Research on the Construction Mechanism of Beautiful China Based on Cluster Analysis: A Case Study of Fujian Province

Authors: Zhao Sanglin, Yuan Bingkun, Tong Jia'ang, Deng Hao, wandering star, Huang Xinyi, Zhao Sanglin

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Abstract

Consolidating the achievements of "resource conservation and environmental protection" and achieving seamless integration with "Beautiful China" constitutes the necessary path for solidly promoting high-quality development of county-level economies. By exploring the influencing factors of Beautiful China construction to realize balanced development across provinces and municipalities, this endeavor helps create more ecological products to meet people's needs, ensures that the Chinese people live a good life, and contributes to China's sound and sustainable development. The construction of Beautiful China represents an important pathway for China to achieve sustainable development and innovate ecological civilization mechanisms, and its progress holds significant meaning for the entire nation and society. This paper focuses on elaborating the relevant concepts and connotations of Beautiful China, constructs an evaluation index system based on the practical requirements and intrinsic value of Beautiful China, selects 83 counties in Fujian Province as research objects, builds an evaluation index system for county economic development in Fujian Province using 2022 statistical data, and conducts empirical research through factor analysis and cluster analysis methods. The results indicate that county economic development in Fujian Province exhibits four characteristic types: developed, relatively developed, medium, and underdeveloped, with prominent imbalances, insufficiencies, and lack of coordination. Accordingly, this paper proposes constructing new-type industries to accelerate industrial modernization transformation; creating characteristic brands to stimulate service industry vitality; increasing opening-up efforts for Maritime Silk Road development; and developing modern agriculture to promote industrial structure optimization. This study represents a thematic analysis conducted using normative research methods. The full text is divided into five parts: Part One analyzes the practical requirements and intrinsic value of Beautiful China; Part Two provides a brief

overview and summary of literature and aspects related to Beautiful China construction; Part Three constructs an evaluation index system based on relevant literature on Beautiful China construction and conducts empirical analysis on existing data; Part Four, guided by the Beautiful China strategy, constructs a new model for county economic development in Fujian Province according to the endowment characteristics of each county; and Part Five proposes specific countermeasures for the constructed new model of county economic development.

Full Text

Preamble

Authors: Zhao Sanglin[1]; Yuan Bingkun[4]; Tong Jia'ang[2]; Deng Hao[1]; You Xing[3]; Huang Xinyi[1]

Affiliations: [1]School of Engineering Management, Hunan University of Finance and Economics [2]School of Economics, Fudan University, 200433 [3]School of Economics, Hunan University of Finance and Economics, 410205 [4]School of Energy Science and Engineering, Central South University, 410083

Abstract

Consolidating the achievements of "resource conservation and environmental protection" and achieving seamless integration with "Beautiful China" constitutes the essential path for solidly promoting high-quality development of county economies. By exploring the influencing factors of Beautiful China construction, we can achieve balanced development across provinces and municipalities, facilitate the creation of more ecological products to meet people's needs, ensure a better life for Chinese citizens, and contribute to China's sound and sustainable development. Building Beautiful China represents an important pathway for China to achieve sustainable development and innovate ecological civilization mechanisms, and its progress holds great significance for the entire nation and society.

This paper systematically elaborates on the relevant concepts and connotations of Beautiful China, constructs an evaluation index system based on its practical requirements and intrinsic values, selects 83 counties in Fujian Province as research subjects, and employs factor analysis and cluster analysis methods for empirical research using 2022 statistical data. The results demonstrate that Fujian's county-level economic development exhibits four distinct characteristics: developed, relatively developed, medium, and underdeveloped, highlighting prominent imbalances, inadequacies, and lack of coordination. Accordingly, this paper proposes constructing new industries to accelerate industrial modernization transformation, creating distinctive brands to stimulate service sector vitality, expanding openness to develop the Maritime Silk Road, developing modern agriculture, and advancing industrial structure optimization.

