

Research on the countermeasures of digital inclusive finance to support the high-quality development of agriculture

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Abstract: *This study aims to explore the countermeasures of digital inclusive finance in supporting the high-quality development of agriculture. Firstly, this paper analyzes the positive impact of current digital inclusive finance technology in China from the perspectives of policy effect and market performance, global governance system and customer groups. Then, the current situation and pain points of high-quality agricultural development are discussed. The current situation includes that high-quality agricultural development contributes to the improvement of ecological environment and is an important way to improve the quality of agricultural products. The pain points include the lack of supply of high-quality agricultural products due to the imbalance of agricultural industrial structure, the poor path of industrial integration and the low benefit of agricultural industry chain due to the single way of industrial cohesion. The study found the impact of digital inclusive finance to support the high-quality development of agriculture. Finally, this paper puts forward a series of countermeasures and suggestions for digital inclusive finance to support the high-quality development of agriculture, including optimizing the construction of rural digital infrastructure, improving the risk supervision system and credit system of digital inclusive finance, and improving the digital inclusive finance system.*

Keywords: *Digital inclusive finance; Agricultural; high-quality development*

1. Introduction

With the advent of the digital era, digital inclusive finance, as a new financial model, is gradually becoming an important means to support the high-quality development of agriculture. However, there are still some problems in China's agricultural sector, such as financing difficulties and information asymmetry, and the traditional financial service model has been unable to meet the needs of farmers. Therefore, it is of great significance to deeply study the positive impact of the current digital inclusive finance technology in China to promote agricultural modernization and improve farmers' income. This study aims to explore the countermeasures of digital inclusive finance to support the high-quality development of agriculture, analyze the current situation and pain points of the high-quality development of agriculture, summarize the current application status, and put forward corresponding countermeasures and suggestions, so as to provide decision-making reference for government departments and financial institutions, promote the wide application of digital inclusive finance in the field of agriculture, and promote the high-quality development of agriculture.

2. The positive impact of digital inclusive finance

According to the existing research results, combined with the views of many scholars, digital inclusive finance has a positive impact on improving the consumption level of residents. Zhang et al. (2020)^[1], Yi and Zhou (2018)^[2], Zou and Wang (2020)^[3] stated that digital inclusive finance has a significant effect on improving residents' consumption level by using theoretical models and specific empirical analysis.

From the perspective of policy effect and market performance, inclusive finance continues to play an important role in the enhancement of national economic aggregate, especially the positive correlation between digital inclusive finance and per capita GDP. This shows its strong driving force for people's effective demand for per capita consumption.^[4] With the development of digital technology,

the role of digital inclusive finance in the process of agricultural development has gradually emerged^[5]: through fast payment, stable consumption and access to subsidies, the financially vulnerable groups can get affordable financial services, get rid of the restrictions of highly monopolistic financing in the rural financial system, and finally get rid of poverty and increase their income. Inclusive finance plays an indispensable role in expanding domestic demand, stimulating consumption and realizing common prosperity for all. Song Xiaoling ^{[6][7]} et al. studied the impact of the development of digital inclusive finance on the income gap between urban and rural areas by using the digital inclusive finance index compiled by Peking University, and the results showed that the development of digital inclusive finance has a significant role in promoting the narrowing of the income gap between urban and rural residents in China.

From the perspective of global governance system, with the wide popularization of digital inclusive finance technology and the continuous improvement of inclusive finance level, China should actively integrate into the global governance system, transform from short-term supervision to long-term supervision mechanism, and steadily and rapidly launch China's version of regulatory sandbox. In order to increase the participation of China's financial regulators, fintech companies and other institutions in the international fintech sector, gradually strengthen their influence in the international financial regulatory system, and encourage Chinese fintech enterprises to actively carry out international cooperation^[8]. By providing more convenient and low-cost financial services, digital inclusive finance can help reduce financial exclusion, promote financial inclusion, and enable more people to integrate into the economic system, thereby reducing poverty and inequality. At the same time, digital inclusive finance can improve the efficiency and transparency of financial regulation, help combat illegal activities such as money laundering and terrorist financing, and enhance the stability and security of the global financial system. In addition, digital inclusive finance can also promote transnational cooperation and information sharing, strengthen economic ties among countries, and promote the development and prosperity of the global economy. In general, the development of digital inclusive finance can help build a more inclusive, just and stable global governance system, and promote the process of economic globalization towards a more sustainable and balanced direction.

