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SYNERGISTIC MECHANISMS BETWEEN DIGITAL INCLUSIVE FINANCE AND RURAL INDUSTRY REVITALIZATION

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Abstract: This study systematically reviews the synergistic mechanisms between digital inclusive finance and rural industry revitalization. Based on theories of industrial integration, total factor productivity, agricultural multifunctionality, and sustainable development, it constructs a theoretical framework for their coordinated development. First, it elucidates the connotations and characteristics of digital inclusive finance—coverage breadth, depth of use, and degree of digitalization—and analyzes the connotations, evaluation indicator system, and dynamic evolution pathways of rural industry revitalization. Second, it investigates the direct support mechanisms of digital inclusive finance—such as capital supply, risk management, and industrial upgrading—as well as its indirect pathways through promoting agricultural technological innovation and catalyzing industry integration, assessing their effects on rural industry revitalization; simultaneously, it analyzes the market demand, credit foundation, and technology application opportunities that rural industry revitalization provides for digital inclusive finance. Third, through case studies, it validates the effectiveness of various digital finance models in expanding industry scale, broadening channels, enhancing risk control, and increasing farmers' incomes. Finally, it proposes policy recommendations to optimize the enabling environment, enhance service capacity, and deepen integration pathways—namely digitalized industry platforms, supply-chain finance, and farmer financial literacy enhancement—to offer theoretical guidance and practical reference for governments, financial institutions, and industry stakeholders in advancing rural revitalization.
Keywords: Digital inclusive finance; Rural industry revitalization; Synergistic mechanism; Industrial integration; Supply-chain finance; Agricultural technological innovation; Case study

1 INTRODUCTION

Rural industry revitalization occupies a critically important position in the national strategic layout of our country; it is the key link in resolving the "three rural" issues, achieving integrated urban-rural development, and advancing national modernization. Since it is proposed the rural revitalization strategy, the development of rural industries has received unprecedented attention. The prosperity of rural industries can not only raise farmers' income levels and improve rural infrastructure and public services, but also enhance the endogenous momentum of the rural economy, promoting agricultural modernization and sustainable rural development. However, for a long time, the development of rural industries has faced numerous difficulties. Traditional financial services have had limited coverage in rural areas, and there is a significant gap between financial supply and the needs of rural industry development. The small number of financial institution outlets in rural areas, along with the simplicity of financial products and services, makes it difficult for rural enterprises and farmers to obtain sufficient funding support. At the same time, the rural credit system is imperfect, and the lack of effective collateral further exacerbates the problems of difficult and expensive financing for rural industries, severely restricting the upgrading and development of these industries. Against this background, digital inclusive finance has emerged as a new financial model. By leveraging modern information technologies such as the Internet, big data, and artificial intelligence, digital inclusive finance breaks the time and space limitations of traditional financial services, reduces the cost of financial services, and improves their efficiency and accessibility. It can extend financial services to every corner of rural areas, providing rural enterprises and farmers with more convenient, efficient, and personalized financial products and services. Through digital inclusive finance, rural industries can obtain more funding support for expanding production scale, improving technology, and expanding markets, thereby injecting new momentum into rural industry revitalization. Therefore, studying the impact of digital inclusive finance on rural industry revitalization has important practical significance. Deeply exploring the mechanisms, problems, and challenges of digital inclusive finance in rural industry development will help the government and financial institutions formulate more effective policies and measures, promote digital inclusive finance to better serve rural industry revitalization, and realize the sustainable development of the rural economy and comprehensive revitalization of the countryside.

2 RESEARCH PROGRESS ON THE SYNERGY BETWEEN DIGITAL INCLUSIVE FINANCE AND RURAL INDUSTRIAL REVITALIZATION

2.1 Theoretical Basis of Rural Industrial Revitalization

Rural industrial revitalization is the key to achieving comprehensive rural revitalization, underpinned by a series of rich theoretical foundations. These theories not only provide directional guidance for rural industrial development but also

offer important academic support for the formulation of relevant policies and practical exploration. The following will systematically review and elaborate on important theories related to rural industrial revitalization.

2.1.1 Industrial convergence theory

Industrial convergence, as an emerging industrial development model, was initially proposed by Rosenberg while studying technological changes in the US mechanical tool industry. He discovered that the technological boundaries between different industries were gradually blurring, and the mutual penetration and integration of technologies were facilitating the emergence of new industrial forms. As research deepened, the concept of industrial convergence was further extended to the economic field, broadly referring to the process where different industries or different sectors within the same industry penetrate, intersect, and ultimately integrate to form new industrial formats and competitive advantages. In the context of rural industrial revitalization, industrial convergence mainly manifests as the integrated development among primary, secondary, and tertiary industries in rural areas. The primary industry (agriculture) is no longer confined to traditional planting and breeding but is closely integrated with the secondary industry (agro-processing, manufacturing) and the tertiary industry (agricultural product distribution, tourism, leisure services, etc.), forming new industrial formats such as integrated agro-processing and sales, leisure agriculture, and rural tourism. This convergence breaks the boundaries between traditional industries, achieving optimized resource allocation and enhanced industrial value-added. Industrial convergence provides new developmental momentum and pathways for rural industrial revitalization. Economically, industrial convergence can extend the agricultural industrial chain and increase the added value of agricultural products[1]. Through deep processing and refined packaging, primary agricultural products can be transformed into high-value-added goods, thereby increasing farmers' income. For instance, fruits can not only be sold directly but also processed into juice, preserved fruit, canned fruit, and other products, significantly enhancing market value. Industrial convergence helps promote rural employment. With the development of rural industrial convergence, new industrial formats continuously emerge, creating substantial employment opportunities. Beyond traditional agricultural production roles, these encompass areas like agro-processing, logistics distribution, and tourism services, attracting the local transfer of surplus rural labor and alleviating the problem of rural labor outflow. Industrial convergence can also drive the optimization and upgrading of the rural industrial structure. Traditionally dominated by low-value-added agriculture, the rural industrial structure was singular. Through convergence, it gradually shifts towards diversification and sophistication, enhancing the competitiveness and risk resilience of rural industries.

2.1.2 Total factor productivity theory

Total Factor Productivity (TFP) is a crucial indicator for measuring the quality and efficiency of economic growth. It refers to the additional output achieved under given inputs of various production factors (such as capital, labor, land, etc.), reflecting the contribution of technological progress, management innovation, and institutional changes to economic growth. The main methods for measuring TFP are parametric and non-parametric. Parametric methods, based on production functions, estimate TFP by calculating function parameters, with common approaches including the Solow residual method and stochastic frontier analysis. Non-parametric methods, not reliant on specific production function forms, primarily use Data Envelopment Analysis (DEA). Improving TFP holds significant practical importance in the process of rural industrial revitalization. It is key to achieving sustainable rural industrial development. Traditional rural industrial development often relied on increasing factor inputs, such as expanding cultivated land, adding labor, and capital investment. However, this extensive development model suffers from resource waste and environmental pollution. By enhancing TFP, industrial output growth can be achieved without increasing, or even while reducing, factor inputs, thereby improving resource utilization efficiency and promoting sustainable rural industrial development. Improving TFP helps enhance the competitiveness of rural industries. In today's increasingly competitive market, rural industries must rely on technological progress and management innovation to improve production efficiency and product quality to secure a place in domestic and international markets. Higher TFP means rural industries can produce higher-quality products and services at lower costs, strengthening market competitiveness. TFP improvement can also foster innovation in rural industries. Technological progress and management innovation are vital pathways to raise TFP, and these innovative activities, in turn, drive rural industries to continuously develop new products, formats, and business models, injecting new vitality into rural industrial revitalization[2].

2.1.3 Agricultural multifunctionality theory

Agricultural multifunctionality refers to agriculture's possession of multiple functions beyond its basic economic function of providing agricultural products, including ecological conservation, cultural heritage, and social stability. This concept was first proposed by Japan in the 1990s to emphasize agriculture's comprehensive value across economic, social, and ecological dimensions. Agricultural multifunctionality has the following characteristics: firstly, diversity – agriculture relates not only to the economic sphere but also closely to ecological, social, and cultural fields; secondly, externality – some functions of agriculture, like ecological protection and cultural heritage, have significant positive externalities, bringing broad benefits to society; thirdly, dynamism – agriculture's functions continuously expand and deepen with socioeconomic development and changing human needs. The theory of agricultural multifunctionality provides new ideas and directions for rural industrial revitalization. Based on multifunctionality, rural industrial development should not be limited to agricultural production and sales but should fully tap into agriculture's ecological, cultural, and social value to develop related industrial formats. For example, leveraging agriculture's ecological function can develop eco-agriculture, sightseeing agriculture, etc., achieving integrated development of agriculture and tourism; utilizing agriculture's cultural function can involve rural cultural experience activities and agro-cultural creative industries, enriching the connotation of rural industries. Harnessing agricultural multifunctionality helps promote

comprehensive rural development. By developing multifunctional rural industries, more talent, capital, and technology can flow to rural areas, improving rural infrastructure and public services, enhancing the quality of life for rural residents, and achieving coordinated development of the rural economy, society, and ecology[3].

2.1.4 Sustainable development theory

The concept of sustainable development was first proposed by Norwegian Prime Minister Gro Harlem Brundtland in the 1987 report "Our Common Future," defining it as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Sustainable development emphasizes the coordination and unity of economy, society, and environment, pursuing long-term, stable development. Sustainable development follows several basic principles: first, the principle of equity, including intragenerational and intergenerational equity – fairness in resource use and development opportunities among contemporaries and between current and future generations; second, the principle of sustainability, requiring that human economic and social development not exceed the carrying capacity of resources and the environment; third, the principle of commonality, emphasizing the shared responsibility and cooperation of all global nations on sustainable development issues. In rural industrial revitalization, sustainable development theory holds significant guiding importance. Rural industrial development should prioritize ecological environmental protection, avoiding over-exploitation and resource waste. For example, promoting eco-agricultural technologies to reduce fertilizer and pesticide use, minimizing agricultural non-point source pollution; developing circular agriculture to achieve resource utilization of agro-processing waste, improving resource recycling efficiency. Sustainable development theory requires rural industrial development to balance economic, social, and ecological benefits. While pursuing economic benefits, it must focus on safeguarding farmers' interests and promoting rural social stability and harmony[4]. For instance, developing characteristic rural industries to increase farmers' income; strengthening rural infrastructure and public service provision to improve farmers' quality of life. Sustainable development theory also emphasizes long-term planning and strategic layout for rural industrial development. Scientific and rational industrial development plans should be formulated based on rural resource endowments, location conditions, and market demand, avoiding blind following of trends and short-term actions to ensure the long-term stable development of rural industries.

