

Research on the Mechanism and Effect of Digital Economy in Reducing Rural Relative Poverty

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Abstract

At present, China's poverty alleviation has achieved some results, but there is still relative poverty in some areas. To build digital villages, we will strengthen the "weak links" in poverty alleviation. Through the construction of multi-dimensional poverty index system, the digital economy has a positive poverty reduction effect, but there is some heterogeneity. In the central and western regions, areas with high level of digital economy development and areas with high level of poverty, the poverty reduction effect of digital economy is more obvious. According to the development of digital economy, we should put forward feasible poverty alleviation methods to improve residents' income level and increase employment opportunities, and strive to explore the path of poverty alleviation with Chinese characteristics.

Keywords

Digital Economy; Relative Poverty; Poverty Index System.

1. Introduction

Since the comprehensive poverty alleviation, farmers' food, clothing, housing and transportation have been greatly improved, but some areas still have the problems of relative poverty and return to poverty. First of all, this study combines with the trend of digital economy development, explores the influence mechanism of digital economy on the reduction of rural relative poverty, and analyzes the transmission path from agriculture and other industries. Secondly, the index system and mathematical model are established to explore the transmission mechanism of digital economy to alleviate the relative poverty in rural areas, and the empirical analysis proves that this path is effective. Secondly, the index system and mathematical model are established to explore the transmission mechanism of digital economy to alleviate the relative poverty in rural areas, and the empirical analysis proves that this path is effective.

2. Research Significance

2.1. Theoretical Significance

Explore the interaction relationship and action mechanism of digital economy and reducing rural relative poverty from a new perspective. Consolidating the achievements of rural poverty alleviation is an important research direction at present. Solving the problem of rural relative poverty through the development and popularization of information technology has certain

research significance for narrowing the gap between the rich and the poor and realizing rural revitalization.

2.2. Practical Significance

Under the background of the development of digital economy, this study explores the road different from the traditional poverty alleviation methods through modern technologies such as information technology and network technology. The research direction is extended from the previous plane research to the spatial level. A comprehensive, dynamic and scientific analysis of the static, dynamic and spatial interactions between the digital divide and poverty.

3. Research Status and Literature Review

3.1. Domestic Research Status

Zhao Rui (2013) realized for the first time that we should dynamically study the dynamic change process of the poverty status of the poor groups in different periods. The promotion of new technology increases the income of the poor. Measurement and decomposition of the poverty vulnerability of rural households in China within the time span is proposed in the study. Li Fuquan (2020) used the dual difference method to analyze the relationship between the distribution of poor population and economic development in all counties in Guangxi from 2016 to 2019. The results show that financial poverty alleviation has a significant impact on the effect of poverty reduction. Cheng Weite (2021) measured and decomposed the multidimensional relative poverty status data of Chinese urban and rural families from 2010 to 2018 by collecting the multidimensional relative poverty status index data of urban and rural families.

3.2. Foreign Research Status

Hein (2016) pointed out in the article that the development of communication technology plays an important role in rural digital economy in Africa. Igor (2019) discussed the construction of a self-development regional evaluation system under the condition of digital economy, and evaluated the major regions of the Northwest Federation. Rasul (2022) took the non-black soil area of the Republic of Bashkortostan as an example to predict the agricultural production scenario of farms, confirming that digital economy is one of the key factors to improve agricultural production efficiency.

3.3. Literature Review

Through combing the literature, it is found that there are studies on solving the problem of rural relative poverty both at home and abroad: In China, the author mainly analyzes the gap between the rich and the poor in some regions from the aspects of income and technology, but the research mechanism of the concentrated remote areas is not deep enough. The analysis of the impact of digital economy on agricultural progress appeared earlier abroad, but most of the research is on the mechanized production of large farms, which is not suitable for the domestic agricultural mode of intensive farming and fine cultivation, and it is difficult to apply to the actual situation. This project constructs a comprehensive index system of the digital divide and poverty from a dynamic perspective, with multi-dimensional dynamic measurement of the digital divide and relative poverty, and calculates a more scientific comprehensive index.

