

Research on the Current Status and Enhancement Strategies for Digital Financial Literacy among Chinese Farmers

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Abstract: In the context of the profound integration of the digital economy and inclusive finance, digital finance has emerged as a pivotal force in alleviating rural financial exclusion and propelling rural revitalization. The digital financial literacy of farmers, meanwhile, represents the linchpin determining their ability to effectively harness the dividends of digital finance. This paper commences by precisely defining the connotation of digital financial literacy. Subsequently, it conducts a systematic analysis of the current state of Chinese farmers' digital financial literacy. Specifically, it reveals several aspects: first, there is a lack of strong awareness among farmers to engage in digital finance; second, the extent of their digital finance utilization remains shallow; third, their grasp of financial knowledge is restricted; and fourth, their capabilities in applying digital technologies are feeble. In light of these issues, this paper puts forward five strategies for enhancement. These include intensifying the construction of rural digital infrastructure, offering financial knowledge education and training programs, altering farmers' traditional mindsets, developing products tailored to rural requirements and streamlining operation procedures, and fortifying the rural financial services provided by financial institutions. The findings of this study can serve as a theoretical reference and practical guide for optimizing the rural digital financial service system, improving farmers' digital financial literacy, and enabling farmers to partake in the achievements of the digital economy

Keywords: Digital Financial Literacy; Chinese Farmers; Enhancement Strategies; Digital Finance; Rural Financial Services

1. Introduction

Against the backdrop of the digital economy emerging as the core driving force for global economic growth, the profound integration of digital technologies and traditional finance has given rise to a novel financial paradigm, digital finance, which encompasses digital payment, digital wealth management, digital credit, and digital insurance. Distinct from traditional finance, digital finance, leveraging its unique advantages, transcends the constraints of time and space, thereby offering a new avenue for the long tail population in rural areas to access inclusive financial services^[1,2].

However, the convergence of the "digital" and "financial" dimensions in digital finance imposes higher demands on users' comprehensive literacy. The existing evaluation framework for traditional financial literacy proves inadequate in meeting the evolving requirements of digital finance^[3]. Consequently, the concept of "digital financial literacy" has emerged in response to this need.

Rural China presents unique characteristics. On one hand, farmers are commonly confronted with the dual challenges of the digital divide and financial exclusion. On the other hand, due to their relatively low educational attainment and distinctive production and livelihood contexts, the deficiencies in their digital financial literacy are particularly pronounced.

Enhancing digital financial literacy can effectively bridge the digital divide, mitigate financial exclusion, and enable individuals and families in rural and remote areas to access digital financial services essential for livelihoods, production, and risk management more efficiently and conveniently, thus enabling them to fully reap the benefits of digital finance. Existing literature indicates that digital financial literacy contributes to increasing farmers' willingness to engage with digital finance, fostering social capital

accumulation, alleviating liquidity constraints, and ultimately strengthening the economic resilience of rural households and promoting rural household wealth accumulation^[4-6].

In this context, a systematic exploration of the connotations, current status, and improvement strategies of Chinese farmers' digital financial literacy not only enriches the research framework of rural digital financial literacy but also provides a basis for policymakers and financial institutions to formulate targeted policies and service initiatives. This, in turn, can help farmers genuinely benefit from digital financial dividends, thereby providing a sustainable impetus for rural revitalization.

2. The Conceptual Connotation of Digital Financial Literacy

Digital finance represents a novel financial paradigm that emanates from the integration of digital technologies, including big data, cloud computing, and blockchain, with traditional financial services. It encompasses all digitally enabled products and services within the financial domain. In comparison to traditional financial services, digital finance diverges significantly in terms of product characteristics, service delivery mechanisms, user interaction modalities, and the manifestation of risks.

Consequently, in the context of the burgeoning digital economy, the measurement criteria and evaluative dimensions of traditional financial literacy have become increasingly obsolete. They are ill-equipped to comprehensively assess the full spectrum of competencies requisite for individuals to utilize digital financial products and services securely and make well-informed digital financial decisions^[7].

With the ongoing digital transformation of the financial industry, the concept of digital financial literacy has emerged as a cornerstone for individuals to adapt to the evolving digital economic landscape and effectively leverage digital finance for economic gain. At present, the academic community has yet to reach a unanimous consensus regarding the precise definition of digital financial literacy.