2.2 Development Status of Digital Inclusive Finance

2.2.1 Origin of digital inclusive finance

The origin of digital inclusive finance can be traced back to the emergence of the inclusive finance concept and the gradual application of digital technology in the financial sector. The concept of inclusive finance was first proposed by the United Nations in 2005 during the International Year of Microcredit. Its basic meaning is a financial system that can effectively and comprehensively serve all social strata and groups, aiming to enable all social strata, especially vulnerable groups neglected by traditional finance such as micro and small enterprises (MSEs), farmers, and low-income urban populations, to access financial services fairly. The emergence of this concept reflects a rethinking of the limitations of traditional financial services. Due to high costs and significant risks, traditional finance often struggles to cover all corners of society, leaving large populations unable to access basic financial services, hindering balanced economic development and social equity. With the rapid development of information technology, digital technologies such as the internet, mobile communications, big data, and cloud computing gradually matured and began to deeply integrate with the financial industry. 2013 was termed China's "Year of Internet Finance," witnessing the vigorous rise of internet finance models represented by third-party payment, P2P lending, and crowdfunding[5]. Leveraging digital technology, these emerging financial models broke through the temporal and spatial limitations of traditional financial services, reduced costs, and improved service efficiency, providing new pathways and means for the development of inclusive finance. Building on this, the concept of digital inclusive finance emerged. It is the product of combining inclusive finance with digital technology, utilizing digital technology to expand the breadth and depth of financial services and enhance their accessibility and inclusivity.

2.2.2 Development of digital inclusive finance

Globally, digital inclusive finance shows a trend of rapid development. International organizations like the World Bank actively promote its development, and many countries and regions have introduced relevant policies and measures to encourage financial institutions to use digital technology to innovate service models and improve coverage. For instance, Kenya's M-Pesa mobile money service is a successful model of digital inclusive finance. Launched in 2007, it provides users with convenient transfer, payment, and savings services via a mobile SMS platform. To date, M-Pesa has covered most of Kenya's population, greatly enhancing local financial service accessibility and promoting economic development. Additionally, India is actively promoting digital inclusive finance. The government launched the "Digital India" plan, encouraging financial institutions to provide services to the masses through digital channels, including opening digital bank accounts and promoting mobile payments, achieving remarkable results. In China, digital inclusive finance has achieved globally recognized accomplishments. The government attaches high importance to its development, issuing a series of policy documents that create a favorable policy environment. Simultaneously, China possesses a vast internet user base and advanced digital technology infrastructure, providing a solid foundation. In the payment sector, third-party payment is widely used in China. Platforms represented by Alipay and WeChat Pay, with their convenient payment experience and extensive application scenarios, have become indispensable payment tools in daily life. According to statistics, by the end of 2024, China's third-party mobile payment transaction volume exceeded hundreds of trillions of yuan. In the credit sector, internet banks and fintech companies use big data, artificial

intelligence, and other technologies to innovate credit models, providing more convenient and efficient credit services to MSEs and individuals. For example, MYbank, leveraging Alibaba's e-commerce platform and big data advantages, provides unsecured, pure-credit microloans to MSEs. By the end of 2024, it had served tens of millions of MSEs. In the insurance sector, internet insurance also shows rapid development. Insurance companies sell products via internet platforms, improving sales efficiency and coverage. Simultaneously, using big data and AI, insurers can assess risks more accurately and develop personalized insurance products.

2.2.3 Application of digital inclusive finance in rural areas

In recent years, the application of digital inclusive finance in China's rural areas has made some progress. With the widespread promotion of mobile payments, payment methods in rural areas have undergone tremendous changes. More and more rural residents are using mobile payments. Support for QR code payments can be seen in rural supermarkets, small shops, and farmers' markets. The popularity of mobile payments not only facilitates daily consumption for rural residents but also promotes rural commodity circulation and economic development. For example, some rural e-commerce platforms use mobile payments to achieve online sales of agricultural products, broadening sales channels. To address the difficulty of obtaining loans for rural residents and rural MSEs, financial institutions and fintech companies actively innovate credit service models. On one hand, they use big data and risk control models to assess the credit status of rural residents, providing qualified residents with small credit loans. For instance, some financial institutions collaborate with agricultural departments to obtain production information like planting and breeding, combine it with farmers' credit records, and provide precise credit support. On the other hand, they develop supply chain finance services, providing financing to upstream and downstream farmers and MSEs around core enterprises in the agricultural industrial chain. For example, in some characteristic agricultural product industries, financial institutions cooperate with agro-processing enterprises to provide order financing to growers, solving their capital shortages during production. The application of digital technology also provides opportunities for expanding rural insurance services. Insurance companies sell agricultural insurance products via internet platforms, improving promotion and sales efficiency. Simultaneously, using technologies like satellite remote sensing and drones, they monitor crop growth, accurately assess disaster losses, and improve claims settlement efficiency. For instance, in some regions, insurers use satellite remote sensing to monitor crop planting areas and growth status in real time. When natural disasters occur, they can quickly determine the affected area and extent of loss, providing timely claim services to farmers. Despite these achievements, challenges remain. Network coverage and communication quality are poor in some rural areas, hindering service delivery. In remote mountainous and impoverished areas, unstable or non-existent network coverage due to geographical isolation and high construction costs prevents residents from using digital financial services normally. Rural residents generally have low financial literacy, with limited awareness and acceptance of digital inclusive financial products and services[6]. Some harbor doubts and concerns about mobile payments, online credit, etc., fearing fund security and personal information leakage. Moreover, lacking financial knowledge and risk awareness, some residents are vulnerable to fraud and misguidance. The rural credit system lags, making it difficult for financial institutions to obtain comprehensive and accurate credit information on residents and MSEs, increasing credit risk assessment difficulty. Furthermore, weak credit awareness in rural areas, with some farmers and enterprises evading debts, dampens the enthusiasm of financial institutions to provide services.

2.3 Research Progress on Their Synergistic Mechanism

The synergistic mechanism between digital inclusive finance and rural industrial revitalization has been a hot topic in academia. Related research aims to deeply analyze how they mutually promote and synergistically develop to drive high-quality rural economic growth. Existing literature mainly explores the supporting mechanisms of digital inclusive finance for rural industrial revitalization, the opportunities rural industrial revitalization provides for digital inclusive finance development, and the intrinsic logic of their synergistic development.

2.3.1 Supporting mechanisms of digital inclusive finance for rural industrial revitalization

Many scholars emphasize the crucial role of digital inclusive finance in solving funding difficulties for rural industries. Through technologies like the internet and big data, it lowers barriers and costs, broadens coverage, and provides rural industrial entities with more convenient and efficient financing channels. For example, Hu (2023) points out that digital credit platforms use multi-dimensional data to assess the credit of farmers and rural MSEs, breaking the traditional reliance on collateral by financial institutions. This allows potentially viable rural industrial projects lacking collateral to gain funding. Such precise capital supply helps optimize resource allocation and promote industrial restructuring and upgrading. Digital inclusive finance also plays an important role in rural industrial risk management. Digital insurance, a key component, provides diversified risk protection. Fang (2024)'s research shows that technologies like satellite remote sensing and IoT enable real-time monitoring of crop growth and livestock health, achieving precise risk assessment and claims settlement. This not only helps reduce natural and market risks faced by farmers and rural enterprises but also boosts their confidence and motivation. Furthermore, digital financial instruments like futures and options provide hedging tools to manage agricultural price volatility risks. The technological innovation brought by digital inclusive finance injects new vitality into rural industries. The popularity of services like mobile payment and e-commerce transforms traditional rural transaction and business models. Xie (2023)'s research finds that digital inclusive finance promotes rural e-commerce development, enabling agricultural products to access markets more easily, reducing intermediaries, and increasing added value. Simultaneously, digital financial platforms provide services like technical training and market information, helping improve management and innovation capabilities. For example,

some digital financial institutions collaborate with agri-tech companies to provide intelligent planting and breeding solutions, pushing rural industries towards modernization and intelligence[7].

2.3.2 Opportunities provided by rural industrial revitalization for digital inclusive finance

The vigorous development of rural industries provides a vast market space for digital inclusive finance. As rural industries diversify, the financial service demands of rural residents and enterprises become increasingly varied. Beyond traditional credit and insurance needs, new demands emerge for wealth management, investment, and payment settlement. Lin (2024) argues that rural industrial revitalization raises rural incomes, giving residents more funds for savings and investment, creating opportunities for digital inclusive financial institutions to offer wealth management services. Concurrently, the growth of rural enterprises requires more financial support, such as supply chain finance and M&A services, helping digital inclusive financial institutions expand their business scope and achieve growth. The vast amount of data generated during rural industrial development provides valuable resources for digital inclusive finance. This data covers various aspects like production, operation, transaction records, and credit status of farmers and rural enterprises, helping institutions assess credit risk more accurately. Zhou (2023) notes that by mining and analyzing rural industrial data, digital financial institutions can build more robust credit evaluation models, improving accuracy and efficiency. Furthermore, rural industrial revitalization promotes the construction of the rural credit system. A sound credit environment is conducive to the healthy development of digital inclusive finance. For example, some local governments foster an atmosphere of honesty and trustworthiness by creating "credit villages" and "credit users," reducing credit risks for institutions. The unique demands of rural industries drive continuous innovation and service upgrades in digital inclusive finance. To meet diverse needs, institutions have launched a series of innovative products and service models. Zhao (2024)'s research finds that, considering the characteristics of agricultural supply chains, some digital financial institutions developed supply chain finance products like order financing and warehouse receipt pledge financing, offering more flexible financing methods. Additionally, some platforms combine features of rural tourism and specialty agriculture to launch customized financial service solutions, enhancing service relevance and effectiveness.

