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Article

## Civil aviation and its impact on the country's economy

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**Abstract.** Civil aviation plays a key role in the modern global economy, providing connectivity between countries and cities, stimulating tourism, trade and business. This article examines the impact of civil aviation on the country's economy, as well as the benefits it brings. Civil aviation contributes to the development of tourism, making it more accessible and attractive due to convenient flights. The influx of tourists increases the demand for hotels, restaurants, transport and entertainment, which leads to the growth of the tourism industry and the creation of new jobs.

Civil aviation also facilitates international trade by providing fast and efficient delivery of goods, which contributes to the expansion of world markets and an increase in international trade. It maintains business relationships, allowing businessmen to easily make business trips and establish international connections. The development of the aviation industry, including aircraft manufacturing and maintenance, as well as airport infrastructure, creates jobs and attracts investment.

Examples from the United States, Qatar and China demonstrate how civil aviation contributes to economic growth and development. Investments in aviation infrastructure and education play an important role in maintaining and developing this industry. Civil aviation stimulates the economy through tourism, trade, business and innovation, making it an important engine of economic development.

**Keywords:** civil aviation, economy, international trade, investments, aviation infrastructure.

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## Introduction

Civil aviation plays a key role in the modern global economy, providing connectivity between countries and cities, stimulating tourism, trade and business [1]. Its importance for the economic development of the country cannot be overestimated. Let's look at how civil aviation affects the economy and what benefits it brings [2].

Civil aviation significantly contributes to the development of tourism. It makes the world more accessible and inviting for tourists [3]. The growth in the number of available flights and the expansion of the range of destinations has contributed to the increased accessibility and attractiveness of tourism. A "convenient flight" is characterized by certain parameters (Figure 1).

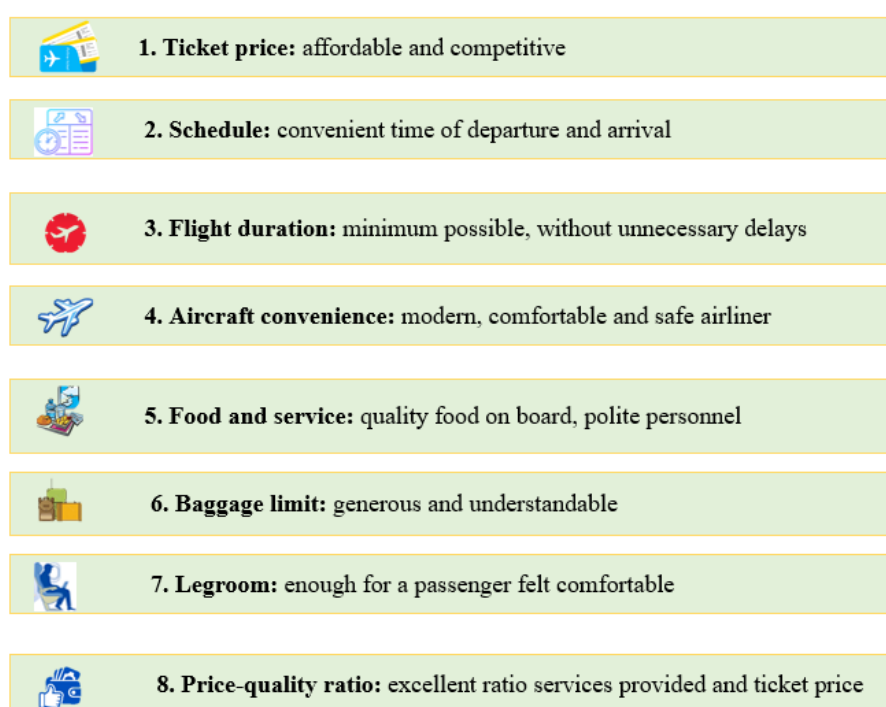


Figure 1. "Convenient flight" parameters

These parameters are important for creating a pleasant and comfortable flight for air passengers.

The arrival of tourists creates demand for various services such as hotel accommodation, restaurants, transportation, shopping and entertainment. This contributes to the growth of the tourism industry and the creation of new jobs, which in turn increases income and invests money in the country's economy [3].

Civil aviation plays an important role in the development of international trade. It provides fast and efficient delivery of goods worldwide. Companies can quickly and easily import and export goods, which contributes to the expansion of global markets and an increase in international trade.

