

The Impact of Digital Inclusive Finance on the High-Quality Development Level of Rural Industries in Jiangmen

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Abstract: As the most active field in the development of China's financial system, digital inclusive finance effectively alleviates the financing exclusion of traditional finance on the high-quality development of rural industries, and plays an important role in promoting rural consumption and high-quality development of rural industries. Based on the rural survey data of Jiangmen City in the 2024 Guangdong Thousand Villages Survey Project, this paper analyzes the impact of digital inclusive finance on the high-quality development of rural industries. The results show that digital inclusive finance can significantly improve the high-quality development level of rural industries in Jiangmen. In addition, the digital inclusive finance in villages with characteristic industries and younger village party branch secretaries has a more significant effect on the improvement of the high-quality development level of Jiangmen rural industry. Therefore, when promoting the implementation of inclusive finance, Jiangmen local government should pay attention to classified measures, and fully release the multiplier effect of digital finance on the high-quality development of Jiangmen rural industry by cultivating characteristic industries and optimizing the structure of cadre talents.

Keywords: Digital inclusive finance, Rural industry, High-quality development

1. Introduction

Focusing on digital inclusive financial services for the real economy, China's policy orientation is increasingly clear and systematic. In recent years, the state has continuously introduced relevant policies in the fields of high-quality development of inclusive finance, financing support for small and micro enterprises, credit information sharing and digital intelligence transformation of small and medium-sized enterprises, promoting inclusive finance from scale expansion to service depth, resource allocation efficiency and development quality. In May 2025, the State Administration of Financial Supervision and Administration and other eight departments jointly issued "Several Measures to Support the Financing of Small and Micro Enterprises," and made systematic arrangements in terms of increasing financing supply, reducing comprehensive financing costs, and improving financing efficiency. In June of the same year, the General Office of the State Financial Supervision and Administration of the People's Republic of China and the General Office of the People's Bank of China jointly issued the "Implementation Plan for the High-quality Development of Inclusive Finance in the Banking and Insurance Industry," which clearly stated that it was necessary to build a comprehensive inclusive financial system covering inclusive financial services, inclusive credit and inclusive insurance, and further strengthen the financial service capabilities of weak areas, underdeveloped areas and specific groups. In summary, the development of inclusive finance in China has gradually shifted from focusing on scale growth to paying more attention to the breadth of service coverage, the efficiency of resource allocation and the improvement of overall development quality, marking the construction of inclusive finance has entered a new stage of deepening service and improving quality and efficiency.

Existing research generally shows that digital inclusive finance has gone beyond the instrumental role of simply improving financial availability, and has increasingly become an important institutional force to support rural industrial upgrading, enhance rural economic resilience, and promote coordinated urban and rural development. A large number of empirical studies have confirmed that digital inclusive finance has a significant role in promoting rural revitalization and high-quality rural development. Chen, Liu ^[1] pointed out that digital inclusive finance can significantly promote rural revitalization and improve the quality of rural development by alleviating rural financing constraints and stimulating farmers'

entrepreneurial vitality. In addition, research based on China's urban panel data confirms that digital inclusive finance has a significant positive impact on high-quality rural development, and reveals the possible transmission effect of local government debt [2]. This shows that the impact of digital inclusive finance is reflected not only at the micro level - improving the financial access of farmers and business entities, but also at the macro level - affecting the allocation of local resources and the sustainable growth of rural economy.

Further, the research began to analyze the specific path of digital inclusive finance to promote the high-quality development of rural industries from the industrial dimension. Zeng and Zhou [3] put digital inclusive finance, rural industrial integration and rural revitalization into a unified framework, and pointed out that it can serve rural revitalization by promoting industrial linkage, optimizing factor flow and industrial structure. From the perspective of rural e-commerce clusters, Huang, Cao [4] found that digital integration can promote the development of rural e-commerce and promote the revitalization of rural industries by reducing the cost of information acquisition and transportation. These studies together show that the role of digital inclusive finance is not only to provide 'financing support', but also to promote the evolution of rural industries to synergy, networking and modernization through digital platforms, e-commerce ecology and industrial integration mechanisms.

