

# Analyzing the Current Situation of High-Quality Development and Its Optimization Path: A Case Study of Xinhui District

Yiyong Ye\*

School of Economics and Management, Wuyi University, Jiangmen 529020, Guangdong Province, China

\*Corresponding author: Yiyong Ye, yyyong2022@163.com

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**Abstract:** Based on the social and economic development data of Xinhui District in Jiangmen City from 2016 to 2020, as well as the characteristics and connotation of high-quality development, this study constructs a high-quality development evaluation index system, explores the current situation of high-quality development in Xinhui District from a quantitative perspective by factor analysis, compares it with the high-quality development situation of other regions, so as to ascertain the gap existing in Xinhui District, and finally, proposes corresponding improvement measures to provide reference for local the government to formulate policies.

**Keywords:** High quality development; Factor analysis; Optimization path

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## 1. Introduction

In the 2018 Government Work Report, Xinhui District in Jiangmen City put forward the goal of achieving high-quality economic development for the first time, which is an urgent need for the transformation and upgrading of its economic development as well as the epitome of China's current social and economic development. Promoting high-quality economic development is and will be the focus of development at present and in the coming period, respectively <sup>[1]</sup>.

In order to better transform China's economy from high-speed growth to high-quality development, it is necessary to systematically study the relationship between high-speed growth and high-quality development, the internal requirements of high-quality development, the construction of a high-quality development judgment system, and the transformation from high-speed growth to high-quality development. This research is of great significance to guide local governments to formulate economic development strategies.

## 2. Research status

Since the concept of "high-quality development" was put forward in 2018, many scholars have conducted research on related topics. Specifically, the content mainly focuses on the following aspects: first, the theoretical connotation of high-quality development <sup>[2-5]</sup>; second, the construction of a high-quality index system; however, the constructed evaluation index systems are different due to the varied understandings of the connotation and extension of high-quality development by local scholars <sup>[6-9]</sup>; the third is the evaluation of high-quality development; for example, Su Yongwei, Li Mengxin, and Kou Huanhuan used

sub index, BP neural network, and the comprehensive index method, respectively, to quantitatively analyze the current situation of high-quality development in each region, discovering that the overall situation of high-quality development is improving, but a significant gap still exists between regions [10-12].

Generally speaking, most of the aforementioned studies are based on the analysis of the current situation of high-quality development at the macro level, such as the comparison between countries or various provinces, with several studies on the high-quality development of specific cities or regions. Therefore, based on the economic survey data of Xinhui District in Jiangmen City, this paper points out the main issues existing in the current economic development of Xinhui District through data analysis, determines the gap between Xinhui District and high-quality development areas, and then proposes corresponding improvement measures to provide reference for the local government to formulate policies.

### **3. Research method**

Since there are many fields involved in high-quality development, this study selects factor analysis as the evaluation and measurement method of high-quality development on the basis of consulting relevant literatures. Factor analysis is a measurement method that considers the internal dependence between indicators and utilizes the idea of dimension reduction to represent multiple indicators with several unobservable variables known as common factors. Using factor analysis, several variables can be used to represent the main information of the original variables and replace the original variables to explain certain economic and social information. It has more advantages in comprehensive evaluation [13].

### **4. Establishing an evaluation index system**

The quality of economic development should include more factors affecting development itself, not only the efficiency of growth, but also the sharing of results. It should include not only economic factors, but also other factors beyond economy. It should reflect not only the harmonious relationship between man and nature, but also that between people. Therefore, to bring all the above factors into the evaluation framework of high-quality development, not only the comprehensiveness, rationality, and effectiveness of indicators should be considered, but also the data availability. According to the basic guiding ideology of the index setting, a high-quality development evaluation index system is established based on four criteria: high-quality economic growth, high-quality innovative development, high-quality ecological civilization, and high-quality development of people's livelihood.

