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Exploring the New Blue Ocean of Low-altitude Economy: An Empirical Analysis of Industrial Status Quo and Technological Innovation References

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Abstract: ***Low-altitude economy, as an important component of the modern economic system, is becoming a new engine for promoting high-quality regional development and industrial upgrading. The low-altitude economy industry, centered on unmanned aerial vehicles (UAVs), general aviation, and air traffic management, not only significantly enhances the efficiency of traditional industries but also gives rise to new business forms such as low-altitude tourism, urban air mobility (UAM), and smart logistics, forming a trillion-yuan market scale. According to statistics, the scale of China's low-altitude economy has exceeded 500 billion yuan in 2023, and it is expected to drive an industrial chain value of over 2 trillion yuan by 2030. The development of low-altitude economy is deeply in line with the national strategy. By unleashing the potential of low-altitude airspace resources, optimizing regional transportation networks, and promoting the integration of scientific and technological innovation and high-end manufacturing, it provides brand-new solutions for the coordinated development of urban agglomerations and rural revitalization. The breakthrough in this field is not only a technological revolution, but also a comprehensive test of institutional innovation, industrial collaboration and social governance capabilities. Its significance has risen to the dimensions of national competitiveness and economic security. Therefore, based on the perspective of the development of low-altitude economic industries in Guangdong and Guangxi, this paper conducts research and analysis on the current cognition status and future development trend of the low-altitude industries of the people in Guangdong and Guangxi.***

Keywords: Low-altitude economy; Emerging sectors of strategic importance; Future development trend.

1. INTRODUCTION

Low-altitude economy refers to an economic activity system that takes the airspace below 1,000 meters above the ground as its carrier, covering multiple fields such as general aviation, unmanned aerial vehicle logistics, urban air traffic (UAM), low-altitude tourism, and emergency rescue [1]. With the breakthroughs in airspace management technology, new energy aircraft and digital technology, the low-altitude economy has become a new track in global industrial competition [2].

As the third-dimensional strategic space following the land and Marine economies, the low-altitude economy is reconfiguring the allocation paradigm of global production factors. The integration of Unmanned Aerial Vehicle (UAV) systems (UAS), Advanced Air Mobility (AAM), and distributed airspace management technologies has given rise to new infrastructure systems with significant network externalities [3]. International practice shows that two dominant development paths have emerged in this field: the progressive airspace reform represented by the FAA NextGen in the United States, and the system reconfiguration model based on digital twin technology by the U-space in the European Union. As a latecomer economy, China is building a development path with institutional characteristics through pilot airspace classification management and vertical integration of industrial chains. In 2023, the marginal contribution rate of the low-altitude economy to GDP has reached 0.38%, and its industrial multiplier effect has significantly surpassed that of traditional infrastructure projects.

However, the asynchrony between technology adoption and social cognition is becoming a constraining factor [4]. The World Bank's 2023 Industry Report points out that emerging economies have a significant "cognitive-policy gap" in the layout of low-altitude industries [5]: For every 10% increase in the technological cognition level of market entities, the efficiency of regional airspace resource allocation can be correspondingly improved by 6.2% (World Bank, 2023). This discovery highlights the leading value of public cognition research in institutional design. As a key node of airspace coordination between China and ASEAN, the Guangdong and Guangxi regions have a

unique multi-level low-altitude industry: it not only has the commercial pilot of UAM (Urban Air Mobility) in the Greater Bay Area urban agglomeration, but also covers the large-scale application of agricultural and forestry plant protection drones in the southwestern border. This gradient development pattern provides a natural laboratory for observing the interaction mechanism between institutional innovation and technological diffusion.

The low-altitude economy demonstrates huge development potential and broad development space [6]. With the continuous optimization of the national top-level design, the steady advancement of infrastructure construction, the continuous expansion of application scenarios, the constant innovation in key technological fields, and the increasingly improved education system, the low-altitude economy will achieve deeper integration with various industries [7]. It is estimated that by 2025, the market size of China's low-altitude economy will reach 1.5 trillion yuan, and it is expected to exceed 3.5 trillion yuan by 2035. The future development will present the following characteristics: First, technological innovation and industrial innovation will be deeply integrated to promote the high-quality development of the low-altitude economy; Second, the policy environment has been continuously optimized, providing a strong guarantee for the development of the low-altitude economy. Third, the application scenarios are constantly enriched, and the low-altitude economy will expand to more fields such as emergency rescue, urban management, and environmental monitoring. Fourth, international cooperation has been continuously strengthened, promoting the coordinated development of the low-altitude economy on a global scale.