It also contributes to the growth of logistics infrastructure such as airports and cargo terminals, which creates new jobs and investments in the transport sector.

Civil aviation plays an important role in maintaining business relationships. Thanks to the possibility of fast and comfortable flights, businessmen can easily make business trips around the world. This contributes to the establishment and maintenance of international business ties, attracting investments and creating opportunities for new transactions and cooperation.

The creation and maintenance of civil aviation contributes to the development of the aviation industry in the country. This includes aircraft manufacturing, maintenance and repair, airport infrastructure and many other aspects. The development of this industry creates jobs and promotes innovation [4].

The presence of large air carriers and international airports can attract investments from abroad. Foreign companies and investors can see the potential in a country with developed civil aviation and invest in it, creating new jobs and contributing to economic growth. Civil aviation has a significant impact on the country's economy, stimulating tourism, trade, business and innovation (Figure 2) [5].

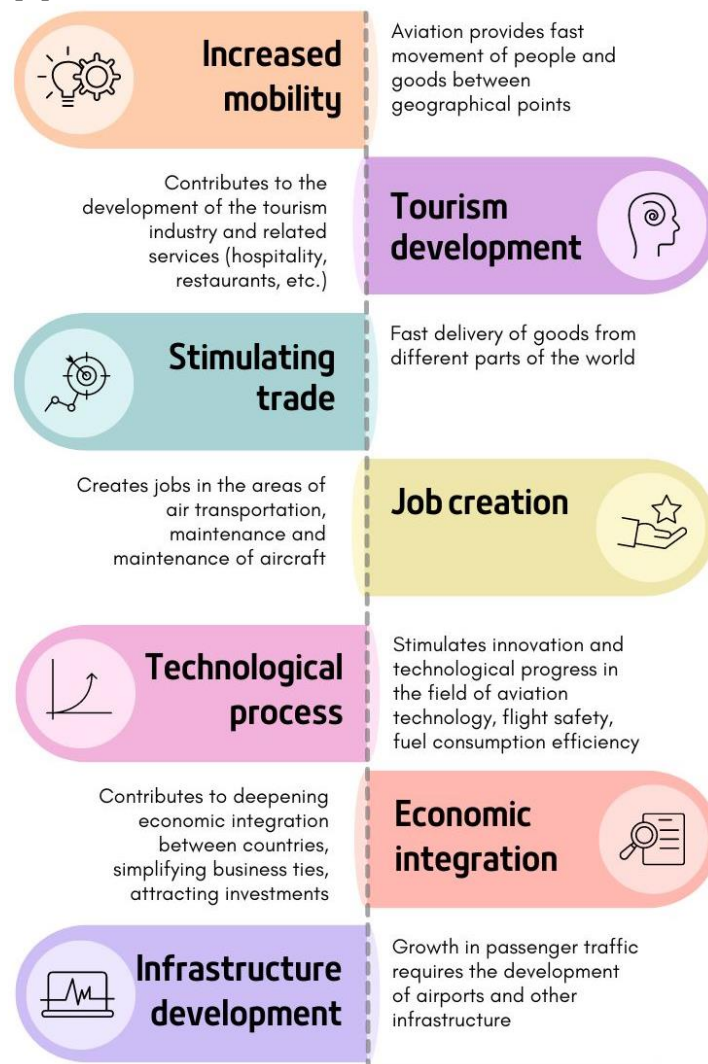


Figure 2. Ways to stimulate the economy through the civil aviation industry

Investing in this industry, including education and training, has the potential to strengthen this contribution and make aviation an engine of economic development.

The share of revenue generated by civil aviation from passenger and cargo transportation can vary significantly depending on the country, region, size of the aviation industry and other factors. However, you can provide a general overview.

In most countries, passenger transportation accounts for the bulk of civil aviation revenues. Income from the sale of air tickets, additional services (for example, business class, additional baggage spaces) and payments for airport services (for example, take-off and landing) make a significant contribution to the economy. The share of revenue from passenger transportation can range from 60% to 90% or more of the total revenue of civil aviation in various countries [6].

Revenues from freight transportation are also significant, but they usually make up a smaller percentage compared to passenger transportation. Cargo aviation covers the transportation of goods, including goods, mail and other goods. The share of revenue from cargo transportation can vary from 10% to 30% or more of the total revenue of civil aviation [6].

