

Research Article

Digital Financial Inclusion Catalyzing College Students Starting Businesses in Rural Hometowns: Models and Solutions

Ran Chen*

Institute of Innovation and Entrepreneurship, Xinxiang Medical University, Xinxiang, China

Abstract

Digital inclusive finance, emerging from the integration of the digital economy and inclusive financial practices, has become a transformative force in addressing the limitations of traditional financial systems, particularly in rural revitalization efforts. By leveraging advanced digital technologies such as the Internet, big data analytics, and the Internet of Things (IoT), digital inclusive finance can efficiently reach underserved populations and provide tailored financial services to end users. This technological advancement offers a practical solution to the persistent problem of the “last mile” in financial service delivery, especially in supporting college graduates who return to their hometowns to start businesses. The primary financial models facilitating this process include those led by traditional commercial banks, agriculture-focused leading enterprises, and digital financial platforms. These models collectively contribute to creating a more accessible and supportive entrepreneurial ecosystem in rural areas. To maximize the effectiveness of digital inclusive finance in promoting youth entrepreneurship in these regions, it is essential to strengthen institutional frameworks, invest in robust digital financial infrastructure, enhance inclusive credit information systems, and design flexible, diversified digital financial products that meet the needs of young entrepreneurs. In this context, digital inclusive finance serves not only as a financial tool but also as a strategic engine for rural development and youth-led innovation.

Keywords

Digital Finance Inclusion, College Student, Starting Businesses in Rural Hometowns

1. Introduction

To drive rural revitalization and address problems challenging college students when hunting for jobs, numerous Chinese local governments support these young adults to start businesses in their rural hometowns with preferential policies regarding administrative approval, land expropriation, business registration and tax exemption. A growing number of young entrepreneurs are thus motivated to launch startups in

their hometowns. These startups that are generally plagued with economic vulnerability, collateral shortage, relatively low creditworthiness, and even high entrepreneurial failure rate hardly receive loans from financial institutions such as commercial banks and loan companies who are reluctant to fund them. Therefore, college graduates who start businesses in their rural hometowns are overwhelmed with difficulties,

*Corresponding author: 151007@xxmu.edu.cn (Ran Chen)

Received: 11 March 2025; Accepted: 9 April 2025; Published: 14 April 2025



Copyright: © The Author(s), 2025. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

soaring cost in financing and limited access to financing. They are less likely to seek the financing credit from commercial banks and micro-credit providers or the equity financing such as private equity, venture capital, listing on the science and innovation board of the Shanghai Stock Exchange (SSE) or the National Equities Exchange and Quotations (NEEQ, known as the New Third Board). These problems are known as “tigers in the road” holding those graduates up in starting businesses in their rural hometowns.

Digital financial inclusion (DFI), compared with the conventional financial inclusion hardly achieving both efficiency and fairness, is more favorable for it injects fairness in the cost-effective and extensive financial services, so that it mitigates the endogenous risks within the financial sector and links up the “last kilometer” of financial assistance to serve rural residents and college students. In view of this, it is of great significance to explore DFI models and solutions to assist college students to start businesses in their rural hometowns.

2. Mechanisms of How DFI Catalyzes College Graduates to Start Businesses in Their Rural Hometowns

DFI emerges as an irresistible trend stimulated by “Internet + finance”. Thanks to such technologies as cloud computing, the Internet, big data, smart terminals, end-users have access to DFI, making financial services accessible to a wider coverage of clients. For example, DFI provides college students who start their own businesses in their hometowns with financial services including financing and insurance, which addresses the issue of financial services’ “last kilometer”.

2.1. DFI Empowered by Technologies Including Cloud Computing, Big Data, and the Internet is Increasingly Accessible to the Public

According to Cao and Guohua, DFI delivers financial services targeted at disadvantaged groups, small and micro enterprises, low-income rural dwellers. At the International Year of Microcredit 2005, banking institutions were encouraged to provide financial services to disadvantaged populations [1]. DFI, in service of disadvantaged groups, small and micro enterprises, backward rural areas, has witnessed a rapid advancement over these years. [2] Andrianaivo M etc. argue that DFI promotes financial fairness, which aims to deliver

financial services to underserved groups at affordable cost. [3] DFI is a newly emerged form of financial services which fuses digital economy and inclusive finance, which is also a product of the inclusive finance empowered by big data, cloud computing, blockchain and Internet of things (IOT). DFI devotes to serve rural people, young entrepreneurs, small and micro enterprises and poverty-stricken people, which means “digital technologies are employed to provide diversified financial services to the underserved groups who have no access to traditional financial services.”¹ According to *Peking University Digital Financial Inclusion Index of China (PKU_DFIIC)*, DFI widens the coverage of financial services as the groups excluding from traditional financial services could have access to financial services, which makes financial services increasingly accessible to the public.