2. RESEARCH DESIGN

2.1 Object of Study

The research subjects of this survey are the people of Guangdong and Guangxi. The main reasons for choosing it as the research object are as follows: (1) There are many low-altitude industries in Guangdong and Guangxi, and the public has a relatively extensive understanding of the low-altitude economy. (2) The Guangdong-Guangdong region is a typical example of regional coordinated development of low-altitude economy: As a "dual high ground" in terms of search popularity and industrial scale of low-altitude economy in China (with a low-altitude economy output value accounting for 28% of the national total in 2023), Guangdong is home to leading enterprises such as DJI and Ehang. Relying on its border location, mountainous terrain and the ASEAN cooperation window, Guangxi is accelerating the layout of differentiated scenarios such as cross-border low-altitude logistics and mountain emergency rescue.

2.2 Sampling Method

We used the method of simple random sampling to select a simple random sample of 950 people from 177.31 million permanent residents in Guangdong and Guangxi, and conducted stratified sampling of the sample according to the nature of their occupations.

Stratified sampling is to first divide the units of the population into several sub-populations (layers) according to certain characteristics, and then conduct simple random sampling from each layer, and it must follow the principle of no duplication and no omission. In order to better reflect the cognition of different occupations towards low-altitude industries in Guangdong and Guangxi, we adopt the method of stratified sampling for analysis.

2.3 Sample Size Determination

Based on the data filled in the questionnaire survey, taking the understanding degree of residents in Guangdong and Guangxi regarding the low-altitude tourism industry as the research objective, it is necessary to pay attention to the overall sample variation of the awareness of this industry. In the absence of correction, the determination formula for the optimal initial sample size n_0 is

$$n_0 = \frac{u^2 PQ/d^2}{1+\frac{1}{N}[\frac{u^2 PQ}{d^2}-1]}$$

The overall quantity is represented by N, using the u value corresponding to the 95% confidence level, that is, u=1.96, where u is the two-tailed α quantile of the standard normal distribution. The sample ratio is represented by p and the absolute error by d, where d=0.04. Based on the results of the prediction survey, set p=0.5 to maximize the variance of the sample proportion. During the formal investigation process, if the sample size p is approximately around 0.5, then on the basis of overall stratification, the maximum possible value of the sample

size can be calculated when p=0.5. Therefore, we choose p=0.5 for estimation. The total population of the Guangdong and Guangxi regions is 177.31 million (calculated based on the permanent resident population). Based on this, the optimal sample size can be roughly estimated as:

$$n_0 = \frac{u^2 p(1-p)}{d^2} = \frac{1.96^2 \times 0.5 \times 0.5}{0.04^2} \approx 601$$

That is, 601 is the calculation result for estimating the sample size of the proportion P in a simple random sampling. Within a 95% confidence interval, based on the standard that the maximum allowable sampling error does not exceed 4%, the optimal sample size is calculated.

After considering that the selected people in Guangdong and Guangxi might give up filling out the questionnaire halfway or submit invalid questionnaires, we assume that the invalid ratio is 36.7%. Then, the actual sample size that should be investigated is 950.

$$n_1 = n \div (1 - 0.367) \approx 950$$

Under the assessment of the actual situation, when conducting the formal investigation, a total of 950 questionnaires were distributed, and the number of valid questionnaires successfully retrieved was 695. Therefore, the effective recovery rate of the questionnaires reached 73.2%.

2.4 Sample Distribution

After successfully obtaining 695 valid questionnaires, we conducted post-event stratification processing based on the occupation types of the respondents. This was done to reduce sampling bias and improve the accuracy of overall parameter estimation. The specific sample distribution is as follows:

Table 1: Sample occupation distribution table

Layer	Weights for strata	Sample size
National public servant	0.0964	67
Manager	0.1137	79
Private business owners and individual business owners	0.0647	45
Company employee	0.1410	98
Unemployed or laid off	0.1079	75
Workers from all industries	0.1266	88
Professionals	0.0604	42
Student	0.1554	108
Retirement	0.1108	77
Other careers	0.0230	16
Aggregate	1	695

2.5 Questionnaire Design

According to the survey content, this questionnaire mainly includes the following aspects.

