

Digital Finance, Corporate Social Responsibility, and Corporate Innovation

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Abstract: *Innovation is the key to promoting high-quality development of the Chinese economy in the new era, and the core driving force for accelerating the construction of a new pattern of "double-cycle" development. As a new form of financial business, digital finance can not only broaden the breadth and depth of financial services, but also optimize the allocation of financial resources, improve the efficiency of financial services, and promote the improvement of the technological innovation level of enterprises. The fulfillment of social responsibility by enterprises can establish a good social reputation and obtain the information and material resources needed for technological innovation from various stakeholders, which also means the redistribution of limited resources. In this paper, the panel data of Shanghai-Shenzhen A-share listed companies from 2014 to 2021 is selected as the research sample, and the two-way fixed model is used to examine the relationship between digital finance, corporate social responsibility (CSR) and enterprise innovation. The results show that: (1) the development of digital finance promotes the innovation and development of enterprises; (2) the substitution effect of corporate social responsibility and digital finance, and corporate social responsibility weakens the positive effect of digital finance on enterprise innovation. Combined with the conclusion, this paper holds that the government and financial institutions should jointly promote the development of digital finance, enterprises should reasonably allocate the internal resources of social responsibility and enterprise innovation, and the regulatory authorities should build an efficient and perfect supervision system. This paper not only provides useful inspiration for improving the digital financial supervision system and enterprises to fulfill their social responsibilities, but also provides empirical basis for enterprises' innovation and development.*

Keywords: *digital finance; corporate innovation; corporate social responsibility*

1. Introduction

With the in-depth implementation of the innovation-driven development strategy, the innovation subject role of enterprises is becoming more and more important, and the pace of enterprise innovation is accelerating. At present, China is facing profound changes unseen in a century, and innovation plays a vital role in promoting the replacement of old drivers of growth, improving productivity and the growth of large-scale economies. Only by effectively improving the technological innovation level of enterprises can we contribute to high-quality development. In recent years, the financial market has developed rapidly by relying on emerging technologies such as blockchain, big data and the Internet of Things. As a new product of traditional finance through technology empowerment, the effective supply of digital finance will directly affect innovation activities. Digital financial through the use of the Internet and information technology, the two tools, and the traditional financial services of a new generation of financial services, through big data link enterprises and financial institutions, solve the transaction both information asymmetry problem, largely reconstruct the business model, expand the consumer demand, provides new opportunities for enterprise innovation. Therefore, under the background of the rapid development of digital economy, it is of great significance to integrate the technology spillover effect of digital financial output into the micro-economic subjects and explore the supporting role of the new financial environment on enterprise innovation.

At the same time, the internal development of the enterprise also affects the level of enterprise innovation. In order to stand out in the market, companies choose to fulfill their social responsibilities and benefit from them, including obtaining market access, reducing financial restrictions, and attracting and retaining quality labor, all of which are crucial to corporate innovation. As a comprehensive performance of enterprises actively seeking their own economic interests and assuming social

responsibility, what role does corporate social responsibility play in enterprise innovation? Will enterprises produce different degrees of innovation performance due to the differences in the level of social responsibility? If enterprise innovation can be promoted from the perspective of fulfilling social responsibility, enterprises can reasonably fulfill their social responsibility to improve the output of enterprise innovation. Taking a-share non-financial listed companies in Shanghai and Shenzhen as samples, this paper empirically analyzes the relationship between digital finance, corporate social responsibility and enterprise innovation, and provides A certain reference for enterprise innovation[1-3].

2. Theoretical analysis and research hypotheses

2.1 Digital finance and corporate innovation

A lot of studies show that digital finance has an important impact on innovation activities. Traditional financial services do not fully support enterprise innovation and entrepreneurship, which largely limits the development of social entrepreneurship activities. Digital technology progress in recent years, prompting digital financial this new financial model in China (xie, 2014), which greatly improves the availability and convenience of financial services, improve China's long-standing financial exclusion phenomenon, make originally excluded in the financial system outside the long tail customers can enjoy the convenience of financial services (zhang, etc., 2019).