From the perspective of customer groups, the combination of digital finance and inclusive finance can help truly achieve the goal of inclusive finance. By operating a variety of intelligent technology product terminals, financial services can be made more durable. The widespread use of network services will be directly related to the expansion of various financial services, enabling more and more, biased users to enjoy the convenience brought by financial services. At the same time, the innovative integration of digital inclusive finance provides farmers with the production cost of farming, which directly improves the utilization rate of production factors, alleviates or even avoids the possible problems caused by information asymmetry, and boosts the utilization rate of land in rural areas and the profit space of agriculture^[9]. By providing convenient and low-cost financial services for farmers and agricultural practitioners, digital inclusive finance reduces their financing threshold and promotes the capital flow and efficiency improvement of agricultural production. This helps agricultural producers better put into production, improve the quality and output of agricultural products, and promote the development of agricultural modernization. Digital inclusive finance can help farmers better manage risks and improve the stability and sustainability of agricultural production. Through digital technology, farmers can timely obtain market information, meteorological data and other agricultural production-related information, make more scientific decisions, reduce production risks, and improve agricultural production benefits. Digital inclusive finance can also rely on a wider customer base, cheaper distribution channel costs and more accurate risk pricing to help traditional financial inclusion services solve the problem of cost and income imbalance, so as to achieve sustainable and comprehensive development of financial economy^[10].

3. The pain points of high-quality development in agriculture

3.1. The unbalanced structure of the agricultural industry leads to insufficient supply of high-quality agricultural products

At present, under the background of bumper grain production in China, the total market supply of rice, corn and other bulk agricultural products is oversupply, the overall price is low, and the market demand is about to reach saturation^[11]. In view of the insufficient supervision and analysis of the construction of bulk agricultural products, the insufficient production capacity and the transfer of overcapacity, measures must be taken to optimize the layout of the agricultural industry chain and

industrial structure. On the one hand, the agricultural exhibition structure is biased towards traditional planting and animal husbandry, and the proportion of modern, scientific and technological agricultural production is low, resulting in insufficient production capacity of high-quality agricultural products. On the other hand, the unbalanced structure of agricultural exhibition industry also makes the supply of agricultural products unbalanced. Some regions may not be able to provide high-quality agricultural products due to production conditions, resulting in a shortage of supply in the market.

The unbalanced structure of agricultural exhibition industry may also lead to unreasonable allocation of resources, agricultural production relies too much on chemicals such as fertilizers and pesticides, resulting in environmental pollution and ecological damage, thus affecting the production of high-quality agricultural products. In addition, the unbalanced structure of agricultural exhibition industry will also affect the income level and quality of life of farmers. The lack of modern agricultural production technology and management experience makes farmers unable to effectively improve the quality and output of agricultural products, resulting in the supply of high-quality agricultural products.

3.2. Poor industrial integration path and single industrial connection mode lead to low benefits of agricultural industry chain.

According to the current situation of rural industrial integration, the fragmentation and segmentation of the agricultural industry chain in China have led to the long-term low-end of the agricultural value chain, which has increased the difficulty of realizing the optimal allocation of agricultural resources and the extension of the industrial chain. Poor industrial integration path means that different industries lack effective cooperation and synergy mechanism, and it is difficult to realize resource sharing and complementary advantages, resulting in low efficiency of production factors utilization. At the same time, the lack of effective integration path also limits the upgrading and transformation of the agricultural industry chain, which cannot realize the efficient operation and value-added of the industrial chain. Secondly, the single mode of industrial cohesion makes the added value of the agricultural industry chain low. The lack of diversified connection and cooperation mode leads to the weak connection between the production link, processing and circulation link of agricultural products, which makes the added value promotion and brand building of agricultural products limited. The single connection mode is also easy to lead to problems such as information asymmetry and unequal distribution of benefits in the industrial chain, which affects the coordinated development of all links in the industrial chain.