4. The Influence Mechanism of Digital Economy on Reducing Rural Relative Poverty

4.1. Digital Technology has Promoted the Improvement of Agricultural Production Efficiency

Comprehensive use of big data, the Internet of Things, blockchain and other modern information technologies to expand the application of agricultural and rural areas, the development of the whole process of prenatal, during and postpartum digital penetration of agricultural products. Prenatally, the supply of agricultural production factors can be optimized through digital economy to realize information sharing in different poor areas and promote the circulation of factors. Through the deep coupling of digital technology and agricultural production, the application of artificial intelligence, quality testing, satellite remote sensing system and other digital technologies in agricultural irrigation, harvesting, meteorology, temperature and humidity control, and soil monitoring, is used to help realize precision agriculture and modern facility agriculture. After delivery, it provides a full range of services for agricultural products sales through digital platform, and expands the sales channels of agricultural products through e-commerce platform. Use cold chain distribution, logistics distribution center and other programs to ensure the export quality of agricultural products.

4.2. Digital Transformation Will Promote the Transformation and Upgrading of Rural Industries

With the change of the development pattern of The Times, new industries, new business forms and new models are emerging, gradually showing a new trend of industrial integration and urban-rural integration. Digital economy has an impact on rural industries from vertical, horizontal and innovative aspects. Innovation breaks through the rural industrial model through core technologies in the digital field, and breeds new cloud countryside, shared farms and digital creative roaming countryside.

5. Measurement and Index Construction of Digital Economy and Rural Relative Poverty

5.1. Measurement and Index Construction of the Development Degree of Digital Economy

A multi-dimensional digital economy index evaluation system has been established, and four indicators of development environment, digital industrialization, industrial digitalization and digital finance are selected to measure the development of digital economy.

5.1.1. Development Environment

The development environment of digital economy depends on the infrastructure construction of digital technology. Taking the construction of information technology infrastructure as the evaluation standard, the number of broadband network access users, the length of optical cable lines and mobile phone base stations all directly affect the degree of farmers' external information interaction. The first-level indicators of development environment are calculated through four second-level indicators.

5.1.2. Digital Industrialization

Digital industrialization refers to the degree of integration into digital economy in the development of rural industries, judging the proportion of sales of information technology, telecommunication services and e-commerce in GDP, and evaluating the degree of export of rural industries with the help of Internet platform and big data algorithm.

5.1.3. Industrial Digitization

To realize the penetration of the industrial chain including production, sales and logistics, promote the digitalization of the whole industrial chain, and improve the quality and efficiency of agricultural products supply. The proportion of enterprises with e-commerce transaction activities, the number of computers used per 100 people, and the number of websites owned by per 100 enterprises as the secondary indicators, so as to judge the degree of industrial digitalization.

5.1.4. Digital Finance

The proportion of enterprises with e-commerce transaction activities, the number of computers used per 100 people, and the number of websites owned by per 100 enterprises as the secondary indicators, so as to judge the degree of industrial digitalization. Digital financial services, such as digital payment, digital credit and digital insurance, promote the construction of digital countryside to a certain extent.

5.2. Measurement and Index Construction of Relative Poverty

This project selects four indicators of group structure, poverty level, income poverty and social poverty to measure the regional relative poverty. Construct a multi-dimensional index system of poverty, including the regional population gender and ethnic structure index, poverty degree index, income poverty index and social poverty index.

5.2.1. Group Structure

Group structure is the composition of group members. It can be divided into the age structure, ability structure, knowledge structure and personality structure of group members. The structure of groups has an important influence on group behavior and work outcomes. Proper collocation of group members can make the members of the group coordinate and cooperate closely, so as to improve work efficiency. The rural population group is defined by the proportion of male population and ethnic minority population.

5.2.2. Poverty Degree

The measurement of relative poverty requires quantifiable indicators to specify specific measures of poverty, including both poverty indicators and poverty levels. When measuring poverty, the number of poor people must be investigated, and the proportion of the poor population in the total population and the ratio of poor villages must be taken as the measurement criteria.

5.2.3. Income Poverty

Income poverty means that the income level of a person or a family is far lower than the income level of the general population, which cannot meet the basic living needs. It mainly compares the family with the poverty line of the country. The Engel coefficient is taken as the positive index, the per capita GDP and the proportion of rural residents' consumption as the reverse index.

5.2.4. Social Poverty

Set reverse indicators from education, medical and health care, and urban-rural integration. Years of education and enrollment rate of primary and secondary schools; number of health institutions and beds in medical and health care. In terms of urban-rural integration, the urbanization rate is set as a specific measurement indicator.

6. Conclusion

6.1. Summary

6.1.1. At the Theoretical Analysis Level

Digital economy involved in the process of traditional production, more and more market main body choice to digital technology efficiency, precision, timeliness to optimize the traditional mode of consumption and production, for the rural revitalization of "industry" has brought new momentum, the development of industry and further improve the residents' income of, for the rural revitalization of "rich life" provides the guarantee. At the same time, when digital technology participates in the production process, whether in terms of production efficiency or from the precise supervision and control of the production process, it can better save production resources and ensure the legality and compliance of exhaust emissions, so as to meet the "ecological livable" requirements of rural revitalization.