DFI involves two manifestations: (1) the Internet financing provided by such financial institutions as Baxin Bank, Jincheng Bank, Ant Financial Services, and Lufax which have been stimulated by digital technologies including the Internet, big data, cloud computing; and (2) the newly emerged modes of financial services introduced by commercial banks, insurance companies and tycoons who fuse the traditional financial services with Internet-based technologies. It is noted that traditional financial institutions and industrial capital are the leading players in DFI market. Statistics from the official website of China’s central bank show that, as of the end of June 2023, the balance of inclusive financial loans exceeded 21.77 trillion, 22.6% year-on-year increase. This increase far exceeded the growth rate of total social financing (TSF), and was also 11.7% higher than the growth rate of ordinary loans. DFI constitutes financial services including digital payment, digital credit, digital financial management, and digital insurance. Among them, digital credit is most accessible and important one, as underserved groups are allow to access to tailored financial services by conducting quantitative analysis and risk assessment on the micro-credit start-ups who fall in poor profitability, high failure rate, negative cash flow and less profitable business model.

2.2. DFI Fixes the Defects of Financial Services in Driving Rural Revitalization

In the course of rural revitalization, rural people are overwhelmed with credit demands. A questionnaire surveyed among 200 rural entrepreneurs suggests that a majority of these subjects had credit demands. Such demands were often subjected to low interest rate, micro size loans and for agricultural purposes (see Table 1).

Table 1. Credit demands in rural revitalization.

categories	results	rural entrepreneurs	Percentage (%)
Demands for capital	yes	156	78%
	no	44	22%
	0-3%	48	24%
Acceptable annual interest rate	3%-6%	100	50%
	6%-10%	46	23%
	>10%	6	3%
	500,000 yuan	124	62%
Credit scale	500-1000,000yuan	44	22%
	>1000,000yuan	32	16%
	agriculture	52	26%
	crop farming & livestock	44	22%
Capital usages	rural tourism	38	17%
		26	13%
	Other pictures	44	22%

In the drive of rural revitalization, China's countryside areas are haunted by low population density, underdeveloped economy, few bank outlets and lack of financial supply, leading to low-quality financial services and insufficient supply of financial products. In rural areas, there is limited demand for financial services ranging from saving and withdrawal, loans on credit, to individual financial management. Establishing bank outlets in every town considerably may lead to higher operating costs for commercial banks. This gives rise to a gap of financial services in rural countryside, which comes from limited access to credit, laborious administrative approval, to a shortage of well-targeted insurance products that are less protective and ineffective in claim policies. Instead, in the era of digital economy, DFI financial institutions deliver financial services over smartphones and online platforms on which users have access to such services as money transfers, mobile payments, and online credit on specific APPs or banks' official websites. This leads to lower operating cost of financial services in rural areas and also expands financial services to more rural and remote areas, enhancing the participation of commercial banks in rural revitalization drive. Moreover, DFI financial institutions like Ant Financial, Baxin Bank, and Jingdong Baitiao have introduced risk evaluation models based on technologies of big data, block chain and cloud computing, which are used for assessing entrepreneurial projects and creditworthiness of borrowers. In addition, data of credit history and information allows lenders to assess the risk of borrowers, which favors financial institutions with considerably less financial risks and lower operating cost. For example, Ant Financial assesses the

credit risk of rural residents based on their transaction footprint on Taobao or Tmall, eliminating financing barriers that constrains the rural underserved groups.

2.3. DFI Provides College Graduates Launching Startups in Their Rural Hometowns with Access to High-quality Financial Services

In their entrepreneurial practices in rural hometowns, a majority of young owners are encountered with inadequate start-up capital and less entrepreneurial expertise. Questionnaire surveys suggest that entrepreneurial college graduates often come from financially disadvantageous rural households which are hardly affordable to the start-up funds to launch businesses. These students themselves are neither equipped with tremendous savings nor solid financial support, which causes a shortage of start-up funds in their entrepreneurship. It is also noted that China's underdeveloped direct financing market excludes a number of small and micro enterprises as well as college students entrepreneurial businesses from seek financing by listing on stock market, except for a few unicorn companies or the "specialized, refined, and innovative enterprises" who are able to do so by listing on the science and innovation board of SSE or NEEQ. Such a financing plight also has to do with the entrepreneurial businesses launched by college students in their rural hometowns. They primarily adopt the business models oriented with green agriculture ranging from rural tourism to rural lodging, which are less applicable and negative in cash flow. These defects

undermine the businesses from attaining acknowledgement and favor from angel investment, which in turn excludes the young owners from access to equity financing and equity transfer.