2. Theoretical analysis and research hypothesis

2.1. The development of digital inclusive finance promotes the high-quality development level of rural industry

Based on existing research, digital finance has been regarded as a transformative tool to promote financial inclusion [5]. Existing research has shown that the development of digital inclusive finance helps to alleviate factor price distortions in the agricultural sector, thereby optimizing factor allocation. Its internal mechanism is that digitization makes the cost of production factors tend to be transparent and product transactions platformized by breaking information barriers and promoting the connection between supply and demand, thus reducing the comprehensive cost of rural industrial development. At the same time, broader market participation and competition also encourage operators to improve the efficiency of resource allocation and promote the transformation of the industry to a high-quality stage. In addition, the impact of digital inclusive finance is not limited to the region. The empirical research of Chen, Zhu [6] shows that there is a significant spatial spillover effect in its development, which can have a positive radiation on the revitalization of rural industries in neighboring regions and inject cross-regional linkage kinetic energy into the sustainable development of rural industries.

H1 : The development of digital inclusive finance promotes the high-quality development level of rural industry.

2.2. The use of digital inclusive finance, the breadth of coverage and the degree of digitization promote the high-quality development level of rural industries.

First of all, the digital transformation process of inclusive finance, with the help of digital technologies such as the Internet, big data, and artificial intelligence, has broken through the geographical space restrictions of traditional financial services, enabling financial institutions to effectively cover rural business entities and individual farmers in remote areas. From the perspective of cost and efficiency, digital means have significantly reduced the physical network management costs and credit risk control costs of financial institutions. Through online and automated processes, the loan approval cycle has been shortened, thereby improving the efficiency of capital allocation and use. With affordable marginal costs, this systematically alleviates the inclusive problem that the traditional financial model is difficult to reach the majority of 'long-tail customers' due to information asymmetry, lack of collateral and limited service radius, and injects much-needed financial water into the development of rural industries. Secondly, the Internet is an important infrastructure for the implementation of digital inclusive finance, and smart phones, as a terminal carrier with high penetration, constitute the basis of user behavior for rural digitization [7]. Smart phones are not only the key interface for financial services, but also the core medium for rural residents to obtain market information, learn production technology, and connect to e-commerce platforms. At the industrial level, the popularity of smart phones has stimulated new forms of rural industry by reducing information search costs and broadening production and marketing docking channels, thus promoting the diversification of rural industrial structure and value chain extension, and providing market connection and innovation carrier for high-quality development. Further, the degree of

digitization has become a key focus to measure the level of industrial modernization. Shen, Jing [8] pointed out that data factor empowerment and financial innovation can jointly promote the digital upgrading of the agricultural industry chain and the optimal allocation of production factors, thus forming a long-term mechanism for the benign interaction among agricultural digitization, financial inclusion and industrial integration. In this mechanism, digital technology not only improves total factor productivity, but also promotes a new model of industrial development by promoting the deep integration of the primary, secondary and tertiary industries in rural areas. Finally, it drives the rural industry to evolve towards high-end, intelligent and green direction as a whole, and realizes the systematic change of quality, efficiency and power. Based on the above analysis, H2a, H2b and H2c are proposed.

H2a : The usage of digital inclusive finance promotes the high-quality development of rural industries.

H2b : The coverage of digital inclusive financial coverage promotes the high-quality development level of rural industry.

H2c : The degree of digitalization of digital inclusive finance promotes the high-quality development level of rural industry.

3. Data source, variable selection and model setting

3.1. Data source

The data used in this paper are from the Thousand Villages Survey Project in Guangdong. This project is a provincial survey project initiated by the Economic and Social Research Institute of Jinan University. It aims to conduct an in-depth household survey of rural areas in Guangdong Province. From the perspectives of targeted poverty alleviation strategy, rural governance and rural operation efficiency, rural ecological environment, education poverty alleviation strategy, land acquisition in the process of rural urbanization, and rural financial reform, the micro-data of rural development in Guangdong Province were systematically collected to provide suggestions for rural revitalization in Guangdong Province and even the whole country. In view of the limitations of the questionnaire items, the survey data of Jiangmen City in 2024 were selected for empirical research. In order to avoid the impact of sample quality problems on the regression results, this paper deletes the missing values and outliers in the survey data, and finally obtains 203 valid samples.