This study employs normative research methods for thematic analysis and is organized into five parts: (1) analyzing the practical requirements and connotation values of Beautiful China; (2) reviewing and summarizing relevant literature on Beautiful China construction; (3) constructing an evaluation index system based on existing literature and conducting empirical analysis; (4) building a new model for Fujian's county economic development guided by the Beautiful China strategy and according to each county's endowment characteristics; and (5) proposing specific policy recommendations for this new development model.

Keywords: Beautiful China; County Economy; Development Model; Factor Analysis

1. Introduction

1.1 Research Background and Significance

Research Background In 2007, ecological civilization became China's new-era development goal at the 17th National Congress of the Communist Party. China's rapid economic development has brought environmental degradation and ecosystem destruction, triggering various other problems. To address this situation, the 18th National Congress in 2012 emphasized ecological priorities and synchronized development across all dimensions, subsequently proposing the concept of "Beautiful China." The Congress clarified that ecological civilization construction serves as the primary prerequisite, forming a closed loop with social, political, cultural, and economic development to create positive resonance among these five aspects. Building a Beautiful China with Chinese characteristics emerged as the most important strategic goal. In 2017, the 19th National Congress report identified accelerating ecological civilization system reform and promoting Beautiful China construction as China's primary objectives for the new stage. For the first time since the Beautiful China initiative was proposed, the report provided a comprehensive plan for ecological civilization construction, relevant measures, and task requirements, pointing out the direction and specific goals for the next stage of ecological development. The fundamental idea is that accelerating ecological civilization construction will enable building a Beautiful China, which will in turn facilitate rapid achievement of the Beautiful China goals. As socialism enters a new era, Beautiful China construction stands as one of six core modernization objectives and promotes implementation of the UN's 2030 Sustainable Development Agenda.

Research Significance Building Beautiful China represents an important pathway for China to achieve sustainable development and innovate ecological civilization mechanisms, with profound significance for the entire nation and society. At the national level, the success of Beautiful China construction affects the progress of building a strong modern socialist country. By exploring influencing factors and achieving balanced development across provinces and municipalities, we can create more ecological products to meet people's needs, ensure a better life for Chinese citizens, and contribute to China's sound and

sustainable development. At the societal level, Beautiful China construction concerns people's wellbeing, as a beautiful China promotes social stability, harmony, improved governance, and cultural inheritance. Through comprehensive evaluation and analysis of Fujian Province's county-level Beautiful China construction from 2012-2022, this paper quantitatively measures the balance of county-level construction and proposes scientifically sound, effective, and feasible policy recommendations to accelerate the Beautiful China construction process, achieve balanced development, and satisfy people's aspirations for a better life.

1.2 Literature Review

Existing literature examines Beautiful China from three main perspectives: (1) basic requirements and connotation values, (2) evaluation index system construction, and (3) implementation pathways. Chinese scholars primarily research Beautiful China through its connotation values, index system construction, and implementation paths.

1.2.1 Realistic Requirements and Connotation Values of Beautiful China Construction Wan Junren (2013) posits that Beautiful China extends ecological civilization construction, requiring coordinated efforts across economic, political, cultural, and social harmony development alongside ecological civilization—the "five carriages" pulling together [14][15]. Hu Jingpu (2017) notes that building Beautiful China aligns with historical trends, demonstrates China's responsibility and demeanor as a major country in the international community, and holds significant contemporary value [12].

1.2.2 Construction of Beautiful China Evaluation Index Systems Current literature primarily focuses on theoretical analysis with limited empirical evaluation. Existing index systems mainly consider three scenarios: systems based on Beautiful China's basic connotations, systems incorporating SDGs indicators, and systems accounting for regional characteristics.

First, index systems based on basic connotations: Gan Lu (2013) summarized Beautiful China as "five beauties" encompassing ecology, harmony, governance, culture, and development, constructing a 56-indicator system representing ecological, social, political, cultural, and economic dimensions [10]. Xiong Yuanbin (2017) similarly focused on ecological, social, and economic aspects, improving existing index systems to calculate Beautiful China construction level scores for cities along the Yangtze River [18].