Prasad et al. (2018) contended that digital financial literacy refers to the comprehensive ability of individuals to make informed and effective decisions by virtue of mastering financial knowledge and skills. They measured digital financial literacy by means of the

frequency of individuals' utilization of digital financial platforms and their corresponding level of awareness^[8].

Some scholars regard digital financial literacy as the integration of digital literacy and financial literacy^[9]. With the deepening of research, an increasing number of scholars perceive digital financial literacy as a multi-dimensional construct that encompasses a range of knowledge, awareness, skills, and behaviors. Moreover, they have been continuously enriching and refining the multi-level indicator system for measuring digital financial literacy^[10].

Integrating previous studies, this paper defines the connotation of digital financial literacy as the integration of knowledge literacy, awareness literacy, behavioral literacy, and skill literacy that individual financial consumers need to fully recognize and safely utilize digital financial products and services and make prudent financial decisions.

3. Current Status of Digital Financial Literacy among Chinese Farmers

3.1 Farmers' Awareness and Motivation to Engage in Digital Financial Services are Limited

At present, there is still a notable lag in the participation awareness of rural groups in China in the field of digital finance. Most groups have not thoroughly explored the practical value of digital finance in scenarios such as agricultural production and operation and daily consumption settlement. Moreover, they lack the inclination to actively understand or experiment with digital financial services, and have not yet developed the consciousness that "digital tools can serve both life and production."

Digital payment is the core service within the realm of current digital financial services, characterized by the broadest coverage and the lowest application threshold. Its application scenarios have been deeply integrated into various aspects of rural daily economic activities, including village-level retail consumption, settlement of agricultural product acquisitions, and cross-regional fund transfers among relatives. It serves as a crucial medium connecting digital finance with the lives of farmers.

Nonetheless, farmers' awareness of

participating in digital payment remains relatively weak. Cash payment remains the preferred method for many farmers. As indicated in the "2023 China Rural Revitalization Comprehensive Survey and Research Report", over half of farmers still opt for cash payment as their primary means of payment in their daily lives. Specifically for elderly farmers, their reliance on cash payment is even more pronounced. This demographic group demonstrates a relatively strong cognitive inertia regarding cash transactions and exhibits a greater trust in the certainty associated with "tangible assets." Additionally, constrained by limited proficiency in operating mobile devices and concerns regarding the security of digital transactions, such as the fear of making operational errors or falling victim to cyber threats, they tend to gravitate towards cash settlements across a wide range of transactions. While younger farmers generally exhibit a greater openness to novelty, in certain remote rural regions, issues such as poor network connectivity, sluggish data transfer speeds, and areas with no network coverage whatsoever, significantly detract from the overall user experience of digital payment services. This, in turn, exerts a substantial impact on the willingness of young rural residents to embrace and utilize digital payment solutions.

3.2 Farmers' Engagement with Digital Financial Services Remains Superficial

Among rural farmers who have already engaged with digital financial services, the depth of their utilization remains notably insufficient. The majority of these farmers are predominantly confined to the realm of digital payment, with limited involvement in other digital financial services such as digital wealth management, digital credit, and digital insurance. On one hand, farmers' digital operational capabilities generally remain at a fundamental level, rendering them ill-equipped to meet the requirements of complex digital financial services. On the other hand, farmers' cognitive biases and insufficient trust in digital financial services act as constraints on the depth of their engagement.

Farmers exhibit low levels of awareness and participation in digital wealth management, primarily attributable to their dearth of financial knowledge and concerns regarding risks. Acquiring financial knowledge necessitates a

certain educational foundation and investment of time. However, the majority of farmers possess relatively low educational attainments and are preoccupied with agricultural production and household responsibilities, lacking the capacity and resources to engage in financial learning. Moreover, the complexity and uncertainty inherent in the wealth management market act as deterrents to farmers. The dissemination of digital credit services in rural areas also encounters significant challenges. Although digital credit offers farmers convenient access to financing, the actual uptake among farmers remains limited. Firstly, influenced by traditional mindsets, farmers harbor a resistance to borrowing, perceiving it as a means of exacerbating their family's economic burden and psychological stress. Secondly, there exists a disconnect between the evaluation mechanisms of digital credit platforms and the practical circumstances of farmers. Digital credit platforms typically rely on big data analytics to assess borrowers' creditworthiness and repayment capabilities. Nevertheless, farmers often have complex and volatile income streams, coupled with a lack of standardized financial documentation, which renders it arduous for them to achieve favorable credit scores on digital credit platforms, thereby impeding loan approvals. Additionally, some farmers have inadequate understanding of crucial aspects such as interest rates and repayment terms associated with digital credit, fueling concerns about potential exposure to exorbitant interest rates and contributing to their cautious approach towards digital credit services.