3.2. Variable selection

3.2.1. Variable being explained

This study takes the ' high-quality development level of rural industry ' as the explained variable. Drawing on the research of scholars such as Wang [9], the high-quality development of rural industry is not only reflected in the growth of economic output, but also covers multiple dimensions such as industrial structure optimization, efficient factor allocation, active business entities, infrastructure improvement and rural cultural prosperity. Based on this theoretical connotation, and fully considering the availability and representativeness of data, this paper constructs a comprehensive evaluation system through the entropy weight method from the four dimensions of industrial efficiency, factor support, subject vitality and service foundation, and specifically selects the following indicators for measurement. The industrial benefit dimension reflects the achievements and efficiency of development, including per capita collective economic income and per capita total output value of characteristic industries ; the factor support dimension reflects the level of protection and utilization of key elements such as land and culture, including the implementation of the ' point-like land supply ' project, the area of village collective operating construction land, and the ownership of public cultural space such as village-level comprehensive cultural service center and book corner ; the dimension of subject vitality reflects the activity and diversification of market organizations, covering the number of new agricultural business entities. The service basic dimension can reflect the modern service system support ability of industrial development, covering the number of express logistics points and the number of network purchasing points.

3.2.2. Core explanatory variables

The core explanatory variable of this paper is the digital inclusive financial composite index. Specifically, it is a weighted average synthesis of three parts : the use of digital inclusive finance, the coverage breadth of digital inclusive finance, and the digitization degree of digital inclusive finance.

The usage of digital inclusive finance. This dimension reflects the actual adoption depth of digital financial services. Learn from the usual practice, the paper set the question 'whether to use digital inclusive financial services or products (such as digital credit, digital payment, Internet insurance, etc.)'. If the answer is 'yes', the assignment is 1; if is 'no', the assignment is 0. The dichotomous variable can effectively distinguish between users and non-users, which is the basic index to measure service penetration.

The coverage of digital inclusive financial. This dimension characterizes the infrastructure and user base of the availability of digital financial services. Research generally uses 'smartphone coverage' as its proxy variable^[10], that is, the proportion of adult population using smartphones in villages or regions. Smart phone is the main terminal to access digital financial services. Its coverage directly determines the scale of potential users and is the material carrier and key premise of service coverage.

Digitalization degree of digital inclusive finance. This dimension depicts the complexity and advancement of technology application. The number of types of digital technologies that should be used in financial scenarios in villages is used for measurement, including mobile Internet, big data credit reporting, artificial intelligence risk control, blockchain, cloud computing, etc. The more types of technologies used, usually means that the higher the level of digitization and intelligence of service processes, the stronger the efficiency of financial services and the ability to price risks.

It should be noted that before the synthesis of the comprehensive index of digital inclusive finance, the use of digital inclusive finance and the degree of digitization of digital inclusive finance have been standardized (Z-score), and then the final index is synthesized with the 'smartphone coverage' variable according to the established weight.

3.2.3. Control variable

In order to more accurately identify the net effect of digital inclusive finance on the high-quality development of rural industries, it is necessary to control the village-level characteristics that may affect both. Referring to the research of Li, Yang^[11], the control variables such as land area, the total agricultural land of the village, the logarithm of the amount of support funds of the village team in the town, and whether there are bus stops are used to control the impact of village characteristics on the comprehensive index of digital inclusive finance.

In summary, the descriptive statistics of the main variables involved in the empirical analysis of this paper are shown in Table 1.

Table 1 Descriptive Statistics

	N	Mean	SD	Min	Max
Id	203	713.172	193.82	392	1080
Development	203	0.006	0.423	-1.373	2.001
Dif	203	0.421	0.168	0.15	0.95
Usage	203	0.217	0.413	0	1
Coverage	203	0.821	0.132	0.2	1
Digitaltech	203	0.226	0.232	0	1
Income	203	0.188	0.413	0.002	3.565
Production	203	0.356	1.186	0	12.827
Dotted	203	0.158	0.365	0	1
Collective operating construction land	203	0.106	0.364	0	3.368
Service center	203	0.99	0.099	0	1
New agricultural business entities	203	5.266	10.529	0	98
Express logistics points	203	1.099	1.851	0	20
Online purchasing agents	203	0.921	3.718	0	50
Land area	203	5.813	5.363	0.077	26
Total agricultural land	203	3.743	4.22	0	27.336
Lnassistance funds	203	0.385	0.895	0	6.909
Bus stop	203	0.695	0.462	0	1