On the one hand, enterprise r & d and innovation activities mainly invest in the human capital of enterprise technology developers, and human capital, as an intangible asset, is often difficult to objectively evaluate its internal value. There is a high failure rate in the process from investment to transfer; on the other hand, under the fierce market competition, enterprises often regard the information about innovation as trade secret, which further aggravates the information asymmetry between enterprises and external investors, and makes it harder for enterprises to raise funds from external financial institutions, thus causing the financing constraints. Academics is generally believed that financing constraints greatly reduces the enterprise innovation ability, more serious financing constraints will lead to enterprises more inclined to cut new product research and development investment, and a sound, multi-level financial system will help to ease the enterprise financing constraints, help enterprises out of financial difficulties, thus helping to improve the innovation of the enterprise will. As a new financial industry, digital finance can effectively fill the gap in the traditional financial system, improve the information asymmetry between the supply and demand sides in the traditional financial market, broaden the financing channels, and significantly improve the efficiency of credit approval.

Based on the above analysis, the first hypothesis is proposed:

H1: Under other conditions, the development of digital finance can promote enterprise innovation.

2.2 Digital finance, CSR and corporate innovation

2.2.1 CSR positively affects the relationship between digital finance and corporate innovation

Some scholars believe that the active performance of social responsibilities is conducive to promoting the level of technological innovation. Based on the perspective of internal innovation atmosphere and mechanism, enterprises create a corporate culture that actively performs social responsibilities, which is conducive to cultivating the atmosphere and mechanism of continuous innovation, so as to improve the innovation investment of enterprises and enhance the innovation ability (Monteagudo and Martinez, 2013). Enterprises' increasing environmental protection awareness and compliance with environmental protection standards are conducive to stimulating R & D departments to design products with higher value, and while reducing the cost of products, so as to improve the competitiveness of enterprises (Porter and Van der Linde, 1995). The performance of corporate social responsibility is conducive to knowledge exchange and sharing with external stakeholders, so as to establish a more perfect internal knowledge system and stimulate diversified innovative thinking (Luo and Du, 2015). Corporate social responsibility can provide an internal driving force for the development of innovation activities. When enterprises undertake social responsibility to maintain a good image, it is necessary to constantly innovate products and production processes to meet the market demand. From the perspective of external resource acquisition, CSR is conducive to

better maintaining the relationship between enterprises and stakeholders, thus forming an extensive and in-depth social relationship network (Luo and Du, 2015; Loncar et al., 2019), which enables enterprises to obtain the information, skills and resources needed for internal innovation activities (Luo and Du, 2015).

The social responsibility of enterprises is conducive to alleviating the financing constraints existing in enterprise innovation activities. The fundamental obstacles to corporate financing constraints lie in information asymmetry and transaction costs (Stephen et al., 2006). On the one hand, enterprises can often establish a good reputation and reputation, bring moral capital to enterprises and improve their credit level, obtain the recognition of digital financial enterprises in the capital market and attract capital investment to support their R & D activities; on the other hand, undertaking the social responsibility and disclosing relevant information can help the society understand the internal information, which is conducive to alleviate information asymmetry and reduce transaction costs[4-5].

Digital finance uses big data to evaluate enterprises, breaks through the shackles of traditional finance, reduces financial transaction costs, and provides a huge space for the development of enterprises. In the context of digital economy, digitization can deeply involve all links of corporate social responsibility, strengthen the willingness of enterprises to fulfill their social responsibility, and ultimately improve the performance of corporate social responsibility (Xiao Hongjun et al., 2021). Digital financial enterprises represented by Alibaba will use non-financial information, including sales information, besides the traditional loan review information, to assist in approving loans. According to the theory of signal transmission, enterprises can convey positive information to the society, which is conducive to obtaining the trust of financial investors, and then obtain financial support.

2.2.2 CSR Negatively affects the relationship between digital finance and corporate innovation

According to the above theoretical analysis, both digital finance and corporate social responsibility can alleviate the constraints of innovation resource allocation through their own transmission mechanism, and then promote enterprise innovation. In other words, the two functions can replace each other to some extent, that is, the innovative utility of digital finance may decline when enterprises fulfill a high level of social responsibility.