The penetration of digital insurance in rural areas presents an equally disheartening scenario. Agricultural production is fraught with numerous risks, and digital insurance should, in principle, play a pivotal role in safeguarding farmers' livelihoods and productive activities. However, the reality diverges significantly. Farmers demonstrate extremely low levels of awareness regarding digital insurance products, primarily due to the insufficient promotional efforts of insurance companies in rural regions and the absence of effective communication strategies tailored to farmers' informational needs and cognitive capabilities. Furthermore, the design of digital insurance products has not adequately accounted for the practical requirements and financial constraints of

farmers. Agricultural risks possess unique characteristics, yet existing digital insurance products are often accompanied by convoluted terms, ambiguous insurance coverage, and high premium costs, all of which contribute to farmers' diminished interest and trust in these products.

3.3 Farmers' Financial Knowledge is Limited

The rural population generally lacks systematic and comprehensive knowledge of digital finance. In rural areas, most farmers have only a superficial understanding of digital finance, lacking in-depth knowledge of its underlying operating principles, risk characteristics, and various application scenarios.

The reasons for the lack of digital financial knowledge among farmers are multifaceted. Firstly, the educational level in rural areas is relatively low, and the overall cultural quality of farmers is not high, which limits their ability to learn and understand complex financial knowledge. Many farmers lack courses related to financial knowledge during their basic education, resulting in an inherent deficiency in their financial knowledge reserves. Secondly, there is a lack of professional channels for popularizing financial knowledge in rural areas. Unlike the rich variety of financial lectures, training courses, and media promotions in cities, rural areas rarely have the opportunity to hold professional financial knowledge popularization activities. Financial institutions' promotional efforts in rural areas often focus on product sales rather than systematic explanations of financial knowledge. Additionally, information dissemination in rural areas is relatively lagging, and farmers have limited channels to obtain financial knowledge, mainly relying on traditional media such as television and radio, which often provide insufficiently in-depth and comprehensive coverage of digital financial knowledge.

Due to the lack of digital financial knowledge, farmers encounter numerous problems when using digital financial services. They are easily misled by false financial information and become victims of financial fraud. Moreover, the insufficiency of digital financial knowledge also prevents farmers from fully leveraging digital financial services to optimize their production and living conditions. For instance, they do not know how to rationally utilize digital credit funds to expand agricultural

production scale and improve production efficiency, nor do they understand the important role of digital insurance products in preventing agricultural production risks, thus failing to provide effective protection for their production and living conditions.

3.4 Farmers' Ability to Apply Digital Technology is Insufficient

The inadequate digital technology application capabilities among farmers have emerged as a formidable obstacle to the widespread adoption of digital finance in rural regions. At the basic operational level, rural residents' engagement with digital skills remains predominantly at a rudimentary stage. As per the "Report on the Development Level of Digital Literacy and Skills of the General Public (2024)", within China's agricultural, forestry, animal husbandry, and fishery sectors, only 59.73% of practitioners possess digital literacy at the primary level or above, representing a deficit of 8.1 percentage points compared to the overall national average among the employed population.

The majority of farmers are only capable of performing basic QR code payments. Proficiency in more advanced functions such as mobile banking account management, transaction record inquiries, and even more complex operations like facial recognition and electronic signatures remains elusive. These very functions, however, form the bedrock of essential digital financial services, including digital credit and agricultural insurance. The root causes underlying this phenomenon are multifaceted, encompassing both the suboptimal compatibility of digital devices and products with rural needs and the conspicuous absence of comprehensive device usage guidance.

The manifestation of skill deficiencies varies across different demographic groups, with the "digital divide" being most pronounced among middle-aged and elderly farmers. The rural agricultural workforce is predominantly composed of individuals in this age bracket, who, due to relatively low educational attainment and deeply ingrained cash transaction habits, lack the intrinsic motivation to engage with digital skills. Beyond grappling with the mechanical operation of devices, they often exhibit significant cognitive gaps in understanding the logical underpinnings of digital services. For instance, some farmers may

opt to abandon applications due to their inability to complete online data entry and qualification verification procedures.