Second, index systems considering SDGs indicators: Fu Lihua (2014) identified deficiencies in previous index systems: lack of consideration for geographical complexity, insufficient attention to inter-factor relationships, and disregard for regional differences. Her research attempted to address these shortcomings by focusing on landscape sensitivity differences across provinces and cities to reestablish evaluation criteria and indicator weights [9]. Gao Feng (2019) traced the evolution of "Beautiful China" thought chronologically, examined connections

between ecological civilization theory, Beautiful China thought, and sustainable development concepts, provided insights into Beautiful China's scientific connotations, and proposed recommendations for indicator setting. His research established a system drawing on SDGs indicator concepts, and considering statistical data time lags, employed earth big data technology and web data crawling to provide more scientifically reasonable evaluation methods [11].

Third, index systems considering regional characteristics: Zhang Ye (2014) used prefecture-level cities as evaluation units, establishing indicators around five dimensions—ecology, economy, politics, culture, and society—and employed a deep learning model (BP artificial neural network) to quantitatively analyze Beautiful City construction levels across Hunan's prefecture-level cities, considering regional differences in ecological construction [19]. Xiang Yunbo (2015) started from Beautiful China's connotations, considered geographical locations and economic, historical, and humanistic preconditions across Chinese provinces and municipalities, drew on a tetrahedral analysis framework, and constructed an evaluation scheme applicable to China's different regional conditions from perspectives of ecological environment, historical culture, social governance, and economic status [17].

1.2.3 Research on Implementation Pathways for Beautiful China Construction Maurizio Marinelli (2018) deeply analyzed environmental challenges related to China's political and socio-economic development, the background of China's ecological civilization construction, and transformations in China's principal social contradictions, pointing out that Beautiful China construction must center on the "Chinese Dream" and focus on solving resource shortages, environmental pollution, and ecological degradation [20]. Ma Xianbiao (2018) identified the correct direction for Beautiful China construction as always adhering to: ensuring establishment of a complete ecological civilization institutional system; confirming the principal position of Party committees and governments in building Beautiful China; and establishing the people as practitioners and creators in Beautiful China construction [13].

1.3 Main Research Content

This paper focuses on Beautiful China construction, encompassing five specific parts. Part one introduces the research background and significance, reviews academic literature on Beautiful China's basic connotations and implementation significance, evaluation index systems, and methods, and briefly summarizes research content and methodological approaches. Part two covers index system construction and data sources, selecting 83 Fujian counties as research subjects, constructing a county economic development evaluation index system based on 2022 statistical data, and employing factor analysis and cluster analysis for empirical research. Part three optimizes Fujian's county economic development model by building a new development model according to each county's endowment characteristics under the Beautiful China strategy. Part four presents conclusions and recommendations, revealing four development types and proposing

specific measures for industrial modernization, service sector vitality, openness, and agricultural development.

2. Economic Development Index System and Data Sources

2.1 Index System Construction

Based on principles of scientific rigor, representativeness, and data availability from statistical yearbooks, bulletins, and government reports, this paper draws on research by Wang Qiang et al. (2021) [23] and Guo Wenbin (2019) [24] to construct a comprehensive evaluation index system for Fujian's county economic development from four dimensions: economic vitality, industrial structure, urban-rural synergy, and development potential, comprising 13 indicators as shown in Table 1 .

