Social Responsibility Commitment, Technological Innovation Investment and Corporate Financial Performance——A case study of listed companies in Jiangsu province

Xiaoke Zhao[1, 2, a], and Huirong Li[2, *]

[1]Business School of Changzhou University, Changzhou 213164, China

[2]Changzhou University Huaide College, Jingjiang 214500, China

*Corresponding author: 970832534@qq.com [a]463535628@qq.com

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Abstract: As the main body of market development, enterprises should improve the efficiency of resource utilization through research and development, create profit growth point and accelerate the capital accumulation of enterprises. On the other hand, we should take the initiative to assume social responsibilities and develop development-oriented strategies to achieve long-term and stable development. This paper selects listed companies in Jiangsu province from 2014 to 2016 as samples to explore the relationship between technological innovation input, social responsibility performance ability and financial performance. The research results are as follows: first, investment in technological innovation is positively correlated with enterprise financial performance. Secondly, the assumption of social responsibility has a positive effect on corporate financial performance. Third, the assumption of social responsibility positively regulates the promotion effect of R&D investment on corporate financial performance. After that, the corresponding countermeasures and Suggestions are put forward: enterprises should improve their independent innovation ability, pay attention to the efficiency of research and development input, pay attention to the strategic implementation and standardization of social responsibility, strategically combine social responsibility and technological innovation, exert the synergistic influence, and promote the harmonious development of economy and society.

1. Introduction

The 19th national congress clearly proposed to "accelerate the transformation and upgrading of traditional enterprises, build their enterprise-based, market-oriented technology innovation system, and enhance the support for social enterprises". At present, Chinese enterprises take the initiative to connect with international advanced technologies by technological innovation, which highlights the strong innovation vitality. The continuous development of high and new technology has brought great changes to people's life. However, many companies pay too much attention to short-term benefits and over-exploit and exploit, resulting in soil erosion, resource shortage, or extending time, increasing the intensity of exploitation of employees' surplus labor value and other social responsibility problems. Therefore, while improving the ability of technological innovation, we should also pay attention to environmental protection, resource conservation, labor rights protection and other issues, and not neglect corporate social responsibility. To improve technological innovation, it is necessary to increase R&D investment, and enterprises undertaking social responsibility will increase R&D investment correspondingly, thus affecting enterprise performance. This article selects 318 listed companies in Jiangsu province as the research object, supplemented by relevant theory and some research results at home and abroad as the foundation, and the influence on technology innovation investment on financial performance, social responsibility on financial performance and the influence of both associated with financial performance made an overall description, and then analysis to the listed company in Jiangsu province in the innovation input, the lack of social responsibility which can lead to performance problems. Finally, some Suggestions and

countermeasures are put forward for establishing and improving the technological innovation mechanism, social responsibility bearing policy and improving corporate performance of listed companies.

2. Literature References

2.1. The relationship between investment in technological innovation and enterprise financial performance.

Martinez et al. (2017) [1] show that although enterprises use innovation achievements to support economic and social achievements, they only effectively use economic achievements to achieve higher financial performance. Geldes (2016) [2] believes that innovation is the key input of global enterprise performance. A study by Zhai Baoyun et al. (2010) [3] found that there was no significant positive correlation between investment intensity in R&D and financial performance. Some companies spend a lot of money on R&D but have relatively low financial performance. On the contrary, the enterprises with high comprehensive performance are those with relatively low R&D input intensity. Liu Hong (1997) [4] believes that there is a nonlinear relationship between R&D input and output. Yan Wei et al. (2009) [5] put forward that R&D investment of different scales has different effects on enterprise financial performance. If the constraint variable of enterprise scale is not taken into account, then there is no significant linear correlation between enterprise R&D investment and performance. Wang Wei et al. (2009) [6] found that R&D manpower investment can significantly promote the growth of enterprise EPS, but R&D expenditure is not significantly correlated with enterprise ROE and EPS and other financial performance indicators.