DFI, in service of ordinary people and financially disadvantaged groups, fuses inclusive financing and digital technologies. DFI covers a variety of financial services such as entrepreneurial financing, online lending, online money transfer, credit guarantee and online insurance. With a comprehensive assessment of the credit history of and entrepreneurial businesses started by entrepreneurial college students, DFI serves them by providing small loans, money transfer and payment, enterprise bill payment, agricultural insurance and other financial services in a "tailor-made" way. Accordingly, they are largely relieved from the longstanding financing plight, laborious approval procedures, credit difficulties and high risks. For example, Baxin Bank and Micro Business Bank utilize big data, cloud computing and other digital technologies to assess the risk of entrepreneurial businesses owned by college students returning to their hometowns. Based on this endeavor, these companies roll out well-targeted financing and credit products for college students. With digital inclusive financial systems in place, college students, in their offices, get access to financial services including but not limited to make deposits, transfers, loans, wealth management through cell phone banks, online platforms. [4]

3. DFI Models Catalyzing College Graduates to Start Businesses in Their Rural Hometowns

As DFI booms, financial products such as online banking, WeChat payment, online crowd-funding and Internet insurance are mushrooming. These novelty products provide multi-level and diversified financial services to college students who start businesses in their rural hometowns. In DFI practices, the fundamental financial models assisting college students to start businesses in their rural hometowns are associated with traditional financial institutions, leading agricultural enterprises and online financial platforms.

Model 1: DFI driven by traditional financial institutions

The backbone of China's financial system constitutes large-scale state-owned banks, stock-holding banks and insurance tycoons who are in dispose of the bulk of the country's financial resources. In the tack of traditional financing system, commercial banks like Industrial and Commercial Bank of China (ICBC), Bank of Communication and China Merchants Bank prefer large-scale, creditworthy, and well-established enterprises with sound operation. For the start up businesses launched by college students in their hometowns, those institutions seem show little interest and are reluctant to provide services, since these businesses operate on small credit scale yet with high credit risks. [5]

However, digital technologies such as the Internet, big data and cloud computing lead to lower operating and service costs for financial institutions, which makes traditional financial institutions accessible to broader client base. Tanks to online banking, mobile banking and network credit, traditional commercial banks are allowed to widen their business scope and service coverage, thus attracting long-tail clients in the financial market. Cases in point include but not limited to "E-jiedai" rolled out by Postal Savings Bank of China, and Zhengzhou Bank's "Nongjiale"etc.. "Digital technologies + traditional banks" DFI model plays an important role to facilitate college students to start businesses in their own rural hometowns.

In such newly introduced model, numerous commercial banks have established DFI divisions for tailor-made financial services. On smart phone e-banking apps, college entrepreneurial students launching businesses in their own rural hometowns have access to services from money transfer, wealth management, mortgage loan, affordable loan, expense deduction, pledge loan, business loan, credit inquiry to foreign exchange settlement. With this one-stop mobile financial supermarket, diversified financial needs of entrepreneurial college students are satisfied. For example, China Construction Bank (CCB) has put in place a DFI platform "Yu Nong Tong", which allows DFI accessible to lower segment of the market by e-banking, WeChat subscription and terminal POS. This greatly improves the financial service delivered by the CCB to facilitate entrepreneurial college students with their startups in rural hometowns.

Moreover, traditional financial institutions, facilitated by the Internet, artificial intelligence and big data, put all-process DFI risk prevention and control systems in place, contributing to safer and more effective DFI services delivered to entrepreneurial college students. For example, on the risk prevention and control platform "Rong'an e-credit" released by China Industrial and Commercial Bank of China (ICBC), digital technologies are employed for borrower information reviewing, credit supervision, and early warning and non-performing loans (NPL) recovery throughout credit granting, which greatly reduces operating costs of entrepreneurial loans among college students.

Insurance companies also play a part in this model by promoting DFI services. They roll out inclusive agricultural insurances for college students starting businesses in their hometowns. For example, China Taiping, a state-owned insurance service provider, has launched diverse agricultural insurance products on based on "Shenxing Taibao", an intelligent platform standardizes data collection, analysis and processing.

Peoples Insurance Company of China (PICC) introduces a DFI model integrating insurance, services and technologies to conduct risk assessment based on digital technologies like big data, cloud computing and IOT. Such technology-empowered streamlined insurance system is characterized with early warning prior to disasters, timely response while disasters

take place and satisfied claim settlement after disasters, which makes quality insurances accessible to college students who launch their start-ups in crop farming and livestock.

