

Research on the Effect and Optimization Strategy of Rural E-commerce Development on Urban-rural Integration under the Background of Rural Revitalization

Weijun Qiu¹, Kehan Liu², Tao Zhou¹, Li Wang¹

¹School of Business Administration, Anhui University of Finance and Economics, Bengbu, China

²School of Finance, Anhui University of Finance and Economics, Bengbu, China

Abstract

The imbalance between urban and rural development is a prominent manifestation of the main social contradiction at present, and urban-rural integration is also regarded as one of the basic principles of rural revitalization strategy. E-commerce, as a new transaction mode that can break the time and space constraints, especially the development of rural e-commerce, creates opportunities for rural residents to meet their respective needs and reduces the imbalance between urban and rural development. Therefore, it is of great significance to explore the enlightenment of rural e-commerce to promote urban-rural integration. On the basis of doing the research on the status quo of rural e-commerce, through the construction of a measurement system, calculating the development level of rural e-commerce and urban-rural integration development level, empirical exploration and analyzing the impact of rural e-commerce on urban and rural integration, and put forward optimization strategies for how to effectively promote urban-rural integration of rural e-commerce at the present stage.

Keywords

Rural Revitalization; Rural E-Commerce; Urban-Rural Integration.

1. Research Background

1.1. The National Rural Vitalization Policy was Promoted

In 2018, the CPC Central Committee and The State Council issued the Rural Revitalization Strategy, which "adhering to integrated urban-rural development" as one of the basic principles of rural revitalization. In 2019, the Opinions of the CPC Central Committee and The State Council on Establishing and Improving the Mechanism, System and Policy System for Integrated Urban and Rural Development put forward the main goals and basic principles for integrated urban and rural development in China. At the Central Rural Work Conference in 2020, General Secretary Xi Jinping stressed the need to promote effective integrated urban and rural development, improve the systems and mechanisms for integrated urban and rural development, and promote the citizenization of rural migrants. In 2021, the Opinions of the CPC Central Committee and The State Council on Comprehensively Promoting Rural Revitalization and Accelerating Agricultural and Rural Modernization proposed to follow the path of socialist rural revitalization with Chinese characteristics, accelerate agricultural and rural modernization, and accelerate the formation of a new type of industry-agricultural and urban-rural relations where industry and agriculture promote each other, urban and rural complementarity, comprehensive integration and common prosperity. The No.1 document of the CPC Central Committee in 2022, the Opinions of the CPC Central Committee and The State Council on Comprehensively Promoting Rural Revitalization in 2022, provides valuable guidance for the realization of the strategic goals of rural revitalization. The implementation of

the rural revitalization strategy not only needs the unique advantages of rural areas, but also relies on the factors and resources provided by the city. Therefore, while comprehensively promoting rural revitalization, integrated urban-rural development is the most critical step. The concept of urban-rural integrated development points out the direction of urban-rural relations, and provides an important guiding role for promoting the development of urban-rural relations in China in the new era. At the same time, the concept emphasizes the two-way flow of urban and rural resources and the iterative innovation of systems and mechanisms, which is the inheritance and sublimation of the thought of overall urban and rural integrated development and urban-rural integration.

1.2. Change of the Principal Social Contradiction

Urban and rural governance is an important part of the national governance system and is conducive to promoting China's socialist modernization. General Secretary Xi Jinping has pointed out that the methods and utility of coordinating urban and rural development and easing urban-rural relations will determine the process of China's modernization to a certain extent. At present, the principal contradiction in Chinese society is the contradiction between unbalanced and inadequate development and the people's ever-growing needs for a better life. At present, the biggest development imbalance in China is the imbalance between urban and rural development, and the biggest inadequate development is the inadequate rural development. As an important market space of domestic large circulation, rural areas have great potential for development. Expanding rural demand and making overall planning for urban and rural development are not only conducive to promoting rural revitalization, but also can expand market capacity and further boost China's economy.

1.3. Rural E-commerce Construction has Achieved Initial Results

The report to the 19th National Congress of the CPC pointed out that issues concerning agriculture, rural areas and farmers are the top priority in the work of the whole Party. We will give priority to agricultural and rural development, play the primary role, and fully revitalize rural areas. In accordance with the general requirements of thriving industries, livable ecology, civilized local customs, effective governance and a prosperous life, we should promote the revitalization of rural industries, talents, culture, ecology and organizations in a scientific and orderly manner. The promotion of rural revitalization strategy cannot be separated from the comprehensive development of agriculture and rural areas. In recent years, China's rural e-commerce has developed rapidly, For the development of rural economy is constantly injected with new impetus, In 2019, the first central document proposed the development goal of "implementing the digital rural strategy", "Continue to carry out the comprehensive demonstration of e-commerce into rural areas", Implement the "Internet + agricultural products out of villages into the city project"; According to the No.1 Central Document in 2021, To improve the county and rural three-level rural logistics system, Upgrading and upgrading of rural logistics infrastructure, Break down the barriers of e-commerce into rural areas and agricultural products out of villages and cities, We will effectively align urban and rural production with consumption, Many measures have jointly promoted the development process of e-commerce into rural areas. According to the National Bureau of Statistics, China's total online retail sales in 2021 was about 13 trillion yuan, The total online retail sales in rural areas was about 2.05 trillion yuan, An increase of 11.3% from 2020, The total online retail sales of agricultural products nationwide was about 422.1 billion yuan, An increase of 2.8% in 2020, The development of the Internet has brought new dividends to the development of rural e-commerce, It also provides a strong basic momentum for the deepening of the rural revitalization strategy, Rural e-commerce has become an indispensable business form in the implementation process of the rural revitalization strategy, It has become an important force for stabilizing growth, strengthening people's livelihood, ensuring employment and promoting

consumption in rural areas, At the same time, it also promotes the circulation of urban and rural factor resources, It provides a new development model for urban-rural integration.

