	383 333	383 333	383 333	383 333	4 600 000	4 692 000	4 785 840	4 881 557	4 979 188	5 078 772	5 180 347	5 283 954	5 389 633	5 497 426
Other expenses	100 000	100 000	100 000	100 000	100 000	100 000	1 200 000	1 224 000	1 248 480	1 273 450	1 298 919	1 324 897	1 351 395	1 378 423	1 405 991	1 434 111
Remuneration for using a loan	1 583 333	1 583 333	1 583 333	1 583 333	1 583 333	1 583 333	19 000 000	6 600 000	4 600 000	2 600 000	600 000	-1 400 000	-3 400 000	-5 400 000	-7 400 000	-9 400 000
VAT payable	-90 326	-67 224	-58 830	-63 329	-64 068	-59 770	-748 063	-966 956	-402 898	200 643	846 433	1 537 427	2 276 792	3 067 911	3 914 409	4 820 162
Income tax	50 246	50 246	50 246	50 246	50 246	50 246	-3 342 194	1 309 392	2 310 973	3 363 015	4 469 217	5 633 541	6 860 229	8 153 824	9 519 190	10 961 537
Result from operating activities	7 798 668	6 790 742	6 297 310	6 561 790	6 605 212	6 352 575	77 787 919	18 509 431	22 197 794	26 053 439	30 088 498	34 315 960	38 749 734	43 404 707	48 296 821	53 443 142

Continuation of Table G.1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Implementation of Wi-Fi modules on board aircraft	14 990 000						14 990 000									
Result from investment activities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash flow from financial activities																
Total cash receipts		*0*	*0*	*0*	*0*	*0*	*100 000 000*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Contribution	*82 545 000*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Bank loan	100 000 000						100 000 000									
Cash outflow	*0*	*0*	*0*	*0*	*0*	*0*	*5 263 158*	*10 526 316*	*10 526 316*	*10 526 316*	*10 526 316*	*10 526 316*	*10 526 316*	*10 526 316*	*10 526 316*	*10 526 316*
Repayment of principal on credit	0	0	0	0	0	0	5 263 158	10 526 316	10 526 316	10 526 316	10 526 316	10 526 316	10 526 316	10 526 316	10 526 316	10 526 316
Result from financial activities	0	0	0	0	0	0	94 736 842	-10 526 316	-10 526 316	-10 526 316	-10 526 316	-10 526 316	-10 526 316	-10 526 316	-10 526 316	-10 526 316

APPENDIX H

Financial model

Table H.1 - Financial model for the project of JSC Air Astana

(in thousands of tenge) Year:	2	3	4	5	6	7	8	9	10
Operating income	67 149 696	71 850 175	76 879 687	82 261 266	88 019 554	94 180 923	100 773 588	107 827 739	115 375 680
Gross income/Loss	54 899 268	58 742 216	62 854 172	67 253 964	71 961 741	76 999 063	82 388 997	88 156 227	94 327 163
Operating expenses	44 827 330	45 723 877	46 638 354	47 571 121	48 522 544	49 492 994	50 482 854	51 492 511	52 522 362
Marginal contribution ratio	0,82	0,82	0,82	0,82	0,82	0,82	0,82	0,82	0,82
Break-even point	54 830 269	55 926 874	57 045 411	58 186 320	59 350 046	60 537 047	61 747 788	62 982 744	64 242 399
Deviation from BEP in absolute terms	12 319 428	15 923 301	19 834 276	24 074 946	28 669 508	33 643 876	39 025 800	44 844 995	51 133 282
Margin of safety at break-even point	18%	22%	26%	29%	33%	36%	39%	42%	44%