These percentages may change over time and depend on economic development, changes in trade flows, and even the impact of crises such as the COVID-19 pandemic, which has had a serious impact on civil aviation and led to a decrease in passenger traffic.

## The methodology

Civil aviation has a different impact on the economies of different countries, depending on their size, geographical location, industry development and other factors. Let's look at some examples (Table 1).

Table 1. The impact of civil aviation on the economies of countries

№	Countries	The impact of civil aviation on the economies of countries
1	United States of America	<ul style="list-style-type: none"> <li>- GA is part of the American economy;</li> <li>- has one of the most developed aviation industries in the world;</li> <li>- there are the largest American airlines (Delta Air Lines, American Airlines and United Airlines);</li> <li>- support for tourism and trade;</li> <li>- Boeing is the largest American manufacturer of commercial airliners;</li> <li>- Boeing and Airbus are investing heavily in research and development, contributing to technological progress in the field of aviation.</li> </ul>
2	The State of Qatar	<ul style="list-style-type: none"> <li>- investments in the development of aviation infrastructure;</li> <li>- Construction of Hamad International Airport in Doha;</li> <li>- development of Qatar Airways;</li> <li>- it is one of the major hubs for international transfers/;</li> <li>- assistance in increasing the transit and tourist flow.</li> </ul>
3	People's Republic of China	<ul style="list-style-type: none"> <li>- Air China and other Chinese carriers are major global players in the civil aviation industry;</li> </ul>

		<ul style="list-style-type: none"> <li>– development of tourism and business trips to China;</li> <li>– investments in aircraft production and in the Chinese company COMAC (Commercial Aircraft Corporation of China – "Commercial Aviation Corporation of China")</li> </ul>
A source: [7], [8], [9]		

From the examples considered, it is clear how civil aviation has affected the economies of different countries.

In the United States, civil aviation is a key component of the American economy. The United States has one of the largest and most developed aviation industries in the world. American airlines such as Delta Air Lines, American Airlines and United Airlines generate billions of dollars in passenger revenue. Also, aviation giants Boeing and Airbus have a strong impact on the American economy as aircraft manufacturers. Civil aviation also supports tourism and international trade, contributing to economic growth [7].

One of the most developed and technologically advanced countries in the Persian Gulf, the Emirate of Qatar has invested in the development of aviation infrastructure, including the construction of Hamad International Airport in Doha and the development of Qatar Airways. This has led to Qatar becoming a key global hub for international transfers, which contributes to the growth of tourism and business development. Civil aviation has had a huge impact on the Qatari economy, contributing to an increase in transit and tourist flow [8].

In the People's Republic of China, civil aviation has shown rapid growth in recent decades. The Chinese airline Air China and other Chinese carriers have become major global players. This growth has contributed to the development of tourism and business trips to China, as well as strengthening international trade ties. In addition, China has also invested in aircraft manufacturing, and Chinese companies such as COMAC have begun to compete in the global market[9].

These examples show how civil aviation can have a significant impact on the economy by stimulating trade, tourism and infrastructure investment.

Investments in education can vary significantly from country to country and depend on government policies, available resources, and other factors. The following is an overview of investments in education in these countries:

**1. The United States of America:** The United States is one of the countries with the highest level of investment in education. Federal and state governments provide funds for education, including funding for schools, universities, and research programs. Separately, it should be borne in mind that the United States also has many private educational institutions. United States of America: The United States has one of the largest education systems in the world. In 2021, the budgets of the states and the federal government of the United States together allocated significant funds for education, totaling more than \$ 700 billion [10].

**2. Singapore:** Singapore, a small city-state in Southeast Asia, is successfully developing its civil aviation. Changi Airport in Singapore is considered one of the best in the world and serves as a key transit hub for passengers. Civil aviation contributes to tourism, international trade and business events, which has a positive impact on the country's economy. Singapore is considered

one of the countries with a high level of investment in education. In 2021, the Singapore government allocated more than \$13 billion for education, which is a significant share of the country's budget [11].

**3. Emirates (UAE):** Civil aviation has had a strong impact on the UAE economy, in particular Dubai and Abu Dhabi. They have invested in the development of aviation infrastructure, creating many global hubs for transfers. This has contributed to the influx of tourists, business personnel and investments, economic diversification and job creation. The UAE also attaches great importance to education. In 2021, they allocated more than 10% of their budget to education, including investments in the creation of universities and educational research programs [12].