3.3. Model setting

In this paper, ordinary least squares regression (OLS) can effectively describe the linear relationship between the two and its impact strength. Therefore, this paper chooses OLS model as the benchmark

model to test the mechanism effect of digital inclusive financial composite index on the high-quality development level of rural industry. The corresponding measurement model is set as follows :

$$Development_i = \alpha_1 + \beta_1 dif_i + Z_i + \varepsilon_1 \quad (1)$$

In (1) : *dif* denotes the digital inclusive financial composite index; *Development* indicates the high-quality development level of rural industry; *Z* represents the control variable; α_1 is a constant term; β_1 denotes the parameter to be estimated; *i* denotes village; ε_1 represents the disturbance term.

4. Analysis of empirical results

4.1. Analysis of Benchmark Regression Results

Table 2 is the baseline regression result. Column (1) and column (2) represent the regression results that are not included in the control variables and included in the control variables, respectively. The regression results show that, based on the empirical analysis of Jiangmen rural areas, the digital inclusive financial composite index has a significant positive impact on the high-quality development of rural industries at a significant level of 1 %. This result shows that the development of digital inclusive finance can effectively empower rural industries and promote their evolution to a higher quality stage. H1 was established.

Table 2 OLS regression

	Development	
	(1)	(2)
Dif	0.648*** (0.172)	0.623*** (0.173)
Control variable	Unsteered	Controlled
Adjusted R-squared	0.062	0.083

*, **, and *** represent 10%, 5%, and 1% confidence levels, respectively.

4.2. Robustness test

Further test the three dimensions of the core explained variables, the usage of digital inclusive finance, the coverage of digital inclusive finance, the degree of digitization of digital inclusive finance, the degree of influence on the high-quality development level of rural industries, and the impact of data extremes on the estimation results. This paper adds the independent variables of the three dimensions of the usage of digital inclusive finance, the coverage of digital inclusive finance, and the degree of digitization of digital inclusive finance, and conducts 1% bilateral tail reduction on all variables. The regression results are shown in Table 3. Whether or not the control variables are added, digital inclusive finance still significantly promotes the high-quality development level of rural industries at the 1% level. At the same time, the usage of digital inclusive finance, the coverage of digital inclusive finance, and the degree of digitization of digital inclusive finance have a positive effect on the high-quality development level of rural industries.

Table 3 Robustness test

	Development				
	(1)	(2)	(3)	(4)	(5)
Dif	0.589*** (0.162)	0.562*** (0.163)			
Usage			0.141** (0.066)		
Coverage				0.404* (0.208)	
Digitaltech					0.297** (0.120)
Control variable	Unsteered	Controlled	Controlled	Controlled	Controlled
Adjusted R-squared	0.057	0.081	0.048	0.044	0.055

*, **, and *** represent 10%, 5%, and 1% confidence levels, respectively.

4.3. Heterogeneity test

4.3.1. Heterogeneity of village characteristic industry

The financing, payment, risk control and other functions of digital inclusive finance need to be combined with the needs of the village industry to play a role. Therefore, this paper divides the samples into villages with characteristic industries and villages without characteristic industries for group regression. The regression results are shown in Table 4. The results of Table 4 show that the impact of digital inclusive finance on the high-quality development level of rural industries is related to whether the village has characteristic industries. In villages with characteristic industries, the enabling effect of digital inclusive finance on the high-quality development level of rural industries has increased significantly at the level of 1%. The possible reason is that for rural areas lacking characteristic industries, the industrial structure is relatively single and scattered, and the business model is biased towards traditional small-scale peasant production, which is difficult to become an effective carrier of digital inclusive financial empowerment. For rural areas with characteristic industries, their characteristic industries have distinct characteristics such as scale and marketization, which are precisely adapted to the functional attributes of digital inclusive finance, so that the enabling effect of digital inclusive finance can be fully released.

Table 4: Heterogeneity of village characteristic industry

	Development	
	Characteristic Industry Group	Non-Specific Industry Group
Dif	0.862*** (0.319)	0.154 (0.182)
Control variable	Controlled	Controlled
Adjusted R-squared	0.078	0.040

*, **, and *** represent 10%, 5%, and 1% confidence levels, respectively.