2. Research on the Current Situation of Rural E-Commerce Development and Urban-Rural Integration

2.1. Development Status of Rural E-Commerce

2.1.1. Development Status of Rural E-Commerce Transactions

The scale of rural e-commerce transactions in China continues to rise, reaching 3.155.34 billion yuan in 2020, with a significant growth rate, an overall positive growth, and a significant growth trend in 2016. By the end of 2020, there were more than 7,000 "Taobao villages" nationwide, distributed in 28 provinces nationwide, and the total sales of "Taobao villages" had exceeded 350 billion yuan. The development of "Taobao Village" virtually shows the growth of Taobao platform, and it is also a representative of the development model of platform-based rural e-commerce. The development of this model plays a great role in promoting the deep integration of primary, secondary and tertiary industries. Many "Taobao villages" are a development model integrating production, processing and sales, which plays a positive role in promoting farmers' employment. For example, many "Taobao villages" are dominated by one family and a small company.

2.1.2. Development Status of E-Commerce Platform

At present, most of them adopt the new platform model of short video live streaming e-commerce represented by new professional farmers. Since the outbreak of COVID-19 at the end of 2019, short video and live streaming e-commerce have become new business forms and outbreak points for rural e-commerce. Both celebrities, "Internet celebrities" and local officials are speaking for featured agricultural and sideline products through short videos and live-streaming e-commerce companies, thus solving the problem of difficulty in selling agricultural and sideline products. And more is the new professional farmers as the main body of the host, incarnation as the fields of the reclamation and propaganda leader, the agricultural and sideline products from planting, picking to sell all the link through short video and live to show people, let more users and customers experience the joy of childhood, buy more agricultural products of the place of origin. However, from the national point of view, rural e-commerce development has a poor foundation, a late start, a talent shortage and an imperfect business model. At present, the development of traditional rural e-commerce mainly relies on the existing e-commerce platforms, mainly including Alibaba, Jingdong, Taobao and so on. These major e-commerce platforms provide important business models for the development of rural areas, mainly using B2B model, B2C model and C2C model. Under the development conditions of these three business models, the rural e-commerce has gradually begun to improve. The B2B model is based on the integration of rural areas and rural areas, and provides channels for transactions between rural areas and enterprises through the e-commerce platform. The B2C model is to produce and supply the featured products through the demand quantity and supply situation, so as to meet the needs of both sides. The C2C model is relatively single, less suitable production, mainly individual producers. The traditional e-commerce model is still relatively single, the model is not mature enough, it is difficult to achieve industrial integration.

With the support of the rural revitalization policy, e-commerce needs to accelerate its development and become the goal of rural modernization. This also means that in rural e-commerce needs a lot of talent support. According to the current development situation of e-commerce, there is still a lack of e-commerce talents. The lack of rural e-commerce talents is mainly due to the following reasons: first, the local e-commerce personnel have low education and unskilled professional and technical knowledge; second, even if there are high-tech e-

commerce personnel, they cannot immediately engage in e-commerce work. E-commerce itself is a business model, requiring various experience, and higher requirements for its operation, market understanding and strategic positioning; third, rural products have low profits, poor local purchasing power, low brand awareness and insufficient attraction. In order to realize the shortage of rural e-commerce talents, we need the policy support of local governments, and establish and improve the talent training mechanism.

At the same time, the development of e-commerce enterprises and rural areas in some areas are not coordinated, and farmers are only the carrier of agricultural industry development, and are not the main body of the industry. Taking Haikou area as an example, the rural e-commerce model in the investigated area is a pure trade type, and the main body is the e-commerce enterprises. If the local farmers want to integrate into the development of e-commerce, the model is single and limited. E-commerce enterprises invest capital and technology in this e-commerce model, while farmers invest in labor force, forming a cooperation mode of mutual demand. In this process, if e-commerce enterprises and local farmers have not had common interests, then the development of e-commerce cannot be stable.

2.1.3. Current Situation of Rural Infrastructure Development

The rural living environment in rural areas is poor and the infrastructure is not perfect enough. Although the network freedom can be realized, the problems of poor signal and slow speed still exist. In remote mountain villages, the development of e-commerce has become particularly difficult. The transportation of agricultural products has become a problem. Transportation difficulties lead to low transportation costs, resulting in the quality of agricultural products is not guaranteed. Logistics companies will find people to live in cities and counties to deliver the goods, which greatly increases the cost of the trading chain in remote mountainous areas, so it largely restricts the development of rural e-commerce.

2.1.4. Development Status of Agricultural Product Brands

The brand awareness of agricultural products is not high, and the production area of agricultural products is generally relatively concentrated, which is easy to cause a single agricultural products, the lack of diversity, resulting in poor competitiveness. Agricultural products produced in rural areas are not supervised by strict regulatory agencies, resulting in poor quality of products. In rural areas, there are often thousands of sellers selling the same kind of goods, resulting in a single product and poor brand competitiveness. Therefore, it is necessary to carry out the correct positioning of agricultural products, pursue diversified product development, so that products can give full play to their respective advantages, and realize product liberalization. Strengthen the supervision of products, gradually carry out product quality certification, proof of origin and other effective measures to ensure the quality of product brand, to build an important guarantee for agricultural products brand.

2.2. Analysis of Urban and Rural Development Status Quo

With the development of the economy and China has entered a new era of socialism, the people's ever-growing needs for a better life have become the principal contradiction for society. The biggest problem in today's social development is the imbalance between urban and rural development, and the speed of rural development is not as fast as urban development. Although the integration of urban and rural areas has begun to develop at the present stage, it started slowly and achieved no significant results. The basic measures and basic public services between urban and rural areas differ greatly, so the integrated development contradiction between the two is prominent.