(1) Basic Information of People in Guangdong and Guangxi (Basic Part)

(2) Current Awareness of Low-altitude Industries among the People in Guangdong and Guangxi (Main Part 1)

(3) Views of the People in Guangdong and Guangxi on the Current Development Status of Low-altitude Industries (Main Part 2)

(4) Suggestions from the People of Guangdong and Guangxi on the Development Trend of Low-altitude Economic Industries (Summary Section)

3. EMPIRICAL RESULTS AND ANALYSIS

3.1 Questionnaire Reliability Test

As shown in Table 2, the reliability of the variable is 0.911. This questionnaire has good reliability and can be used

for subsequent research.

Table 2: Formal questionnaire reliability test

Reliability statistics	
Klonbach Alpha	Number of terms
0.911	25

3.2 Questionnaire Validity Test

The results in Table 3 show that the overall validity of the questionnaire is 0.954, which is greater than 0.5, and the significance level is less than 0.05. The questionnaire data passed the validity test and the expected results can be obtained.

Table 3: Formal questionnaire reliability test

KMO and Bartlett tests		
KMO sampling appropriateness quantity		0.954
Bartlett sphericity test	Approximate chi-square	7414.118
	Degree of freedom	276
	Significance	0.000

3.3 Randomness Test

We conduct randomness tests based on three basic information: "gender", "age" and "monthly income". For 695 valid questionnaires, the hypothesis testing questions are:

H0: The sequence sample data shows sample randomness.
H1: The sequence sample data shows that the samples are not random.

The sample randomness test of each categorical variable in the question was conducted using SPSS software. The specific test results are shown in Table 4. Take α=0.05. From the test results, it is known that -1.96<zi<1.96 (i= 1,2,3), that is, the null hypothesis H0 cannot be rejected. Therefore, it can be considered that the sample data does not violate randomness. The sample randomness test of each variable in the question was conducted with the help of SPSS. The test results show that the order of the sample data of most variable sequences is random. Therefore, it can still be considered that the degree of randomization of the survey data obtained from this questionnaire is relatively good.

Table4: Formal questionnaire reliability test

Run test			
	1. Gender	2.Year	3. Monthly income
Test value [a]〈average value〉	1.48	3.38	3.00
Number of cases〈Test value	362	370	387
Number of cases〉= Test value	333	325	308
Total number of cases	695	695	695
Number of strokes	349	335	346
Z	0.084	-0.918	0.153
Progressive significance (double tail)	0.933	0.359	0.878

3.4 A Contingency Table Analysis of Gender and the Initial Impression of Low-altitude Economic Industries in Guangdong and Guangxi

As can be seen from Table 5, the p-values corresponding to the chi-square test (0.972, 0.518, 0.593, 0.622, 0.980, 0.744, 0.297) all exceed the significance level of 0.05. Therefore, the null hypothesis is accepted, that is, it is believed that there is no significant correlation between gender and the respondents' initial impression of the low-altitude economic industries in Guangdong and Guangxi. The reason might be that as an emerging field, the low-altitude economy industry has a relatively wide dissemination of related information. Respondents of different genders may have obtained knowledge about the low-altitude economy through similar channels (such as social media, news reports, science popularization activities, etc.). Therefore, gender differences have not had a significant impact on information acquisition and initial impressions.

Table 5: Gender and the chi-square test of the initial impression of low-altitude economic industries in Guangdong and Guangxi

Project	Name	Gender		X^2	P
		male	female		
Urban air transportation fee（UAM）	unselected	63.54%	63.66%	0.001	0.972
	pitch on	36.46%	36.34%		
Low-altitude logistics	unselected	37.85%	40.24%	0.418	0.518
	pitch on	62.15%	59.76%		
Agricultural plant protection	unselected	72.38%	74.17%	0.286	0.593
	pitch on	27.62%	25.83%		
Low-altitude tourism	unselected	27.72%	19.22%	0.244	0.622
	pitch on	79.28%	80.78%		
Emergency rescue	unselected	40.33%	40.24%	0.001	0.980
	pitch on	59.67%	59.76%		
Industrial inspection	unselected	22.65%	21.62%	0.107	0.744
	pitch on	77.35%	78.38%		
None of the above is known	unselected	100%	99.70%	1.089	0.297
	pitch on	0	0.30%		