2.3.3 Intrinsic logic of their synergistic development

A close interactive relationship exists between digital inclusive finance and rural industrial revitalization. Rural industry is the foundation for digital inclusive finance development; only with thriving industries can rich business scenarios and customer resources be provided. Simultaneously, digital inclusive finance is a crucial support for revitalization, providing funding, technology, and risk management. They are interdependent and mutually reinforcing, forming a virtuous cycle. For example, the development of characteristic rural industries attracts more financial resources, whose support, in turn, further drives industrial growth and upgrading. Policy Guidance and Market Mechanisms Policy guidance and market mechanisms play important roles in their synergistic development. The government issues policies like fiscal subsidies and tax incentives to encourage institutions to increase support. Meanwhile, the market mechanism plays a decisive role in resource allocation, as institutions autonomously select service targets and business models based on demand and risk-return principles. Liu (2023) believes that only by organically combining policy guidance with market mechanisms can synergistic development be achieved. For instance, governments can establish risk compensation funds to reduce institutional risks while guiding market capital towards key areas and weak links in rural industries. Technological Innovation and Institutional Innovation Technological and institutional innovation are important driving forces. The application of digital technologies like big data, AI, and blockchain brings new opportunities, improving efficiency and precision in financial services and industrial management. Institutional innovations, such as in financial regulation and rural property rights reform, provide safeguards for a conducive development environment. Chen (2024) points out that only by integrating technological and institutional innovation can the synergistic effect be fully realized. For example, establishing a regulatory sandbox for rural digital financial services can encourage innovation while preventing financial risks. In summary, existing literature has conducted relatively in-depth research on the synergistic mechanism between digital inclusive finance and rural industrial revitalization, revealing the intrinsic logic of their mutual promotion and synergistic development from different perspectives. However, in practice, synergistic development still faces challenges like the digital divide and financial risk prevention. Future research needs to further address these issues and propose more effective solutions to promote deep integration and sustainable development.

3 CONSTRUCTION OF THEORETICAL FRAMEWORK FOR DIGITAL INCLUSIVE FINANCE AND RURAL INDUSTRY REVITALIZATION

3.1 Characteristics of Digital Inclusive Finance

Digital inclusive finance is the product of deep integration between traditional inclusive finance and digital technologies. Its goal is to use digital means to lower the cost of financial services, improve the efficiency and accessibility of those services, and enable a broader population—especially groups excluded from or underserved by the traditional financial system, such as micro-enterprises, farmers, and impoverished populations—to enjoy comprehensive, convenient, and secure financial services at an affordable cost. In essence, digital inclusive finance extends the boundaries of traditional inclusive finance by leveraging digital technologies to overcome the temporal and spatial limitations of conventional financial services, addressing information asymmetry, and creating new paths to achieve fairness and inclusion in financial access. It is not merely the digitization of existing financial operations, but rather a technology-driven, socially

oriented innovation model that focuses on serving vulnerable groups and covers a range of financial services including payments, savings, credit, insurance, and investment.

By means of the Internet, mobile communications, and other digital technologies, digital inclusive finance breaks the geographic constraints of physical financial-institution branches and can extend financial services even into remote or economically underdeveloped areas. For example, in certain mountainous or rural regions where traditional bank branches are sparse, residents often had to travel long distances to conduct banking transactions. With mobile-banking and mobile-payment services, however, local residents can transfer funds, pay bills, and check account balances at any time and from anywhere, dramatically improving access to financial services.

Traditional financial institutions often impose stringent requirements on customers' credit histories, income levels, and asset holdings, making it difficult for many micro-enterprises and low-income individuals to obtain financial support. Digital inclusive finance uses big data and artificial-intelligence techniques to evaluate credit risk more comprehensively and accurately, thereby extending financial services to a wider population. For instance, some Internet finance platforms base small-loan decisions on multidimensional data sources such as e-commerce transaction records and social-media activity, providing micro-loans to small enterprises and sole proprietorships and addressing their funding challenges.

Digital inclusive finance encompasses more than traditional payment and savings products; it spans credit, insurance, and investment as well. As digital technologies continue to evolve, innovative financial products and services proliferate. In the credit space, beyond conventional bank loans, models such as online micro-lending and supply-chain finance have emerged. In insurance, data-driven personalized products—such as return-shipping insurance and flight-delay insurance—have appeared. In investment, Internet-based fund-sales platforms offer investors a more convenient channel for purchasing mutual funds, lowering the threshold to entry.

By offering convenient and efficient financial services, digital inclusive finance increases customer participation and usage frequency. Take mobile payments, for example: users need only scan a QR code with their phones to complete a transaction, eliminating the need to carry cash or a physical bank card. This convenience has driven mobile payments to become increasingly prevalent in daily life, with users making use of them more frequently. At the same time, digital inclusive finance platforms offer personalized financial services and product recommendations to meet diverse customer needs, further strengthening customer retention and engagement.

The development of digital inclusive finance relies on digital-technology support such as big data, cloud computing, artificial intelligence, and blockchain. These technologies play critical roles in every facet of digital inclusive finance. Big data enables more accurate credit assessments, risk alerts, and targeted marketing. Cloud computing provides robust processing power and storage capacity to support financial institutions in handling large volumes of data. Artificial intelligence powers functions like intelligent customer service and robo-advisors, raising the efficiency and quality of financial services. Blockchain addresses trust issues in financial transactions, enhancing transaction security and transparency.

Digital inclusive finance is fundamentally data-driven, collecting and analyzing vast amounts of customer information. By mining and analyzing customers' transaction records, behavioral data, and credit histories, financial institutions gain a comprehensive understanding of each customer's needs and risk profile, allowing them to deliver highly tailored financial products and services. For example, during loan approval, an institution can evaluate a customer's repayment ability and credit risk by analyzing their credit data and transaction history, leading to more accurate lending decisions. Data-driven processes also help financial institutions optimize their operations, reduce costs, and improve risk management.

3.2 Indicator System for Rural Industry Revitalization

Rural industry revitalization centers on achieving industry prosperity, which not only entails expanding agricultural production scale and increasing output but also emphasizes optimizing industrial structure and improving development quality. From the internal perspective of agriculture, coordinated development across planting, livestock, and fisheries must be realized, driving the transformation and upgrading of traditional agriculture into modern agriculture. For example, promoting precision agriculture and smart agriculture by using modern information technologies and scientific management methods can raise production efficiency and resource-utilization efficiency while lowering production costs. Simultaneously, emphasis must be placed on the quality and safety of agricultural products through standardized production and rigorous quality supervision, fostering regionally distinctive brands with market competitiveness.

Rural industry revitalization stresses integrated development of the primary, secondary, and tertiary sectors in rural areas. The primary sector provides raw materials for the secondary and tertiary sectors; the secondary sector processes agricultural products to extend the value chain and increase added value; and the tertiary sector—comprising rural tourism, e-commerce, and logistics—supports industrial development and broadens market reach. Through industry integration, the limitations of traditional agriculture are overcome, creating additional employment opportunities and economic growth points. For instance, some regions leverage local natural landscapes and agricultural resources to develop rural tourism, combining agricultural production and processing with tourism services, so that visitors experience rural life and purchase local agricultural products and handicrafts, achieving synergistic growth among sectors.Rural industry revitalization must adhere to the principles of sustainable development, achieving unity among economic, social, and ecological benefits. Throughout the development process, rural ecological and environmental protection should be prioritized, ensuring rational utilization of natural resources and avoiding overexploitation and

environmental pollution. Examples include promoting ecological-agriculture practices—employing organic fertilizers and biological pest control to reduce chemical inputs, preserve soil quality, and maintain biodiversity—and cultivating circular-agriculture practices that recycle agricultural processing waste, thereby enhancing resource-recycling rates. Simultaneously, attention to rural social development is essential: promoting farmers' income growth, improving living standards and well-being, and achieving comprehensive rural revitalization[8].

Market demand must guide rural industry revitalization, adjusting industrial structures and product offerings in response to changing market dynamics. By deeply understanding market needs, rural industries can develop suitable agricultural products and services, enhancing competitiveness. Moreover, innovation is a key driving force behind rural industry revitalization. Science and technology innovation, management innovation, and business-model innovation should be encouraged to bring new technologies, methods, and formats into rural industries. For example, leveraging Internet technologies for agricultural-product e-commerce to expand sales channels, and developing cold-chain logistics to reduce post-harvest losses and improve circulation efficiency.