- (1) High-quality economic growth: economic growth intensity (per capita GDP), economic growth efficiency (capital output ratio, energy consumption rate), degree of economic openness (ratio of total import and export to regional GDP), and economic industrial structure (industrial structure advanced index).
- (2) High-quality innovative development: innovation investment (research and development [R&D] funds accounting for the GDP and R&D personnel ownership per ten thousand people) and innovative output (patent ownership per ten thousand people).
- (3) High-quality ecological civilization: green living (forest coverage and green rate of built-up area)
- (4) High-quality development of people's livelihood: income level (per capita disposable income), employment level (registered urban unemployment rate), medical service (per capita healthcare expenditure), education expenditure (per capita education expenditure), and urban-rural coordination (urbanization rate).

### **5. Empirical analysis**

#### **5.1. Data collection and pre-processing**

According to the index system, relevant statistical data for 2016-2020 were collected and sorted out from

the Guangdong Provincial and Jiangmen City Statistical Yearbook. The specific data are shown in **Table 1**.

**Table 1.** High-quality development evaluation index data of Xinhui District

Index	2016	2017	2018	2019	2020
Per capita GDP (ten thousand yuan)	5.87	6.03	6.29	6.88	8.70
Capital output ratio	2.36	2.11	1.89	1.75	1.77
Energy consumption per unit of GDP (ton/ten thousand yuan)	0.56	0.56	0.55	0.52	0.42
Ratio of total import and export to regional GDP (%)	58.93	57.30	54.69	49.85	43.25
Industrial structure advanced index	6.4	6.49	6.56	6.59	6.77
R&D funds accounting for the GDP (%)	1.71	1.86	1.61	1.98	1.79
R&D personnel ownership per ten thousand people (person/ten thousand)	44.68	42.10	36.32	59.92	87.80
Patent ownership per ten thousand people (piece/ten thousand)	4.08	4.11	6.60	6.31	11.52
Forest coverage (%)	33.27	33.61	33.74	33.74	30.48
Greening rate of built-up area (%)	43.97	44.56	44.76	44.86	45.20
Per capita disposable income (yuan)	20,924.92	22,912.83	25,190.84	27,706.65	30,820.75
Registered urban unemployment rate (%)	2.35	2.36	2.37	2.39	2.38
Per capita healthcare expenditure (yuan)	603.73	732.96	788.93	1061.59	1251.1
Per capita education expenditure (yuan)	1,899.90	2,213.44	2,311.38	2,425.73	2,568.95
Urbanization rate (%)	63.18	64.15	64.32	65.23	66.23

## 5.2. Factor analysis

SPSS was used to conduct factor analysis. According to the principle of eigenvalue  $\geq 1$  and the cumulative variance contribution rate greater than 85%, two principal components were selected. All the results obtained passed the IMO test and Bartlett's ball test. The specific data are shown in **Table 2**.

**Table 2.** Interpretation of total variance

Assembly	Initial eigenvalue			Extract sum of squares		
	Amount to	Variance percentage	Cumulative percentage	Amount to	Variance percentage	Cumulative percentage
1	12.1616	81.077	81.077	12.162	81.077	81.077
2	1.7730	11.820	92.897	1.773	11.820	92.897
3	0.9149	6.100	98.997			
4	0.1505	1.003	100.000			

Extraction method: Principle component analysis

It can be seen that the cumulative variance corresponding to the first two eigenvalues reached 92.897%, which meets the selection rules. Therefore, the evaluation system of 15 index can be compressed into two principal components, and with 92.897% of the original data retained, it can reflect the entire content of the original information.

**Table 3** demonstrates the calculated rotated component matrix, which provides the corresponding coefficient scores of each index, reflecting the close relationship between the index and high-quality development.