Table 1 Evaluation Index System for County Economic Development Level in Fujian Province

Indicator	Unit	Symbol	Definition
Per capita GDP	Yuan	X1	Intuitive indicator of per capita economic output (regional GDP/year-end population)
Per capita consumption	Yuan	X2	Social consumer goods retail sales/average population
Fixed asset investment	10,000 yuan	X3	Workload of construction and purchase of fixed assets in monetary terms
Ratio of per capita disposable income to per capita GDP	%	X4	Evaluation of coordination between residents' income level and county economic development
Education expenditure ratio	%	X5	Education expenditure as share of total fiscal expenditure
Healthcare expenditure ratio	%	X6	Healthcare expenditure as share of total fiscal expenditure
Per capita residential area	m^2	X7	Residential area per capita

Indicator	Unit	Symbol	Definition
Public transport vehicles per 10,000 people	Vehicles	X8	Public transport vehicles per 10,000 people
Major environmental pollution incidents in past 5 years	Count	X9	Number of major environmental pollution incidents
Government transparency platform	Binary	X10	Whether a government transparency platform exists
Per capita cultural and entertainment expenditure	Yuan	X11	Per capita cultural and entertainment expenditure
World cultural heritage sites	Count	X12	Number of world cultural heritage sites
Cultural industry value added	10,000 yuan	X13	Economic value added of cultural industries
Ecological land proportion	%	X14	Proportion of ecological land
Industrial wastewater treatment rate	%	X15	Industrial wastewater treatment rate

Note: The initial indicator selection was larger, but factor patterns and loadings among highly correlated indicators were unclear, complicating factor naming and subsequent analysis, hence the selection of these 13 indicators.

2.2 Data Sources

This study selects 83 counties (including autonomous counties) in Fujian Province as research subjects. Data were collected from the Fujian Development Yearbook, 2022 National Economic and Social Development Statistical Bulletins, and Fujian Provincial Government websites, ensuring authenticity, reliability, and validity through compilation and analysis.

2.3 Empirical Analysis

2.3.1 Data Standardization Given differing measurement units, magnitudes, and calculation units across indicators, direct mathematical transformation under equal conditions is impossible. To unify comparison standards and eliminate dimensional effects, this paper employs Z-score standardization:

$$Z_{ij} = \frac{X_{ij} - \bar{X}_j}{S_j}$$

where X_{ij} is the observed value of indicator j for sample unit i, $\bar{X}_j$ is the mean of variable j, and S_j is the standard deviation. After standardization, variable values fluctuate around 0, with values >0 indicating above-average levels and values <0 indicating below-average levels.

2.3.2 Correlation Testing Factor analysis requires variable correlation. Before conducting factor analysis, this paper tests inter-variable correlations using SPSS 19.0 on standardized data to calculate the correlation coefficient matrix $R = X^* X^{*T} = (r_{ij})$ for 13 indicators, with results shown in Table 2 .

Table 2 Correlation Coefficient Test Results

[Table content showing correlation matrix with significance levels]

Note: Values represent correlations between indicator pairs. Absolute correlation values closer to 1 indicate stronger relationships. Most absolute correlations in Table 2 exceed 0.5, indicating strong inter-indicator correlations suitable for factor analysis.

Figure 1 [Figure 1: see original paper] Correlation Heatmap

2.3.3 Factor Analysis This paper employs principal component analysis to solve the factor loading matrix. The procedure involves: (1) conducting principal component analysis on 13 variables using SPSS 25.0 with rule-based missing value imputation; (2) rotating extracted factors to obtain eigenvalues and cumulative variance contribution rates, shown in Table 3 and Table 4 .

Table 3 KMO and Bartlett's Test

Test	Value
KMO Measure of Sampling Adequacy	0.000***
Bartlett's Test of Sphericity	0.000***

Note: **,** , * represent significance at 1%, 5%, and 10% levels respectively.*

Table 4 Total Variance Explained

Component	Variance Explained (%)	Cumulative Variance (%)
1	[Value]	[Value]
2	[Value]	[Value]
3	[Value]	[Value]

Note: This table shows principal component contribution to variable explanation. Generally, expression should reach 90%+; otherwise, factor adjustment is needed. Higher variance explanation rates indicate more important principal components deserving greater weight.

Principal component analysis requires eigenvalues >1. Table 4 shows three variables with eigenvalues >1: $\lambda_1 = 10.858$, $\lambda_2 = 1.368$, and $\lambda_3 = 1.161$. These three common factors explain 84% of total variance, representing the vast majority of original variable information, thus selected for analysis.

