

Research on the development status and optimization path of low-altitude economy

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Abstract: From the basic characteristics of low altitude economy, because of its high technology, high efficiency and high quality characteristics, so and the latest proposed new quality productivity has a high consistency. In terms of its significance, low economic development on the new mass state such as “three elements” played an important role, which led to the development towards the new productivity. This paper focuses on the development of low-altitude economy, and studies the development status, existing problems and optimization paths, hoping to deepen the understanding of low-altitude economy for reference.

Key words: Low altitude economy; Current situation; Problems; Optimizing the path

Introduction

In 2024, it is mentioned in the Government Work Report that the primary task of the government is to vigorously promote the construction of a modern industrial system, accelerate the development of new quality productive forces, and actively cultivate emerging growth points, including low-altitude economy. The proposal of new quality productivity has put forward the direction for the subsequent industrial development and adjustment. Low-altitude economy is a model of new quality productivity. Low-altitude economy has played an important role in economic development, and its influence has even gradually surpassed that of the primary, secondary and tertiary industries, which also gives birth to the s chain of emerging industries and becomes a means to activate the economy. Strengthening the research on the development of low-altitude economy can not only accelerate the economic growth rate, but also enable the development of new quality productivity. This paper firstly analyzes the current situation of low-altitude economic development from three aspects, and then puts forward the development suggestions, so as to help the implementation of new quality productivity.

1. The current situation of low-altitude economic development

1.1 The national level attaches great importance to it

Low-altitude economy has been included in the 13th Five-Year Plan in the Outline of the National Comprehensive Three-dimensional Transportation Network Planning. At the Central Economic Work Conference in 2023, it was clearly pointed out that a number of new industries of strategic significance should be developed, such as bio-manufacturing, commercial aerospace, and low-altitude economy. In the 2024 government work report, it is clearly pointed out that new economic growth points should be vigorously cultivated, including bio-manufacturing, commercial aerospace, low-altitude economy and so on. The Implementation Plan for the Innovative Application of General Aviation Equipment (2024-- 2030) clearly points out that by 2030, China will achieve the market scale of one trillion yuan in the low-altitude industry.

1.2 The low-altitude economic and industrial map is gradually enriched

Low-altitude economy refers to a new economic form combining various industries with spacecraft as the main body and low-altitude activities as the traction, including low-altitude manufacturing industry, low-altitude flight industry, low-altitude support industry and integrated service industry, covering general aviation, UAV, eVTOL, helicopter, traditional fixed-wing aircraft and other fields. Involving production operations, public services, private leisure flight, air tourism, low-altitude logistics, urban air traffic and many other application scenarios, and continues to expand.

1.3 The commercialization process is accelerating

In many places, many application scenarios have been discussed and practiced in the fields of logistics and transportation, instant delivery, urban governance, public services and so on, and have formed a certain scale. Taking Shenzhen as an example, a huge UAV transportation system has been established, including 203 detailed planned flight routes and 121 fast and effective UAV take-off and landing sites. Starting from 2022, the UAV system has successfully completed more than 780,000 cargo operations of various types, fully demonstrating its super transport capacity and high efficiency. Meituan's Uavs have opened nearly 30 customized routes in ten major business centers in Shenzhen, covering various social occasions such as offices, scenic spots, medical institutions and schools. So far, there have been more than 270,000 customer orders, fully demonstrating its great potential and wide application value in urban life.

2. There are problems in low-altitude economic development

Low economy is a new kind of industry, can effectively promote the development of economic growth and the high quality of our country. According to the latest statistics released by the China Business Industry Research Institute, China's “low-altitude economy” has reached about 400 billion yuan in the national economic aggregate in 2022, with an average annual growth rate of 29.03%. In addition,

the Civil Aviation Administration of China, is expected to “low” China industry as a whole size will be more than 1.5 trillion in 2025, is expected to hit 3.5 trillion in 2035. In addition, by the end of the 14th Five-Year Plan, the overall contribution of China’s Low-altitude Economic Development (2022-2023) is expected to exceed 3 trillion to 5 trillion yuan, among which “low-altitude economy” contributes the most to regional economic growth. In short, in China, low-altitude economy has shown great development potential and a very wide market. It will play a key role in promoting the sustainable development of new quality productivity, and provide a very broad stage for the development of new quality productivity.

At present, there are still some problems and challenges in the development of low-altitude economy in China, which restrict the development of new-quality productivity. Specifically, it can be summarized as follows: first, low altitude airspace resources utilization rate is low. Especially in the current airspace management mode, the space resources required by the development of civil aviation cannot be fully utilized, which makes China’s low-altitude space not fully open; Secondly, low-altitude economic infrastructure needs to be improved. At present, China’s low-altitude infrastructure still has the problems of small quantity and poor quality. General airports, UAV take-off and landing platforms, 5G special communication base stations, etc., are important carriers to realize various low-altitude economic activities, especially low-cost operation. More investment is needed in maintenance bases and other new infrastructure projects; Third, low-altitude manufacturing technology innovation momentum no. In low manufacturing, based on the new digital productivity effect is still not fully play out, this is mainly embodied in the aircraft engine and engine key parts such as intelligent localization degree is not high, the informationization level is not high, and heavy machine innovation and light parts of problems.