6.1.2. At the Empirical Analysis Level

At the same time, when digital technology participates in the production process, whether in terms of production efficiency or from the precise supervision and control of the production process, it can better save production resources and ensure the legality and compliance of exhaust emissions, so as to meet the "ecological livable" requirements of rural revitalization. Digital transformation is divided into vertical extension of the agricultural industrial chain, horizontal integration with other industries, to promote new business forms in an innovative way, and to realize the transformation and upgrading of rural industries from these three aspects. The evaluation index system of rural revitalization and digital economy is constructed and measured, the data is standardized and the various weights are measured, so as to conclude that the digital economy reduces the relative poverty to a certain extent.

6.2. Countermeasures and Suggestions

6.2.1. Strengthen the Construction of Digital Technology Infrastructure

We will strengthen the construction of digital communication facilities, provide high-speed broadband networks in rural areas, and provide Internet services to farmers. By issuing electronic currency and promoting digital payment tools, digital transactions between farmers and urban residents can be realized, and the financial environment for farmers and the digital payment system will be improved. After the realization of the development of digital technology, attention should be paid to ensuring digital security, build network security, data security, information security and other security systems, and strengthen digital security management to ensure the smooth operation of digital economy.

6.2.2. Promote the Integration of Digital Technology and Agriculture

First, digital agricultural facilities such as smart greenhouses and digital planting and breeding should be built in rural areas, and technologies such as the Internet of Things and blockchain should be used to improve the efficiency of agricultural production and management, and reduce investment and labor costs. Secondly, the development of digital rural e-commerce: digital rural e-commerce can promote the sales of agricultural products, display and sell agricultural products through the e-commerce platform, save the cost of intermediate links, and promote the sales of local agricultural products to the national market. Finally, cultivate digital agricultural talents: strengthen the training of digital agricultural talents, promote the application of digital technology and information management, improve the skills and quality of agricultural workers and the overall management ability of agricultural workers with the help of digital technology, and improve agricultural efficiency.

6.2.3. Increase Policy Support for Digital Technology

Party committees and governments at all levels, and all local departments should pool the synergy of digital transformation. Party committees and governments at all levels, and all local departments should pool the synergy of digital transformation. We should deepen talent recruitment, introduce a few key talents who can play a key role in the digital transformation, and take multiple measures to improve the digital skills of practitioners of small and medium-sized enterprises. Strengthen the capital guarantee, through the establishment and operation of the digital transformation fund of small and medium-sized enterprises, the implementation of the digital transformation of small and medium-sized enterprises model rewards, to provide comprehensive financial support for the digital transformation of small and medium-sized enterprises. We will optimize the transformation ecology, build a data security guarantee system, create an open, healthy and safe digital ecology, and cultivate the soil for innovation and creation for small and medium-sized enterprises.

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References

- [1] Fang Binnan, Lu Shanshan. When agriculture meets the digital economy [N]. Beijing Business Daily, 2023-04-27 (003).
- [2] Zhao Kai, Lu Yu, Tan Mengwei, Zhang Zheyuan, Ma Chongbo, Li Zhanjie. Study on the coupling and coordination mechanism of digital economy development and rural revitalization [J]. Economist, 2023 (04): 121-123 + 125.
- [3] Jiang Zekun. A Study on the impact of digital economy on rural Revitalization [D]. Hebei University of Geosciences, 2022.
- [4] Tang Hongtao, Chen Jie. Research on the dual intermediary path of digital economy in promoting rural revitalization [J]. Journal of Changsha University, 2022,36 (06): 52-62.
- [5] Zhao Pengshan. Research on the impact of agricultural digital development on the urban-rural income gap [D]. Liaoning University, 2022.
- [6] Liang Ting. Research on the coordinated Development of digital Inclusive Finance and Rural Revitalization Strategy [D]. Xidian University, 2021.
- [7] Luo Ting-jin. Research on the Digital Divide and the Anti-Poverty Issues in the Underdeveloped Areas of China [D]. Beijing University of Posts and Telecommunications, 2020.
- [8] Sun Zhongfu, Zhang Qingdan. Digital economy is a new driving force of agricultural development [N]. Chinese Journal of Science, 2018-01-24 (007).