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Review

A Literature Review on the Transmission Mechanism of Innovation and Entrepreneurship for Digital Finance to Effectively Support the High-quality Development of Real-economy

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Abstract: From the perspective of innovation and entrepreneurship, we have collected relevant research results in the past few years (2018–present). Based on the collected data, a significant amount of research has been conducted up to the year 2022, indicating that experts and scholars are increasingly focused on the transmission of digital finance to a higher standard of development of the real-economy. Existing research is largely devoted to the transmission mechanisms of "digital finance - innovation and entrepreneurship" or "innovation and entrepreneurship — the high-quality development of the real-economy". There is little overview of "digital finance—innovation and entrepreneurship—the quality development of the real-economy." In this paper, we review relevant literature in the context of innovation and entrepreneurship, which may provide some useful guidance for improving the digital financial system and enhancing the growth of the real-economy.

Keywords: Digital Finance; Innovation and Entrepreneurship; High-quality Development; Real-economy; Literature Review

1. Introduction

In March 2021, at the two sessions in Beijing, President Xi Jinping emphasized that the 14th Five-Year Plan period marks the beginning of a new journey toward building a modern socialist society. The upcoming journey calls for a clear understanding of the development stage, progress toward the implementation of a novel development concept, acceleration of the development of a novel development pattern, and the facilitation of quality development. According to the Outline of the 14th Five-Year Plan and Vision 2035 for the National Economic and Social Development of the People's Republic of China, it is necessary to increase innovation in cooperation models in the real-economy. Digital finance can eliminate corporate financing constraints, encourage innovation and entrepreneurship, and promote the high-quality development of the real-economy.

From the perspective of innovation and entrepreneurship, this paper brings together relevant research results from 2018 to present, which are categorized into two sections: the impact of digital finance on innovation and entrepreneurship, and the impact of innovation and entrepreneurship on

the high-quality development of the real-economy. The data for this paper is adapted from the CSSCI Chinese Social Sciences Citation Index.

2. Effects of Digital Finance on Innovation and Entrepreneurship

2.1. Effect of Digital Finance on Innovation

The contribution of digital finance to innovation can be divided into two aspects: macro and micro. The study provides insight into how digital finance can drive regional innovation at the macro level. On the one hand, digital finance eases the pressure on financing directly from the supply side. Regional innovation is supported by the extent and depth of digital finance, while the role of digitization is less clear. Digital finance plays a significant role in driving innovation in eastern China rather than in central and western China, and its impact is greater in eastern regions or in first- and second-tier cities with greater human capital and economic sophistication. On the other hand, digital finance indirectly contributes to regional innovation capacity by promoting industrial structure upgrading and expanding regional consumption demand [1-4]. The development of digital finance also involves spatial spillover effects and threshold effects. The spatial spillover effect manifests itself in that digital finance stimulates innovation activities in the region, which in turn enhances innovation capacity in neighboring cities [5]. The threshold effect shows that when the threshold value is exceeded, the marginal benefit of the development of digital finance on the innovation impact of cities increases, and its innovation incentive effect shows increasing marginal benefits as the level of regional economic development improves [6-7].

The study also focuses on the role played by digital finance in promoting technological innovation on a micro scale. Firstly, digital finance can address the traditional information asymmetry between banks and enterprises, provide insight into enterprises, and eliminate the costs associated with audits of the financial services sector by utilizing big data, the Internet of Things, and cloud computing. Contrary to the superior financing environment for large businesses, SMEs are more dependent on the financial markets and more sensitive to financial constraints. In addition to improving the availability of funds for "long-tail enterprises," digital means of finance can effectively relieve the pressure of liquidity constraints on enterprises and promote enterprise innovation. By advancing digital finance, shareholders can lessen their financing constraints, address the risk of equity pledges, and enhance corporate governance, thus promoting corporate innovation investments. It is more pronounced among privatized firms and non-Big 4 audited firms [8]. It is true that the role of digital finance cannot be separated from the role of effective financial regulation, and in regions with strong financial regulations, its role in promoting corporate innovation is even more significant, not only in terms of "quantity," but also in terms of "quality" of innovation [9]. Secondly, digital finance has a positive impact on technological innovation. Digital finance can displace the problems of attribute mismatches and domain mismatches seen in traditional finance, allowing for both incremental and breakthrough innovation, and the effect of breakthrough innovation is greater than that of incremental innovation [10-11]. Thirdly, digital finance has a significant role to play in all dimensions of the high-quality industrial development, including green transformation, government welfare improvement, and efficiency enhancement [12-13]. The incentive effect of the development of digital finance on corporate green innovation is more pronounced in regions where