3.5 Tandem Analysis of Age and the Degree of Industrial Cognition of low-altitude Economy in Guangdong and Guangxi Regions

Table 6: Chi-square test of age and the degree of cognition of low-altitude economy industries in Guangdong and Guangxi regions

Project	Statistical value	Degree of freedom	Gradualness (bilateral)
Pearson Kafer	24.883	20	0.206
Likelihood ratio	24.771	20	0.210
The number of valid cases	695		

As can be seen from Table 6, the Pearson Chi-square independent test corresponds to P=0.206>0.05. Therefore, the null hypothesis is accepted. Thus, it is believed that there is no significant correlation between age and the degree of industrial cognition of low-altitude economy in Guangdong and Guangxi. The reason might be that the technologies involved in the low-altitude economy industry (such as drones, eVTOL), application scenarios (such as low-altitude tourism, logistics distribution), and policy background, etc., may have similar appeal and cognitive difficulty for respondents of different age groups. For instance, both young people and middle-aged and elderly people may show similar interest and cognitive levels in emerging applications such as low-altitude tourism or drone delivery.

3.6 A Contingency Table Analysis of the Basic Impressions of Occupations and Low-altitude Economic Industries in Guangdong and Guangxi Regions

It can be known from Table 7 that the Pearson Chi-square independent test corresponds to P=0.035<0.05. Therefore, the null hypothesis is rejected. Thus, it is believed that there is a significant correlation between occupations and the basic impression of low-altitude economic industries in Guangdong and Guangxi.

Table 7: The basic impression chi-square test of occupations and low-altitude economic industries in Guangdong and Guangxi regions

Project	Statistical value	Degree of freedom	Gradualness (bilateral)
Pearson Kafer	52.849	36	0.035
Likelihood ratio	48.674	36	0.077
The number of valid cases	695		

It can be known from Table 8 that different occupational groups have different impressions of the low-altitude economic industries in the Guangdong and Guangxi regions. National civil servants, managers and retirees hold relatively positive views on the industry, with a high satisfaction rate. Especially, the satisfaction rate of retirees reaches 55.85%. Private business owners/self-employed individuals and technicians have a neutral attitude and relatively low satisfaction. Among the company's staff, the proportion of dissatisfaction is the highest, reaching

31.63%, which may be due to the gap between expectations and reality. The unemployed/laid-off worker group is mainly moderately satisfied, and the proportion of dissatisfied workers is relatively high. The student group is open to new things, with dissatisfaction accounting for only 2.78%. Overall, middle-aged and young occupational groups have a higher interest in low-altitude economy industries. Specific occupational groups need more information to enhance their awareness. Occupational differences are reflected in the working environment, educational background and attitude towards innovation, and targeted publicity and popular science education are needed.

Table 8: A table of basic impressions of occupations and low-altitude economic industries in Guangdong and Guangxi regions

Occupation	Basic impression					Total
	be very dissatisfied	dissatisfaction	medium	satisfaction	great satisfaction	
National public servant	12	0	25	22	8	67
	17.91%	0.00%	37.31%	32.84%	11.94%	100.00%
Manager	18	0	26	30	5	79
	22.78%	0.00%	32.91%	37.97%	6.33%	100.00%
Private business owners/self-employed individuals	8	0	22	12	3	45
	17.78%	0.00%	48.89%	26.67%	6.67%	100.00%
Company employee	31	0	29	29	9	98
	31.63%	0.00%	29.59%	29.59%	9.18%	100.00%
Unemployed/laid off	13	0	31	29	2	75
	17.33%	0.00%	41.33%	38.67%	2.67%	100.00%
Workers from all industries	18	0	27	38	5	88
	20.45%	0.00%	30.68%	43.18%	5.68%	100.00%
Professionals	4	0	17	15	6	42
	9.52%	0.00%	40.48%	35.71%	14.29%	100.00%
Student	14	3	45	37	9	108
	12.96%	2.78%	41.67%	34.26%	8.33%	100.00%
Retirement	11	0	23	33	10	77
	14.29%	0.00%	29.87%	42.86%	12.99%	100.00%
Else	3	0	7	6	0	16
	18.75%	0.00%	43.75%	37.50%	0.00%	100.00%
Total	132	3	252	251	57	695

3.7 Contingency Table Analysis of Educational Qualifications and Subjective Evaluation of Low-altitude Economic Industries in Guangdong and Guangxi Regions

As can be seen from Table 9, the Pearson Chi-square independent test corresponds to P=0.443>0.05. Therefore, the null hypothesis is accepted. Thus, it is believed that there is no significant difference in the subjective evaluation of the low-altitude economic industries in Guangdong and Guangxi among people with different educational levels. The reason might be that the subjective evaluation itself is influenced by personal biases, emotional factors and the social environment. Even if the educational attainment levels are different, respondents may evaluate low-altitude economic industries based on similar social cognition and emotional tendencies, resulting in the insignificant influence of educational attainment factors on subjective evaluation.