Model 2: leading agricultural enterprises enabled DFI

With higher-level industrial concentration of China's agriculture sector, leading agricultural enterprises such as New Hope Group, Muyuan Foods, Dabeinong Group, and Chuying Argo-pastoral Group have witnessed rapid growth, emerging as organizers and leaders in the agricultural industry chain. These leading enterprises are advantageous in assisting college students who start businesses in their rural hometowns, for they have access to the information about production, orders, sales of the businesses launched by entrepreneurial college students. Leveraging digital technologies as the Internet, big data, and cloud computing, they are allowed to integrate resources of the upstream and downstream industrial chain, and also financing guarantees and microfinance loans for those entrepreneurial college students. For this reason, many leading agriculture-related enterprises, relying on the advantages in the industrial chain, information flow, logistics,

have rolled out extensive DFI services including financing, collateral, and credit for the startups launched by college students in the industrial chain. This has become an important financial model to facilitate college students to start businesses in their rural hometowns. [6]

Leading agricultural enterprises are born to be promoters of DFI services in rural areas. One of their endeavors is to leverage technologies like remote sensing, IOT and digital positioning for risk assessment of and well-targeted credit-granting to the startups launched by college students in their rural hometowns. Likewise, a comprehensive assessment of the information flow, capital flow and logistics of these startups enable leading agricultural enterprises to assist the students by offering them financial services in forms of financial guarantees and microfinance. Therefore, financing difficulties that interfere with the businesses ran by entrepreneurial college students are largely addressed by these products Dabeinong's "Nongfudai" and "Supporting loan"; New Hope's "Villagedai" and "Villagerong", etc. (See Table 2)

Table 2. DFI products rolled out by some leading agricultural enterprises.

leading agricultural enterprises	DFI products	function
Dabei-nong	"Nongfu dai" Supporting loan	micro-credit serving rural residents
New Hope	"Village dai" equity loan	Diversified credit services serving rural residents
Shuanghui	"Huirong tong" "Huixiang dai"	diversified financial services for upstream and downstream enterprises

Furthermore, an increasing number of leading agricultural enterprises are in cooperation with local governments to jointly provide DFI services. For example, Chongqing Municipality introduces a DFI model integrating leading agricultural enterprises and local government, which is based on the partnership between enterprises and rural residents and the cooperation between enterprises, cooperatives and rural residents. With such a model in place, local governments are obligated to offer discount government loans and guarantees mortgages to agricultural ventures on credit and college students who start businesses in their rural hometowns. Meanwhile, leading enterprises, leveraging their advantages in capital flow, information flow and logistics, employ digital technologies such as big data, IOT, and cloud computing in risk assessment and directional tracking of the start-ups on credit. This allows the enterprises to identify credit amount and corresponding interest rate, catering to the credit demands from college students who start their own businesses in their rural hometowns.

Besides, a batch of leading agricultural enterprises also cooperate with commercial banks to jointly develop financial products such as pledge financing and guarantee financing, making DFI well-targeted and effective in assisting college

students who start businesses in their rural hometowns. Of these financial endeavors, the DFI provided by Dabeinong Group is a case in point worthy of our attention. Empowered by such network platforms as "Pig Management Network", "Nongxin Network" and "Zhinong Mall", the provider collects, analyzes and organizes real-time data of pig breeding industry chain. Such technology-enabling expertise informs college entrepreneurs of trading prices and breeding policies, and also provides college entrepreneurs with financial services like credit assessment, and small loans.

Model 3: online financial platforms based DFI.

As digital technologies like mobile Internet, big data, and cloud computing boom, online platforms such as Ali, Tencent, Jingdong and Baidu become players in Internet finance, emerging as a mighty force in DFI. [7] Ali and Jingdong, with tremendous transaction data and user information, have conducted closed-loop integration of capital flow, information flow and logistics, which substantially improves the operational efficiency of DFI and becomes an important DFI model to empower college students to start businesses in their rural hometowns.

Online finance platforms provide diversified financial ser-

vices to college students with their start-ups in rural hometowns. Internet financing enterprises are the direct beneficiaries of financial technologies and also active players to promote DFI. The intelligent decision-making system integrating big data with machine learning enables a number of Internet finance enterprises to conduct credit risk assessment and credit business approval, in which patch processing and online approval are so effective that a micro-credit business is completed in just a few seconds. Besides, These platforms, leveraging technologies of big data, blockchain, cloud computing, make it possible to implement a life-cycle risk management covering auditing, monitoring, early warning and executing throughout a credit business, which improves the efficiency of risk management. For example, Sichuan Xinwang Bank rolls out a credit platform named "Haorendai" with floating interest rate for borrowers who have different creditworthiness. Borrowers are allowed to apply for loans on the official WeChat mini program developed for the platform, which makes credit services efficient and accessible to college students who start businesses in their hometowns. [8]