The realization of high-quality agricultural development is a complex and severe systematic project, due to the backward information construction in rural areas, there is a serious problem of information asymmetry between farmers and financial institutions, which not only faces the practical constraints of resources and environment, but also needs to be solved in finding new driving forces. In different historical stages of agricultural development, kinetic energy has different tools and conditions, or there are different models (Li, 2017)^[12]. For a long time, there has been structural surplus in agricultural development, and agricultural output cannot be digested in time, resulting in the waste of resources. At the same time of realizing agricultural development, pollution is also worrisome, and agricultural production may pay a large environmental price. Therefore, rural digital finance and traditional finance should be combined, and the online advantages of digital inclusive finance should be combined with the offline information advantages of traditional inclusive financier institutions, so as to better promote digital inclusive finance to support the high-quality development of agriculture.

4. The impact of digital inclusive finance to support the high-quality development of agriculture

4.1. Achieving effective links between farmers and modern agriculture

Digital inclusive finance can effectively connect small farmers with modern agriculture and fully revitalize various factors of production in rural areas. Digital inclusive finance can be combined with the actual development of rural areas, through the diversified digital supply chain financing mode, integration of production data procurement, agricultural and sideline products sales and other upstream and downstream resources and financing information, improve the relevance of the whole local agricultural industry chain. At present, relying on the advantages of rural property rights system reform and national system integration network, major financial institutions can effectively alleviate agricultural liquidity constraints, solve the fundamental problems of farmers' management and financing difficulties, high costs, risk prevention and so on through real-time supply and demand

information, online sales and various information data, and realize the effective connection between farmers and modern agriculture.^[13]

At the same time, digital inclusive finance provides farmers with more diversified financial services. Through digital financial tools such as mobile banking and mobile payment, farmers can more conveniently carry out operations such as fund withdrawal, transfer and payment, and realize the popularization and facilitation of financial services. Farmers can obtain loans, insurance, settlement and other services through the digital inclusive finance platform, which improves the capital turnover rate and efficiency of agricultural production and promotes the development of modern agriculture. Secondly, digital inclusive finance provides farmers with more information and technical support. Through the digital financial service platform, farmers can obtain the latest information and technical guidance in planting, breeding and sales, which helps them better understand the market demand, price trend of agricultural products and other information, and improve the efficiency and competitiveness of agricultural production. Digital inclusive finance can also introduce more flexible and convenient financial products through fintech innovation, such as small loans, mobile payment, e-commerce of agricultural products, etc., which promotes the deep integration and interaction between farmers and modern agriculture.

4.2. Digital inclusive finance has promoted the formation of agricultural development pattern

Digital inclusive finance can effectively promote the transformation of agriculture to green, environmentally friendly and low-carbon, and boost the formation of a development pattern of "one village, one product, one village, one industry". The traditional agricultural backward operation management and production technology, high cost input, low income, high energy consumption and low profit, such as the integration of digital inclusive finance and the depth of the real economy can expand the green development attribute while enriching agricultural and rural financial capital, and provide new vitality, new ideas and new technologies for the management of agricultural industry chain. Digital inclusive finance can also promote the effective transformation from traditional agriculture to modern agriculture, optimize the energy structure, and adjust the rural economic structure.

First of all, digital inclusive finance can provide convenient and low-cost financial services, including agricultural credit, insurance, payment, etc., to help farmers solve capital turnover difficulties and improve production efficiency and agricultural output quality. Secondly, digital inclusive finance can promote the modernization and intelligent development of agriculture. Through digital technology and financial tools, it can realize the informatization and intelligence of agricultural production, management and marketing, improve the efficiency and quality of agricultural production, and promote the optimization and upgrading of agricultural industry chain. In addition, digital inclusive finance can also promote the integrated development of agriculture and other industries. Through financial support and digital technology innovation, it can promote the connectivity between agriculture and rural economy, promote the development of processing and circulation of agricultural products, form a complete agricultural industry chain, and improve the overall level of agricultural development.