2.2.1. The Urban-rural Dual Economic Structure is Quite Sharp

With the rapid development of economy and the continuous development of modern industrialization, the proportion of agriculture in the total GDP gradually decreased. From 1978

to 2019, the proportion of agricultural GDP decreased from 27.7% to 7.1%. And the urbanization in the same cycle also reached about 60%, indicating that 40% of China's population is still rural residents. In recent years, the rural labor force has been pouring into the cities, and a large number of agricultural talents have entered the cities, leading to the loss of rural talents, relying on agriculture to maintain a small economy, which has increased the economic income gap between urban and rural areas. However, the government did not fully open the free flow of population, but in recent years, more and more attention through social and economic policies and urban-rural dual structure, for example; the compulsory education, rural areas are free and rural children to rural and small and medium-sized cities, guide farmers to reduce the pressure of big cities, and maintain the stability of big cities. It can be said that the urban-rural dual structure has hindered the progress and development of Chinese society to a certain extent. However, from another perspective, the function of the dual structure in maintaining social stability may give some relief to the suffering China.

2.2.2. The System and Mechanism for the Balanced Allocation of Urban and Rural Factors have Not Yet been Established

The long-term existence of the dual structure has led to the serious uneven distribution of the allocation of funds, talents, resources, resources and other basic public measures between urban and rural areas. A large number of high-quality talents from rural areas flow into cities. At the same time, the state has issued preferential policies for cities to vigorously support urban development, so most urban talents are not willing to flow to rural areas with less resource allocation.

The basic measures in rural areas have not yet been perfect, and the high risk of rural capital investment, the uncertainty of income, and the unreasonable allocation of urban and rural resources lead to a relatively backward economic state for a long time, greatly hindering the economic development of rural areas, and thus widening the gap between urban and rural areas.

2.2.3. The Gap between Basic Public Services between Urban and Rural Areas is Large

In recent years, the medical insurance, endowment insurance and education for urban and rural residents have been guaranteed. Other basic public services have achieved remarkable results. However, there is still a gap in the basic measures between urban and rural areas. Mainly in terms of medical care and education, rural areas are not equipped with advanced urban medical equipment and excellent urban teachers. As a result, it is difficult to guarantee the quality of medical care and education in rural areas. The lack of human resources in rural areas makes it difficult to achieve balanced development of various resources and public services.

2.2.4. The Three Major Rural Industries are Still in the Primary Stage of Development

The integration of the three industries can further accelerate the flow of resources and production factors between urban and rural areas, which is of great help to rural development. In recent years, the rural industrial integration in Anhui province has played some role, but it is still in its initial stage, and the experience of industrial integration is still obviously insufficient. Industrial integration still has problems, for example; industrial integration scale, integration degree is not high. The processing degree of agricultural products is not high, the industrial chain is short, most in individual industrial and commercial households, poor integration ability, processing conversion rate is low.

3. Empirical Research and Results Analysis

3.1. Correlation Analysis of the Factors Affecting Rural E-Commerce Development on Urban-Rural Integration

3.1.1. Construction of the Index System

Prerequisites for urban-rural integration include capital, labor and other factors of production. Passenger turnover is an important representation of the flow of factors between urban and rural areas. The urbanization rate is used to reflect the urbanization process. The development of secondary and tertiary industries plays a huge role in promoting the urban and rural economy, and fixed asset investment can reflect the social preparation for production development. Therefore, the four indicators of passenger turnover, urbanization rate, the proportion of output value of secondary and tertiary industries, and the proportion of fixed asset investment in GDP are used to reflect the preconditions for urban-rural integration.

Table 1. Comprehensive evaluation indicators of urban-rural integrated development

Level 1 indicators	Secondary indicators	Level3 indicators	symbol
Level of integrated urban and rural development	The premise of urban-rural integration	turnover of passenger traffic	Y_1
		Urbanization rate	Y_2
		The output value of the secondary and tertiary industries is heavy	Y_3
	Urban-rural integration	Internet penetration rate	Y_4
		Length of the public transport operation network line	Y_5
		Per capita postal and telecommunications business	Y_6
		Share of investment in environmental pollution control in GDP	Y_7
	Results of urban-rural integration	per capita GDP	Y_8
		The ratio of the urban-rural Engel coefficient	Y_9
		The ratio of urban and rural culture, education and entertainment expenditure	Y_{10}
		Endowment insurance coverage rate	Y_{11}

The impetus of urban-rural integration covers many factors, such as information, transportation and other factors. The Internet penetration rate, the length of public transport

operation network lines, and the per capita post and telecommunications business can reflect the construction of information infrastructure, and the proportion of environmental pollution control investment in GDP is used to show the government's attention to environmental protection and provide subsequent impetus for the sustainable development of urban and rural integration. Therefore, the impetus of urban-rural integration is reflected by four indicators: Internet penetration rate, the length of public transport operation network lines, per capita post and telecommunications business, and the proportion of environmental pollution control investment in GDP.

The results of urban-rural integration include basic services, education and entertainment. Can be seen through the per capita GDP national disposable income, the ratio of urban and rural engel coefficient and the ratio of urban and rural cultural and education entertainment spending can reflect the difference between urban and rural life and leisure costs, endowment insurance coverage can show the basic medical level, so choose the four indicators to reflect the results of urban and rural integration.

For the establishment of rural electricity development level index system, on the basis of index selection of scientific, representative and data availability, reference to the existing literature index system research, learn from Zhang Xiaoheng (2016), Liu Yousheng, Chen Dubin (2016) scholars, and combined with the actual situation of Anhui, build rural electricity development, evaluation index system.