Moreover, credit platforms pertaining to rural residents also facilitate college students who start businesses in their hometowns by providing specialized financial services. With the rapid development of Internet financing, vertical DFI platforms for rural areas, rural residents and agriculture are rolled out. A case in point is the DFI platform "Yinongdai" released by CreditEase. This product, covering financial fields including credit, wealth management, insurance, leasing and other, allows entrepreneurial college students to have access to businesses services from agricultural insurance, microfinance to financial leasing. In terms of microcredit, "Yinongdai" serves as a loan intermediary platform on which student borrowers apply for loans. Their credit information is then publicized on the platform, which assists lenders in deciding whether or not to lend and the amount of loans. For effective risk management in the process of microfinance, the platform carries out online credit assessment and offline review, and also puts in place a risk warning system monitoring the process of microfinance as well as a NPL recovery system.

Additionally, leveraging digital technologies, online finance platforms empower the businesses launched by college students who start businesses in their hometowns, making digital dividends accessible to the young entrepreneurs. For example, "Jingnongdai", an online loan platform run by Jingdong, uses digital technologies including big data and cloud computing to identify, monitor and evaluate agricultural production activities, and then grant loans at regular basis. Such a digitalized and well-targeted credit-granting model contributes to address collateral shortage and creditworthiness plight entrepreneurial obstructed college students, so that they get access to digital dividends. Other representative platforms are Ant Gold Service's "Netfarmingdai" and "Wangnong Insurance" on which digital technologies are leveraged to build up a credit system to

provide small loans, financing guarantees and other financial services to entrepreneurial students. [9]

4. Solutions to DFI Catalyzing College Graduates to Start Businesses in Their Rural Hometowns

DFI has been the focus of supply-side reform in the financing sector and also a rewarding attempt towards finance power who addresses the financing hurdles obstructing small and micro enterprises. According to the guideline document issued by China's State Council specifying policies and measures to promote the high-quality development of inclusive finance, efforts should be made to leverage digital technology to empower inclusive finance in rural areas, make up for the defects of DFI, and drive rural revitalization DFI. To this end, we attempt to explore practical solutions to address the "last kilometer" problem that challenges college students who start businesses in their rural hometowns. In view of this, we shall center on the financial models and products released by financial institutions including traditional commercial banks, leading agricultural enterprises and online financial platforms. [10]

4.1. Establish and Enhance DFI Systems

The top-level design promoting DFI, in guidance of policies including supply-side reform in the financing sector and finance power and empowered by technologies big data, blockchain, IOT and digital sensing, is forged to ensure financial services accessible to college students who start businesses in their rural hometowns.

In the first place, DFI policies and systems favoring college students who start businesses in their rural hometowns should be well-targeted and customized. Practice has proved that DFI contributes to rural revitalization and serve college students who start entrepreneurial businesses in their hometowns. However, the industrial structure and economic development of different regions vary, so does the demand for DFI from different customer segments. In this regard, it is rational to promote region-specific DFI systems by rolling out customized policies catering to varied needs, which further assists college students to start businesses in their hometowns. To be specific, in the economically developed regions, efforts should be made to forge innovated DFI service modes by developing diversified DFI systems such as online credit, financing guarantee, agricultural insurance and equity financing. These diversified and multi-level DFI services are accessible to college students who start entrepreneurial businesses in their hometowns. As for the less developed regions, it is a top priority to expand DFI to a wider coverage by establishing a DFI system that features small loans and loan guarantees to address financing problems encountered by college students who start businesses in their rural hometowns. [11]

Moreover, financial security and risk prevention should be taken into account as a fundamental part of DFI system, which makes DFI more secure, legitimate and risk controllable. DFI is primarily motivated by financial innovation, but financial security also matters in promoting innovation. Therefore, a system designed for financial risk warning, assessment, prevention and control should be put in place to make DFI under more effective administrative supervision. [12] For example, to crack down on financial scandals such as the village banking insolvency in China's Henan province, P2P lending platform frauds, illegal fundraising in the guise of finance serving for rural revitalization, it calls for regulatory standards and systems of DFI financial services in place. Furthermore, CBIRC should ramp up regulations in the key financial service providers including microfinance companies, finance companies, and online crowd-funding platforms. Policies and regulations should be formulated to specify the definitions of illicit activities including, but not limited to, illegal fundraising, pooling savings with high interest rates and financial products. The calculation of default rate and legal liabilities stemming from defaults are also in need of clearer explanations. [13]

Above all, promoting DFI also should adhere to the leadership of the Communist Party of China (CPC). Accordingly, efforts should be made to uphold the people-centered notion and the centralized leadership of CPC in promoting DFI. Prevention and control of financial risks and serving the real economy are among the central tasks of promoting DFI. In addition, legislative efforts and regulations for supervising funds of DFI financial institutions are also urgent tasks, together with the complaint platform addressing DFI related issues, which assure a healthy and orderly operation of DFI financial institutions.