**4. Turkey:** Civil aviation plays an important role in Turkey's tourism industry. Airports in Istanbul and other major cities of the country provide convenience for millions of tourists, which contributes to tourism revenue and job creation. In 2021, Turkey allocated more than 5% of its budget to education, which means significant funding for its education system [13].

**5. Kazakhstan:** Kazakhstan is also investing in education as part of a program to modernize the educational system. This includes the development of higher education, the support of scientific research and the stimulation of training at international levels, and also seeks to develop civil aviation, especially through the development of airports and cooperation with international airlines. This helps to attract foreign tourists and investments. Kazakhstan is also investing in education, aiming to improve the quality of education and the development of its universities. In previous years, Kazakhstan allocated 4-5% of its budget to education [14].

## Findings/Discussion

To analyze the income from aviation activities at airports in Kazakhstan and the connection of this factor with investments in personnel education, we will present two large airports in Kazakhstan: Almaty and Nur Sultan (Astana).

Almaty Airport is the largest airport in Kazakhstan and one of the busiest in the country. It handles a large volume of passenger traffic, including domestic and international flights, and Almaty is the economic and cultural center of Kazakhstan.

Nur Sultan Nazarbayev Airport (formerly Astana Airport) serves the capital of Kazakhstan and is an important air hub in the region. It also has both domestic and international flights, connecting the capital with other parts of the country and the world. This airport plays an important role in the development of the capital's economy [15].

The relationship between these revenues and investments in human resources education may be as follows:

- If one of the airports has more qualified and educated staff (for example, air staff, technical staff, management staff), this can contribute to a more efficient and high-quality operation of the airport and, consequently, an increase in revenue.
- Education and training can also improve the safety and reliability of aviation operations, which can lead to a more attractive airport for airlines and passengers, increasing revenue.

### Investing in civil aviation education: the key to development and safety

Civil aviation plays an important role in the modern global economy and provides efficient transport links between cities and countries. However, to ensure the efficiency, safety and sustainability of the aviation industry, it is necessary to invest in education in this area. In this chapter, we will consider what investing in education in the field of civil aviation gives and why it is so important (Figure 3) [16].



Figure 3. The advantage of investing in civil aviation education

One of the key aspects of investing in civil aviation education is the training of highly qualified specialists. Pilots, engineers, technical staff and dispatchers play a crucial role in ensuring flight safety and reliability of air transport. Their training requires specialized knowledge and skills.

Investments in education make it possible to create modern training programs and equipped classrooms, laboratories and simulators where future professionals can acquire practical skills and experience. Education also includes training in compliance with safety standards and regulations, which helps to reduce the risk of aviation incidents [17].

Civil aviation is constantly evolving, introducing new technologies and innovations. Investments in education make it possible to train personnel capable of working with modern aviation systems, on-board electronics and software. This helps the aviation industry to be competitive and efficient.

Education also supports research and development in the field of aviation. Scientists and engineers trained in higher education institutions can work on the development of new technologies that will improve the safety, efficiency and environmental sustainability of aviation.

Investments in education also support the development of leaders and managers in the aviation industry. The management of airlines, airports and the regulation of aviation requires high qualifications and an understanding of the specifics of the industry.

Aviation education programs can provide future managers with the necessary knowledge about strategic management, aviation economics, and legislation. This contributes to the effective management of aviation organizations and their sustainable development.

Investments in education relate not only to technical aspects, but also to the safety culture in civil aviation. Training of personnel is extremely important to comply with safety standards and minimize risks.

The higher the level of education and training of aviation specialists, the more effectively they are able to make the right decisions in difficult situations and manage risks. This is important to maintain the safety of passengers and cargo transportation. Educational programs in civil aviation promote international cooperation, knowledge sharing and transfer of best practices and technologies between countries. This contributes to the globalization and development of international air transportation [16].

## Conclusions

Investing in civil aviation education is a critical factor for the development, safety and efficiency of this industry. Highly qualified specialists, modern technologies, management skills and a safety culture are all supported by education and training. These investments not only contribute to economic growth, but also make aviation more accessible and safer for everyone.