Table 2. Comprehensive evaluation indicators of rural e-commerce development

Level 1 indicators	Secondary indicators	Level3 indicators	symbol
Development level of rural e-commerce	Industrial aggregation	E-commerce sales scale	X_1
		The ratio of e-commerce sales scale to the added value of the primary industry	X_2
	performance of enterprises	Average asset turnover rate of rural e-commerce enterprises	X_3
		Average and average enterprise profit rate of rural e-commerce enterprises	X_4
	Logistics foundation	Postal access to the administrative village example	X_5
		Per capita express delivery quantity	X_6
	Information foundation	The Internet coverage rate is available in rural areas	X_7
		Computer ownership per 100 households	X_8

3.1.2. Establishment of the Typical Correlation Analysis Model

In order to study the correlation between the indicators of urban and rural integrated development and the development of rural e-commerce, and to make the integrated development of urban and rural areas the input variable and the development of rural e-commerce the output variable, the typical correlation analysis method is adopted. It uses the

principal component idea to find out the linear combinations of the input variables and the output variables, respectively, and then discuss the correlation between the linear combinations. All the data used in this paper are from China Statistical Yearbook, China Population and Employment Statistical Yearbook, China Fixed Asset Investment Statistical Yearbook, Urban Statistical Yearbook of major autonomous regions and provinces, and China Statistical database of China Social and Economic Development released by the National Bureau of Statistics from 2014-2021. Data from 55 samples were selected for the analysis.

The specific steps of establishing the typical correlation analysis model are as follows:

Step1. Build the original matrix;

According to the obtained data, we set the development index of rural e-commerce as the integration of urban and rural development. $X = (X_1, X_2, \dots, X_8)'$ $Y = (Y_1, Y_2, \dots, Y_{11})'$ Z is the overall centralized array of observational data.

$$Z = \begin{bmatrix} X_{1,1} & \dots & X_{1,8} & Y_{1,1} & \dots & Y_{1,11} \\ \vdots & \ddots & \vdots & \vdots & \ddots & \vdots \\ X_{55,1} & \dots & X_{55,8} & Y_{55,1} & \dots & Y_{55,11} \end{bmatrix} = (X, Y)'$$

Step2. Standardize the raw data and calculate the correlation coefficient matrix;

We normalized the index data, then calculated the correlation coefficient matrix R between two samples, and divided R into

$$R = \begin{bmatrix} R_{11} & R_{12} \\ R_{21} & R_{22} \end{bmatrix}$$

Among them, R_{11} and R_{22} are respectively the correlation coefficient matrix within the indicators, and R_{12} and R_{21} are the correlation coefficient matrix between the indicators.

Step3. Seek the typical correlation coefficient and the typical variables;

$A = R_{11}^{-1}R_{12}R_{22}^{-1}R_{21}\lambda_1^2$ First, the feature root and the feature vector, the feature root, and the feature vector, then have $S_1\alpha_iB = R_{11}^{-1}R_{12}R_{22}^{-1}R_{21}\lambda_1^2S_2\beta_i$

$$\alpha_i = S_1^{-1}(S_1\alpha_i), \beta_i = S_2^{-1}(S_2\beta_i)$$

The typical correlation coefficient of index X of rural e-commerce development and index Y of urban-rural integrated development is, and the typical variable is λ

$$\begin{cases} V_1 = \alpha'_1 X \\ W_1 = \beta'_1 Y \end{cases}; \begin{cases} V_2 = \alpha'_2 X \\ W_2 = \beta'_2 Y \end{cases}; \dots; \begin{cases} V_t = \alpha'_t X \\ W_t = \beta'_t Y \end{cases} (t \leq 55)$$

λ The canonical correlation coefficient, i , was tested for significance. Before making the typical correlation analysis of index X of rural e-commerce development and index Y of urban-rural integrated development, we should first check whether the two groups of variables are related; if not, the typical correlation of the two groups of variables discussed is meaningless.

3.1.3. Solution of the Typical Correlation Analysis Model

Typical correlation analysis was performed using SPSS software, resulting as follows:

Table 3. Typical correlation coefficient

order number	1	2	3	4	5	6	7	8	9	10	11
canonical correlation coefficient	0.995	0.969	0.956	0.931	0.865	0.845	0.758	0.611	0.490	0.325	0.310
Prop Var	0.001	0.008	0.011	0.018	0.034	0.038	0.057	0.085	0.103	0.121	0.132

The typical correlation coefficients between the first, second, third, and fourth pairs of typical variables were all greater than 0.9. Thus it can be seen that the four of these four typical variables have strong explanatory power, and the corresponding typical variables are closely

related. However, to determine the significance of the correlation of the typical variables, the significance test of the typical correlation coefficient is required. The results by SAS are shown in the table:

Table 4. Typical correlation coefficient test table

	Wilk's	DF	Sig.
1	0.000	159.840	<0.0001
2	0.000	147.920	<0.0001
3	0.000	134.580	0.0002
4	0.001	119.780	0.0252
5	0.014	103.520	0.3337
6	0.058	85.792	0.686
7	0.202	66.608	0.9605
8	0.475	46.000	0.996
9	0.759	24.000	0.9925
10	0.876	23.423	0.9993
11	0.895	21.385	0.9987

Test that remaining correlations are zero:

The significance results indicated significant associations between the top three pairs of canonical variables at the significance level of 0.01. Standardized coefficients of canonical variables to build canonical correlation models.

$$\begin{aligned}
 V_1 &= 1.17x_7 + 0.16x_3 + 0.18x_6 \\
 W_1 &= 4.13y_4 \\
 V_2 &= 0.14x_3 + 0.25x_5 + 0.78x_1 \\
 &\quad + 0.57x_5 - 0.17x_4 + 0.54x_2 \\
 W_2 &= 0.72y_8 + 0.31y_5 \\
 V_3 &= 0.76x_3 + 0.36x_4 + 0.85x_5 + 0.56x_{10} + 0.55x_{11} \\
 &\quad + 0.56x_2 \\
 W_3 &= 0.58y_5 + 0.1y_4 + 0.53y_6
 \end{aligned}$$

In the first pair, the typical variables mainly separate the Internet penetration rate from various indicators (the typical load is 4.13), which is correlated to the maximum rural Internet coverage rate (the corresponding typical load is 1.17). Therefore, increasing the Internet penetration rate has an important impact on the increase of rural Internet coverage rate, and then promote the better development of rural e-commerce.