4.3. It will ease financing constraints in agriculture, rural areas and farmers

Digital inclusive finance, through its scale, coordination and sustainability, will contribute to the improvement of farmers' access to funds. At the same time, with the help of big data and Internet technology, traditional financial institutions provide distinctive financial services for "agriculture, rural areas and farmers" customers, including efficient loans and the whole industrial chain^[14]. By providing online financial services and convenient financial products, digital inclusive finance has lowered the financing threshold for "agriculture, rural areas and farmers" subjects, expanded the financial financing channels for farmers, rural residents and agricultural enterprises, and helped them obtain financial support more easily. Digital inclusive finance uses big data, artificial intelligence and other technological means to improve the credit assessment and risk control capabilities of "agriculture, rural areas and farmers" subjects, reduce financing risks of financial institutions, increase financial support for "agriculture, rural areas and farmers", and promote agricultural production, rural construction and farmers' income increase. Digital inclusive finance can also promote the innovation of financial products, meet the diversified financing needs of agriculture, rural areas and farmers, including agricultural production loans, rural financial services, agricultural products pledge financing, etc., provide personalized and customized financial services for agriculture, rural areas and farmers, and effectively alleviate their financing constraints.

4.4. We will promote the financing of agricultural industry chains

At present, there are still many problems in agricultural development: lack of value-added space, short production chain, high operating costs, and limited funds held by farmers. The implementation of inclusive finance in the high-quality development of agriculture can introduce and attract various types of financial institutions to carry out business in rural areas. In this way, if the development reaches a certain stage, it will drive the technological upgrading of agricultural technology, service and other aspects, thus promoting the upgrading of agricultural production and increasing farmers' income. Inclusive finance supports the high-quality development of agriculture, which also makes full use of the production advantages of rural areas, develops the service industry, tourism, Internet and big data industries, enriches the industrial chain of rural areas, and stimulates the vitality of rural development.

Digital inclusive finance makes use of digital technology and financial tools to improve the informatization level and operational efficiency of all links of the industrial chain, promote the coordination and optimal allocation of resources in production, processing and circulation, and promote the overall benefit improvement of the industrial chain. Digital inclusive finance can also promote risk management and collaborative innovation among all links of the industrial chain. Through financial support and digital technology innovation, it reduces the operational risks of industrial chain participants, stimulates their innovation motivation, and promotes the technological upgrading and industrial structure optimization of the industrial chain. He (2020)^[15] found that in the process of digital transformation of rural industries, digital inclusive finance can give full play to its advantages, improve financial support, broaden the breadth of financing, and promote industrial integration.

5. The future prospects of digital inclusive finance to support the high-quality development of agriculture

5.1. We will optimize the development of digital infrastructure in rural areas

Sound digital infrastructure is the basic guarantee to solve the financing dilemma of agriculture, rural areas and farmers, and also a necessary condition for the rapid development of digital inclusive finance in rural areas (Guo and Yao, 2021; Qin and Pan, 2022)^{[16][17]}. First of all, digital inclusive finance can provide more diversified and personalized financial services for rural areas through fintech innovation, promote the development of rural financial markets, promote the construction and improvement of rural financial institutions, and further optimize the rural financial service system. Secondly, digital inclusive finance can promote the upgrading and intelligent development of rural digital infrastructure construction. Through digital technology and big data analysis, it can improve the informatization level of rural areas, promote the development of new forms of business such as rural e-commerce and smart agriculture, and promote the diversification and modernization of rural economy.

Therefore, government departments and financial institutions should continuously improve the construction, transformation and upgrading of information infrastructure in rural areas, promote the informatization, digitalization and mobile of financial infrastructure, improve the network coverage and network transmission speed in rural areas, ensure that digital inclusive finance can penetrate into rural areas, and guide all kinds of financial service providers to carry out inclusive financial services. The development environment of digital inclusive finance should be optimized, so that digital inclusive finance can integrate traditional finance and traditional industries, and build a good governance environment and innovation environment. Optimizing the construction of rural digital infrastructure can improve farmers' financial literacy, strengthen farmers' financial education and training, and popularize the financial knowledge of digital inclusive.