2.2. The relationship between corporate social responsibility and financial performance.

Yang Yisu et al. (2016) [7] showed that, regardless of enterprise size, corporate social responsibility would not lead to short-term financial deterioration, but in terms of long-term financial performance, the positive correlation between corporate social responsibility and financial performance was more significant in large enterprises. Xiong B et al. (2016) [8] believes that although the relationship between enterprises and society between stakeholders is bad and good, corporate social performance and financial performance can also achieve mutual benefit and a virtuous cycle, which is conducive to improving the practice of corporate social responsibility. Fu Qiang et al. (2013) [9], after analyzing the relationship between the practice of social responsibility of listed enterprises and corporate income and market competitiveness, came to the conclusion that the practice of social responsibility of companies will promote the improvement of core competitiveness.

2.3. Collaborative impact of technological innovation input and social responsibility commitment on corporate financial performance.

Martinez Conesa (2017) [10] believes that technological innovation brings increased capital, while the impact of corporate social responsibility on financial performance will be weakened. According to Zhu Naiping et al. (2014) [11], appropriate growth and innovation budget can improve the impact of corporate social responsibility on financial performance, and also significantly enhance the positive impact of technological innovation input on long-term financial performance. While strengthening social responsibility management, enterprises should also improve their innovation ability and give play to the synergy effect of integrated strategy on financial performance. Wang Jiping (2016) [12] found that investment in technological innovation can positively regulate the relationship between corporate social responsibility and financial performance. Enterprises should integrate corporate social responsibility awareness and technological innovation activities, promote each other, and jointly create corporate value.

In summary, most domestic and foreign literatures focus more on the single role of technological innovation investment and social responsibility to the financial performance of enterprises, while the classification of industry or performance is not detailed in the research of synergy. Enterprises should focus on considering the overall benefits, formulating integrated strategic decisions,

integrating technological innovation investment and corporate social responsibility, mutual benefit, and improving corporate financial performance, so that enterprises can meet social requirements and implement sustainable development.

3. Research hypothesis and model construction

3.1. Research hypothesis

Whether it is strategic social responsibility or altruistic social responsibility investment, it will increase the company's stakeholders' income targets, attract market capitalization, enhance suppliers' willingness to cooperate, expand the competitiveness of enterprises in the same type of enterprises, and reduce production costs. Increase profits and ultimately increase corporate value. Therefore, hypothesis H1 is proposed: corporate social responsibility commitment has a positive effect on corporate financial performance.

Increasing investment in technological innovation can improve the development and production efficiency of the enterprise, and then directly improve the financial performance of the enterprise. Without sufficient R&D investment, there is no way to gain the advantages of technological innovation and thus fail to master core competitiveness.

Better products and technologies can only gain market recognition by relying on technological innovations that increase investment and increase investment. The core technological capabilities of sustainable development enterprises are particularly important. Therefore, hypothesis H2 is proposed: there is a positive correlation between the technological innovation investment of the enterprise and the financial performance of the enterprise.

As far as internal stakeholders are concerned, the company's shareholders and employees are not only able to master and use the company's resources, but also the organizers and implementers of technological innovations. They also have an unshirkable obligation to practice social responsibility.

In addition, for external stakeholders, the continuous innovation of products and services is to meet the needs of more consumers, to enable new products and technologies to gain wider market recognition, and to better meet the needs of social and resource environments, and promote enterprises. The realization of external social responsibility. Therefore, hypothesis H3 is proposed: corporate social responsibility and technological innovation input based on internal stakeholders and external stakeholders have a significant synergistic effect on corporate financial performance.

3.2. Sample selection and data source

This paper selects 318 listed companies such as main board, small and medium-sized board and listed board in Jiangsu Province from 2014 to 2016 as the research object, eliminates the incomplete company data of extreme data and information disclosure, and finally screens out the data of 271 listed companies as research sample. The data comes from the annual report of listed companies and the Wind database published by the China Securities Regulatory Commission, including indicators of corporate performance, R&Dinvestment, and social responsibility of listed companies.

3.3. Model construction and variable selection

(1) Model building

This paper sets the basic econometric model as follows:

$$ROA_{it} = \beta_i + \beta_{1it} RD + \beta_{2it} CSR + \beta_{3it} Control_i + \varepsilon_{it} \quad (1)$$

$$ROA_{it} = \alpha_i + \alpha_{1it} CSR * RD + \alpha_{2it} Control_i + \mu_{it} \quad (2)$$

(2) Variable selection

The definition of the study variables is shown in Table 1.