environmental regulations are stronger or economic development is lower in central and western China [14].

2.2. Effect of Digital Finance on Entrepreneurship

One can divide the effects of digital finance on entrepreneurship into two categories: those affecting residents' entrepreneurship and business entrepreneurship. Recently, research has focused on the impact of digital finance on urban entrepreneurship and farmers' entrepreneurship. On the one hand, farmers who lack credit information and collateral assets face higher financing costs when they begin their businesses. They would rely on cost-effective digital finance to overcome these obstacles [15]. On the other hand, the "pro-poor" nature of digital finance in supporting entrepreneurship is significant. Regarding the rural grassroots, the development of digital finance has helped to boost the entrepreneurial behavior of rural residents and equalize entrepreneurial opportunities, thus contributing to inclusive growth in China [16]. Entrepreneurship plays a mediating role between digital financial development and shared prosperity, which can also moderate the non-linear spillover effects of digital finance [17].

Digital finance is a tool for promoting entrepreneurship by providing financial support to entrepreneurs and easing the financial burdens they face in starting businesses. Meanwhile, new enterprises of all types create jobs and power economic development, thus achieving inclusive growth. There is a greater effect of digital finance in promoting entrepreneurial activity among micro and small businesses than it does on medium and large companies [18]. Digital finance and entrepreneurial activities also exhibit strong spatial autocorrelations and spillover effects; they form similar spatial agglomeration areas in terms of distribution, and agglomerations of entrepreneurial activities are generally also agglomerations of digital finance. In addition, the development of digital finance in the eastern region has a significant spillover effect on entrepreneurial activities in neighboring provinces, whereas the indirect effects on entrepreneurial activities in the central and western regions are more substantial [19].

3. Effects of Innovation and Entrepreneurship on the High-quality Development of the Real-Economy

3.1. Impact of Innovation on the High-quality Development of the Real-economy

Innovation can be categorized as regional innovation and technological innovation; each had a unique impact on the high-quality development of the real-economy. Several studies have demonstrated that regional innovation has a positive effect on the high-quality economic development, including spatial spillover and agglomeration effects. In terms of spatial spillovers, innovation activities contribute not only to the high-quality development of the real-economy in the region where they are located, but also to growth in surrounding areas. The agglomeration effect is reflected in the fact that the performance level of innovation-driven the high-quality development varies among regions, with the eastern region significantly outperforming the central and western regions, and the regions with higher overall efficiency assessment values are mostly economically developed regions with strong innovation capabilities [20].

The experience of economic development in developed countries shows that technological innovation has a significant driving capacity for the high-quality development and economic

development poles [21]. On the one hand, technological innovation can contribute to the upgrading of the industrial structure by participating in the shift from an economy dependent on traditional factors to one based on innovation. In turn, the upgrading of industrial structures will further promote technological innovation, thus promoting the high-quality development of the real-economy. It means that there is a synergistic effect between technological innovation and industrial structure upgrading, and this synergistic effect helps to contribute to the high-quality economic development [22]. On the other hand, the impact of industrial structure upgrading on the high-quality development is different from one region to another. In the eastern region, the upgrading of the industrial structure is the main force behind the quality development of its entity economy; in the central region, on the contrary, it hinders the quality development of its entity economy; in the western region, this does not significantly affect the quality development of its entity economy. While diversification of innovation during periods of high growth can contribute to economic growth, in periods of high-quality development, the role of innovation specialization in stimulating economic growth is even more pronounced [23]. Moreover, there is a threshold effect of technological innovation in high-tech industries on the high-quality development of the real-economy, in which the effect of technological innovation efficiency in high-tech industries on the quality of economic development is significantly positive until a threshold is reached, and its effect diminishes afterwards [24].