5.2. Improve the risk supervision system and credit system for digital inclusive finance

With the rapid development and popularization of digital inclusive finance, financial institutions and regulatory authorities will face more complex and diversified risk challenges. Therefore, it is crucial to establish a sound regulatory system for the risks of digital inclusive finance. With the help of technological means such as big data and artificial intelligence, regulatory authorities can conduct real-time monitoring and risk assessment of the digital inclusive finance market, detect and respond to potential risk events in a timely manner, and ensure the stability and healthy development of the financial market. Secondly, the development of digital inclusive finance also requires the establishment

of a sound credit system. Credit system is the foundation of digital inclusive finance, which can effectively reduce information asymmetry, improve the risk control ability of financial institutions, and promote the effective allocation of financial resources. Through the establishment of digital credit evaluation model and credit information sharing platform, it can provide financial institutions with more accurate and comprehensive customer credit information, help financial institutions better identify and evaluate risks, reduce the non-performing loan ratio, and improve the sustainability and robustness of financial services.

Therefore, in terms of risk regulation, digital inclusive finance can continuously improve the regulatory system through technological innovation and regulatory cooperation. Regulators can strengthen cooperation with fintech enterprises and industry associations, jointly study and formulate regulatory norms and standards, and promote the standardized and healthy development of the digital inclusive finance market. At the same time, financial institutions can also use blockchain, artificial intelligence and other technical means to establish intelligent credit evaluation models, improve the efficiency and accuracy of credit evaluation, and provide better credit support for digital inclusive finance services.

5.3. Improve the digital inclusive finance system

In the process of the development of digital inclusive finance, the government should play a positive guiding role in the provision of digital finance, and on this basis, constantly improve and perfect China's digital financial service platform. At the same time, the government should accelerate the top-level design, vigorously develop the carrier of digital economy, increase the investment in digital financial infrastructure, and further improve the development level of digital inclusive finance. The government should increase the transfer payment of agriculture-related funds, encourage financial institutions to focus on serving modern agriculture and agribusiness, ensure that credit is directed to the rural revitalization strategy, and pay more attention to the inclusiveness of digital finance while considering the profit goal. On the premise of ensuring information security, the existing information resources can be shared to the maximum extent.

Financial institutions should continue to promote digital inclusive finance to sink into rural areas, provide rural residents with inclusive financial products and services that meet the actual needs of rural areas, and build a multi-level digital inclusive financial service system. Since the high-quality development of agriculture by digital inclusive finance will also be affected by many factors such as industrial structure and urbanization, local cities should innovate new paths for digital inclusive finance to promote high-quality development of agriculture according to their own characteristics such as natural resource endowment and geographical environment. Local cities should coordinate, complement and help each other. This can improve the level of high-quality agricultural development and realize the balanced development of high-quality agriculture. Financial institutions should also provide more financial capital support for the key areas and bottlenecks of rural revitalization strategy development, optimize and upgrade financial instruments, innovate digital inclusive finance products and services, indirectly tap the consumption potential of farmers, and make digital inclusive finance become a sustainable driving force for high-quality agricultural development.

6. Conclusions

In the research on the countermeasures of digital inclusive finance to support the high-quality development of agriculture, through the analysis of the current situation and pain points of the high-quality development of agriculture, as well as the discussion of the impact and future prospects of digital inclusive finance in the field of agriculture, it is found that digital inclusive finance, as an emerging financial model, is of great significance to support the high-quality development of agriculture. Through the application of digital technology, agricultural production efficiency can be improved, agricultural production structure can be optimized, and farmers' income level can be improved, so as to promote agricultural modernization and the development of rural economy. Digital inclusive finance brings new development opportunities to the field of agriculture and provides an effective way to solve the problems in agricultural development. In the future, it is necessary to strengthen the application and promotion of digital inclusive finance in the field of agriculture, improve the digital financial service system, improve farmers' financial literacy, and promote the wide application of digital technology in agricultural production. At the same time, the government, financial institutions and agricultural enterprises should strengthen cooperation to jointly promote the role of

digital inclusive finance in the high-quality development of agriculture, and achieve the goal of agricultural modernization and increasing farmers' income and becoming rich.

Digital inclusive finance to support the high-quality development of agriculture is an inevitable trend of current agricultural development, and also an important path to realize agricultural modernization. Through unremitting efforts and cooperation, digital inclusive finance will inject new vitality into the high-quality development of agriculture, and achieve the goal of increasing farmers' incomes and getting rich and sustainable agricultural development.

Acknowledgements

Project information: This paper is the research result of the 2023 Graduate Scientific Research Start-up Fund project of the School of Economics and Management of Guangxi Normal University. Project No.: JGYJSKY202307.

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