2.3.4 Factor Naming and Interpretation Factor loadings represent correlation coefficients between variables and common factors. Larger absolute loadings indicate stronger variable relationships and better explanatory power, as shown in Table 5 .

Based on cumulative variance contribution rates, eigenvalues, and principal component factor loading matrices, each principal component function is expressed as: $F_j = \beta_{j1}X_1 + \cdots + \beta_{jp}X_{13}$, where $j = 1, \ldots, 4$ and p is the number of variables.

In the first principal component F_1, larger loadings appear for per capita consumer retail sales (X_2) and urbanization rate (X_9). F_1 primarily explains these variables and is named the "Urbanization Level Factor."

In the second principal component F_2, larger loadings appear for agricultural, forestry, animal husbandry, and fishery value added (X_{12}) and per capita agricultural machinery power (X_{10}). This common factor primarily explains these variables and is named the "Agricultural Development Factor."

In the third principal component F_3, larger loadings appear for secondary industry proportion (X_6), per capita industrial output value (X_8), and industrial investment growth rate (X_{12}), with strong negative correlation with tertiary industry proportion. This factor represents industrial-led development levels and is named the "Industry Dominant Factor."

Table 5 Principal Component Factor Loading Matrix

[Table showing factor loadings and communalities for standardized variables]

2.3.5 Comprehensive Factor Evaluation and Ranking Using rotated principal component variance contribution rates as weights, this paper calculates comprehensive scores for 69 Fujian counties through weighted summation: $F = 0.71537F_1 + 0.17829F_2 + 0.10634F_3$. County scores and rankings appear in Table 6 .

Table 6 Comprehensive Evaluation and Ranking of Economic Development Levels for 83 Fujian Counties

[Ranking table showing counties with their composite scores]

Table 6 reveals significant disparities, with Siming District scoring highest (3.8088) and Xianyou County lowest (-1.7181), indicating serious development imbalances across Fujian's counties.

2.3.6 Cluster Analysis To more objectively reflect sample relationships, this paper employs K-means cluster analysis in SPSS to categorize 83 counties, with results shown in Table 7 .

Table 7 Cluster Analysis Results

Cluster	Counties
Category 1	[List]
Category 2	[List]
Category 3	[List]
Category 4	[List]

Chart notes: Silhouette coefficient ranges [-1,1]; higher values indicate better clustering. DBI (Davies-Bouldin index) measures intra-cluster vs. inter-cluster distances; smaller values indicate better clustering. CH (Calinski-Harbasz Score) measures cluster separation vs. tightness; larger values indicate better clustering.

Based on Table 7, 83 counties are divided into four categories: 16 counties in Category 1, 12 in Category 2, 31 in Category 3, and 24 in Category 4. According to economic development status, these are named Developed, Relatively Developed, Medium, and Underdeveloped types, as detailed in Table 8 .

Table 8 Classification of 83 Fujian Counties

Type	Counties	Proportion
Developed (Category 1)	Siming, Haicang, Huli, Jimei, Tong'an, Xiang'an, Gulou, Taijiang, Cangshan, Mawei, Jin'an, Changle, Fuqing, Minhou, Lianjiang, Luoyuan	26.5%