4.2. Improve DFI Infrastructure in Rural Areas

DFI arises from the combination of digital economy and inclusive finance, and also advances as a trend comes along with the development of Internet finance driven by mobile banking, online credit, online wealth management and online crowdfunding. Development of DFI depends on digital infrastructure and the spread of digital terminals. More accessible DFI digital infrastructure and less operating costs in rural areas is the key to make most of DFI in the service of college students who start launch-ups in their rural hometowns. [14]

First and foremost, efforts are made to build more 5G base stations and optical communication stations, so as to expand affordable broadband coverage and increase rural household Internet access. This contributes to fill the widening urban-rural digital gap. For example, sectors including telecommunication, power grid, and postal service should construct information infrastructure in the interest of rural people, and press ahead with the undertakings of Internet access to villages and digitalizing villages. Also, a regular maintenance

system for digital information infrastructure in rural areas should be put in place to ensure network and communication facilities in sound operation, which paves the way for DFI to serve college students who start businesses in their rural hometowns. [15]

In addition, more big data centers, IOT centers and warehousing and logistics hubs are expected to build in rural counties, districts and poverty-stricken areas, which could increase the accessibility and efficiency of digital financial services in rural areas. Efforts are also made to press ahead with industry digitalization in rural areas by applying technologies like IOT, remote sensing, digital positioning and intelligent monitoring in agricultural businesses as well as promoting digital credit-granting to college students who start businesses in their rural hometowns.

More attempts are expected to make in introducing communication networks, payment systems and clearing systems that are compatible with DFI system. To this end, we call for improved inter-bank payment system and mobile payment and clearing system, which could provide small and micro-enterprises and individual entrepreneurs with high-quality payment services. Moreover, developing payment products such as debit cards, digital payments, credit cards and e-pairing is encouraged to create favorable conditions for DFI services. Mobile payment infrastructure in rural areas should be enhanced by setting up more ATMs and self-service terminals, and increasing the number of POS machines authorized merchants. We also expect a full coverage of financial outlets such as agricultural credit cooperatives and micro-finance companies.

4.3. Introduce DFI Credit System

DFI catalyzing college students with the launch-ups in their rural hometowns relies on a sound and enabling DFI credit system. Accordingly, DFI credit system should be introduced based on such digital technologies as big data, cloud computing and blockchain, which allows DFI to provide more customized services for small and micro economy. [16]

Initial efforts are expected to make on the improving diversified DFI credit system. In view of this, we call for enhance the Credit Reference Center, the People's Bank of China ("CCRC") and the credit database of enterprises and individuals by updating the data of online platforms, financial institutions, government bodies and judicial departments. Meanwhile, a national credit information sharing platform should be put in place, on which information of enterprise qualifications, certifications, administrative penalties and administrative licenses are accessible. The database encapsulating personal credit information also awaits improvement by consumer portrait and quantitative analysis of personal credit status based on technologies of big data and cloud computing etc.

Besides, local governments also play a part in promoting DFI by expanding Internet DFI infrastructure and creating

DFI ecosystems coordinated and shaped by public and private sectors and players. On this information-sharing ecosystem, data of end users ranging from housing property, marital status, tax, social security, medical insurance and financial subsidies are all accessible to rural commercial banks, agricultural enterprises and online DFI platforms. It is also recommended to collect and evaluate the credit data of entrepreneurial college students, and further establish a multi-level and comprehensive credit system. Such system calls for collaborative efforts made by government agencies across sectors of tax, municipal supervision, education and finance as well as productive partnerships and cooperation among banks, businesses and tax authorities. A case in point is "Credit Loan", a local credit product app developed and released by the Suzhou municipal government.

In addition, a DFI credit system pertaining to small and micro enterprises and self-employed businesses should be established, in which technologies of big data, blockchain, and cloud computing are utilized for accurate customer portrait. Additionally, measures are taken to improve credit scoring for college students and small and micro enterprises by rolling out a standardized and regulated credit data collection system, which contributes the sharing of user data information. For example, the credit status of college students who start businesses in their hometowns dynamically is assessed based on the data of their business operation, utilities, and network consumption information.

We propose to establish credit management organizations and rating agencies in rural areas, which are expected to develop credit products targeting at college students who start businesses in their rural hometowns. With these efforts, students have access to credit services including financing, guarantee and insurance. [17] For example, technologies such as big

data and cloud computing are harnessed to collect, analyze and process the data of businesses relating to land transfer, agricultural subsidies, agricultural insurance, rural tourism, which allows to assess risks and determine prices of these launch-ups, tailor-made credit services for college students.