Farmers also exhibit significant limitations in information processing capabilities, a domain crucial for the effective uptake of digital financial services. The dissemination of digital financial services hinges on the efficient transmission of a vast array of online information, including policy subsidy clarifications, credit product interest rate disclosures, and insurance claim process guidelines. Nevertheless, the majority of farmers lack the proficiency to navigate digital platforms effectively for information retrieval and discrimination. This shortfall not only undermines their ability to align their specific needs with appropriate digital financial products but also exposes them to the risk of overlooking valuable policy incentives due to misinformation. Consequently, this further exacerbates the existing divide between farmers and the realm of digital financial services.

4. Strategies for Enhancing Farmers' Digital Financial Literacy

In light of the issues manifested in the digital financial literacy of farmers, this paper correspondingly proposes recommendations, which is conducive to improving the digital financial literacy of farmers.

4.1 Strengthening Digital Infrastructure Construction

4.1.1 Enhancing network coverage in rural areas

The government ought to enhance financial support for the construction of digital infrastructure in rural areas. In collaboration with communication operators, a detailed plan for network coverage expansion should be formulated. Base stations should be preferentially constructed, and communication optical cables should be laid in remote rural areas where network coverage is weak. This aims to boost the 4G network coverage rate and gradually advance the pilot construction of 5G networks. Meanwhile, a tracking mechanism for network construction progress should be established. Regular evaluations and public disclosures of network coverage conditions should be carried out to ensure the timely completion of the construction plan. By improving network signals, rural residents will

be able to use digital financial services smoothly, thus increasing the utilization rates of online payments and online wealth management.

4.1.2 Improving communication quality in rural areas

The government should intensify the supervision of communication operators. It is necessary to establish an evaluation index system for communication quality, incorporating indicators such as network latency, data transmission speed, and signal stability into the scope of assessment. For operators whose communication quality fails to meet the standards, measures including urging rectification and fining should be adopted to encourage them to enhance service quality. Communication operators are required to strengthen the maintenance and upgrading of network equipment in rural areas, optimize network configuration, and improve the stability and fluency of network communication. This ensures that financial applications (APPs) can promptly respond to the operation commands of rural residents, thereby enhancing the usability experience of digital financial services.

4.2 Strengthening Financial Knowledge Education and Training

4.2.1 Defining the financial knowledge required by farmers

The financial knowledge required by farmers should be closely tailored to their daily operational habits, production and living scenarios, and risk prevention needs, thus constructing a practical knowledge system.

Regarding basic operational knowledge, farmers are required to master the basic functions of mobile banking, financial modules in WeChat or Alipay, and the financial section of the National Government Service Platform. They should be capable of independently performing high-frequency operations, such as binding social security cards, querying the arrival of subsidies, and verifying transfer information.

In terms of scenario-specific application knowledge, farmers need to acquire knowledge corresponding to different life and production scenarios. For daily consumption scenarios, they need to understand the key aspects of digital payment security, techniques for setting payment passwords, and the rules regarding small-amount cash withdrawal fees to facilitate

daily fund management; in production and operation scenarios, they should be well-informed about the application conditions and procedures of national digital credit products for agriculture, rural areas, and farmers, as well as know the key points of online agricultural insurance purchase and claims settlement and the process of withdrawing the proceeds from e-commerce sales of agricultural products; in social security scenarios, they should clearly understand the online payment channels for urban and rural residents' medical insurance and social security, as well as the digital settlement process for out-of-town medical treatment, thereby ensuring the implementation of people's livelihood welfare.

With respect to risk prevention knowledge, it should be integrated into farmers' daily financial knowledge learning to help them identify and avoid potential financial risks in the process of using digital financial tools and participating in financial activities. Farmers should be able to differentiate between official and fraudulent information, remain vigilant against various financial pitfalls. Moreover, they should be aware of the rights-protection paths, such as reporting cases, filing complaints, and handling fund discrepancies in the event of risks

4.2.2 Enriching financial training activities in rural areas

Financial institutions and the government ought to conduct a greater variety of training initiatives.