APPENDIX I

Calculations of Green bonds issuance

Table I.1 - Calculations of Green bonds issuance

Period	The remaining face value	Payment, tenge	Interest, tenge	Repayment of nominal value, tenge	Present Value	Percentage share, %	Modified duration (years)	Convexity
1	48,500,000,000	4,093,476,648	2,740,250,000	1,353,226,648	3,874,954,345	66.94%	0.0289	0.0005
2	47,146,773,352	4,093,476,648	2,663,642,344	1,429,834,304	3,710,764,550	65.08%	0.0546	0.0019
3	45,716,939,048	4,093,476,648	2,583,007,146	1,510,469,502	3,553,271,890	63.10%	0.0774	0.0042
4	44,206,469,546	4,093,476,648	2,497,665,529	1,595,811,119	3,402,123,456	61.02%	0.0976	0.0078
5	42,610,658,427	4,093,476,648	2,407,502,201	1,685,974,447	3,256,987,123	58.80%	0.1155	0.0125
6	40,924,683,980	4,093,476,648	2,312,244,645	1,781,232,003	3,117,548,899	56.47%	0.1311	0.0183
7	39,143,451,977	4,093,476,648	2,211,605,036	1,881,871,612	2,983,512,765	54.02%	0.1446	0.0251
8	37,261,580,365	4,093,476,648	2,105,279,290	1,988,197,358	2,854,599,674	51.43%	0.1560	0.0329
9	35,273,383,007	4,093,476,648	1,992,946,140	2,100,530,508	2,730,547,112	48.68%	0.1661	0.0417
10	33,172,852,499	4,093,476,648	1,874,266,166	2,219,210,482	2,611,108,554	45.79%	0.1745	0.0514
11	30,953,642,017	4,093,476,648	1,748,880,274	2,344,596,374	2,496,052,333	42.72%	0.1815	0.0621
12	28,609,045,643	4,093,476,648	1,616,411,079	2,477,065,569	2,385,161,456	39.49%	0.1872	0.0737
13	26,131,980,074	4,093,476,648	1,476,456,874	2,617,019,774	2,278,233,002	36.07%	0.1918	0.0862
14	23,514,960,300	4,093,476,648	1,328,595,257	2,764,881,391	2,175,077,699	32.46%	0.1953	0.0996
15	20,750,078,909	4,093,476,648	1,172,379,958	2,921,096,690	2,075,519,581	28.64%	0.1976	0.1139
16	17,828,982,219	4,093,476,648	1,007,337,495	3,086,139,153	1,979,395,126	24.61%	0.1992	0.1290
17	14,742,843,066	4,093,476,648	832,970,633	3,260,506,015	1,886,552,045	20.35%	0.2000	0.1450
18	11,482,337,051	4,093,476,648	648,752,043	3,444,724,605	1,796,849,299	15.85%	0.2000	0.1618
19	8,037,612,446	4,093,476,648	454,125,103	3,639,351,545	1,710,156,123	11.09%	0.1995	0.1794
20	4,398,260,901	4,398,260,901	248,500,000	4,149,760,901	1,626,352,456	5.65%	0.1950	0.1978
Total		81,869,532,960	33,922,817,213	48,500,000,000	44,805,958,333	41.44%	7.2	520.10