## Contribution of the authors

**Kalekeyeva M.E.** – made a significant contribution to the collection and analysis of literature on continuous robotic manipulators inspired by biological models. His work focuses on the study of the current state of this technology, its application and management issues, which contributes to the development of more flexible and adaptive robotic systems.

**Muratbekova G.V.** – participated in the development of the concept of work and writing the text of the article with the presentation of analytical data, ensuring the integrity of all parts of the article.

**Garmash O.V.** – participated in the critical revision of the content of the article and in the approval of the final version for publication

**Konakbai Z.E.** – participated in the development of the concept of work and writing the text of the article with the presentation of analytical data, ensuring the integrity of all parts of the article.

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### **Азаматтық авиация және оның ел экономикасына әсері**

**Аңдатпа.** Азаматтық авиация қазіргі әлемдік экономикада маңызды рөл атқарады, елдер мен қалалар арасындағы байланысты қамтамасыз етеді, туризмді, сауданы және бизнесті ынталандырады. Бұл мақалада Азаматтық авиацияның ел экономикасына әсері, сондай-ақ оның пайдасы қарастырылады. Азаматтық авиация туризмді ыңғайлы әуе рейстерінің арқасында қол жетімді және тартымды ете отырып дамытады. Туристер ағыны қонақүйлерге, мейрамханаларға, көлікке және ойын-сауыққа сұранысты арттырады, бұл туристік индустрияның өсуіне және жаңа жұмыс орындарының ашылуына әкеледі.

Сондай-ақ, азаматтық авиация тауарларды тез және тиімді жеткізуді қамтамасыз ете отырып, халықаралық сауданы дамытады, бұл әлемдік нарықтардың кеңеюіне және халықаралық сауданың ұлғаюына ықпал етеді. Ол бизнесмендерге іссапарларды оңай жүргізуге және халықаралық байланыстар орнатуға мүмкіндік беру арқылы іскерлік қарым-қатынасты сақтайды [1]. Әуе кемелерін өндіру мен күтіп ұстауды, сондай-ақ әуежай инфрақұрылымын қоса алғанда, авиация индустриясын дамыту жұмыс орындарын ашады және инвестицияларды тартады.

АҚШ, Катар және Қытайдан алынған мысалдар Азаматтық авиацияның экономикалық өсу мен дамуға қалай ықпал ететінін көрсетеді. Авиациялық инфрақұрылым мен білімге инвестициялар осы саланы қолдау мен дамытуда маңызды рөл атқарады. Азаматтық авиация туризм, сауда, бизнес және инновация арқылы экономиканы ынталандырады, оны экономикалық дамудың маңызды қозғалтқышы етеді [2].

**Түйін сөздер:** азаматтық авиация, экономика, халықаралық сауда, инвестициялар, авиациялық инфрақұрылым.

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### **Гражданская авиация и ее влияние на экономику страны**

**Аннотация.** Гражданская авиация играет ключевую роль в современной глобальной экономике, обеспечивая связь между странами и городами, стимулируя туризм, торговлю и бизнес. В этой статье рассматривается влияние гражданской авиации на экономику страны, а также выгоды, которые она приносит. Гражданская авиация вносит свой вклад в развитие туризма, делая его более доступным и привлекательным благодаря удобным рейсам. Приток туристов увеличивает спрос на отели, рестораны, транспорт и развлечения, что приводит к росту индустрии туризма и созданию новых рабочих мест.

Гражданская авиация также способствует международной торговле, обеспечивая быструю и эффективную доставку товаров, что способствует расширению мировых рынков и увеличению

объема международной торговли. Она поддерживает деловые отношения, позволяя бизнесменам легко совершать деловые поездки и устанавливать международные связи [1]. Развитие авиационной промышленности, включая производство и техническое обслуживание самолетов, а также инфраструктуры аэропортов, создает рабочие места и привлекает инвестиции.

Примеры США, Катара и Китая демонстрируют, как гражданская авиация способствует экономическому росту и развитию. Инвестиции в авиационную инфраструктуру и образование играют важную роль в поддержании и развитии этой отрасли. Гражданская авиация стимулирует экономику через туризм, торговлю, бизнес и инновации, что делает ее важным двигателем экономического развития [2].

**Ключевые слова:** гражданская авиация, экономика, международная торговля, инвестиции, авиационная инфраструктура.

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