Corporate social responsibility includes improving employee welfare, donating to the society to improve information disclosure, etc. Corporate social responsibility will produce a lot of consumption of internal resources. However, the resources occupied by social responsibility are often difficult to directly act on the production and operation activities and generate profits, which can only be achieved through the perception and support of stakeholders. In fact, only when the behavior can create profits for the enterprise, when the support premium generated by stakeholders to social responsibility behavior is enough to offset the cost of social responsibility. However, some studies show that in reality, consumers' responses to corporate social responsibility and ethical marketing policies are not ideal, and corporate social responsibility activities have little impact on consumers' purchasing behavior (Deng Xinming et al., 2011). In other words, the positive brand and reputation effect formed by enterprises through fulfilling their social responsibility is difficult to produce satisfactory returns for goods and services. This makes the income obtained by social responsibility unable to make up for its cost, squeeze the development resources of the enterprise, and may have a certain negative impact on the normal operation of the enterprise.

The technical level of enterprise patent application has a high demand for enterprise resources. The innovation activities of enterprises have two characteristics: high risk and high investment, which determine that it is difficult for innovation activities to obtain external financing, and also ensure the sustainability of capital and human capital investment. Due to the great uncertainty of enterprise innovation, enterprises need to explore repeatedly in the early stage of research and development. If there is no continuous research and development investment as the foundation, innovation activities will be unsustainable, so internal resources are particularly important. The assumption of corporate social responsibility will occupy the internal resources dependent on innovation activities, reduce the effectiveness of innovation activities, and may have a negative impact on enterprise innovation activities. Therefore, the performance of corporate social responsibility may weaken the role of digital financial development in promoting corporate innovation[6-9].

Based on the above analysis, the following competitive assumptions are proposed:

H2a: While other conditions remain unchanged, corporate fulfillment of social responsibility enhances the positive impact of digital financial development on corporate innovation.

H2b: While other conditions remain unchanged, corporate fulfillment of social responsibility weakens the positive impact of digital financial development on corporate innovation.

3. Study design

3.1 Sample selection and data sources

In this paper, a-share listed companies in Shanghai and Shenzhen as the research object, select the sample range from 2014-2021, and further screen and process the selected samples: excluding all financial, ST, abnormal data and missing data of the main financial indicators; 1% and 99% of the continuous variables. The digital financial inclusion index of this paper comes from the Digital Financial inclusion Research Center of Peking University, the score data of corporate social responsibility comes from Hexun, and the number of enterprise patent applications and other financial data come from CSMAR Taian Financial Research database, with a total of 15,102 observation values.

3.2 Variable picking

3.2.1 The variable being explained

Enterprise Innovation (Patents). Most of the existing documents select indicators to measure the innovation level of an enterprise from the two aspects of R & D input and result output. In this paper, the total patent application of an enterprise (Patents) is selected as the agent variable of the enterprise innovation level. In order to eliminate the impact of data trend fluctuation, the index adds 1, and then takes the natural logarithm.

3.2.2 Explanatory variables

Digital finance (Fin). This paper selects the digital financial inclusion index as the proxy variable of the development level of digital finance. The index is jointly compiled by the Digital Inclusive Finance Center of Peking University and Ant Financial Services Group. It measures the development degree of digital finance at the provincial and prefectural levels in China, with the help of the massive micro data and transaction account big data of Ant Financial Services (Guo Feng et al., 2016). The index fully shows the development status of digital finance in China, and has been widely used in relevant research. In this paper, the digital financial index is used as the proxy variable of the core explanatory variable, and is expressed by Fin.

3.2.3 Regulated variable

Corporate Social Responsibility (CSR). Based on the accuracy and availability of the data, this paper adopts the corporate CSR score data of listed companies published in the "Social Responsibility Report of Listed Companies". From the perspective of the stakeholders, the social responsibility evaluation system of Hexun, based on the corporate social responsibility report, corporate annual report and various public materials, systematically evaluates the situation of corporate social responsibility from multiple dimensions, which can reflect the performance of corporate social responsibility in a comprehensive and objective way.