Type	Counties	Proportion
Relatively Developed (Category 2)	Mingxi, Qingliu, Ninghua, Datian, Youxi, Jiangle, Taining, Jianning, Licheng, Fengze, Luojiang, Quangang, Shishi, Jinjiang, Nan'an, Hui'an, Anxi, Yongchun, Dehua, Xiangcheng, Longwen, Longhai, Changtai, Guangze, Songxi, Zhenghe, Xingluo, Yongding, Zhangping, Changting, Shanghang, Wuping, Liancheng, Jiaocheng, Fu'an, Fuding, Xiapu, Gutian, Pingnan, Shouning, Zhouning, Zherong, Chengxiang, Hanjiang, Licheng, Xiuyu, Xianyou	26.5%
Medium (Category 3)	Guangze, Songxi, Zhenghe, Xingluo, Yongding, Changtai, Yunxiao, Zhangpu, Zhao'an, Dongshan, Nanjing, Pinghe, Hua'an, Yanping, Jianyang, Shaowu, Wuyishan, Jian'ou, Shunchang, Pucheng	24.1%
Underdeveloped (Category 4)	Zhangping, Changting, Shanghang, Wuping, Liancheng, Jiaocheng, Fu'an, Fuding, Xiapu, Gutian, Pingnan, Shouning, Zhouning, Zherong, Chengxiang, Hanjiang, Licheng, Xiuyu, Xianyou	22.9%

Developed Type (Category 1): These regions, including Siming and Haicang districts, rank highest in composite scores and are concentrated in

northern Fujian, representing the province's most economically developed and urbanized areas. They possess complete infrastructure, efficient transportation networks, and diversified industrial structures. Their superior geographical locations and strong economic strength attract substantial talent and investment, making them provincial and national economic, cultural, and technological centers.

Relatively Developed Type (Category 2): Including Mingxi, Qingliu, and other counties, these regions exhibit high development levels though slightly below Category 1. They typically possess certain industrial foundations and transportation conditions, rapidly developing characteristic industries while enhancing comprehensive competitiveness.

Medium Type (Category 3): Including Guangze, Songxi, and other counties, these rank medium in composite scores and are mainly distributed around transportation arteries. They possess certain economic foundations and development potential but may be constrained by resources, technology, or markets. These regions are enhancing development potential through infrastructure improvement and industrial structure optimization.

Underdeveloped Type (Category 4): Including Zhangping, Changting, and other counties, these rank lowest in composite scores and are mainly distributed in mountainous western Fujian. Due to remote locations and inconvenient transportation, their economic development lags, with weak industries, narrow roads, and low railway density limiting external economic exchange. These areas require increased infrastructure investment, improved transportation, and support for developing characteristic industries to enhance economic benefits and living standards.

Overall, Fujian's county economic development exhibits significant imbalances, necessitating tailored development strategies and policies for different regions to promote balanced provincial development.

3. Optimization of Fujian's County Economic Development Model

3.1 Development Model Selection

Fujian's counties exhibit substantial differences in economic development and resource endowments, making appropriate model selection crucial. Following factor and cluster analysis of 83 counties using SPSS, this paper divides all counties into four categories and constructs a new development model for Fujian's county economy guided by the Beautiful China strategy and based on each county's endowment characteristics, as shown in Table 9 .

Table 9 Selection of County Economic Development Models in Fujian

Development Model	Applicable Counties
New Industry Model	Siming, Haicang, Huli, Jimei, Tong'an, Xiang'an, Gulou, Taijiang, Cangshan, Mawei, Jin'an, Changle, Fuqing, Minhou, Lianjiang, Luoyuan, Jianning, Luojiang, Quangang, Shishi, Jinjiang, Nan'an
Service Industry-Driven Model	Wuyishan, Taining, Hui'an, Anxi, Yongchun, Dehua, Xiangcheng, Longwen, Longhai, Changtai, Guangze, Songxi, Zhenghe, Xingluo, Yongding, Zhangping, Changting, Shanghang, Wuping, Liancheng, Jiaocheng, Fu'an, Fuding, Xiapu, Pingnan, Zhouning, Zherong, Chengxiang, Hanjiang, Licheng, Xiuyu, Xianyou
Light Industry Openness Model	Licheng, Fengze, Minqing, Yongtai, Pingtan, Sanyuan, Shaxian, Yong'an, Mingxi, Qingliu, Ninghua, Datian, Youxi, Jiangle
Characteristic Agriculture-Led Model	Shouning, Gutian, Yunxiao, Zhangpu, Zhao'an, Dongshan, Nanjing, Pinghe, Hua'an, Yanping, Jianyang, Shaowu, Jian'ou, Shunchang, Pucheng

3.2 Selection Rationale

New Industry Model suits counties with certain industrial foundations and convenient transportation, enabling construction of industrial processing, agricultural machinery and equipment, and new energy industrial systems through enterprise and technological innovation [5]. This model fits Category 1 counties from cluster analysis, which generally possess industrial foundations and high development levels.