An indicator system for rural industry revitalization must be built on a clear understanding of its connotation and relevant theories, with a scientific theoretical basis and logical structure. Selected indicators should accurately reflect the reality and critical factors of rural industry development, ensuring evaluation accuracy and reliability. Rural industry revitalization is a complex systems project, so the indicator system must cover various dimensions: industry scale, industrial structure, industrial performance, industry integration, etc., forming an integrated whole to comprehensively and holistically evaluate the level of rural industry revitalization. Indicators should possess clear definitions and calculation methods, with data that are readily accessible and easy to compile. At the same time, the total number of indicators should not be excessive, avoiding overly complicated calculations and evaluation processes so that the system is practical and feasible.Rural industry development is dynamic, and the indicator system must be flexible and adaptive, allowing adjustments and improvements over time to capture new realities and issues in rural industry revitalization.Reflecting the overall scale and level of agricultural production, including the combined output value of planting, livestock, and fisheries.Measuring the scale of the agricultural-product processing industry, indicating the level of value added to agricultural goods.If the locale has developed a rural-tourism sector, this indicator reflects the market size and economic benefits of rural tourism.Analyzing the rationality of the rural industrial structure, reflecting each sector's role and position within the rural economy. Ideally, the rural industrial structure should demonstrate coordinated development and mutual promotion among the primary, secondary, and tertiary sectors.Emphasizing the share of locally characteristic industries within the rural industrial sector; the growth of these specialty industries enhances rural industry competitiveness and appeal.Calculating the agricultural output value created per unit of agricultural labor, reflecting the efficiency and performance of agricultural production.Measuring the extent of value increase after agricultural products undergo processing, indicating the profitability of the agricultural-product processing industry.Directly reflecting the actual income that farmers obtain from industry development, making it a vital indicator for gauging rural industry revitalization effectiveness.Counting the number of specific projects that integrate the primary, secondary, and tertiary rural industries, reflecting the activity level of industry integration.Indicating the proportion of agricultural products sold through e-commerce channels, reflecting the integration between the Internet and the agricultural sector.Reflecting the extent to which the rural-tourism industry drives local employment, demonstrating how industry integration fosters job creation.Measuring the volume of chemical fertilizers and pesticides used in agricultural production, reflecting the environmental impact of farming practices.Indicating the comprehensive utilization level of agricultural waste (e.g., straw, livestock and poultry manure), promoting resource recycling and environmental protection.Reflecting the quality and stability of the rural ecological environment, which is crucial for maintaining ecological balance[9].

To accurately evaluate the level of rural industry revitalization, it is necessary to determine appropriate weights for each indicator. Methods such as the Analytic Hierarchy Process (AHP) and the Delphi Method can be employed, inviting experts from related fields to assess the importance of each indicator and thereby establish reasonable weights. Once indicator weights are determined, a comprehensive evaluation method—such as the weighted-average approach—can be used to quantify rural industry revitalization. Specifically, each indicator's actual value is multiplied by its corresponding weight, and then the products are summed to yield an overall evaluation score. These scores allow for comparison and analysis of rural industry revitalization levels across different regions, identifying problems and gaps and providing a basis for targeted policy and intervention measures.Through defining the connotation of rural industry revitalization and constructing an evaluation indicator system, one can more accurately capture the current status and trends of rural industry development, providing scientific decision support and practical guidance for advancing rural industry revitalization. Table 1 presents a rural revitalization evaluation indicator system comprising five subsystems and thirty specific indicators.

3.3 Theoretical Framework Construction

The theoretical framework for the collaborative mechanism between digital inclusive finance and rural industry revitalization draws on multidisciplinary theories, integrating factors from economics, finance, industrial development, and rural society. This framework is structured into four interrelated and mutually reinforcing levels—goal, element, driving, and support—each contributing to the coordinated development of digital inclusive finance and rural industry revitalization.The overarching goal of the collaborative development of digital inclusive finance and rural industry revitalization is to achieve high-quality rural economic growth and comprehensive social progress. Specifically, this

goal includes enhancing the competitiveness and added value of rural industries, promoting optimization and upgrading of rural industry structures; increasing farmers' incomes and narrowing the urban-rural income gap; improving the accessibility and quality of rural financial services and enhancing rural residents' financial literacy and capabilities; and fostering improvement of the rural ecological environment and sustainable development to realize unity among economic, social, and environmental benefits.

The element layer comprises the main players, service types, infrastructure, and industry actors that form the foundation for collaborative development. Main players include traditional financial institutions (such as rural credit cooperatives and Agricultural Bank branches), fintech companies, and nonbank financial institutions. These stakeholders innovate financial products and service models through digital means, providing diversified financial support to rural industries. Service types cover digital credit, digital payments, digital insurance, and digital wealth management. Digital credit supplies funding for rural industry development; digital payments improve transaction efficiency and convenience; digital insurance reduces industry risk; and digital wealth management helps farmers increase their assets. Infrastructure includes digital-technology platforms (mobile Internet, big data, cloud computing, blockchain) and financial infrastructure (credit systems, payment and clearing systems). These provide the technical and institutional foundation for digital inclusive finance. Industry actors comprise households, family farms, cooperatives, and agricultural enterprises; each plays a distinct role in rural-industry development and together form the rural-industry landscape. Industry categories include agriculture (planting, livestock, forestry, fisheries), agricultural product processing, and rural services (rural tourism, e-commerce, rural logistics). Industrial diversity bolsters rural industries' resilience and comprehensive benefits. The environment consists of policy, market, and technology conditions; a favorable environment attracts resource flows to rural areas and promotes industry growth.

The driving layer identifies the primary forces propelling collaborative development. Market demand is the fundamental driver: as urban and rural residents' living standards rise, demand for high-quality agricultural goods and rural tourism services increases, offering broad market opportunities for rural industries. At the same time, rural industry development generates diversified financial needs, spurring digital inclusive-finance innovation. Government policy support is a crucial safeguard: through fiscal subsidies, tax incentives, and financial-regulatory policies, the government channels financial resources to rural areas, encourages financial institutions to innovate products and services, and backs rural-industry development. Moreover, the government formulates industry plans, strengthens infrastructure, and improves the rural business environment, creating a favorable policy backdrop for collaborative development. Rapid advances in digital technology provide essential technical support: big data, cloud computing, and artificial intelligence reduce financial-service costs and risks, improving service efficiency and precision. Digital technology also enables the intelligentization and informatization of rural industries, facilitating their transformation and upgrading. Establishing sound laws, regulations, and regulatory systems standardizes market order in digital inclusive finance and rural-industry development, protects financial consumers and investors, and strengthens financial-regulatory coordination to prevent financial risks, ensuring stable collaborative development. Strengthening talent cultivation and attraction in digital finance and rural industries is another critical driver: through educational and training programs, rural residents' financial literacy and industry skills improve, and professionals in finance, technology, and management are drawn to rural areas, supplying intellectual resources. Building and perfecting rural credit systems enhances credit-information collection, integration, and sharing; through credit rating and incentive mechanisms, rural residents' and industry actors' credit awareness rises, improving the rural financial ecosystem and lowering financial institutions' credit risk.

The support layer specifies how digital inclusive finance enables rural industry revitalization and, conversely, how rural industry revitalization propels digital inclusive finance. Digital inclusive finance innovates credit models—such as big-data–based unsecured loans and supply-chain finance—to provide rural industry actors with more convenient, efficient funding. Additionally, digital inclusive finance channels social capital into rural industry investment, widening financing channels and overcoming funding-bottleneck challenges. Digital insurance, futures, and other financial tools help rural industry actors diversify and transfer risk: agricultural insurance reduces the impact of natural disasters and market fluctuations on production, while agricultural-product futures enable producers to hedge price risk and stabilize incomes. By offering diverse risk-management instruments, digital inclusive finance enhances rural industries' resilience. Digital inclusive finance also supports rural industry's technological innovation and transformation: by providing technology loans, venture capital, and other financial services, it encourages enterprises to increase R&D investment, adopt advanced production methods and management practices, and boost competitiveness and added value. At the same time, digital inclusive finance drives industry integration, promoting deeper linkages between agriculture and secondary and tertiary sectors, expanding rural-industry development space[10].

Conversely, the growth of rural industries produces diverse financial needs that create a vast market for digital inclusive finance. Building a comprehensive Chinese rural revitalization evaluation indicator system is a complex, multidimensional process: it must align with the connotation of rural revitalization while remaining scientific, feasible, and based on readily obtainable data. Table 1 illustrates an evaluation indicator system for rural revitalization, comprising five subsystems and thirty specific indicators.

Table 1 Rural Revitalization Evaluation Index System

Variables	First level indicator	Secondary indicators
		GDP per capita
		Total power of agricultural machinery
		Effective irrigation area

Rural Revitalization	Industry is booming	Per capita food production
		Total output value of agriculture, forestry, animal husbandry and fishery
		Rural per capita electricity consumption
	Ecological and livable	Number of primary medical and health institutions
		Number of nursing beds per thousand elderly people
		Park green area
		Number of public toilets per population
		Number of health technicians per population
	Rural Civilization	Number of public libraries per population
		Comprehensive population coverage of rural radio programs
		Comprehensive population coverage of rural TV programs
	Effective governance	Number of rural residents receiving minimum living security
		Completed investment in industrial pollution control
		General public budget expenditure
	Affluent life	Per capita disposable income of rural residents
		Insurance Depth
		Engel coefficient of rural households
		Per capita consumption expenditure of rural residents

As rural industries undergo transformation and upgrading, their financial-service needs will shift from traditional credit alone to more comprehensive financial services, such as payment and settlement, investment and wealth management, and risk management. The development of rural industries provides both impetus and opportunity for the innovation and advancement of digital inclusive finance. Healthy growth in rural industries helps improve the credit environment in rural areas, thereby furnishing a solid foundation of credit for the development of digital inclusive finance. When industrial actors operate steadily and maintain good repayment records, their credit ratings rise, reducing lending risks for financial institutions. At the same time, the advancement of rural industries also drives increases in rural residents' incomes, enhancing their credit awareness and repayment capacity, which in turn promotes the sustainable development of digital inclusive finance.

The digital transformation of rural industries offers concrete practice scenarios for applying digital finance technologies. For example, the growth of rural e-commerce demands convenient payment and settlement services, while the adoption of agricultural Internet-of-Things applications can supply financial institutions with more accurate production information and risk-assessment data. As rural industries become more digitized, they foster the application and innovation of digital technologies in the financial sector, thereby accelerating the growth of digital inclusive finance.

The theoretical framework for the collaborative mechanism between digital inclusive finance and rural industry revitalization is not static; it evolves dynamically alongside economic and social development and technological progress. In the short term, their collaborative development manifests primarily as financial resources being injected into rural industries and as industries beginning to take shape. Financial institutions expand credit support for rural industries, helping industrial actors overcome capital shortages and enabling initial industrial growth. Simultaneously, the emerging needs of developing rural industries provide feedback to financial institutions, prompting them to further refine financial products and services.