3.2.4 Control variables

Table 1: Variable definitions

The variable type	symbol	Variable definitions
The variable being explained	Patents	Ln (The number of enterprise patent applications+1)
Explanatory variable	Fin	Digital Financial inclusion General Index/100
Regulated variable	CSR	Hexun net Corporate social responsibility score of listed companies
Controlled variable	Size	The total assets of the enterprise are taken in the log number
	Lev	Total corporate liabilities / total assets
	Growth	Year-end growth rate of total assets
	First	The largest shareholder shareholding ratio
	Indep	Number of independent directors / Board of Directors
	Capital	Total assets at the end / total operating income at the end
	ROA	Net profit after tax / Total assets
	PPE	Total fixed assets / total assets at the end of the year
Second	The GDP of the secondary industry / the national total GDP	

In order to control the influence of other factors, this paper selected the following variables as control variables, and adopted the "year-industry" two-way fixed effect model to control the effect of

year and industry. Specific definitions of each variable are shown in Table 1.

In order to verify the positive promotion effect of digital financial development on enterprise innovation, the year (Year) and industry (Ind) are fixed, and the specific model is constructed as follows:

$$Patents_{i,t} = \alpha_0 + \alpha_1 Fin_{i,t} + \sum \alpha_j Controls_{i,t} + \Sigma Year + \Sigma Ind + \varepsilon_1 \quad (1)$$

In order to test the impact of CSR on corporate innovation, a regression model (2) was constructed to test H2:

$$Patents_{i,t} = \beta_0 + \beta_1 Fin_{i,t} + \beta_2 CSR_{i,t} + \beta_3 interact_{i,t} + \Sigma \beta_j Controls_{i,t} + \Sigma Year + \Sigma Ind + \varepsilon_2 \quad (2)$$

4. Empirical analysis

4.1 Descriptive statistics

In order to better understand the general distribution characteristics of the data, in this paper, stata15.0 software is used to make descriptive statistics for all variables. The table shows the sample number, mean value, standard deviation, minimum value and maximum value of each variable, Details are shown in Table 2:

Table 2: Descriptive statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Patent	15,102	11.78	41.03	0	250
Patents	15,102	0.603	1.445	0	5.525
Fin	15,102	2.485	0.457	1.056	3.216
CSR	15,102	21.47	12.33	-3.610	73.49
Size	15,102	22.33	1.336	19.56	26.18
Lev	15,102	0.430	0.205	0.0541	0.938
Growth	15,102	0.189	0.359	-0.347	2.097
Top1	15,102	0.339	0.146	0.0848	0.748
Indep	15,102	0.378	0.0541	0.333	0.571
Captial	15,102	2.611	2.399	0.394	15.98
ROA	15,102	0.0413	0.0749	-0.275	0.303
PPE	15,102	0.195	0.151	0.00166	0.693
Second	15,102	0.394	0.0894	0.158	0.541

According to Table 2, there are 15,102 valid samples. The maximum value of the number of enterprise patent applications (Patent) is 250, and the minimum and median are 0, indicating that the number of patent applications of different enterprises is obviously right-biased, so the number of enterprise patent applications (Patent) is log-transformed ($Patents = \ln(Patent + 1)$). The mean and standard deviation of enterprise innovation (Patents) are greater than the median, indicating that the overall innovation of the enterprise is not strong and there are large differences in the innovation output of different enterprises. The explanatory variable is the digital inclusive inclusion index (Fin), the maximum and minimum value of corporate social responsibility (CSR) are 73.49 and 3.61 respectively, and the mean and median are 21.47 and 12.33 respectively, indicating that the performance level of social responsibility among enterprises is uneven, and the overall score is left distribution, indicating that the level of corporate social responsibility has great room for improvement[10].

4.2 Correlation analysis

Table 3 reports the results of the correlation analysis for the main variables. As can be seen from the table, the correlation coefficient of digital financial index and enterprise parents is 0.006, which is significantly positive at the 1% level. The preliminary verification shows that H1 is established, indicating that without considering other conditions, the better the development of digital finance, the more enterprise innovation can be promoted. In addition, it can be seen from the table that enterprise size enterprise growth is significantly positively correlated with enterprise innovation, and asset-liability ratio and capital intensity are significantly negatively correlated with enterprise innovation, which is roughly consistent with the expected results. The table variables are less than 0.6, and the largest correlation coefficient is 0.531, indicating that there is no multicollinearity among the

various variables.