Table.1. variable definition

Variable	Index	Symbol	Proxy variables and units	Definition
Explained variable	Business Performance	ROA	Total net asset interest rate (%)	Total net asset interest rate = Net profit / average total assets×100%
Explanatory variables	RD	RD	R&D expenditure (10 million yuan)	Total R&D expenditure
	Social responsibility	CSR	Social contribution rate (%)	Total social contribution / average total assets×100%
Control variables	scale	SIZE	Asset (yuan)	Natural logarithm of total assets
	Assets and liabilities	TDR	Debt ratio (%)	Asset-liability ratio = total liabilities / total assets

4. Empirical Test

4.1. Descriptive statistics

In order to have a preliminary understanding of the selected variables, a descriptive analysis of the minimum, maximum, mean, median, mean and variance of each variable is shown in Table 2.

Table.2. Descriptive analysis

	Business Performance /%	R & D investment / 10 million yuan	Social responsibility /%	Business size / yuan	Assets and liabilities /%
Mean	7.24	6.66	17.44	21.35	37.67
Median	6.46	2.99	14.57	21.28	35.68
Max	58.86	86.93	119.17	26.84	96.37
Min	-10.63	0.02	-3.24	18.44	3.51
SD	6.16	11.19	12.80	1.18	18.86

According to the data analysis in the above table, the net asset ratio of listed companies can be maintained at 7.24%, while the median level remains at 6.46%, which reflects that the listed companies in the sample have partial profitability and good investment environment, among which listed companies The worst net profit margin is -10.63%, and the best is 58.86%. It can be seen that the ability of different listed companies to make a profit is still very different. The average R&D expenditure of listed companies is about 666 million yuan, and the median is 299 million yuan. The big difference between the two shows that there are big differences in the investment of R&D by various listed companies. More listed companies are new to technology. The research and development pays more attention to it, and it invests huge amounts of money every year. The largest investment company has reached 869 million yuan, while a small number of enterprises have low investment in research and development, and the minimum investment is only 200,000 yuan. The standard deviation of R&D investment is about 100 million yuan. This also shows that the R&D expenditure of listed companies fluctuates greatly from another angle, and the R&D expenses of different enterprises are quite different. The social contribution of listed companies averaged 17.44%, of which the largest contribution company reached 119.17%, the smallest investment was -3.24%, and the standard deviation was 12.8%. This indicates that listed companies have large fluctuations in social contribution.

4.2. Regression analysis

Panel data can usually establish mixed effect model, fixed effect model and random effect model. Since the time span of empirical data is only three years, and the unit of section is 271 listed companies, which belongs to short panel data, consider establishing an individual fixed effect

model. The rationality of the model selection is tested by the fixed effect redundancy test and the random effect-fixed effect Hausmann test.

The basic form of the individual fixed effect model is $y_{it} = \alpha_i + \beta' X_{it} + u_{it}$, where α_i is a random variable, indicating that there are i different intercept terms for i individuals, and the change is related to X_{it}; y_{it} is the regression variable (scalar), u_{it} is the error term (scalar), and X_{it} is $k \times 1$ regression variable column vector (including k regression quantities), β is the $k \times 1$ regression coefficient column vector. For the same individual regression coefficient, the model is called the individual fixed effect regression model.

First, the paper establishes an individual fixed effect model and performs a redundancy test on the fixed effect model. The test results are shown in the following table. It is tested that the P value is 0, less than 0.01, so the hypothesis that the mixed effect model is better than the fixed effect model at the 1% significance level should be chosen to establish an individual fixed effect model.

Table.3. Fixed effect redundancy test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.354162	(270,538)	0.0000
Cross-section Chi-square	941.866176	270	0.0000

Further, this paper establishes an individual random effects model and performs a fixed-random effect Haussmann test. The test results are shown in the following table. The test P value is 0.0001, less than 0.01, so the hypothesis that the random effect model is better than the fixed effect model can be rejected at the 1% significance level, indicating that a fixed effect model should be chosen between the random effect model and the fixed effect model.