In the medium term, the collaborative development of digital inclusive finance and rural industry revitalization will place greater emphasis on optimizing industrial structure and innovating financial services. As rural industries continue to develop and their structures upgrade, their demands for financial services will become more diversified. Financial institutions will intensify support for emerging industries and innovative enterprises, while also creating new financial products and service models to meet these evolving needs.

Over the long term, the collaborative development of digital inclusive finance and rural industry revitalization will achieve comprehensive prosperity in the rural economy and thorough social advancement. Digital inclusive finance will deeply integrate with rural industries, forming a virtuous-cycle ecosystem. As rural industries develop, they will elevate rural residents' incomes and living standards, attract increasing talent and resources to rural areas, and promote sustainable rural social development.

By constructing a theoretical framework that defines the collaborative mechanism between digital inclusive finance and rural industry revitalization, practitioners gain theoretical guidance to foster their coordinated development, thus achieving high-quality rural economic growth and comprehensive social progress.

4 DIGITAL INCLUSIVE FINANCE'S DIRECT IMPACT ON RURAL INDUSTRY REVITALIZATION

4.1 Direct Impact of Coverage Breadth of Digital Inclusive Finance on Rural Industry Revitalization

The breadth of digital inclusive finance coverage is primarily reflected in the accessibility and prevalence of financial services, measured by indicators such as the number of financial-institution outlets, the penetration rate of accounts and bank cards, and the coverage scope of digital financial services. In rural areas, expanding the coverage of digital

inclusive finance enables more farmers and rural enterprises to access financial services conveniently. Previously, because physical outlets of financial institutions were scarce, many remote villages' industry actors could not reach formal financial services and thus could not satisfy their funding needs. As the coverage range of digital inclusive finance expands, farmers and enterprises can easily open accounts and apply for loans via mobile devices. For example, some large digital-finance platforms have partnered with rural credit cooperatives to launch online credit products, covering many rural areas that were previously untouched by traditional financial services. This has provided rural industries with additional funds to scale up production, introduce new technologies and equipment, and directly promoted the development of rural industries.Broader financial coverage also supports the diversification of rural industries. Various types of rural industries—such as specialty cultivation, animal husbandry, and rural tourism—all require corresponding capital investment. As the breadth of digital inclusive finance coverage increases, different industry actors can access financial support, encouraging diversification in rural industries. In one region, for example, under the support of digital inclusive finance, villages that once relied solely on traditional agriculture gradually developed rural homestays and agricultural-product processing industries, enriching the rural industrial structure and improving the overall competitiveness of rural industries.

4.2 Direct Impact of Usage Depth of Digital Inclusive Finance on Rural Industry Revitalization

The usage depth of digital inclusive finance reflects the frequency and diversification of financial-service utilization, encompassing payment, credit, insurance, investment, and other services. In payment, the convenient methods provided by digital inclusive finance—such as mobile payments and online banking—greatly enhance the transaction efficiency of rural industries. When farmers and enterprises procure raw materials or sell their products, they can complete payments in real time, reducing the risks and time costs associated with cash transactions.In credit, by offering personalized credit products and flexible repayment terms based on the actual needs and operating conditions of industry actors, funds can be allocated more precisely to rural industry development. For instance, to address the seasonal funding needs of crop growers, some financial institutions have introduced credit products with repayment schedules aligned to planting cycles, improving capital utilization efficiency and ensuring smooth industry operations.The increased usage depth of digital inclusive finance is also evident in the widespread application of insurance and investment services. Rural industries face multiple risks, such as natural disasters and market fluctuations; agricultural insurance helps farmers and enterprises receive compensation when losses occur, safeguarding continuous development. At the same time, some rural enterprises can participate in financial-market investments to achieve asset appreciation and further diversify their industrial portfolios, thereby strengthening their risk-resilience capacity. For example, a rural livestock-breeding enterprise purchased agricultural insurance and, when an epidemic caused livestock losses, received compensation from the insurer, averting bankruptcy and providing security for subsequent recovery and development.

4.3 Direct Impact of Digitalization Level of Digital Inclusive Finance on Rural Industry Revitalization

The digitalization level of digital inclusive finance primarily concerns the extent of technological application—such as big data, artificial intelligence, and blockchain—in financial services. The application of digital-technology enables financial institutions to process business more efficiently and reduce operating costs. Through big-data analytics, institutions can more accurately assess the credit status of rural industry actors, mitigating risks arising from information asymmetry and thereby lowering credit-approval costs and risk premiums. Meanwhile, online financial-service processes reduce the need to build and operate physical outlets, allowing institutions to serve rural industries at lower cost. This means that rural industry actors can obtain financial support at reduced expense, enhancing their profitability.Higher digitalization levels also create possibilities for innovating financial-service models. For instance, blockchain-based supply-chain finance can achieve efficient coordination of capital flows, information flows, and logistics across all links of a rural-industry supply chain. The credit of a core enterprise can be transmitted via blockchain to upstream and downstream supply-chain entities, enabling small enterprises and farmers at the chain's end to secure financial support. Additionally, artificial intelligence applications in financial services—such as intelligent customer service and robo-advisors—provide rural industry actors with a more personalized and intelligent financial-service experience, thereby promoting rural-industry development.

5 INDIRECT IMPACT MECHANISMS OF DIGITAL INCLUSIVE FINANCE

Digital inclusive finance, in promoting rural industry revitalization, does not act solely through direct channels; it also injects new vitality into rural industry development via a series of indirect pathways, such as agricultural technological innovation and industrial integration. This section delves into how digital inclusive finance indirectly influences rural industry revitalization through these channels.The development of digital inclusive finance provides robust financial support for agricultural technological innovation. Under traditional financial models, agricultural technological innovation faces difficulties in obtaining financing and high financing costs, and financial institutions often adopt a cautious stance toward agricultural technology projects due to factors such as high risk, low returns, and information asymmetry. By leveraging advanced digital technologies, digital inclusive finance overcomes temporal and spatial constraints, lowers the cost and barriers of financial services, and enables more agricultural technology enterprises and researchers to access financing support. On one hand, digital inclusive finance platforms use big data and cloud-

computing technologies to conduct precise risk assessments and credit ratings for agricultural technology enterprises and research projects, thereby offering them personalized financial products and services. For example, some digital finance institutions, based on multidimensional data—such as an agricultural technology enterprise's R&D capacity, intellectual property, and market prospects—provide credit loans to meet their funding needs for purchasing R&D equipment and recruiting talent. On the other hand, digital inclusive finance innovates financial products—such as agricultural technology crowdfunding and supply-chain finance—to attract social capital into agricultural technological innovation. Agricultural technology crowdfunding platforms offer direct financing channels to investors for agricultural technology projects, enabling projects to obtain rapid funding support; supply-chain finance, relying on core enterprises within the agricultural industry chain, provides financing services to upstream and downstream agricultural technology enterprises, enhancing the collaborative innovation capacity of the industry chain[11].

Agricultural technological innovation is a key force in driving the upgrading of rural industries. As agricultural technological innovation, supported by digital inclusive finance, advances continuously, a series of new technologies, new varieties, and new equipment are widely applied in agricultural production, improving production efficiency and quality, and promoting the diversified development of rural industries. In the planting sector, agricultural technological innovation has brought about the application of precision agriculture technologies, such as satellite remote sensing, drone monitoring, and intelligent irrigation. These technologies can monitor soil moisture and crop growth conditions in real time, enabling precise fertilization and irrigation, thereby improving agricultural resource utilization efficiency and reducing production costs. At the same time, new varieties cultivated through gene editing and hybrid breeding technologies—featuring higher yields, better quality, and stronger stress resistance—provide strong support for ensuring food security and agricultural product supply. In the livestock sector, the development of intelligent breeding technologies has transformed traditional farming models. The application of automated feeding equipment, environmental-monitoring systems, and disease early-warning systems enhances breeding efficiency and animal welfare while reducing the risk of disease outbreaks. Moreover, agricultural technological innovation has spawned new industry formats—such as agricultural product processing, rural e-commerce, and rural tourism—extending the agricultural value chain, increasing the added value of agricultural products, and broadening farmers' income channels.

6 TYPICAL REGIONAL CASE ANALYSIS

6.1 Suqian, Jiangsu: Digital Inclusive Finance Helping to Upgrade the Flower and Tree Industry

Suqian in Jiangsu Province is nationally known as the "hometown of flowers and trees," and Shuyang County within Suqian even enjoys the reputation of "China's No. 1 County for Flowers and Trees." The local history of flower and tree cultivation is long, the industry scale is considerable—covering over 600,000 mu (approximately 40,000 hectares) of flowers and seedlings—with more than 300,000 people engaged in the trade. Products range across categories such as bonsai, fresh-cut flowers, and landscaping seedlings, and they sell well throughout the country. However, the traditional development model of the flower and tree industry faces many challenges, such as growers' financing shortages, limited sales channels, and high logistics and distribution costs, all of which constrain further industrial upgrading.Local financial institutions have cooperated with e-commerce platforms to develop specialized online credit products based on multidimensional information such as growers' transaction data and credit records. For example, Suqian Rural Commercial Bank launched the "Flower and Tree Loan," which allows growers to apply for loans simply by submitting an application on their mobile phones; the system then quickly evaluates their credit status and grants an appropriate credit limit. To date, this product has provided more than RMB 300 million in cumulative loans to over 5,000 flower and tree growers, effectively resolving their funding difficulties related to seedling procurement and greenhouse construction[12].

Focusing on the core enterprises within the flower and tree industry chain, financial institutions have carried out supply-chain finance services. Taking a large local flower and tree e-commerce enterprise as an example, financial institutions provide financing services to its upstream and downstream growers, suppliers, and distributors. By passing down the creditworthiness of the core enterprise, they reduce the financing threshold for small and medium-sized enterprises and farmers along the supply chain. For instance, banks offer accounts-receivable pledge financing to suppliers based on purchase contracts with the core enterprise, accelerating cash flow turnover and ensuring stable operation of the industry chain.