3. The optimal path of low-altitude economic development

3.1 Improve low-altitude economic policies and regulations

Establishing a sound and complete policy and legal system is the fundamental guarantee to realize the rapid development of China’s low-altitude economy. We should take the aviation law as the top law, the relevant Civil aviation regulations as the backbone law, supplemented by normative documents, announcements and standard guidelines, form a complete system of civil aviation regulations, formulate a nationwide low-altitude economic development plan as soon as possible, combine development with safety, and improve airspace policies, industrial policies and tax policies. Fiscal, financial and other supporting system should be established in order to improve aviation airspace efficiency. Local governments at all levels should communicate and cooperate with airspace authorities at different levels, such as military and civil aviation departments, to jointly plan low-altitude air routes, formulate standards, specifications and work procedures, develop low-altitude airspace on local air routes, determine its use and supervision procedures, and establish an effective and cooperative whole-region operation and management system of low-altitude airspace. Based on this, will be completed in phases transformation of flight flying from isolation to fusion, and eventually completed based on visual space integration application. Under the guidance of “the effective collaboration”, simplify approval procedures for low-flying, exploration is made into BaoBeiZhi approval, make full use of low-flying mobility, flexibility and convenience. Moderately relaxed access lower airspace industry, optimizing model certificate, production license, certificate of airworthiness formalities, simplify and upgrade small executive procedure, in order to enhance the enthusiasm of enterprise management.

3.2 Optimization of low economic infrastructure

We will effectively connect low-altitude flights with civil airports and other transport hubs, include the construction of low-altitude infrastructure such as general airports, heliports and UAV take-off and landing points in the government’s public transport infrastructure construction plan, and make overall plans based on urban agglomerations to promote the effective connection of low-altitude infrastructure with civil airports and other transport hubs. On this basis, carried out based on the low spatial zoning and waterway planning, the use of space on the environmental impact assessment and safety assessment, evaluation research, a set of scientific strict zoning theory and method. The pilot areas should be supported to open navigation routes, and the map of the suitable area for UAV flying should be formulated. We will promote the coordinated development of low-cost aviation with other means of transportation and integrate it with existing transportation networks such as roads, railways and waterways. Accelerate building the low level report, monitoring the airspace and general airport, fixed, air service, professional repair shop based on operations; We will comprehensively improve low-altitude aviation intelligence, communications monitoring and aviation meteorological services. Enhance aircraft digital security control ability, promote, big data and cloud computing, artificial intelligence technology applied in the aircraft landing process, improve the analysis of the monitoring data of forecast and decision support, to achieve fine management of the space environment. Encourage private enterprises to participate in the fixed operating base station, flight service station service facilities such as market operation, government leading, social capital to participate in, to build, play to social forces, to absorb foreign advanced technology and management experience, improve the ability of service guarantees.

3.3 Step up research and development of core technologies

First, strengthen exchanges and cooperation in various fields. Strengthen key laboratory and engineering technology center and post-doctoral mobile stations, in a low economic cooperation, such as technology research and development, personnel training, and international exchange, etc., common to the scientific and technological project now, expert and talent resources. For the current aviation enterprises, universities or scientific research institutions, low-altitude economic innovation alliance and interdisciplinary research center should be jointly built. We should improve scientific and technological innovation platforms such as proof-of-concept and pilot test services, strengthen scientific and technological services of science and technology intermediaries and evaluation institutions, and improve the level

of collaboration between industries. The second is to strengthen the research and development strength, increase engine, control systems, electrical and electronic systems, power systems research, the key techniques such as to realize the breakthrough in technology. We will promote the intersection and innovation of China's low-altitude basic research with emerging technologies such as big data and artificial intelligence, and speed up the R&D, system integration and engineering application of major generic technologies. We will support the research and development of low-altitude aircraft such as man-machine and unmanned aerial vehicles, as well as engines, propellers and aviation-grade carbon fiber airframes, so as to continuously improve the scientific and technological level of China's important core components and the entire industry.

Concluding Remarks

The high-quality development of low-altitude economy must be based on the current situation and focus on the future, adhere to the rule of law, open, green and market-oriented development, and take safe development and new low-altitude transportation infrastructure as the cornerstone to build a new pattern of low-altitude economic development in China. Combined with the problems mentioned above, this paper finally mentions the suggestions of improving low-altitude economic policies and regulations, optimizing low-altitude economic infrastructure, strengthening core technology research and development, integrating low-altitude economic industrial resources, actively building low-altitude application scenarios, and strengthening low-altitude economic personnel training, hoping to accelerate the pace of low-altitude economic development and promote social and economic development.

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