Table 3: Correlation analysis

	Patents	Fin	CSR	Size	Lev	Growth	Top1	Indep	Captial	ROA	PPE	Second
Patents	1											
Fin	0.008***	1										
CSR	0.031***	-0.082***	1									
Size	0.061***	0.069***	0.217***	1								
Lev	-0.012	-0.018**	-0.123***	0.480***	1							
Growth	0.043***	-0.050***	0.164***	-0.058***	-0.130***	1						
Top1	0.006	-0.029***	0.178***	0.211***	0.034***	-0.016**	1					
Indep	-0.017**	0.050***	-0.021**	0.008	0.008	0	0.057***	1				
Captial	-0.075***	-0.005	-0.126***	0.007	0.003	0.033***	-0.088***	0.021**	1			
ROA	0.050***	-0.013	0.531***	-0.009	-0.376***	0.357***	0.161***	-0.017**	-0.242***	1		
PPE	0.034***	-0.174***	-0.083***	0.102***	0.064***	-0.180***	0.083***	-0.022***	-0.116***	-0.061***	1	
Second	-0.002	-0.376***	0.012	-0.121***	-0.004	0.024***	-0.032***	-0.049***	-0.092***	0.047***	0.147***	1

4.3 Analysis of regression results

4.3.1 Digital finance and corporate innovation

Table 4 reports the results of the return of digital finance and enterprise innovation. The regression results of column (1) show the regression results of the current digital inclusive financial inclusion index (Fin) and enterprise innovation (Patents). Considering that the digital financial influence on enterprise innovation activities need a certain amount of time, the digital financial index lags behind the core explanatory variable, which can moderately reduce the reverse causality. The regression results are shown in column (2) in Table 4.

Table 4: Regression results for model (1)

Variables	(1) Patents	(2) Patents
Fin	0.2084*** (3.5416)	
L.Fin		0.2359*** (3.5201)
Size	0.1311*** (11.9558)	0.1271*** (10.4804)
Lev	-0.1292* (-1.8606)	-0.0505 (-0.6581)
Growth	0.0912** (2.5392)	0.0060 (0.1465)
Top1	-0.1022 (-1.2146)	-0.1254 (-1.3339)
Indep	-0.4837** (-2.2093)	-0.3750 (-1.5552)
Captial	-0.0182*** (-4.7027)	-0.0236*** (-5.9718)
ROA	0.3172* (1.7915)	0.5002*** (2.6566)
PPE	0.0371 (0.4115)	0.0903 (0.9005)
Second	-0.3523** (-2.4295)	-0.3819** (-2.3684)
_cons	-2.5831*** (-9.1025)	-2.3254*** (-7.3349)
N	15102	12445
r2	0.0622	0.0634
ind	YES	YES
year	YES	YES

Note: ***, ** and * indicate that the statistical significance levels are 1%, 5% and 10%, respectively.

In column (1), the regression coefficient of digital finance (Fin) and enterprise innovation (Patents) is 0.2084, which is significantly positive in the confidence level of 1%, indicating that the overall

development level of digital finance can significantly improve the level of enterprise innovation and promote the transformation of research results; after the lag, the regression coefficient of digital finance (l. Fin) and the enterprise innovation is 0.2359, the result is still significant at the confidence level of 1%, H1 is verified. Column (1) In the main regression results, the regression coefficient of enterprise scale (Size) and enterprise growth (Growth) is 0.1311 and 0.0912 respectively, reaching the significance level of 1% and 5% respectively, indicating that large-scale enterprises and enterprises with good development state have strong innovation ability. The relationship between the above control variables and enterprise innovation behavior basically meets the theoretical expectation, which is consistent with most existing research results.

4.3.2 Digital finance, CSR, and corporate innovation

Table 5 reports the test results of digital finance, CSR and corporate innovation. Article (1) is listed as the result of corporate social responsibility in regulating the relationship between digital finance and corporate innovation.