As e-commerce business has expanded, digital payments have been widely adopted in flower and tree transactions. Third-party payment providers have partnered with local e-commerce platforms to roll out convenient payment and settlement systems that support multiple payment methods such as WeChat Pay and Alipay. At the same time, preferential fee rates specifically for flower and tree transactions have been introduced to reduce transaction costs. These measures not only improve transaction efficiency but also reduce the risks associated with cash transactions.

Under the support of digital inclusive finance, Suqian's flower and tree industry has continued to expand. The newly added planting area for flowers and seedlings has exceeded 100,000 mu (approximately 6,700 hectares), attracting more farmers to participate in the flower and tree industry. Meanwhile, industry development has also attracted substantial investment, promoting the extension and expansion of the industrial chain. The integration of digital finance and e-commerce has helped flower and tree enterprises and growers broaden their sales channels. Through e-commerce platforms, Suqian's flower and tree products not only sell well in major domestic cities but are also exported to Japan,

South Korea, and other countries and regions. In 2024, Suqian's flower and tree e-commerce sales reached RMB 10 billion, a year-on-year increase of 20%.

The application of digital inclusive finance has improved production efficiency and economic benefits in the flower and tree industry, directly increasing growers' incomes. Statistics show that the per capita annual income of local flower and tree growers has risen from about RMB 20,000 to over RMB 30,000, and their living standards have significantly improved.At present, a relatively authoritative measure of the current state of digital inclusive finance development is the "Peking University Digital Inclusive Finance Index (2011–2020)" compiled by Peking University's Digital Finance Research Center. This paper uses that index to analyze the current state of digital inclusive finance development in Jiangsu Province.

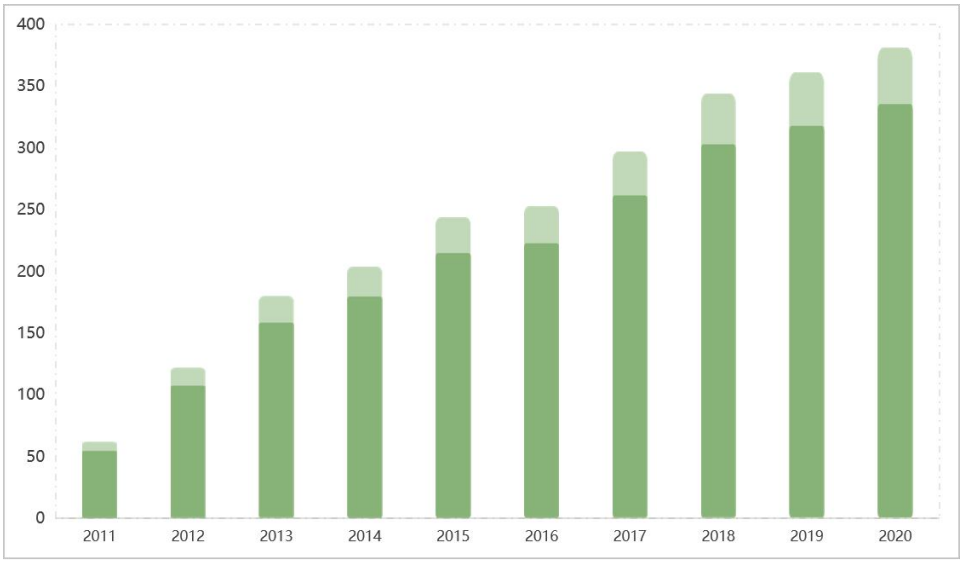

Figure 1 Jiangsu Province Digital Inclusive Finance Index 2011~2020

As shown in Figure 1, thanks to Jiangsu Province's active response to the national call, its strong emphasis on the digital inclusive finance development strategy, and the introduction of numerous supporting policies tailored to local characteristics, from 2011 to 2020 the province's digital inclusive finance business grew sevenfold over ten years, steadily achieving faster, higher-quality, and more efficient development.

6.2 Suichang, Zhejiang: Digital Inclusive Finance Activates the Rural E-Commerce Industry

Suichang County in Zhejiang is a typical mountainous county with abundant natural resources but relatively lagging economic development. In recent years, Suichang has leveraged local specialty agricultural products and traditional handicrafts to vigorously develop the rural e-commerce industry, becoming one of the nationally recognized birthplaces of rural e-commerce. However, the development of the rural e-commerce industry faces problems such as insufficient funds, difficult logistics and distribution, and a shortage of talent, which constrain further industry growth. The Suichang County government, together with financial institutions, has established a comprehensive rural credit system by collecting data on farmers' basic information, production and operation information, and credit records, creating credit files for farmers and carrying out credit ratings. Based on the credit rating results, financial institutions provide differentiated lending services to farmers. For example, farmers with higher credit ratings can obtain greater credit lines and lower loan interest rates. At present, the rural credit system in Suichang County has covered more than 90% of farmers nationwide, effectively solving the problem of farmers' difficulty in obtaining loans[13].

Local financial institutions, using fintech tools such as big data and cloud computing, have developed a dedicated e-commerce financial services platform. This platform integrates multiple financial services—payment and settlement, credit financing, and insurance protection—to provide one-stop financial solutions for rural e-commerce enterprises and entrepreneurs. For example, by analyzing e-commerce enterprises' transaction data and logistics information, the platform offers precise credit support. At the same time, it also provides credit insurance, freight insurance, and other insurance products to e-commerce enterprises, reducing their operating risks.In order to improve the accessibility and convenience of rural financial services, Suichang County has set up rural financial service stations in each administrative village. These stations are equipped with self-service ATMs, POS machines, and other financial devices, providing villagers with basic financial services such as cash withdrawal, fund transfers, and bill payments. Additionally, the service stations undertake responsibilities such as financial-knowledge promotion and credit-information collection, becoming important carriers of rural financial services.The application of digital inclusive finance has injected strong momentum into Suichang's rural e-commerce industry. Currently, there are more than 5,000 rural e-commerce operating entities in Suichang County, with over 20,000 employees. In 2024, rural e-commerce sales reached RMB 5 billion, a year-on-year increase of 30%. The development of the e-commerce industry has driven the growth of local specialty agricultural products and traditional handicrafts, promoting farmers' income growth and rural

economic prosperity. Through the construction of the rural credit system and the application of financial technology, Suichang's rural financial ecosystem has been significantly improved. The nonperforming loan rate of financial institutions has significantly declined, and the quality and efficiency of rural financial services have improved. At the same time, rural residents' financial literacy and credit awareness have been enhanced, laying a solid foundation for the sustainable development of rural finance.The deep integration of digital inclusive finance and the rural e-commerce industry has promoted the implementation of Suichang County's rural revitalization strategy. Rural infrastructure has been continuously improved, and the level of public services has been continuously raised, refreshing the rural landscape. Meanwhile, the development of the e-commerce industry has also attracted a large number of talents back to the countryside, providing talent support for rural revitalization. This paper compares per capita disposable income of rural residents in Zhejiang Province with that nationwide from 2011 to 2022; as shown in Figure 2, rural residents' disposable income in Zhejiang has consistently remained far higher than the national level, and its growth rate has also been far ahead.

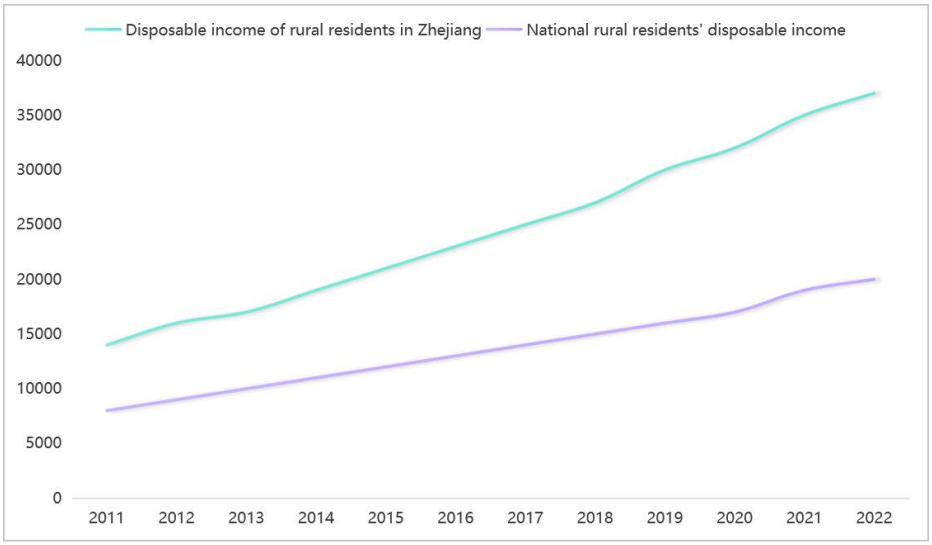

Figure 2 Disposable Income of Rural Residents in Zhejiang Province and the Whole Country (2011-2022)

6.3 Qingchuan, Sichuan: Digital Inclusive Finance Promotes the Development of Specialty Breeding Industries

Qingchuan County in Sichuan is located in a mountainous area with a superior ecological environment, making it suitable for developing specialty breeding industries. Locally, the main activities are sheep breeding, beekeeping, and poultry farming; however, due to a lack of funds, technology, and market channels, the breeding industry remains small in scale and yields low returns. At the same time, traditional breeding methods incur high costs and carry significant disease risks, which constrain the industry's development. The Qingchuan County government, together with financial institutions and insurance companies, has introduced a "government–bank–insurance" cooperation model. The government sets up a risk compensation fund to provide guarantees and credit enhancement for breeders; financial institutions offer loans to breeders; and insurance companies provide breeding insurance to reduce breeding risks. For example, breeders need only pay a small premium to obtain full insurance coverage for their breeding operations. When risks such as disease outbreaks or natural disasters occur, the insurance company compensates the breeder according to the terms of the contract.