**Table 3.** Composition matrix A after rotation

Indicators	Assembly	
	1	2
Forest coverage	-0.983	0.067
Energy consumption per unit of GDP	0.963	0.244
Patent ownership per ten thousand people	0.936	0.309
Per capita GDP	0.929	0.36
R&D personnel ownership per ten thousand people	0.878	0.311
Ratio of total import and export to regional GDP	-0.836	-0.542
Industrial structure advanced index	0.833	0.532
Per capita disposable income	0.749	0.655
Per capita healthcare expenditure	0.745	0.658
Urbanization rate	0.742	0.666
Registered urban unemployment rate	-0.338	-0.917
Capital output ratio	-0.436	-0.859
Per capita education expenditure	0.6	0.766
Greening rate of built-up area	0.623	0.721
R&D funds accounting for the GDP	-0.112	0.675

Extraction method: main component analysis; rotation method: Kaiser-normalized maximum variance method; the rotation converged after three iterations

As can be seen, in the first principal component, the 10 indexes include forest coverage, energy consumption per unit of GDP, patent ownership per ten thousand people, per capita GDP, R&D personnel ownership per ten thousand people, ratio of total import and export to regional GDP, industrial structure advanced index, per capita disposable income, per capita healthcare expenditure, and urbanization rate. Since the overall contribution rate of the first principal component is as high as 81.077%, it is believed that the aforementioned 10 indexes are crucial to improving the high-quality development of Xinhui District.

In the first principal component, the coefficient score of forest coverage is -0.983, which indicates that economic development and environmental protection are considered a contradictory pair. In order to develop economy, land and other related resources are required, which will inevitably have a negative impact on the environment. In order to improve the effect of environmental protection and realize the harmonious coexistence between men and nature, we have to put forward higher requirements on the methods and strategies of economic development, so as to achieve the goal of “gold and silver mountains” as well as “green mountains.”

Industrial structure is a key factor affecting the economic development of Xinhui District, which involves various aspects, such as enterprise transformation and upgrading, reducing energy consumption, and independent innovation. In the first principal component, the coefficient score of energy consumption per unit GDP is 0.963, indicating that this index is closely related to high-quality economic development. Optimizing the proportion of tertiary industries and improving the development efficiency of secondary industries as well as the development speed of tertiary industries are of great significance to improving the quality of economic development in Xinhui District. In addition, the coefficient score of the advanced industrial structure index is 0.833, thus confirming from another aspect.

Innovation is the key foundation for enterprise transformation and upgrading. In the first principal component, the coefficient scores of patent ownership per ten thousand people and R&D personnel ownership per ten thousand people are high, indicating that in order to realize the transformation and

upgrading of traditional enterprises as well as the development and growth of emerging industries, the role of high-level professional and technical talents is extremely important, as they provide intellectual support for enterprises through their innovation and enhance the core competitiveness of enterprises.

The remaining three indexes (per capita disposable income, per capita healthcare expenditure, and urbanization rate) are closely related to the development of people's livelihood, indicating that improving people's livelihood is an important element to improving the quality of economic development in Xinhui District. We should not only pursue economic growth, but also benefit people's livelihood from the achievements of economic development, improve their living standards, and enhance the quality of social public services, which are the ultimate goals of economic development. Therefore, improving the quality of livelihood is crucial to the realization of high-quality economic development in Xinhui District.

Since the contribution of the second principal component is only 11.82%, which plays a much smaller role than the first principal component, the higher coefficient scores in the second principal component are as follows: registered urban unemployment rate and capital output rate. Employment is the primary source of income for people, which is of great significance to the stability and sustainable development of the entire society. Therefore, vigorously developing the economy and providing more job opportunities will not only support economic development, but also ensure and improve people's livelihood as well as maintain the reform, development, and stability of the overall situation.

From the calculation, the rotated component matrix coefficient A and two eigenvalues are obtained, and in combination with the normalized data, the high-quality development coefficients of Xinhui District from 2016 to 2020 can be calculated, as shown in **Table 4**.