4.3.2. Age heterogeneity of village party branch secretary

As the core of rural grassroots governance, the village party branch secretary's decision-making directly affects the transmission efficiency of digital inclusive finance to empower rural industries. Young and middle-aged village party branch secretaries have higher digital literacy and stronger risk preference, which is conducive to the promotion of digital financial tools and industrial innovation; the digital literacy of the Party branch secretary of the elderly village is low, and the acceptance of the operation logic of the digital financial platform and the online financing mode is limited. It is difficult to effectively guide the new business entities to rationally use digital credit resources, which weakens the transmission efficiency of the development of the digital inclusive financial enabling industry to a certain extent. Therefore, the age structure difference of the village party branch secretary will theoretically significantly affect the high-quality development of digital inclusive finance to the rural industry. Therefore, according to the third national agricultural census standard, this paper divides the sample into two groups with 55 years old as the boundary for group regression, and the results are shown in table 5. It can be seen that under the leadership of young and middle-aged village party branch secretaries, the comprehensive index of digital inclusive finance has a significant positive impact on the high-quality development of rural industries at the significance level of 1%. Under the leadership of the secretary of the party branch of the old village, the impact of the digital inclusive financial composite index on the high-quality development of the rural industry is not significant.

Table 5: Age heterogeneity of village party branch secretary

	Development	
	Under 55 years old	Over 55 years old
Dif	0.726*** (0.230)	0.475 (0.288)
Control variable	Controlled	Controlled
Adjusted R-squared	0.104	0.002

*, **, and *** represent 10%, 5%, and 1% confidence levels, respectively.

5. Conclusions and Recommendations

5.1. Conclusions

This paper explores whether digital inclusive finance promotes the high-quality development of rural industries in Jiangmen, and further explores whether there is a significant difference between the age of village characteristic industries and the age of village party branch secretaries on the promotion of high-quality development of rural industries in Jiangmen by digital inclusive finance. The following conclusions are drawn : (1) Digital inclusive finance has a significant role in promoting the high-quality development of rural industries in Jiangmen. (2) In villages with characteristic industries, digital inclusive finance can significantly promote the high-quality development level of rural industries in Jiangmen. Under the leadership of young and middle-aged village party branch secretaries, digital inclusive finance has a significant positive impact on the high-quality development of rural industries in Jiangmen.

5.2. Recommendations

First, strengthen the development of rural characteristic industries and consolidate the industrial foundation of digital inclusive finance to enable the high-quality development of rural industries. Based on the county 's resource endowment, we should focus on advantageous industries such as characteristic planting and breeding, agricultural product processing, and rural tourism, cultivate and strengthen new agricultural management entities, and promote industrial scale, standardization, and brand development. We will promote the deep integration of digital inclusive finance and rural characteristic industries, accurately match the financing needs of all aspects of industrial development, guide financial resources to tilt towards characteristic industries, upgrade financial needs with industrial development, and realize the two-way empowerment of industrial development and financial empowerment.

Second, local governments should strengthen policy guidance, encourage the younger construction of village party branch secretaries, and break the bottleneck of digital inclusive finance landing transmission. Local governments and organizational departments should introduce targeted support policies, broaden the channels for the selection of young talents, and encourage outstanding young party members, returning entrepreneurial youth, college-graduate village officials and other members to join the village party branch secretary position ; we should establish a training mechanism for youth secretaries, carry out special training on digital literacy, financial policy and industrial development, improve the comprehensive ability of youth secretaries, give full play to their advantages of high digital acceptance and strong innovation consciousness, and promote the efficient implementation of digital inclusive financial policies.

Third, financial institutions should speed up the pace of digital transformation and give full play to the synergistic effect of digital inclusive finance and traditional finance. Relevant government departments should guide banking institutions to take technological innovation and data-driven as the core, combine the characteristics of county industrial development and the financing needs of inclusive groups, innovate digital inclusive financial products and service models, enrich digital credit, online settlement and other service forms, and ensure the accuracy and adequacy of financial supply for the high-quality development of county economy. They should also promote insurance institutions to rely on information flow and data sharing mechanisms to continuously optimize the agricultural insurance service process, improve service efficiency and service quality, improve the insurance service experience of inclusive groups, and build an all-round and multi-level county digital inclusive financial service system.

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