Focusing on the local specialty breeding industry chain, financial institutions have launched digital supply-chain finance services. Take a large meat processing enterprise, for instance: financial institutions provide financing to its upstream and downstream breeders, feed suppliers, and distributors. By transmitting the core enterprise's credit to other participants in the chain, they lower the financing threshold for small and medium enterprises and farmers along the supply chain. At the same time, financial institutions utilize blockchain technology to achieve real-time monitoring of capital flows, information flows, and logistics within the supply chain, enhancing the security and efficiency of supply-chain finance.To improve the convenience of financial services, Qingchuan County's financial institutions have introduced a mobile finance service platform. Breeders can use a smartphone app at any time to apply for loans, make repayments, and check account information. The platform also provides value-added services such as breeding-technology consultations and market-trend analyses, offering breeders comprehensive financial support.

Under the support of digital inclusive finance, Qingchuan County's specialty breeding industry has steadily expanded in scale. The numbers of sheep, bee colonies, and poultry raised have each grown by more than 20%, 30%, and 40%, respectively, attracting more farmers into specialty breeding. Meanwhile, industry development has also drawn significant investment, promoting the standardization, scale expansion, and industrialization of breeding operations. The application of digital inclusive finance has improved the production efficiency and economic returns of the specialty breeding industry, directly increasing breeders' incomes. Statistics indicate that the per-capita annual income of local breeders has risen from around RMB 15,000 to over RMB 25,000, and their living standards have significantly

improved.Through the “government–bank–insurance” cooperation model and the promotion of breeding insurance, the risks in Qingchuan County’s specialty breeding industry have been effectively reduced. When breeders face risks such as disease outbreaks or natural disasters, they can receive timely compensation, minimizing economic losses. At the same time, the application of digital supply-chain finance services and the mobile finance service platform has enhanced the industry’s risk resilience and market competitiveness[14].

From the three typical regional case studies above, it is clear that digital inclusive finance plays a crucial role in rural industry revitalization. In different regions, by leveraging their own industry characteristics and development needs, local stakeholders have explored digital inclusive finance models suited to their circumstances. These models have effectively addressed financing challenges in rural industry development, promoted industrial upgrading, and increased farmers’ incomes. Such successful experiences offer valuable lessons and references for other regions.

7 PATHS AND MEASURES FOR PROMOTING THE DEVELOPMENT OF DIGITAL INCLUSIVE FINANCE

7.1 Optimizing the Policy Environment for Digital Inclusive Finance

The government should establish a dedicated special fund for the development of digital inclusive finance, providing subsidies to financial institutions engaged in digital inclusive finance services. For financial institutions that serve key inclusive finance targets—such as micro and small enterprises and rural residents—with digital financial services, a certain proportion of fiscal interest subsidies should be granted based on metrics such as number of clients served, loan amounts, and service quality, in order to lower service costs and enhance their enthusiasm for offering digital inclusive finance products. In terms of taxation, for financial institutions engaged in digital inclusive finance, appropriate reductions or exemptions of value-added tax and income tax should be provided. For example, for institutions issuing small digital loans, a certain percentage of value-added tax on interest income may be waived; for institutions that establish digital financial service outlets or conduct digital financial services in rural areas, a specified period of income tax relief should be granted.The government should formulate clear development plans and policy guidance for digital inclusive finance, directing financial resources toward inclusive finance areas. Financial institutions should be encouraged to increase their investment in digital financial services for rural, remote regions and micro and small enterprises, and through policy guidance, drive innovation in digital financial products and services to meet the diverse financial needs of different groups. At the same time, the government can use industrial policy guidance to promote the application and development of digital technologies in inclusive finance. For instance, support should be given to digital financial technology enterprises, with subsidies and tax incentives provided to those engaged in research, development, and application of digital financial technologies, thereby advancing innovation and application of digital financial technologies and improving the efficiency and quality of digital inclusive finance services.

With the rapid development of digital inclusive finance, traditional regulatory methods can no longer meet evolving needs. Regulatory authorities should actively innovate their supervisory approach, introducing technology-driven regulatory tools that use big data and artificial intelligence to strengthen oversight of digital inclusive finance activities. A big-data regulatory platform for digital inclusive finance should be established to collect financial institutions’ business data and customer information in real time; through data analysis and mining, potential risks can be identified promptly, enabling dynamic supervision of digital inclusive finance. Meanwhile, regulatory authorities should strengthen collaboration with fintech companies, establishing joint regulatory mechanisms to address new issues and challenges arising in digital inclusive finance development. For example, data resources can be shared with fintech firms to enhance monitoring and evaluation of digital financial products and services, improving the effectiveness and precision of regulation.

To avoid gaps and overlaps in regulation, the responsibilities of each regulatory body in the field of digital inclusive finance must be clearly defined. A coordinated regulatory mechanism for digital inclusive finance should be established, enhancing communication and collaboration among different regulatory departments to form a cohesive supervisory force. At the same time, unified regulatory standards and norms for digital inclusive finance should be formulated, clarifying requirements for market entry, business rules, and risk management of digital financial products and services. Compliance supervision of digital financial institutions must be strengthened, with severe penalties imposed on violations in accordance with law, in order to maintain order in the digital inclusive finance market.Consumer protection is crucial in the development of digital inclusive finance. Regulatory authorities should reinforce supervision of financial institutions, requiring them to fully disclose product information and risk warnings when offering digital financial services, thereby safeguarding consumers’ right to information and choice. A robust complaint-handling mechanism for digital inclusive finance should be established, with clear channels for complaints and timely resolution of consumer disputes. Financial literacy and risk-awareness training for customers should be strengthened to guide consumers toward rational use of digital financial products and services.Digital inclusive finance development involves multiple departments, such as financial regulators, fiscal authorities, and technology departments. These departments should enhance communication and collaboration to form a policy synergy. For example, financial regulators formulate regulatory policies for digital inclusive finance; fiscal authorities provide subsidies and tax incentives; and technology departments promote the application and innovation of digital technologies in inclusive finance. Through interdepartmental policy coordination, the healthy development of digital inclusive finance can be jointly advanced.

Because different regions in China exhibit significant disparities in economic development levels and financial ecosystems, the development of digital inclusive finance is also unbalanced. The government should formulate differentiated digital inclusive finance policies, adopting targeted support measures based on each region's actual conditions to promote coordinated regional development. For economically developed areas, financial institutions should be encouraged to innovate digital financial products and services to improve the service quality and efficiency of digital inclusive finance. For economically underdeveloped areas, policy support should be increased, digital financial infrastructure construction strengthened, and the accessibility and coverage of financial services enhanced. At the same time, interregional financial cooperation and exchanges should be bolstered to optimize allocation of digital inclusive finance resources.

7.2 Enhancing the Service Capability of Digital Inclusive Finance

7.2.1 Strengthening financial infrastructure construction

The government should increase investment in network and communication infrastructure in remote rural and underdeveloped areas by setting up special funds specifically for laying optical-fiber networks and constructing 5G base stations, for instance. In certain mountainous villages where complex terrain results in weak network coverage, digital inclusive finance services cannot be effectively provided. By supporting these areas with special funds to introduce advanced communication technologies and equipment, a stable and high-speed network can be ensured, providing the necessary foundation for the popularization of digital financial services.Telecom operators possess abundant network resources and customer data, while financial institutions have professional capabilities in financial services. Their collaboration can achieve resource sharing, such as jointly offering preferred packages for rural regions that bundle network services with financial services, lowering the threshold for rural residents to use digital financial services. Cooperation and interoperability between financial institutions and third-party payment providers should be promoted. A unified payment and clearing standard and interface specifications should be established so that payment and clearing between different institutions is more seamless. For example, commercial banks should strengthen cooperation with third-party payment platforms like Alipay and WeChat Pay to achieve account interoperability and rapid fund transfers, improving payment and clearing efficiency and facilitating various digital financial transactions for residents.Advanced encryption and identity-authentication technologies should be employed to secure payment information. For instance, blockchain technology can be used to encrypt and store payment and clearing data in a distributed manner, preventing data tampering and leakage and improving the stability and reliability of the payment and clearing system.

7.2.2 Improving the Adaptability of Financial Products

Financial institutions should conduct in-depth research on the financial needs of different groups. For micro and small enterprises, innovative credit products should be developed using receivables and intellectual property rights as collateral. Since micro and small enterprises often lack traditional collateral, leveraging the value of their receivables and intellectual property can provide financing support and resolve their financing difficulties. For rural residents, financial products aligned with agricultural production cycles should be designed. For example, small loans with repayment terms set according to crop planting and harvest cycles can be introduced to provide funding support at the start of planting and allow repayment after harvest and sales, thereby reducing repayment pressure on rural residents.New financial services that combine digital technologies should be launched. For example, big data and artificial intelligence can be used to offer robo-advisory services. Based on a customer's risk preference and asset status, personalized investment-portfolio recommendations can be provided to lower the entry barrier for investment, enabling more ordinary residents to participate in the investment market.Supply-chain finance should be developed with core enterprises as the foundation: by integrating information flows, capital flows, and logistics flows within the supply chain, financing services can be offered to small and medium enterprises along the chain. Digital technologies should be used to achieve real-time sharing and monitoring of supply-chain information, improving risk-control capacity in supply-chain finance.

7.2.3 Strengthening financial technology talent cultivation

Universities should optimize curriculum offerings for fintech-related majors. Frontier-technology courses—such as artificial intelligence, blockchain, and big data—should be added, along with financial professional courses like risk management and product design, to train compound talents who understand both finance and technology. Practical opportunities should be provided so that students can accumulate experience through real projects. Financial institutions can recruit outstanding graduates from universities to strengthen their own fintech talent pools.

Financial institutions should regularly organize in-house fintech training courses for employees, inviting industry experts and technical backbones to teach. The content should cover the latest fintech technologies, business models, and regulatory policies to enhance employees' fintech literacy and business capabilities. Employees should be encouraged to obtain industry certifications—such as fintech analyst or blockchain engineer certifications—and rewarded or given career-development support upon passing, incentivizing continuous improvement of their professional skills.