Second, the typical variable will per capita GDP from 11 urban and rural integration development indicators (typical load is 0.72), the rural electricity development is the corresponding explanatory variable of electronic commerce sales scale, e-commerce sales scale and the ratio of the added value of the primary industry and postal administrative villages (typical load is 0.78,0.57 and 0.54). Obviously, the per capita GDP and e-commerce sales scale have a strong correlation, which fully explains the role of e-commerce in promoting the integration of urban and rural development.

Third, the typical variables separate the line length of public transport operation network lines and per capita post and telecommunications service from the indicators (typical load is 0.76 and 0.85), and the corresponding explanatory variables are the average asset turnover and per capita express number of rural e-commerce enterprises (typical load is 0.58 and 0.53). Under the combined effect of the average asset turnover rate of rural e-commerce enterprises and the

increase of per capita number of express delivery, the length of public transportation operation network and per capita post and telecommunications business have been significantly improved, so the development of rural e-commerce can promote the circulation of factor resources in urban and rural areas.

4. Results Analysis of the Effect of Rural E-Commerce Development on Urban and Rural Integration

4.1. Development of Rural E-Commerce Promotes Urban-Rural Integration

4.1.1. Promote the Prosperity of Agricultural Industry and Narrow the Gap between Urban and Rural Economic Development

Promoting "agricultural products upward" and "industrial products downward" is an effective path for rural e-commerce for rural economic development. Promoting the rapid development of e-commerce will help to promote the effective transformation of a safe and sustainable new agricultural and food system in China. Therefore, for rural areas, we should develop industries according to local conditions, promote information construction to promote agricultural and rural development, develop rural e-commerce through digital construction, and empower the agricultural industrial chain through information technology. The impact of the development of rural e-commerce on rural industries can be summarized through the following aspects. First of all, the development of rural electricity to a certain extent, broaden the scope of agricultural and sideline products sales, make agricultural sales boundary further widened, give the outside world more understanding of rural agricultural and sideline products, making external capital is more willing to, more easily flow and penetrate into the rural market, so the development of characteristic industry can effectively help urban and rural integration. In addition, with the increase of agricultural production profits, it further provides financial support for agricultural and rural development, and also improves the confidence of agricultural producers. The continuous inflow of funds has a certain positive effect on the optimization and adjustment of rural industrial structure to a certain extent. Secondly, rural e-commerce has also driven the decline of industrial products, bringing more advanced technologies and production methods to rural areas, providing a certain degree of technical support for rural development, making agricultural production activities more convenient and efficient, and opening up more production space. Therefore, through the dual role of capital and technology to achieve industrial penetration, cross and reorganization, promote the optimization and upgrading of the industrial structure in rural areas, and further promote the pace of agricultural and rural modernization.

4.1.2. Promote Ecological Livability and Narrow the Gap between Urban and Rural Ecological Development

The village primary industry needs a livable ecological environment, and only on this basis can it drive and attract the development of the rural secondary industry and even the rural tertiary industry, so as to retain the resources. Therefore, for the overall coordinated development of rural areas, ecological environment construction is the basis and guarantee of rural development. To build a beautiful countryside and a beautiful China, we need to continuously optimize and improve the rural ecological environment. From the perspective of the segmentation field, relying on the development of rural e-commerce not only promotes the "agricultural products up" and "industrial products down", but also realizes the transformation of the rural single industry to the diversified industrialization. On the one hand, it deeply excavates the local resources in rural areas, and releases the green environmental protection concepts such as rural related ecological value to the outside world. Through standardized and reasonable scientific development and utilization, Revitalize the rural natural resources and traditional customs, With basic agriculture, traditional rural folk customs and traditional rural

natural scenery as the core, Vigorously develop the rural characteristic tourism industry, Make the rural characteristic customs set recuperation, entertainment, culture, education is equal to one, This is the most direct embodiment of the statement that "clear waters and green mountains are gold and silver mountains", It is also a good way to drive and encourage rural residents to start spontaneous employment and entrepreneurship, To broaden the channels for increasing rural residents' income to provide a guarantee, Thus more resources will pour into the countryside, To build up the countryside, Further coordinating the protection and development of rural ecological resources, Thus forming a virtuous circle. On the other hand through the development of electricity platform to green water castle peak, ecological livable characteristic concept to the outside world, not only realized the effective docking of rural civilization and urban civilization, and the rural residents of ecological environmental awareness also affected, and effectively promote ecological livable beautiful rural construction, promote rural ecological revitalization, promote the development of rural ecological development is always in a virtuous circle.