Table.4. Random effects Hausmann test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	24.707438	4	0.0001

Based on the comprehensive analysis of the fixed-effect F test and the random effect Hausmann test results, the paper finally establishes an individual fixed effect model for the sample data. The model regression results are shown in Tables 5 and 6.

Table.5. Model 1 regression analysis results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	47.32861	10.29538	4.597070	0.0000
RD	0.126141	0.046944	2.687060	0.0074
CSR	0.133031	0.025723	5.171614	0.0000
SIZE	-2.084996	0.490423	-4.251422	0.0000
TDR	0.033788	0.018810	1.796292	0.0730

Table.6. Model 2 regression analysis results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	40.37161	10.12919	3.985669	0.0001
RD*CSR	0.007611	0.001837	4.142840	0.0000
SIZE	-1.623020	0.475388	-3.414093	0.0007
TDR	0.020140	0.018864	1.067641	0.2862

According to the significance t test of the coefficient of the regression equation, the regression coefficients of the explanatory variables RD, CSR and the interaction terms RD*CSR to the interpreted variable ROA are significant at the significance level of 0.05. Therefore, RD, CSR, and RD*CSR have significant effects on ROA. It should be noted that the regression equation of the

individual fixed-effects model only reports the common intercept, and does not give the specific intercept term for the individual of the cross-section. This paper also focuses on the slope coefficient of each variable in the regression model. For model one, according to the regression equation, it can be seen that in the case of controlling other variables to remain unchanged, for every 10 million yuan of R&D investment of listed companies, the corporate performance, that is, the net profit margin of total assets will increase by an average of 0.126%;For every 1% increase in social contribution rate, corporate performance will increase by an average of 0.133%.This shows that the R&D investment and social contribution of listed companies have a significant positive effect on the improvement of corporate performance. The above assumptions 1 and 2 are confirmed. The positive effect of the synergy between the two on the performance of the enterprise is reflected in the second model, that is, the coefficient of the interaction between the two is 0.0076, which confirms the R&D investment and social contribution rate of the listed company to the performance of the enterprise. The improvement has a significant synergistic effect, and this hypothesis 3 is proved.

While considering the multi-factors such as enterprise scale and management level, the input of corporate social responsibility will enhance the promotion of enterprise technology innovation investment to the market value of enterprises, and the investment of technological innovation will also enhance the promotion of corporate social responsibility to the market value of enterprises. Role, which shows that the impact of technological innovation investment and corporate social responsibility on corporate financial performance will play a synergistic effect of “1+1>2”. The existence of synergy will encourage enterprises to pay attention to the investment in technological innovation capability while taking social responsibility. Therefore, for enterprises, technological innovation investment and social responsibility commitment should be taken as complementary overall strategic decisions. In addition, all the participating factors must be integrated and optimized to achieve the best results.

5. Conclusion

5.1. Analysis conclusion

First, corporate social responsibility is significantly positively correlated with corporate financial performance. The company's practice of social responsibility can expand the financial performance of the company and provide theoretical support for relevant types of research in the future. Second, R&D expenditures are positively related to corporate financial performance. This shows that it is reasonable for many listed companies to increase their R&D investment as a long-term development strategy. The investment in technological innovation will significantly promote the financial performance of the company. Third, social responsibility commitments will positively regulate the improvement of financial performance by R&D expenditures.

5.2. Suggestions

First, improve the efficiency of social responsibility practices. It is necessary to improve the legal system that matches it, continuously improve the awareness of listed companies in implementing social responsibility, and improve the social responsibility management system. The fulfillment of social responsibilities of enterprises in line with national policy requirements, the formation of intangible assets, in the long run is conducive to the improvement of corporate financial performance. Second, improve the ability of scientific and technological innovation. It is necessary to implement and improve the innovation incentive policy, increase investment in research and development, improve the independent innovation capability of enterprises, and carry out high-efficiency and high-quality innovation. Third, coordinate the relationship between technological innovation and social responsibility. Enterprises should take into account the promotion of technological innovation and social responsibility, promote the development of scientific and technological innovation, actively fulfill social responsibilities, reduce the depletion of energy and resources, and achieve sustainable development of enterprises.

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