Table I.2 - Calculations of Green bonds issuance

Period	Remaining nominal value at the beginning	Annuity payment	Interest (5.65%)	Repayment of nominal value	Accumulated interest	Accumulated repayment	Percentage of interest in payment (%)
1	48,500,000,000	4,093,476,648	2,740,250,000	1,353,226,648	2,740,250,000	1,353,226,648	66.94%
2	47,146,773,352	4,093,476,648	2,663,642,344	1,429,834,304	5,403,892,344	2,783,060,952	65.08%
3	45,716,939,048	4,093,476,648	2,583,007,146	1,510,469,502	7,986,899,490	4,293,530,454	63.10%
4	44,206,469,546	4,093,476,648	2,497,665,529	1,595,811,119	10,484,565,019	5,889,341,573	61.02%
5	42,610,658,427	4,093,476,648	2,407,502,201	1,685,974,447	12,892,067,220	7,575,316,020	58.80%
6	40,924,683,980	4,093,476,648	2,312,244,645	1,781,232,003	15,204,311,865	9,356,548,023	56.47%
7	39,143,451,977	4,093,476,648	2,211,605,036	1,881,871,612	17,415,916,901	11,238,419,635	54.02%
8	37,261,580,365	4,093,476,648	2,105,279,290	1,988,197,358	19,521,196,191	13,226,616,993	51.43%
9	35,273,383,007	4,093,476,648	1,992,946,140	2,100,530,508	21,514,142,331	15,327,147,501	48.68%
10	33,172,852,499	4,093,476,648	1,874,266,166	2,219,210,482	23,388,408,497	17,546,357,983	45.79%
11	30,953,642,017	4,093,476,648	1,748,880,274	2,344,596,374	25,137,288,771	19,890,954,357	42.72%
12	28,609,045,643	4,093,476,648	1,616,411,079	2,477,065,569	26,753,699,850	22,368,019,926	39.49%
13	26,131,980,074	4,093,476,648	1,476,456,874	2,617,019,774	28,230,156,724	24,985,039,700	36.07%
14	23,514,960,300	4,093,476,648	1,328,595,257	2,764,881,391	29,558,751,981	27,749,921,091	32.46%
15	20,750,078,909	4,093,476,648	1,172,379,958	2,921,096,690	30,731,131,939	30,671,017,781	28.64%
16	17,828,982,219	4,093,476,648	1,007,337,495	3,086,139,153	31,738,469,434	33,757,156,934	24.61%
17	14,742,843,066	4,093,476,648	832,970,633	3,260,506,015	32,571,440,067	37,017,662,949	20.35%
18	11,482,337,051	4,093,476,648	648,752,043	3,444,724,605	33,220,192,110	40,462,387,554	15.85%
19	8,037,612,446	4,093,476,648	454,125,103	3,639,351,545	33,674,317,213	44,101,739,099	11.09%
20	4,398,260,901	4,398,260,901	248,500,000	4,149,760,901	33,922,817,213	48,500,000,000	5.65%

APPENDIX J

Acts of Implementation

air astana

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УТВЕРЖДАЮ
Менеджер по учету расходов ИТО
_____ Жакамбаева Н.Е.
"01" апреля 2024 г.

АКТ
о внедрении результатов диссертационной работы
Садвакасовой Камиллы Габиткызы
на тему «Финансирование авиационных компаний: теория, методология и практика»

Настоящим подтверждаем, что результаты диссертационного исследования Садвакасовой К.Г. на тему: «Финансирование авиационных компаний: теория, методология и практика» обладают актуальностью, представляют практический интерес и были использованы при разработке бизнес-плана в "Установке Wi-Fi роутеров на борты самолетов", в рамках цифровизации и технологической трансформации группы компаний АО "Эйр Астана".

Менеджер по учету расходов ИТО _____ Жакамбаева Н.Е.

Acts of Implementation

УТВЕРЖДАЮ
Менеджер по учету расходов ИТО
Жакамбаева Н.Е.
"01" апреля 2024 г.

АКТ
о внедрении результатов диссертационной работы
Садвакасовой Камиллы Габиткызы
на тему «Финансирование авиационных компаний: теория, методология и практика»

Настоящим подтверждаем, что результаты диссертационного исследования Садвакасовой К.Г. на тему: «Финансирование авиационных компаний: теория, методология и практика» обладают актуальностью, представляют практический интерес и были использованы при разработке дорожной карты по выпуску зеленых облигаций, как альтернативные источники финансирования авиационных компаний и бизнес-плана в "Установке Wi-Fi роутеров на борты самолетов", в рамках цифровизации и технологической трансформации группы компаний АО "Эйр Астана".

Менеджер по учету расходов ИТО _____ Жакамбаева Н.Е.