Table 5: Regression results for model (2)

variables	(1) Patents
Fin	0.1881*** (3.1712)
CSR	0.0016 (1.1913)
interact	-0.0057*** (-2.6403)
Size	0.1296*** (11.3636)
Lev	-0.1207* (-1.7280)
Growth	0.0939*** (2.6125)
Top1	-0.0957 (-1.1335)
Indep	-0.4773** (-2.1796)
Captial	-0.0176*** (-4.5101)
ROA	0.3774* (1.7772)
PPE	0.0468 (0.5175)
Second	-0.3597** (-2.4815)
_cons	-2.5522*** (-8.8789)
N	15102
r2	0.0627
ind	YES
year	YES

Note: ***, ** and * indicate that the statistical significance levels are 1%, 5% and 10%, respectively.

The regression results of column (1) show that the regression coefficient of the multiplication item (interact) and enterprise innovation is -0.0057, which is significantly negative at the 1% level, indicating that the performance of corporate social responsibility weakens the role of digital finance in promoting enterprise innovation. The possible reason for this result is that the fulfillment of enterprise social responsibilities occupies a lot of enterprise resources and increases the cost, leading to the weaker the positive promotion effect of digital finance on enterprise innovation. The results verify the establishment of H2b.

4.4 Robustness test

The above paper verifies the incentive effect of digital finance on enterprise innovation. In order to ensure the reliability of the conclusion, this paper selects the method of replacing variables to test the robustness, and remeasures the enterprise innovation variables from the perspective of innovation investment. Drawing on the existing literature, the R&D investment intensity (RDrate) is used to replace the amount of enterprise patent application (Patents) as the agent variable of enterprise innovation. The robustness results are shown in Table Table 6. The test results show that after replacing the variables of enterprise innovation, the positive promotion effect of digital finance on enterprise innovation still exists, and corporate social responsibility weakens the positive impact of digital finance on enterprise innovation, which is basically consistent with the previous results.

Table 6: Regression results for model (1) and (2)

variables	(1) RDrate	(2) RDrate
Fin	2.1744*** (13.7248)	2.0899*** (13.2836)
CSR		0.0019 (0.6689)
interact		-0.0281*** (-4.1589)
Size	-0.1133*** (-4.0259)	-0.1074*** (-3.6395)
Lev	-4.2767*** (-18.5544)	-4.2662*** (-18.4330)
Growth	0.0569 (0.4740)	0.0623 (0.5198)
Top1	-1.4116*** (-7.3350)	-1.3613*** (-7.0514)
Indep	1.1229* (1.9317)	1.1394** (1.9632)
Capital	0.2706*** (10.5967)	0.2718*** (10.6337)
ROA	-2.5626*** (-3.5989)	-1.7844** (-2.2401)
PPE	-2.1704*** (-9.3041)	-2.1559*** (-9.2261)
Second	-2.1441*** (-4.4723)	-2.1659*** (-4.5141)
_cons	2.8580*** (3.5609)	2.7942*** (3.4032)
N	15102	15102
r2	0.3943	0.3951
ind	YES	YES
year	YES	YES

Note: ***, ** and * indicate that the statistical significance levels are 1%, 5% and 10%, respectively.

5. Research conclusions and implications

5.1 Research conclusions

This paper uses the data of listed companies in Shanghai and Shenzhen from 2014 to 2021 and the local level data of Peking University to build a two-way fixed effect model to empirically study the impact of the development of digital inclusive finance on the innovation output of listed enterprises. And further add corporate social responsibility to explore its regulatory effect on the development of digital finance on enterprise innovation. The main conclusions of this paper are as follows:

First, the higher the development level of digital finance, the more it can promote the innovation level of listed enterprises. Digital finance combines traditional financial activities with new digital technologies such as big data, effectively improves the information collection ability and the capital allocation efficiency of financial institutions, effectively reduces the information asymmetry in enterprise innovation activities, and thus is conducive to the development of enterprise innovation

activities.