Financial institutions should raise the frequency of financial knowledge training programs in rural regions and introduce innovative training modalities. Based on their practical work experience, these institutions are required to identify the essential financial skills that rural residents need to acquire, and then develop relevant training materials in the form of videos, graphics, and texts. For instance, mobile publicity vehicles can be employed to penetrate deep into villages for financial knowledge dissemination. During these campaigns, financial knowledge popularization videos can be played, and promotional brochures can be distributed. Additionally, by leveraging online live-streaming platforms, financial institutions can organize online financial knowledge lectures. Renowned financial experts can be invited to deliver in-depth explanations, and interactive segments can be incorporated to

address the inquiries of rural residents.

The government, on its part, can assemble financial experts and volunteers to form a financial knowledge outreach team. This team can then engage in offline training activities in rural areas. It is crucial that the training content be tailored to the actual requirements of rural residents. When imparting knowledge, simple and accessible language should be used to explain the utilization methods of digital financial products and risk prevention techniques.

4.3 Transforming Farmers' Traditional Concepts

4.3.1 Strengthening publicity and guidance for farmers

By disseminating digital finance knowledge in a manner that aligns with farmers' cognitive capabilities, it is possible to enhance farmers' awareness of the importance and convenience of digital finance. Channels such as rural cultural activity centers, bulletin boards, and radio stations can be effectively utilized to launch promotional campaigns on digital finance knowledge. Through vivid pictures and straightforward texts, the advantages and security features of digital financial products can be presented. Furthermore, by accurately identifying farmers' preferences for television dramas, variety shows, and shortform videos, information regarding the significance and convenience of digital finance in rural areas can be conveyed through engaging storylines or interactive games. This approach enables farmers to directly perceive the positive impacts of digital finance on their production and daily lives. Simultaneously, detailed information on the application of digital finance should be released via multiple channels trusted by farmers, including government agencies, village committees, and banks. This can help alleviate the sense of resistance stemming from unfamiliarity or mistrust of digital finance. Finally, organizing digital finance product experience exhibitions can provide rural residents with hands-on opportunities to experience the convenience of digital payment and online wealth management products, thereby dispelling their concerns.

4.3.2 Leveraging the exemplary role of rural pioneers

It is advisable to encourage rural prosperity pioneers and young entrepreneurs returning to

their hometowns to take the lead in experimenting with digital financial products and sharing their usage experiences. Leveraging their exemplary influence can effectively prompt other rural residents to shift their mindsets. For example, when young entrepreneurs who have returned to their rural areas embark on projects such as agricultural product e-commerce or agricultural machinery procurement, they can actively utilize digital credit to address capital-turnover issues or conveniently receive sales revenues via digital payment platforms. After amassing hands-on experience, they can disseminate the practical value of digital financial products to their fellow farmers through means deeply ingrained in rural life, including village assemblies, on-site exchanges in the fields, and sharing within villagers' WeChat groups.

Authentic cases and detailed operational guidance from their peers can significantly mitigate the sense of unfamiliarity and apprehensions that ordinary farmers harbor towards digital finance. This enables farmers to directly witness the positive impact of digital finance in reducing operational costs and enhancing production efficiency.

4.4 Enhancing the Adaptability of Digital Financial Products

4.4.1 Developing targeted products

Financial institutions are advised to conduct in-depth investigations in rural areas. By doing so, they can gain a comprehensive understanding of the characteristics of rural residents' financial needs and subsequently develop digital financial products tailored to these specific requirements. Given the seasonal nature and uncertainty of rural residents' incomes, it is essential to design flexible digital credit products. For example, financial institutions can introduce credit products where interest is paid quarterly and the principal is repaid upon maturity. Alternatively, repayment plans can be adjusted in accordance with the harvest seasons of agricultural products. Moreover, financial institutions should develop low-threshold and stable online wealth management products that are suitable for rural residents. These products should offer a variety of investment terms and amounts to satisfy the diverse investment demands of rural residents.