4.1.3. Promote Civilized Governance and Narrow the Gap between Urban and Rural Public Services

The development of rural e-commerce will not only affect the economic level of rural areas and the ecological environment of rural areas, but also drive the change of social governance system and the change of rural style, and promote the reconstruction of the original economic organization structure of rural society. Among them, information literacy plays a significant positive role in promoting high-quality farmers' participation in rural construction. On the one hand, rural e-commerce can develop a number of new industries in rural areas, creating characteristic agricultural industry brands, and also transform the traditional identity of farmers from the original single agricultural producer to agricultural dealers, or even the managers of rural small and medium-sized rural enterprises. As a result, the initial fragmented and single production mode is transformed into an organized, disciplined and organized production and operation mode with a certain organizational scale. In addition, relevant policies, laws and regulations are also integrated into the work and life of farmers, realizing a more efficient organization and management mode. Through the construction of the multi-layer management mode of rural, township and county coordination, the two-way service channel of "industrial products down" and "agricultural products up" in rural areas is opened, and then a standardized and unified governance mode is formed in rural areas, which is conducive to the unified governance and management of rural areas. On the other hand, with the continuous restructuring of the economic organization structure, there are more and more opportunities for communication and cooperation between rural residents. In addition, with the development of rural e-commerce, the outside world also makes the new ideas constantly input. The continuous introduction of information, talents, ideas and other resources also makes rural residents have more opportunities to contact with the outside world, so that rural residents can fully understand and have access to the Internet knowledge and a new service mode. These new concepts and models have gradually penetrated into farmers' life and organizational management, making rural grassroots governance more efficient and convenient.

4.1.4. Promote Rural Employment and Entrepreneurship, and Narrow the Income Gap between Urban and Rural Areas

The development of rural e-commerce has a profound impact on the production and life style of rural residents. The digital operation relying on the development of rural e-commerce can effectively increase the income of rural residents' income. Therefore, for the living standard of rural residents, the impact of rural e-commerce can be expounded from the following aspects. First of all, the rural electricity can through the development of regional advantage resources,

realize the joint development of "agriculture & tourism", by creating characteristic agricultural brand, in agricultural production of each link such as processing, inspection, packaging, storage, distribution can release jobs to absorb local villagers to participate in, thus providing more convenient employment channels, employment for rural residents to create more opportunities, promote farmers' income to get rich. In addition, rural e-commerce has greatly stimulated the enthusiasm of rural residents in production and their own creative ability, making more innovative and new production models constantly emerge, and effectively solving the problem of rural surplus labor force. In this process, the rise of various small private economies, such as micro-workshops, makes full use of the leisure time of rural residents, and effectively solves the problem of rural residents without income source in the current non-busy farming time, so that the benefits released by the development of rural e-commerce will benefit more people. Secondly, the rural e-commerce chambers of commerce can reduce the cost of related production and living for rural residents, mainly including transaction costs, communication costs and production costs. The continuous expansion of e-commerce channels makes the turnover speed and cycle of raw materials needed for agricultural production and the turnover cycle shorter, thus improving the production efficiency. In addition, farmers can compare prices between different businesses, and they can take the initiative to choose, changing the original relatively passive situation, and thus reducing the production costs. In addition, relying on the electricity development makes its rapid popularization, the sales of agricultural products gradually broke through the regional and time restrictions and constraints, make agricultural products sales time, expand the sales of agricultural products, make smaller rural production scale and urban larger inner demand effectively cohesion, to alleviate the problem of information asymmetry, establish a more effective communication mechanism, so as to increase farmers' income. Finally, on the one hand, due to the expansion of sales channels, the sales of agricultural products are more smooth, which leads to the further reduction of the threshold of entrepreneurship, promotes the formation of entrepreneurship tide, and has a positive impact on the optimization and upgrading of the industrial structure in rural areas, driving the increase of farmers' income and become rich, and thus forms a long-term economic growth mechanism. On the other hand, due to the support of e-commerce platforms, the financing channels of farmers in production and life are widened, and the financing costs are reduced, thus the infrastructure conditions in the agricultural production process are improved, the enthusiasm of farmers in production is improved, and the ways for farmers to increase their income are therefore widened. To sum up, it is concluded that the development of rural e-commerce promotes the improvement of the life quality and living standards of rural residents through various paths.

4.2. Development of Rural E-commerce Suppresses Urban-Rural Integration

In fact, due to the existence of urban-rural digital divide, the development of rural e-commerce may also become a stumbling block to the integrated development of urban and rural areas. As a negative product of the urban-rural dual structure system in the digital economy era, the "digital divide" between urban and rural areas stems from the huge differences between urban and rural residents in terms of digital technology acceptance degree, information resource access opportunities, the popularization scope of intelligent equipment, and the network knowledge learning ability. At the same time, under the background of the long-term urban tilt policy, as the result of the economic and social differentiation between urban and rural areas, the level of digital infrastructure construction in the rural areas of China lags far behind the urban areas, which seriously restricts the digital transformation of agriculture and rural areas. The gap of digital infrastructure construction will form the urban and rural digital divide, and to a certain extent, urban and rural residents digital technology use probability differences, rural residents make difficult to make full use of network information technology looking for employment opportunities, combined with the electricity digital economy model in rural areas,

the urban and rural income gap is growing. Studies have confirmed that the digital divide between urban and rural areas hinders the equalization of income distribution between urban and rural residents, and is not conducive to the integrated development of urban and rural areas. In addition, the education level of rural residents is relatively backward, resulting in their weak ability to apply digital technology, which forms the secondary digital divide between urban and rural areas. Rural residents' use of digital technology mostly stay in the lower threshold of network communication, leisure, entertainment, news and information, etc., and has a high positive externality value of public services, business transactions, Internet finance is rarely involved, exposed the rural residents to share digital dividend ability obvious short board, delay the process of the development of urban and rural integration.