Table 9: The chi-square test of subjective evaluation of educational qualifications and low-altitude economic industries in Guangdong and Guangxi regions

Chi-square test	Statistic	Degree of freedom	Progressive significance (bilateral)
Pearson Kafer	12.032	12	0.443
likelihood ratio	12.169	12	43.20%
The number of valid cases	695		

3.8 KMO and Bartlett Tests

Through the KMO test, we can confirm whether the selected indicator system data is suitable for using the principal component factor analysis technique. This method is considered applicable only when the KMO value reaches or

approaches 0.6. Based on our sample data, the KMO index calculated in the statistical table is 0.975, which indicates that these sample data are suitable for principal component factor analysis. Furthermore, the p value of Bartlett's sphericity test is less than 0.05, which means that the analysis results of our sample data are statistically significant.

Table 10: Influencing factors: KMO and Bartley test

KMO sampling appropriateness measuremen		0.978
Bartlett sphericity test	Approximate chi-square	5902.993
	Degree of freedom	120
	Significance	0.000

3.9 KMO and Bartlett Tests

Based on these 16 quantified evaluation indicators of influencing factors, through the application of SPSS software for factor analysis and principal component analysis, and by setting the eigenvalue threshold greater than 1, we obtained the contribution rate of each principal component, the rotated component matrix, and the eigenvector matrix. According to the data in Table 11, two principal components were selected, and their contribution rates were as follows: The first principal component accounted for 55.352%, the second principal component accounted for 4.026%, and the cumulative contribution rate reached 59.378%. This means that the first two principal components contain the data information of more than 59.378% of the 15 evaluation indicators.

Table 11: The eigenvalues, variances and cumulative contribution rates of each component of the influencing factors

Element	Initial eigenvalue			Extract the sum of the load squares		
	Total	Variance percentage	Accumulation%	Total	Variance percentage	Accumulation%
1	8.856	55.352	55.352	8.856	55.352	55.352
2	0.644	4.026	59.378	0.644	4.026	59.378
3	0.597	3.733	63.111			
4	0.576	3.598	66.709			
5	0.563	3.522	70.230			
6	0.547	3.417	73.647			
7	0.498	3.111	76.757			
8	0.491	3.068	79.826			
9	0.474	2.964	82.790			
10	0.456	2.849	85.639			
11	0.426	2.663	88.302			
12	0.420	2.624	90.926			
13	0.408	2.549	93.474			
14	0.386	2.414	95.889			
15	0.345	2.154	98.043			
16	0.313	1.957	100			

The eigenvector matrix can reflect the load of each index on each principal component. As can be seen from Table 12, the first principal component is mainly determined by external factors, and the second principal component is mainly determined by internal factors.

Table 12: Eigenvector matrix

Project	Element	
	1	2
X_1	0.079	0.301
X_2	0.084	-0.279
X_3	0.084	0.403
X_4	0.087	0.096
X_5	0.081	
X_6	0.085	-0.114
X_7	0.087	-0.226
X_8	0.078	0.787

X_9	0.082	-0.191
X_{10}	0.083	-0.558
X_{11}	0.086	-0.245
X_{12}	0.083	0.001
X_{13}	0.089	-0.115
X_{14}	0.088	0.052
X_{15}	0.089	-0.152
X_{16}	0.080	0.058