3.2. Impact of Entrepreneurship on the High-quality Development of the Real-economy

Mass entrepreneurship is empowered by digital finance, which enhances both the vitality and creativity of the real-economy, and leads to high-quality economic growth. Enterprise activities can change traditional economic growth models, enable industrial upgrading, and structural transformation. In addition, digital finance can also promote the equalization of entrepreneurship opportunities, lower the threshold for social entrepreneurship, and promote the inclusive growth of the real-economy. The strengthening of human capital and the stimulation of entrepreneurial dynamism enhance the industrial structure and create favorable conditions for the high-quality development of the real-economy [25]. Furthermore, knowledge-intensive entrepreneurship also adds new impetus to the high-quality development of the real-economy of the country [26]. Through the combination of digital finance and commodity markets, entrepreneurs can easily access quality innovation resources and thus achieve high levels of entrepreneurship. High-level entrepreneurial activity play a crucial role in improving the quality of economic growth by stimulating market vitality and improving the "quality" of the real-economy [27].

4. Conclusions and Recommendations

The research selected relevant papers from the CSSCI database between 2018 and the present, and after an analysis of the literature, the findings are as follows:

Firstly, innovation is a crucial element in transmitting digital finance to facilitate high-quality development of the real-economy. There are two types of innovation: regional innovation and technological innovation. Through spatial spillovers and agglomeration effects, regional innovation drives the high-quality economic progress in the region and surrounding areas; technological innovation drives the digital transformation of non-financial enterprises and makes them more innovative to achieve the high-quality economic growth.

Secondly, entrepreneurship is another effective path for digital finance to promote the high-quality growth in the real-economy. Entrepreneurship promotion can be categorized into two categories: residential entrepreneurship and corporate entrepreneurship. Digital finance is inherently inclusive, and by empowering the masses to start their own businesses, it promotes equality and a higher level of entrepreneurship in the real-economy, which creates new market opportunities and encourages inclusive growth.

Finally, the sharing, security, and low threshold features of digital finance enable digital financial institutions to provide universal and precise services that traditional financial institutions cannot provide within the real-economy. The Model is well suited to the requirements of the high-quality development. Taking advantage of the resource allocation role of digital finance, it transforms financial services into a popular service capable of serving the real-economy [28-29].

All forms of financial innovation, including digital finance, cannot escape the logical relationship among financial innovation, financial risk, and financial regulation. However, financial regulation often lags. There is the potential for economic volatility due to the varying levels of education of the population receiving financial support through digital finance and the false boom of some start-up businesses. The following recommendations are therefore proposed:

Firstly, it is essential to integrate financial services and digital technology. Building a digital financial infrastructure, identifying exogenous conditions that stimulate strategic digital change in enterprises, and providing references for accelerating the development of a novel pattern of digital transformation, which would facilitate the high-quality economic development [30].

Secondly, it is important for governments to formulate policies and institutions for green innovation, optimize the leading mechanisms for green innovation, and encourage the development of a high-quality green innovation industry. In order to play an effective role in transferring the "coordination and guidance" effect of digital finance, it is necessary to enhance the two-way link between the financial market and the environmental protection industry using digital technology platforms.

Finally, the reform of the digital financial system should be further enhanced to promote the sustainability of the financial industry. The cultivation of high-quality talent in the financial sector has the potential to increase its competitiveness. Improve laws and regulations to facilitate a standardized and orderly development of the digital finance industry.

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