4.4. Develop Diversified DFI Products

DFI concerns as for leveraging digital economy in terms of its scale effect, synergy effect and long tail effect. It also expands inclusive financial services to small and micro enterprises entrepreneurial college students, poverty alleviation businesses in rural areas. Accordingly, promoting DFI service system should be pragmatically oriented to assist college students start businesses in rural hometowns and revitalize rural economy by developing online financial products supporting agriculture and the rural underserved and providing diversified financial services in favor of entrepreneurial students. [18]

In the first place, DFI institutions are expected to develop tailor-made credit and guarantee products that primarily cater to the financing demands from college students starting business in their rural hometowns. The plight that these young entrepreneurs stand slim chance to the financing on high cost and with limited access is owing to hurdles arising from lack of collateral and loan guarantee. According to a survey among 200 college students starting business in their rural hometowns, a majority of the subjects were found to demand for financing. As a matter of fact, borrowing credit funds often requires the designation of collateral or guarantors on the part of the recipient of the loan. For the young entrepreneurs, however, there seem to be no guarantors or collateral. Even worse, the guarantee comes in high expenses and harsh requirements. (see Table 3)

Table 3. Demands for financing guarantee among college students who start businesses in their hometowns.

categories	options	Number of surveyed students	percentage
demands for financing guarantee	Yes	162	81%
	No	38	19%
ways of guarantee	Civil servant or employees public service providers acting as guarantors	48	24%
	Relatives and friends acting as guarantors	50	25%
	Collateral	64	32%
	Other	38	19%
	No guarantors	102	51%
Guarantee problems	No collaterals	96	53%
	Strict requirements	84	42%
	High expenses	52	26%
	others	44	22%

To this end, DFI institutions are encouraged to focus on addressing the financing plight that concerns the young entrepreneurs. Efforts in this regard vary from risk assessment models designed to start-ups launched by the young entrepreneurs to online and physical small and micro credit products. [19] As for the lack of financing guarantee, agencies involved are expected to spare no efforts to trial loan guarantee models ranging from "leading enterprises + cooperatives", "trading market + family farms" to "four households joint insurance". Moreover, businesses like digital credit-granting and digital guarantee are also encouraged to provide accessible financing guarantee to the youth. With property, forest ownership, livestock acting as collaterals, collateral shortage obstructing the young businessmen is by no means a tiger in the road. [20]

In addition, a multi-level DFI service system should be established in the direction of diversified financial needs of entrepreneur students. DFI is thus promoted by rolling out small and micro loans, agricultural insurances, and equity financing for start-ups. DFI products should be feasible and reliable in the context of green agriculture, rural tourism and rural e-commerce, which contributes to meeting graduates' demands for multi-level and diversified financial services. For instance, start-ups run by graduates primarily relate to green agriculture, breeding and rural tourism. These businesses are found to be risky, making them underserved due to a limited number of agricultural insurance products. Therefore, it is a priority to develop digital inclusive insurance products covering natural disasters, disease death and pest loss in accordance with the regulations of agricultural insurances, which will satisfy demands of entrepreneurial college students for insurance products. [21]

5. Conclusion

College students starting businesses in their hometowns is crucial to address unemployment among college students and drive rural revitalization, which is of great significance to improving economic vitality, relieving employment pressure and promoting industrial transformation. According to the *Strategic Planning for Rural Revitalization* and the *National Rural Industry Development Plan*, college students starting businesses in their hometowns play a vital part in rural revitalization, and also an important driving force in promoting rural industrial upgrading, urban-rural integration and rural prosperity. [22] When launching up their businesses, they are generally encountered with challenges from start-up capital shortage, underserved finance, and limited access to banking loans and direct financing, which become bottleneck constraints impeding those students. DFI is a critical front of financial supply-side reform, and also an important financial tool serving rural economy and college students with launch-ups in their home towns. The rise of DFI leverages technologies such as Internet, cloud computing, and big data to enable innovated financial products, conduct credit evaluation and online finance.

This gives entrepreneur students increasing access to financial services. Therefore, promoting DFI in rural and remote areas should be in principle of both efficiency and equity, ensuring that entrepreneur college students are provided with low-cost and high-quality financial services to address the problem of "last kilometer" in the financial services for college starting businesses in their hometowns.