7.2.4 Strengthening data governance and application

Financial institutions should establish strict data-collection standards and processes. The scope, method, and purpose of data collection must be clearly defined to ensure legality, accuracy, and completeness of data. When collecting customer data, explicit authorization should be obtained, and customers informed about data usage methods and purposes. Techniques such as data encryption and access control should be adopted to prevent data leakage and misuse.

A data-security emergency response plan must be established to ensure timely response and resolution in case of data-security incidents, safeguarding customer data.

Big-data analytics should be used to deeply mine customer data to understand their consumption habits, credit status, and financial needs, enabling financial institutions to provide more precise financial services. For example, by analyzing customers' transaction data, suitable financial products and services can be recommended. Under lawful and compliant premises, data sharing and exchange between financial institutions and other relevant entities should be realized. By integrating multiple parties' data, service efficiency and quality can be improved, and financial risks prevented.

7.3 Promoting Deep Integration of Rural Industries and Digital Inclusive Finance

Deep integration of rural industries and digital inclusive finance is an important approach to promote high-quality rural economic development and achieve rural revitalization. Through their organic combination, new vitality can be injected into rural industry development, while financial-service accessibility and coverage are enhanced, helping farmers increase income and become prosperous. To promote their deep integration, the following specific measures can be taken:

The government should collaborate with financial institutions, technology enterprises, and other stakeholders to build a digitalized rural-industry service platform that integrates production, sales, and financial services. This platform should integrate upstream and downstream resources of rural industries and provide services such as technical guidance for agricultural production and breeding, market-trend analysis, and product-sales channel matching. Simultaneously, modules for digital inclusive finance services should be incorporated to offer one-stop online financing, payment and settlement, and insurance services to farmers and new agricultural business entities. For example, a dedicated "financial supermarket" could be set up on the platform to showcase various financial products suitable for rural industries; users can compare and select according to their needs and submit applications online. Rural supply-chain finance should be developed with core enterprises of rural specialty industries as the foundation. Financial institutions, based on actual transaction data in the supply chain and the credit of core enterprises, can provide financing support to upstream and downstream farmers and micro and small enterprises. For example, in the agricultural-product processing sector, a financial institution can provide farmers with prepayment financing according to purchase contracts between a core processing enterprise and farmers, resolving farmers' production-funding shortages. Meanwhile, digital technology should be used to monitor logistics, capital flows, and information flows within the supply chain in real time, reducing financial risks. In addition, core enterprises should be encouraged to cooperate with financial institutions to establish supply-chain finance service platforms, achieving online, automated operations of supply-chain finance.

Support for digital agriculture should be increased to cultivate new formats such as smart agriculture, rural e-commerce, and rural tourism. The government should introduce policies that encourage agricultural enterprises and farmers to adopt digital technologies such as the Internet of Things, big data, and artificial intelligence, achieving intelligent and precise agricultural production management. Financial institutions should provide targeted loans and venture capital for digital agriculture projects. For example, for farmers and enterprises undertaking smart-agriculture projects, financial institutions can offer preferential-interest-rate loans and make dynamic assessments and adjustments based on project implementation progress and outcomes. At the same time, rural e-commerce and digital inclusive finance should be integrated to provide rural e-commerce operators with convenient payment and settlement and small loans, promoting the upward flow of agricultural products and the downward flow of industrial goods.

Financial institutions, universities, and social organizations should collaborate to conduct financial-knowledge education activities in rural areas. A combination of online and offline methods should be used—such as holding financial-knowledge seminars, distributing educational materials, and producing short videos—to spread basic concepts, product types, operation procedures, and risk-prevention knowledge of digital inclusive finance to farmers. For example, financial-knowledge training classes can be regularly held in rural cultural activity centers and village committees, inviting financial experts and business specialists to provide on-site lectures and answer questions. Meanwhile, financial-knowledge short videos can be published on new-media platforms such as WeChat official accounts and Douyin, enabling farmers to learn anytime. In selected villages with favorable conditions, rural financial-education demonstration bases should be established as platforms for financial-knowledge dissemination and practice. Demonstration bases should be staffed with professional financial-education personnel to conduct regular training and promotional activities. A financial-experience area should be set up for farmers to personally experience operation processes of digital inclusive finance products—such as mobile banking and mobile payments—to improve their understanding and use of digital inclusive finance. Furthermore, demonstration bases should partner with financial institutions to provide farmers with consultation and application services for small loans, insurance, and other financial products, helping them address actual financial needs.

Universities and vocational colleges should be encouraged to establish rural-finance-related majors to train financial talent suited to the development needs of rural industries. A specialized recruitment and training mechanism for rural financial talent should be established to attract outstanding financial professionals to work in rural areas. For example, the government can introduce preferential policies—such as housing subsidies and relocation allowances—to graduates who work at rural financial institutions. Meanwhile, existing rural financial practitioners should receive enhanced training and evaluation to improve their professional and service capabilities. Regular professional training sessions and exchange activities should be organized for rural financial practitioners to update their knowledge and enhance their

ability to serve rural industries.Investment in network and communication infrastructure in rural areas should be increased to improve network coverage and quality. The government should allocate special funds to support telecom operators in constructing base stations and laying optical-fiber networks in rural areas, especially focusing on strengthening coverage in remote mountainous and impoverished regions to eliminate network blind spots. Operators should be encouraged to lower network fees in rural areas to reduce the burden on farmers and rural enterprises. By improving network conditions, solid technical support is provided for the development of digital inclusive finance, making it convenient and efficient for farmers to use digital financial services.

Financial institutions should be promoted to deploy self-service banks, POS machines, and other payment and settlement devices in rural regions to expand payment service coverage. They should cooperate with rural e-commerce platforms and supply cooperatives to establish rural payment-service points that provide villagers with convenient cash withdrawal, transfers, remittances, payments, and other payment and settlement services. At the same time, the promotion of mobile payments should be intensified to guide farmers to use mobile banking, WeChat Pay, Alipay, and other mobile payment tools. By optimizing the rural payment and settlement environment, fund-transfer efficiency is improved, thereby stimulating active development of the rural economy.Government departments, financial institutions, enterprises, and other stakeholders should integrate their information resources to establish a credit-information system covering rural residents and rural enterprises. Leveraging big data and cloud computing technologies, comprehensive and accurate assessments and analyses of farmers' and rural enterprises' credit status should be conducted. Financial institutions can provide more precise financial services based on credit reports generated by the credit-information system, thereby reducing financial risks. For example, for farmers and rural enterprises with good credit, financial institutions can offer higher credit lines and more favorable interest rates. At the same time, management and maintenance of the rural credit-information system should be strengthened to ensure data security and accuracy.

The government should introduce fiscal and tax incentives to encourage financial institutions to increase their digital inclusive finance support for rural industries. For financial institutions providing digital inclusive finance services to rural industries, fiscal interest subsidies, tax reductions, and other incentives should be granted. For instance, a certain proportion of fiscal interest subsidies can be provided to institutions issuing rural microloans based on loan amounts to reduce institutions' funding costs. Meanwhile, institutions that establish branches and service outlets in rural areas should receive tax exemptions and fiscal subsidies to enhance their willingness to serve rural areas.The government should establish a rural-industry digital inclusive finance risk-compensation fund with public investment to compensate financial institutions for losses incurred from unavoidable factors or market risks in the process of conducting digital inclusive finance business. The risk-compensation fund should compensate institutions according to established standards and procedures to ease their risk-bearing pressure. Concurrently, financial institutions should be guided to strengthen risk management, establish comprehensive risk-warning and disposal mechanisms, and enhance risk-prevention capacity.

Supervision of digital inclusive finance business must be strengthened to standardize financial institutions' business operations and market conduct. A robust regulatory system for digital inclusive finance should be established, with strengthened oversight of financial-product innovation, information disclosure, and consumer protection. In particular, illegal fund-raising, fraud, and other crimes in the digital inclusive finance field should be prevented to maintain stability and security in the rural financial market. At the same time, regulatory coordination and cooperation among financial authorities should be enhanced to form a supervisory synergy and improve regulatory efficiency.By implementing the above measures, the deep integration of rural industries and digital inclusive finance can be promoted, providing stronger financial support for rural industry development and driving the prosperity of the rural economy and the smooth implementation of the rural revitalization strategy.

8 CONCLUSION

This study delved into the synergistic relationship between digital inclusive finance and rural industry revitalization, uncovering significant complementary effects. Digital inclusive finance enhances the accessibility of financial services—for example, mobile payments and online credit—which lowers entry barriers and costs, promotes the optimization and upgrading of industrial structures, and channels funds toward rural specialty industries, emerging industries, and high–value-added industries. It also stimulates innovation and entrepreneurship by providing entrepreneurs with financing guarantees and market information, thereby offering critical support for rural industry revitalization. Its mechanisms encompass: technological empowerment—using big data and artificial intelligence to improve service efficiency; information sharing—breaking down information barriers to increase industry transparency; and industrial integration—linking finance, technology, and e-commerce to achieve coordinated development. Simultaneously, rural industry revitalization expands the demand for financial services, improves the quality of financial assets, and drives financial innovation—for example, by developing rural supply-chain finance and agricultural specialty insurance products—thus creating favorable conditions for digital inclusive finance. The two processes promote and depend on each other.Furthermore, this study also recognizes limitations in research on shared-bicycle deployment strategies: namely, data constraints (a lack of user-behavior and psychological data and insufficient spatiotemporal coverage), static strategy design lacking dynamic adjustment mechanisms, and an incomplete consideration of factors such as urban cultural atmosphere and policies and regulations. Future work must expand data collection, optimize modeling algorithms, establish dynamic adjustment mechanisms, and strengthen multi-factor comprehensive research to enhance strategy effectiveness.Looking ahead, efforts should deepen the integration of

digital inclusive finance and rural industry revitalization, fully leveraging their synergistic effects to support the broader rural revitalization agenda.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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