3.10 Comprehensive Evaluation of Influencing Factors

The macroeconomic situation, personal preferences of consumers, the orientation of national policies and regulations, airspace management and resource utilization, the heat of the capital market, industry standards and market norms, the degree of social recognition and acceptance, the degree of attention from local governments, the geographical location of low-altitude industrial economic clusters, the number of professional aerospace talents, the completeness of infrastructure construction, the maturity of local industrial chains, and the local market leaders The standardized data of 15 variables, namely the development degree of the body, the development degree of local new quality productive forces, the safety supervision degree of local low-altitude industries, and the cost and market penetration degree, are X_1 to X_{16} in sequence. Then, the principal component expression is obtained according to the table:

$$y_2 = 0.301x_1 - 0.279x_2 + 0.403x_3 + 0.096x_4 + 0.282x_5 - 0.114x_6 - 0.226x_7 + 0.787x_8 - 0.191x_9 - 0.558x_{10} - 0.245x_{11} + 0.001x_{12} - 0.115x_{13} + 0.052x_{14} - 0.152x_{15} + 0.058x_{16}$$

$$y_1 = 0.079x_1 + 0.084x_2 + 0.084x_3 + 0.087x_4 + 0.081x_5 + 0.085x_6 + 0.087x_7 + 0.078x_8 + 0.082x_9 + 0.083x_{10} + 0.086x_{11} + 0.083x_{12} + 0.089x_{13} + 0.088x_{14} + 0.089x_{15} + 0.080x_{16}$$

After conducting operations on the aforementioned two main components using quantified variable data, and taking the variance contribution ratio of these two main components as the weight, a comprehensive evaluation index of influencing factors for the industrial development of low-altitude economy in Guangdong and Guangxi regions is constructed:

$$F = 0.55352x_1 + 0.04026x_2$$

Through the above principal component analysis, we can conclude that the main factors influencing the development of the low-altitude economy industry in Guangdong and Guangxi regions are the orientation of national policies and regulations, the degree of attention from local governments, the completeness of infrastructure construction, the number of professional aerospace talents, and the maturity of the local industrial chain. Therefore, in order to promote the development of low-altitude economic industries in Guangdong and Guangxi, these key factors should be given priority attention, and corresponding policies and measures should be formulated to optimize the environment for the development of low-altitude economic industries.

4. CONCLUSION AND SUGGESTION

4.1 Objective Evaluation and Willingness to Improve

In order to understand the views of the people in Guangdong and Guangxi on whether the development of the low-altitude economy industry in Guangxi and Guangdong needs to be improved and certain measures taken, as well as the current situation of the related work of this industry's development, the following answers were obtained after distributing questionnaires to the public. Those who are highly dissatisfied with the work related to the low-altitude economy industry in the Guangdong-Guangdong region reflect that 7.63% of them have a very strong willingness to take measures. Among them, 6.76% were not very satisfied with their work and had a strong willingness to take measures. 18.42% expressed a moderate attitude towards their work and had a moderate willingness to take measures. 31.51% expressed satisfaction with their work and had a relatively weak willingness to take measures. 35.68% expressed great satisfaction with their work and had a very weak willingness to take measures. From the above data, it can be roughly seen that there are still some people who believe that the work related to the low-altitude economy industry in the Guangdong-Guangdong region is currently not optimistic and

urgently needs relevant practical and effective measures to improve it.

4.2 Industrial Collaboration, Airspace Innovation

When asked about the question of "Where should the conditions for promoting the development of low-altitude economy in Guangdong and Guangxi start?", we hope to accurately capture the inner expectations of the people in Guangdong and Guangxi for the integrated development direction of low-altitude economy. We are deeply eager to listen to the true voices in the hearts of the people and gather multi-angle and multi-level solutions and countermeasures. Setting this question as a ranking question of the first, second, and third most important types can more intuitively reflect the hierarchical hierarchy of the public's intentions and help us grasp the core demands of the public more clearly and quickly. Based on this, policymakers can break through the limitations of traditional thinking, explore more practical, efficient and powerful measures and plans, and promote the vigorous development of low-altitude economic industries in the Guangdong and Guangxi regions.

4.3 Increase Investment in Low-altitude Areas and Diversify Development

When asked "In which aspects should the investment in the development of low-altitude economic industries in Guangdong and Guangxi be increased?", the setting of this question is carried out by multiple subjects. It may make different choices based on the different occupations, incomes and other aspects of the people. The fiscal investment is also divided by multiple subjects. This issue can be identified from the public's perception as to which aspects of the low-altitude economy industry in the Guangdong and Guangxi regions should be increased in terms of investment, such as "infrastructure construction", "talent introduction", "project support", and so on. This can further reflect which areas are still weak links in the development of this industry, and thus more purposefully identify the gaps. And by adopting more appropriate financial input, every sum of funds can be spent more effectively.