Abbreviations

SAT Speech Act Theory

Author Contributions

Ran Chen is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] CaoGuohua, ZhangJing. The Entrepreneurial Ecosystem of Inclusive Finance and Entrepreneurship: A Theoretical and Empirical Test in China [J]. *International Journal of Finance & Economics*, 2020(9): 1-22.
- [2] Anand S, Chhikara K S. A Theoretical and Quantitative Analysis of Financial Inclusion and Economic Growth [J]. *Management & Labour Studies*, 2013, 38(1-2): 103-133.
- [3] Andrianaivo M, Kpodar K. Mobile Phones, Financial Inclusion and Growth [J]. *Review of Economics and Institutions*, 2012, 3(2): 1-30.
- [4] XieWenwu, Wangtao, YuJiagen. Does digital inclusive finance promote rural residents 'entrepreneurship'?. *Financial Theory & Practice*, 2020, 492(7): 111-118.
- [5] Feng Dawei, Gao Mengtao, Zhouli. Digital financial inclusion and individual entrepreneurship: evidence from the China labor-force dynamics survey. *Financial Economics Research*, 2020, 35(1): 91-103.
- [6] Liang bang, Zhang jianhua. Can the development of digital inclusive finance stimulate innovation? Evidence from Chinese cities and SMEs. *Modern Economic Science*, 2019(5): 74-86.
- [7] Xie xuanli, Shen yan, Zhang Haoxing, Guo Feng. Can digital finance promote entrepreneurship? Evidence efrom China. *China Economic Quarterly*2018, 17(4): 1557-1580.
- [8] GaoJing, ZhangYingliang. Nonghuchuangye: Rural residents' entrepreneurship: initial social capital affects opportunity recognition behavior of entrepreneurs——empirical study based on a survey of 518 rural entrepreneurial residents. *Journal of Agrotechnical Economics*, 2013(1): 32-39.

- [9] Liu song, Wei binhui, Su Keyu. Can Internet usage improve the level credit for farmers——empirical research based on CFPS panel data. *Economic Theory and Business Management*, 2020 (7): 58-72.
- [10] Li Jianjun, Li Juncheng. Inclusive Finance and Entrepreneurship: “Give people a fish” or “Teach people to fish”? *Journal of Financial Research*, 2020(1): 69-87.
- [11] Feng Yongqi, Cai Jiahui. Can digital Inclusive finance promote entrepreneurship?-Based on inter-provincial data and heterogeneity of Industrial structure. *Modern Economic Science*, 2021(1) 79-90.
- [12] He Jing, Li Qinghai. Digital finance and farmers’ entrepreneurship. *Chinese Rural Economy*, 2019(1): 113-126.
- [13] Yang Zhe, Huang Mai. Rural digital governance serves as a breakthrough for commercial banks to expand rural scenes. *The Chinese Banker*, 2020(6): 125-127.
- [14] Luo Chunling, Wang Dingxiang. The dilemma of Chongqing rural financial service for rural revitalization and the choices of digital inclusive financial models. *Journal of Contemporary Financial Research*, 2022(6): 60-64.
- [15] Xing Yang. “Dividend “and “gap” of rural digital inclusive finance. *Economist*, 2021, 266(2): 102-111.
- [16] Jiang, Ruibo, and Fan, Wenjing. Inclusive finance and employment: Can financial development improve peasant's entrepreneurship? [J]. *Managerial and Decision Economics*, 2021(6): 1-17.
- [17] Wang Xiaoya, Li Hongshu. Promoting financial services in rural revitalization. *China Finance*, 2021(8): 34-36.
- [18] Huang Mai, Ma Jiujie. The service model of farmers’ network loan and its innovative development. *Reform*, 2019(3): 97-105.
- [19] Qin Jinfeng, Gao Chuanhua. China’s digital inclusive finance and digital villages are in coordinated development. *China Economic & Trade Herald*, 2019(11): 120-121.
- [20] Chen XiuMing. Inclusive finance promotes rural revitalization. *Qinghai Finance*, 2019(1): 24-28.
- [21] Zhang Longyao, Xin Zhaohui. Distribution dynamics, regional differences and convergence of digital inclusive finance in rural China. *Journal of Quantitative & Technological Economics*, 2021(3): 23-42.
- [22] Song Wei, Zhang Baozhen, Yang Haifen. The impact mechanism and empirical analysis of digital inclusive finance on farmers’ entrepreneurship. *Journal of Technical Economics & Management*, 2022(2): 99-104.

Biography



Ran Chen obtained her Bachelor of Arts degree in Chongqing University of Posts and Telecommunications. Then he obtained his Master’s degree of Arts degree in Zhengzhou University. Currently, she is a lecturer at the Xinxiang Medical University Institute of Innovation and Entrepreneurship. Her specializations include innovation and entrepreneurship management, graduate employment guidance, college students innovation and entrepreneurship education. Her current research interests are green strategy and emerging economic development, technological innovation and entrepreneurship management, industry-university-research cooperation.