**Table 4.** High-quality development index of Xinhui District

Year	F1	F2	Total score
2016	-9.948	-9.363	-9.873
2017	-5.905	-3.575	-5.609
2018	-2.460	-1.495	-2.337
2019	2.773	5.172	3.078
2020	15.540	9.262	14.741

It can be seen that the high-quality development of Xinhui District has been maintaining an upward trend from 2016 to 2020, indicating that the quality of economic development is constantly improving. The scores from 2016 to 2018 are negative, reflecting that the development of the first three years is lower than the five-year average. In 2019 and 2020, the development quality has improved significantly, showing that Xinhui District has made remarkable progress in changing its mode of economic development, optimizing its economic structure, and changing its impetus for growth.

In terms of the changes of the two factors, the total score is similar to the trend of factor F1, indicating that F1 plays a decisive role in the high-quality economic development of Xinhui District. F1 mainly includes 10 indexes under four aspects: high-quality economic growth, high-quality innovative development, high-quality ecological civilization, and high-quality development of people's livelihood. Therefore, the focus should be on these 10 indexes while taking effective optimization measures.

The contribution rate of factor F2 is relatively small. The main reason is that the current industrial structure of Xinhui District is still dominated by traditional industries, and it is still undergoing transformation and upgrading. Indexes such as capital output ratio and R&D funds accounting for GDP have a latency that prevents them from fully realizing their potential for the time being.

### 5.3. Comparative horizontal analysis

In order to better understand the high-quality development of Xinhui District in Guangdong Province, the data of two different time nodes (2016 and 2020) were used to calculate the high-quality development of Xinhui District, the whole province, and Shenzhen City. The calculation process is the same as that in the previous section. The high-quality development coefficients of the two years are shown in **Table 5**.

**Table 5.** Comparison of the high-quality development coefficients

Time	F1	F2	Total score in 2016	F1	F2	Total score in 2020
Xinhui District	-7.42	-0.83	-6.28	-7.03	0.88	-5.77
Guangdong Province	-5.10	-5.79	-4.90	-5.46	-5.77	-5.20
Shenzhen	12.52	6.62	11.45	12.49	4.88	10.97

It can be seen that in 2016, the high-quality development of Xinhui District is lower than the average level of Guangdong Province, and there is a significant gap compared with Shenzhen City, which is the representative of high-quality development.

After five years of development, Xinhui District finally reached the average level of the whole province, but the gap is still significant compared with Shenzhen City. This transformation is attributable to a series of reform measures, such as the adjustment of the industrial layout of the new society, the development of three major economic sectors, the optimization of the industrial structure, the creation of three major industrial clusters, the improvement of the industrial system, and the construction of three major logistics areas, which have enhanced the economic development.

## 6. Conclusion

A systematic analysis of the high-quality development of Xinhui District from 2016 to 2020 was conducted from a longitudinal and horizontal perspective, in which several conclusions can be derived.

- (1) From a vertical point of view, the quality of economic development of Xinhui District has been constantly improving, especially in the recent two years.
- (2) From factor analysis, there are two key factors affecting the high-quality development of Xinhui District: one is the adjustment of industrial structure, which is the most fundamental factor and plays a leading role in the development of Xinhui's economy, while the second is the improvement in the quality of people's livelihood, which has a significant effect on improving the quality of economic development in Xinhui District.
- (3) From a horizontal point of view, in 2016, the quality of economic development of Xinhui District greatly differs from the average level of the whole province. The gap is mainly reflected in three levels: economic growth rate, innovation development, and the development of people's livelihood. By 2020, the gap with the provincial average gradually narrowed, but compared with Shenzhen City, there is still a lot of room for improvement.

## 7. Optimization path for Xinhui's high-quality development

According to the analysis and comparison, Xinhui District should focus on several aspects. First, optimize the industrial structure and build a modern industrial system; second, transform and improve traditional industries with high and new technologies; third, promote high-quality and efficient development of producer services; fourth, promote the vigorous development of strategic emerging industries; fifth, strengthen the support of scientific and technological innovation as well as activate the endogenous power of enterprises; lastly, enhance the effective supply of talents and better serve real economy.

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## Disclosure statement

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