In contrast, although the proportion of people who believe that measures such as "increasing financial investment in expanding application scenarios of the low-altitude economy", "increasing financial investment in upstream and downstream enterprises of the low-altitude economy industrial chain", "increasing investment in low-altitude economy industrial funds", and "increasing management investment in professional education and training related to the low-altitude economy" are important, is relatively low. However, these aspects are also of great significance for the all-round development of the low-altitude economy. They respectively involve multiple links such as the expansion of application markets, the coordination of industrial chains, capital support and talent cultivation, all of which are indispensable and important components of the low-altitude economy.

4.4 Digital Empowerment, Low-altitude Expansion

When asked the question "Under the background of the development of new quality productivity, how do you think digital technology should be utilized to further expand the influence of the low-altitude economy?", the question Settings mainly set the questionnaire options from the five aspects shown in the following figure, namely "Through technologies such as big data, artificial intelligence, and the Internet of Things, achieve intelligent management and operation of low-altitude aircraft. "Enhance flight safety" "Build a low-altitude intelligent Internet, increase the coverage and real-time performance of low-altitude communication, and provide basic support for the collaborative operation of unmanned aerial vehicle groups" "Strengthen the construction of low-altitude digital infrastructure such as communication, navigation, and surveillance, and solve the problems of continuous coverage and latency of low-altitude networks" "Empower the low-altitude economic industrial chain through digital technology "Enhance the efficiency of R&D design, production manufacturing, operation management and other links", "Utilize the computing power network to support the efficient operation of the low-altitude economy and ensure the real-time processing and decision support of flight data", and "others" six options. The setting of this question is mainly to understand the public's views on using digital technology to expand the influence of the low-altitude economy. It covers multiple dimensions such as intelligent management, the construction of smart networks, the strengthening of digital infrastructure, the improvement of industrial chain efficiency, and the support of computing power networks. It explores the public's deep-seated demands for the low-altitude economy to drive economic growth under the background of the development of new quality productivity. And explore new development paths and opportunities for related industries to utilize digital technologies.

Through the questionnaire survey, several positive influences have been widely recognized. Among them, the

options include "achieving intelligent management and operation of low-altitude aircraft through technologies such as big data, artificial intelligence, and the Internet of Things to enhance flight safety", "building a low-altitude intelligent network to increase the coverage and real-time performance of low-altitude communication and provide basic support for the collaborative operation of unmanned aerial vehicle groups", and "empowering the low-altitude economic industrial chain through digital technology The number of people who ranked "improving the efficiency of R&D design, production and manufacturing, operation and management and other links" as the top priority all exceeded 100, namely 124, 112 and 116, accounting for 33.07%, 29.87% and 30.93% respectively among the number of people who filled out the valid questionnaire. In contrast, although the number of people choosing "utilizing computing power networks to support the efficient operation of the low-altitude economy and ensure real-time processing and decision support for flight data" and "strengthening the construction of low-altitude digital infrastructure such as communication, navigation, and surveillance to solve the problems of continuous coverage and latency of low-altitude networks" is less than the other three, they still reflect the potential value of these measures in the low-altitude economy.

To sum up, the majority of the public believes that using digital technology to expand the influence of the low-altitude economy is a key link in promoting economic development. In multiple dimensions such as intelligent management, the construction of intelligent networks, and the empowerment of industrial chains by digital technologies, the low-altitude economy has demonstrated remarkable development potential and value. Through the application of technologies such as big data, artificial intelligence, and the Internet of Things, intelligent management and operation of low-altitude aircraft have been achieved, which not only enhances flight safety but also lays a solid foundation for the sustainable development of the low-altitude economy. The construction of a low-altitude intelligent Internet, which enhances the coverage and real-time performance of low-altitude communication, also provides strong support for the collaborative operation of unmanned aerial vehicle swarms, further expanding the application scenarios and market demands of the low-altitude economy. To further unleash the potential of the low-altitude economy, the Guangdong and Guangxi regions should seize development opportunities, increase investment and policy support, and promote the low-altitude economy to become a new engine for regional economic growth. Meanwhile, emphasis should be placed on regional coordination and industrial linkage. By strengthening cooperation and exchanges, the diversification and sustainable development of the economy can be achieved, injecting new vitality and impetus into the long-term development of the low-altitude economy.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest relevant to this study.

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