Service Industry-Driven Model suits counties near central cities with convenient transportation, as service consumption primarily targets urban residents. This includes two types: Category 2 counties from cluster analysis with convenient transportation near economically developed central cities, and counties with multiple 3A-level or higher scenic areas that can leverage rich tourism resources, such as Wuyishan's Mount Wuyi.

Light Industry Openness Model focuses on expanding agricultural product sales through e-commerce, creating farmer-enterprise-market channels to promote agricultural efficiency, farmer income growth, and rural revitalization [6]. This suits Category 3 counties from cluster analysis, characterized by low public

factor scores and negative industrial development factors. These counties can seize "Internet+" and "mass entrepreneurship and innovation" opportunities [7] to drive economic development through rural e-commerce and adjust industrial structures, such as Licheng and Fengze districts.

Characteristic Agriculture-Led Model relies on natural resource advantages and agricultural supporting facilities, including agricultural enterprise development and technology application. Category 4 counties from cluster analysis suit this modern agricultural model, as they have large primary industry shares, resource advantages in agricultural development, and highly distinctive local agricultural products with significant comparative advantages, such as Shouning apples and Gutian tobacco.

4. Conclusions and Recommendations

4.1 Developing Digital Industries and Accelerating Industrial Modernization Transformation

Digital Industry and Industrial Integration: Build smart factories through automated production lines and intelligent robots to achieve intelligent and flexible production processes adapting to changing market demands. Develop high-end intelligent manufacturing products by combining big data analysis to understand market needs and trends, creating high value-added and competitive products like smart wearables and smart home devices. Achieve industrial chain coordination by closely collaborating with local transportation industries for efficient coordination in raw material procurement, production, and logistics distribution to reduce costs and enhance market competitiveness.

Scientific Innovation and Industry-Academia-Research Cooperation: Establish innovation platforms by collaborating with local research institutions and universities to pool resources for new technology and product development. Strengthen talent cultivation through specialized skills training with universities to develop high-quality talent with digital skills, providing human resources for digital industry development. Promote research commercialization by establishing mechanisms encouraging technology transfer and 成果转化 between enterprises and research institutions to rapidly apply innovations to actual production.

Advanced Internet Technology Application: Introduce big data and cloud computing technologies across production, circulation, processing, and sales for real-time data collection, analysis, and processing to improve intelligent production levels. Build e-commerce platforms using internet technology to integrate online and offline channels, expand sales channels, and enhance brand influence. Optimize supply chain management through internet technology to achieve transparent, real-time supply chain management, optimizing inventory and logistics to reduce costs and improve efficiency.

Policy Support and Environment Building: Government should provide

policy support including tax incentives and financial assistance to reduce enterprise innovation costs and stimulate vitality. Improve infrastructure construction by strengthening information and communication infrastructure to enhance network coverage and data transmission speeds. Foster an innovation atmosphere by encouraging enterprise exchanges and cooperation, sharing resources and technological achievements to create an open, shared, and collaborative innovation ecosystem.

4.2 Building Characteristic Brands and Stimulating Factor Vitality

Characteristic Brand Development and Factor Optimization: Every county possesses unique history, culture, and natural resources. Deeply exploring these characteristics can form distinctive brand positioning. Quality should be prioritized alongside innovation, combining modern technology and concepts to inject new vitality into traditional features. Optimize factor allocation through market research and data analysis to understand supply and demand for production factors (land, labor, capital) to improve efficiency and economic benefits.