5. Research on the Optimization Strategy of Promoting Urban-Rural E-Commerce Integration through the Development of Rural E-Commerce

5.1. Strengthen Urban and Rural Interaction and Enhance Regional Co-Creation Capacity

5.1.1. Give Full Play to the Leading Role of the Government and Promote Regional Integration and Urban-Rural Coordination

Government should actively assume the main responsibility in the development of urban and rural integration, strengthen the top design of urban and rural areas, reasonable urban and rural planning, optimize urban and rural space layout, through the policies and system actively lead the direction of urban and rural integration, promote urban and rural human, financial and material resources and other kinds of free flow, in the field of market failure, such as providing public goods and resource allocation, take the initiative of government functions. At the same time, we should coordinate the relationship between the government and society, the market and the masses, constantly improve the capacity of urban and rural governance, give full play to the role of social organizations and the masses, and constantly strengthen and improve the social governance model with the leadership of the Party as the core, villagers' self-governance and participation as the basis, and the close cooperation of social organizations.

5.1.2. Reasonable Development Model Selected According to Regional Advantages

Through the field investigation of social practice and field research, it is found that there is an unbalanced development phenomenon among various regions, so it is necessary for each region to develop the regional economy according to its own advantages. First for rich agricultural and sideline products, is too dependent on the development of the first industry area, should adjust measures to local conditions to fully mobilize their own advantages, fully coordinate the government and the villagers to participate in processing and production operation, promote farmers' employment, make full use of the Internet major electric business platform, expand agricultural and sideline products sales, broaden the sales channels, drive the local villagers' income to get rich. Secondly, for the economic radiation belt of the developed regions, we should fully rely on the external advantages to develop related industries and form the radiation and driving role of the economy. Finally, for the developed regions, it is necessary to timely carry out industrial transfer, introduce advanced models to maintain their own high-level economic development, fully reflect their responsibility, coordinate the economic development of the surrounding areas, and promote the integrated development of urban and rural areas.

5.1.3. Adjust the Industrial Structure and Promote the Rational Distribution of Industries

Scientific and reasonable industrial structure is an important basis for the healthy operation and development of the society. The adjustment of industrial structure has a significant positive

impact on the development level of urban and rural integration. We should improve the industrial distribution of urban and rural areas and formulate reasonable policies for healthy industrial development. City usually has a lot of modern service industry and high-end manufacturing, the economic development level of rural areas is relatively backward, enterprises plays an important role in multi-center governance, can adjust measures to local conditions in the development of regional advantage industry, accelerate the second and three industries in rural areas, increase the disposable income of rural residents, promote the coordinated development of rural one, two and three industries. Combined with the actual situation of the region, we will develop modern agriculture and tourism services with local characteristics, expand more economic development points in rural areas, and form new industrial groups in rural areas. For example, by actively developing rural tourism resources, people not only drive the local economic development through rural tourism, but also have a deep communication and exchange between urban and rural residents, and achieve the integration at the social level to a certain extent. Cooperate with Internet e-commerce enterprises, promote it with the help of the advantages of e-commerce platform, build a comprehensive service platform connecting production and marketing, take the natural resources of agriculture and rural areas as the advantages, steadily promote the development of smart agriculture, and build a rural industrial system with sustainable development.

5.2. Optimize the Construction of Rural Facilities and Improve the Level of Comprehensive Rural Services

5.2.1. Improve Digital and Other Infrastructure Construction, and Promote Equal Access to Public Services

On the Internet infrastructure construction, should strengthen the construction of telecom network, extend the cable lines, gradually add and put into use township 5G base station, improve the PC and mobile terminal above the network penetration rate, at the same time, enhance the rural power grid power supply capacity and network signal receiving ability, ensure the normal operation of rural electricity digital platform.

besides, In realizing the urban-rural integration of public service resources, The government should rationally allocate public resources such as education, medical care and health care in both urban and rural areas, We will increase public financial spending in education, medical care and infrastructure construction, And to make the appropriate tilt of the rural areas, Constantly improve the construction of rural irrigation and water conservancy facilities, import of advanced technology, Improve the mechanization level of agricultural production, The government should scientifically control agricultural non-point source pollution, To strengthen ecological and environmental protection, Efforts to open up a new situation of the sharing of health and education resources in urban and rural areas, All kinds of social groups should also play their own roles, Improve the public service system between urban and rural areas, Promote the connectivity of various resources between urban and rural areas, Gradually achieve balanced development between urban and rural areas.

5.2.2. We will Strive to Improve Rural Governance and Innovate the Governance Organization System

At present, at this stage, China has been emphasizing the need to gradually eliminate the differences in mechanisms between urban and rural areas, innovate the organizational system of urban and rural social governance, establish a joint coordination mechanism between urban and rural governance, and promote the orderly participation of multiple governance subjects in urban and rural social governance. According to the current stage characteristics of village development, it is necessary to continuously optimize the path of rural governance, promote the formation of a coordinated governance mechanism of urban and rural society, and avoid hindering the further development of rural areas due to the solidification of the governance

organization system. In rural social governance, one-way control should be replaced by one-way consultation, and an institutionalized and standardized interaction mechanism should be established to promote the effective interaction between the government, the market and the society, so that organizational forces can participate together and conduct multiple cooperation. In addition, through the urban and rural social governance system, actively involving the government, the market, organizations and the villagers, it achieves the ultimate goal of co-management of multiple governance subjects and co-governance in the integration of urban and rural areas.

5.2.3. Build a Comprehensive Service Platform for Urban and Rural Communities

We will actively participate in the construction of new urbanization and beautiful countryside, build or transform multi-disciplinary and fully functional rural comprehensive service cooperatives and urban and rural community service centers (stations), train specialized management personnel, and be responsible for carrying out "all-round and one-stop" services to meet the diversified and personalized service needs of urban and rural residents. We will coordinate urban and rural e-commerce resources, build a number of urban commercial centers and urban commercial service complexes, and support rural e-commerce in developing emerging services such as ecological health care, leisure and tourism, rural tourism, elderly care, and fitness. Jointly promote and standardize the construction of sites for urban and rural renewable resources, promote the reuse of renewable resources, and improve the urban and rural ecological environment.