Second, with other conditions unchanged, corporate social responsibility has a negative adjustment effect between digital finance and enterprise innovation. Although enterprises to fulfill their social responsibility to a certain extent has reduce the financing cost, improve corporate reputation to promote performance growth positive economic consequences, but the fulfillment of social responsibility, such as charitable donations, improve employee welfare, etc., will consume a lot of internal resources, produce a lot of consumption, increase the cost of enterprise, from enterprise innovation resources.

5.2 Contribution and enlightenment

In summary, this paper puts forward the following policy suggestions: First, actively build the digital finance industry ecosystem, and promote the all-round development of digital finance among regions. On the one hand, it is necessary to accelerate the construction of national strategic planning and regional interaction to provide technical support and guarantee for further promoting the development of digital finance; on the other hand, the government and relevant departments should strengthen publicity and guidance, encourage enterprises to widely use digital financial services, fully develop the universal advantages of digital finance, contribute to support the transformation of various achievements of enterprises and promote high-quality economic growth. Second, enterprises should reasonably fulfill their corporate social responsibility according to their own conditions. According to the above test results, the over-performance of corporate social responsibility will consume a large amount of internal resources of enterprises, reduce the effectiveness of innovation activities, and thus weaken the incentive effect of digital finance on enterprise innovation. Therefore, enterprises should reasonably fulfill their social responsibilities according to their own realities, prevent excessive fulfillment of social responsibilities from occupying enterprise resources, increasing operational risks, affecting the development of independent innovation and development of enterprises, and weakening the contribution of digital finance to enterprise innovation. Third, improve the digital financial supervision and legal and regulatory system to promote the safe development of digital finance. At present, digital finance is developing rapidly in China, but while improving the efficiency of resource allocation, it will inevitably bring new digital financial risks, such as information leakage risks and network risks. In this regard, we should actively explore the construction of a coordination and cooperation mechanism between government departments and regulatory agencies to promote development through supervision, and ensure that digital finance provides services for enterprise innovation activities within the scope of law, and develops healthily under the regulatory framework.

References

- [1] Xie Ping, Zou Chuanwei, Liu Hai'er. *The basic theory of Internet finance* [J]. *Financial Research*, 2015 (08): 1-12.
- [2] Zhang Xun, Wan Guanghua, Zhang Jiajia, He Zhongyue. *Digital economy, Inclusive finance, and Inclusive Growth* [J]. *Economic Research*, 2019 (08): 71-86.
- [3] Li Chuntao, Yan Xuwen, Song Min, Yang Wei. *Fintech and Enterprise Innovation — Evidence of the New Third Board Listed Companies* [J]. *Industrial Economy of China*, 2020 (01): 81-98.
- [4] Tang Song, Wu Xuchuan, Zhu Jia. *Digital finance and enterprise technology innovation— structural characteristics, mechanism identification and the effect difference under financial supervision* [J]. *Manage World*, 2020 (05): 52-66 + 9.
- [5] Monteagudo, I. C.; and Martinet, I. B. *Corporate Social Responsibility: A Crossroad between Changing Values, Innovation and Internationalisation* [J]. *European Journal of International Management*, 2013, 7(03): 295-314.
- [6] Porter M E, Kramer M R. *The link between competitive advantage and corporate social responsibility* .J. *Harv Busi Rev*, 2006, 84, 78-92.
- [7] Luo X. M., Du S. L. *Exploring the Relationship between Corporate Social Responsibility and Firm innovation* [J]. *Marketing Letters*, 2015, 26 (04): 703-714.
- [8] Stephen J. Brammer; Stephen Pavelin. *Corporate Reputation and Social Performance: The Importance of Fit* [J]. *Journal of Management Studies*, 2006, 43(3).
- [9] Xiao Hongjun, Yang Zhen, Liu Meiyu. *The social responsibility promotion effect of enterprise digitization: the test of internal and external dual paths* [J]. *Economic Management*, 2021 (11): 52-69.
- [10] Deng Xinming, Tian Zhilong, Liu Guohua, Chen Lu. *Consumer response of business ethical behavior in the Chinese scenario* [J]. *Soft Science of China*, 2011 (02): 132-153.