Service Industry Transformation and Consumption-Driven Models: Closely monitor central city demand as it drives consumption trends in surrounding counties. Develop diversified consumer service industries beyond basic healthcare and education, including characteristic elderly care, domestic services, and home maintenance. Optimize consumption environments by improving service quality, facilities, and consumer rights protection to create safe, comfortable consumption environments that attract more consumers.

Tourism Resource Development and Utilization: Integrate and plan tourism resources rationally, emphasizing ecological and cultural heritage protection for sustainable tourism development. Fuse tourism with local culture to create distinctive tourism brands through local souvenirs and folk cultural activities. Complete tourism industry chains by developing accommodation, catering, entertainment, and related industries to improve tourism value-added.

Location Advantages and Openness Enhancement: Leverage location advantages by planning logistics and warehousing infrastructure according to geographical positions and transportation conditions to improve goods distribution capacity, while actively integrating into regional economic integration. Increase openness by strengthening economic and cultural exchanges with external regions to attract foreign investment and technology through trade fairs and cultural festivals. Improve infrastructure and service quality by increasing investment in transportation and communication infrastructure and enhancing public service efficiency to create convenient, efficient service environments.

4.3 Developing Modern Agriculture and Optimizing Industrial Structure

Due to insufficient brand awareness, some agricultural products' potential remains underdeveloped. Government agencies should guide planning and development, selecting and cultivating leading characteristic industry enterprises as industry chain cores. Construct "enterprise + base + farmer" pipeline production and operation models, utilizing agricultural mechanization to create characteristic agricultural planting bases that reduce production costs, enhance market competitiveness, gradually remove market bottlenecks, expand sales channels, lengthen industry chains, and form characteristic agriculture-led modern agricultural models that promote county industry integration.

4.4 Expanding Opening-Up and Promoting Industry Integration

Expanding Opening-Up: Deepen international cooperation by actively participating in international economic cooperation and competition, strengthening economic and technological exchanges with various countries to promote deep integration of county industries with international markets. Optimize foreign investment environments by simplifying procedures and providing one-stop services to attract more foreign capital.

Promoting Industry Integration: Strengthen industrial synergy by promoting collaborative cooperation among different industries within counties to form effective industry chain linkages and improve overall competitiveness. Guide enterprise transformation and upgrading by encouraging increased R&D investment and introducing advanced technology and management experience to promote high-end, intelligent transformation of traditional industries.

Developing Export Trade: Fully utilize national policy support by closely monitoring policy developments to actively secure preferential policies like export tax rebates and credit support to reduce export costs. Strengthen brand building by guiding enterprises to establish brand awareness, improve product quality and added value, and create internationally competitive independent brands.

Building Deep Cooperation Platforms: Establish government guidance mechanisms by formulating preferential policies and providing financial support to promote deep docking between counties and domestic/international markets. Build information sharing platforms using modern information technology to establish information sharing mechanisms among government, enterprises, and platforms to improve market sensitivity. Promote inter-county cooperation and exchange to jointly explore markets and achieve resource sharing and complementary advantages.

Improving Foreign Trade Laws and Regulations: Perfect the legal system by formulating and improving foreign trade-related laws and regulations to provide legal guarantees and reduce international trade risks. Strengthen

intellectual property protection to safeguard enterprise legitimate rights and stimulate innovation vitality.

Cultivating Foreign Trade Professionals: Strengthen university foreign trade education by encouraging universities to offer relevant majors and courses to cultivate internationally-minded professionals. Conduct vocational training for in-service personnel to improve professional competence. Introduce high-level overseas talent through preferential policies to provide intellectual support for county foreign trade.

Developing Maritime Silk Road Economy: Deepen economic and trade cooperation with Maritime Silk Road countries to expand trade fields and market space. Promote infrastructure connectivity by actively participating in Maritime Silk Road infrastructure construction to facilitate smooth logistics and information flow. Strengthen cultural exchanges and cooperation to enhance mutual understanding and trust, laying solid foundations for economic cooperation.

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Note: Figure translations are in progress. See original paper for figures.