5.3. We will Actively Develop E-Commerce and Deepen Institutional Reform

5.3.1. Provide the Guarantee for Returning to Their Hometown to Start Businesses, and Strengthen Talent Training

Rural areas cannot provide more job opportunities and salaries for young people, so most young people will choose to go out to work. But now the development of e-commerce Internet, distance and region are no longer limited to the development of young people. Today's countryside has many new ways to get rich, of course, it is also a good thing to develop their hometown, young people learn skills and knowledge outside, back to their hometown for a contribution, make full use of the Internet to let their hometown also keep up with the pace of The Times. With the continuous development of rural e-commerce and the continuous innovation of content, more technical talents are needed to operate, guide the rural people to use it, and solve a series of problems in production and living and use, and truly lead the masses to benefit. Therefore, on the one hand, the government should take policy support to encourage college students and other young people to return home to start businesses, and guide rural people to carry out e-commerce industry production; on the other hand, it should actively guide the basic knowledge and operation skills of e-commerce, to improve the application ability of e-commerce.

5.3.2. Integrate Resource Distribution and Break the Development Limitations Such as Logistics Network Infrastructure

The development of e-commerce cannot be separated from the logistics supporting service system. Compared with cities, due to the remote geographical location in rural areas, inconvenient transportation, backward logistics services and high distribution costs, the small application scale and small income in rural areas of e-commerce. Therefore, as the last kilometer of logistics, it is also very important to strengthen road construction, perfect logistics distribution system, cold chain production line and vacuum packaging line, the construction of basic logistics and storage facilities, to solve the problems of agricultural products in the sales process of perishable and st. At the same time, the advantages of rural e-commerce big data should be utilized to integrate rural digital information, strengthen the effective development

and utilization of agricultural information resources, and improve the service system of information sharing and effective integration of agriculture-related digital information resource platform.

5.3.3. Improve E-commerce Platform Services and Innovate E-Commerce Application Scenarios

Combined with the quantity and quality of the existing agricultural trading platforms, it can be found that the current construction of agricultural trading platform has a long way to go. Different from the path of "industrial products down", the relevant network platforms and APP of "agricultural products up" in China are still in the initial stage of development, and do not have a huge influence in the industry, such as Huinong Network and China Agricultural Products Sales Network, which is not conducive to rural residents' income and getting rich. Therefore, the government should work with relevant Internet enterprises to actively encourage the research and development of related agriculture-related e-commerce products and agricultural products e-commerce trading platforms to expand the influence of related products and improve the recognition of rural residents. In addition, we should strengthen the benign guidance to rural residents, and constantly improve the habit of rural residents using such platforms to trade, so as to realize the real benefit to the people. At the same time, the current net red economy is in a stage of rapid development, and it has become a feasible path to help rural industrial upgrading through live broadcasting. Therefore, governments at all levels can promote the sales of agricultural products by cooperating with major anchors, reach long-term cooperation intentions through signing contracts and other forms, and promote the sales of agricultural products. Rural residents themselves can also sell their products through short video platforms. In the process of sales, they can also show the natural charm of rural areas to drive the development of related tourism industries and broaden the channels for increasing income. In addition, the digital mode of e-commerce should continuously expand the application field, promote the construction of diversified scenes such as rural civilization and public service, link urban-rural interaction, and promote urban-rural integration.

Acknowledgments

Anhui University of Finance and Economics 2022 College Student Scientific Research and Innovation Fund Project (XSKY22022ZD).

References

- [1] years fierce. Evolution of urban and rural relations, integration barriers and supporting policies in China [J]. *The Economist*, 2020 (08): 70-79.
- [2] Mukri. Main obstacles and breakthrough directions of urban-rural integrated development in the new development stage [J]. *Administrative management reform*, 2021 (01): 79-85.
- [3] Chen Dan, Zhang Yue. The Logic, Key and Path of Urban-rural Integration under the rural Revitalization strategy [J]. *Macroeconomic management*, 2019 (01): 57-64.
- [4] Chen Wen, Wu Ying. The development of the digital economy, the digital divide and the income gap between urban and rural residents. *Southern Economy*, 2021 (11): 1~17.
- [5] Chen Jing. The influence of e-commerce development on agricultural industrial agglomeration from the perspective of rural revitalization --takes Guangxi as an example [J]. *Business Economy Research*, 2021 (08): 123-127.
- [6] Chen Jinguang, Tang Long, Tang Yuehuan. Does rural e-commerce policy help to narrow the urban-rural income gap? --Based on the perspective of factor flow and expenditure structure [J / OL]. *Agricultural technology and economy*: 1-15.

- [7] Fang Ying, Yuan Xiaoling. Research on the Realization path of rural E-commerce to Improve Farmers' income from the Perspective of Targeted Poverty Alleviation [J]. Journal of Xi'an University of Finance and Economics, 2019,32 (04): 92-99.
- [8] Guo Hongdong, Bai Junfei, Liu Yehong, Wang Jingjing, Qujiang. China's example of e-commerce boosting the development of smallholder farmers [J]. Journal of Jiangsu University (Social Science edition), 2021,23 (05): 13-21 + 33.
- [9] Guo Kaikai, Gao Weijie. Research on the Opportunities, Challenges and Countermeasures of high-quality development of rural e-commerce [J]. Modern economic discussion, 2022 (02): 103-111.
- [10] Ren Xiaocong, and Jun. Development trend, problems and countermeasures of rural E-commerce in China [J]. Modern economic discussion, 2017 (03): 45-49.
- [11] Zhang Wenxiao.--takes Gumu County as an example [J]. Journal of Guangxi University for Nationalities (Philosophy and Social Sciences edition), 2020,42 (01): 92-99.