4.4.2 Simplifying the operating process

Financial institutions are required to optimize

both the operation interfaces and procedures of digital financial products, rendering them more concise and accessible. Specifically, a design featuring large fonts and icons should be adopted, accompanied by a reduction in the use of specialized jargon. By streamlining the operation steps, rural residents with varying educational attainments can utilize these products with greater ease. Within the APP, operational guidelines and online customer service functions should be incorporated. This allows rural residents to promptly seek and receive assistance whenever they encounter issues. Furthermore, it is essential to organize training programs tailored to rural residents on the operation of digital financial products. Through on-site demonstrations, video tutorials, and other effective methods, rural residents can be guided to become proficient in the operation of these products.

4.5 Strengthening Rural Financial Services of Financial Institutions

Financial institutions are obliged to regard mobile service outlets as mobile service windows and rural financial service stations as permanent service nodes. By integrating guidance on the utilization of digital finance and information dissemination into their daily services, they can assist farmers in truly grasping and applying digital financial tools.

In the provision of mobile service outlet services, scenario-specific guidance should be implemented in accordance with the production and living rhythms of rural areas, accompanied by the simultaneous promotion of real-time information dissemination. Financial institutions can accurately deploy mobile service vehicles to locations such as the edges of farmland, rural marketplaces, or village event venues, depending on various scenarios, including peak farming seasons, market days, and festivals. This approach ensures a close alignment between the guidance content and the actual requirements of farmers. Professional staff should be assigned to offer one-on-one hands-on training, meticulously explaining each digital financial operation that is frequently utilized by farmers.

Enhancing the coverage of rural financial service stations is of paramount importance. Additionally, training programs on digital finance for station staff should be intensified to improve their professional proficiency and

service capabilities. This enables farmers to promptly seek assistance at these service stations whenever they encounter difficulties in digital financial operations. Under the guidance of station staff, rural residents can engage in on-site experiences of digital financial product operations, concurrently accessing detailed product information and consultation services. This effectively enhances rural residents' understanding of and willingness to use digital financial products.

Furthermore, facilities such as bulletin boards and electronic display screens at rural financial service stations can be utilized to disseminate digital financial knowledge and product information. Moreover, service stations can establish an information feedback mechanism. Farmers can communicate their interests in specific digital financial topics to liaison officers, and financial institutions can then promptly replenish relevant dissemination materials based on this feedback, thereby ensuring that the disseminated content remains highly relevant to the practical needs of farmers.

5. Conclusions

This paper undertakes a systematic research on the digital financial literacy of Chinese farmers. Through a comprehensive analysis and exploration of its connotations, current status, and improvement strategies, the following core findings are presented:

Firstly, digital financial literacy represents the core competence for farmers to adapt to digital financial services in the digital economy era. Distinct from traditional financial literacy, its connotations must encompass both digital characteristics and financial characteristics. Specifically, it is manifested as an organic integration of knowledge literacy, awareness literacy, behavioral literacy, and skill literacy. This definition provides a theoretical foundation for subsequent analyses of the current situation and the formulation of countermeasures.

Secondly, the digital financial literacy of Chinese farmers currently confronts multiple dimensions of deficiencies. Generally speaking, farmers demonstrate a weak sense of participation in digital finance, with cash payments still playing a significant role. The depth of their digital finance utilization is limited, as they are less involved in complex services such as digital wealth management,

credit, and insurance. Their reserves of financial knowledge are restricted, and they lack systematic learning avenues. Moreover, their ability to apply digital technologies is feeble, and the "digital divide" among the middle-aged and elderly groups is particularly pronounced. The emergence of these issues is not only associated with the underdeveloped digital infrastructure in rural areas and the scarcity of financial education resources but also influenced by factors such as farmers' traditional mindsets and the inadequate adaptability of digital financial products.

Thirdly, enhancing farmers' digital financial literacy necessitates the establishment of a multi-dimensional countermeasure framework. The government should assume a leading role by increasing investment in rural digital infrastructure construction, thereby optimizing network coverage and communication quality. Financial institutions, in collaboration with the government, should identify the knowledge requirements based on farmers' production and living scenarios. Through various forms of training, efforts should be made to improve farmers' knowledge levels and operational capabilities. By intensifying publicity and guidance, and encouraging leading figures in rural prosperity and young entrepreneurs returning to their hometowns to share their experiences of using digital finance, farmers' traditional concepts can be gradually transformed, and their sense of repulsion towards digital finance can be alleviated. Financial institutions are required to develop digital financial products tailored to farmers and streamline the operation processes. Additionally, they should leverage mobile service points and rural financial service stations to deepen offline services.

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