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An Empirical Study on the Impact of Social Responsibility on Financial Performance of Pharmaceutical Manufacturing Enterprises

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Abstract: To strengthen the supervision of medical safety, we must be strict, with the most rigorous standards, the most stringent supervision, the most severe punishment, the most serious accountability, and strengthen unity and authority. This paper selects the data of pharmaceutical manufacturing listed companies from 2018 to 2022 as a sample, puts forward the hypothesis of the impact of enterprises ' active social responsibility on their financial performance, and establishes a structural equation model to verify the hypothesis. The results show that the impact of corporate social responsibility on financial performance is different, and the main impact on financial performance is to fulfill social responsibility to partners, shareholders and society.

Keywords: Pharmaceutical Manufacturing Enterprises; Community Responsibility; Financial Performance; Structural Equation Model.

1. Introduction

Under the background that the concept of global sustainable development has gradually become the mainstream trend in the world, the United Nations, governments and stock exchanges have gradually tightened the regulatory environment. Since 2016, more than 2000 relevant regulatory policies have been issued around the world, and it has become a consensus to fulfill social responsibilities and promote sustainable development. At the same time, the party and the state attach great importance to social responsibility. On May 22,2020, in an important speech delivered during the deliberation of the Inner Mongolia delegation at the Third Session of the Thirteenth National People 's Congress, he proposed " people first, life first " and urged all sectors of society to effectively protect people 's lives and health. In addition, the report of the 20 th National Congress of the Communist Party of China pointed out that ' we should continue to promote the construction of healthy China and put the protection of people 's lives and health in a strategic position of priority development'. Social responsibility is a bridge between enterprises and society, and a necessary condition for the sustainable development of enterprises. Only by actively fulfilling social responsibilities can enterprises gain social recognition and trust, and contribute to the sustainable development of society.

As a supplier of drugs, the mission of pharmaceutical manufacturing enterprises is to protect people 's health and play a key role in social progress that is very different from other industries. Therefore, pharmaceutical companies need to actively assume social responsibility. However, in recent years, some pharmaceutical manufacturing enterprises have weak awareness of social responsibility, resulting in frequent occurrence of drug safety problems, which has a huge impact on the physical and mental health of the people. For example, in 2013, a pharmaceutical company in Rajasthan, India was exposed to produce unqualified anticancer drugs. In 2017, a pharmaceutical company in the United States had serious cleaning and hygiene problems in the production process; in 2018, the production of freeze-dried rabies vaccine for human use in Changchun Changsheng Biotechnology Co., Ltd. had the behavior of record fraud. In 2019, India 's drug inspection department found that there were hidden dangers in the production quality of many pharmaceutical factories, including data fraud, unclean production environment and other issues. Therefore, pharmaceutical manufacturing enterprises must bear social responsibility and be responsible for stakeholders. Based on the previous research results, this paper analyzes the impact of social responsibility on business performance of listed companies in the pharmaceutical manufacturing industry through empirical research, and promotes listed pharmaceutical manufacturing companies to actively fulfill their social responsibilities.

2. Literature Review

The relationship between corporate social responsibility and corporate financial performance is a hot issue in the field of foreign enterprise management research for more than 20 years. The research results of foreign scholars divide the relationship between the two into three categories: positive correlation, insignificant relationship and negative correlation. According to Griffin & Mahon (1997), there is a positive correlation between corporate social responsibility and business performance, because the implementation of corporate social responsibility can improve the reputation of the enterprise, expand the visibility of the enterprise, attract more customers, and thus improve the business performance of the enterprise[1] ; based on the data from 1991 to 1996, Siegel and Mc Williams (2000) conducted an empirical study on the Dominican Social Responsibility Investment Index and the six-year weighted average of corporate performance. The conclusion is that there is no significant relationship between the two[2] ; Mishra et al. (2013) established a relationship model between corporate social responsibility and risk by studying the data of several companies from 2000 to 2009 and using the principle of financial leverage. They believe that when a company has a social responsibility problem, actively assuming social responsibility and corresponding consequences can reduce the company's non-systemic risk ; Marcia Millon Cornett et al. (2016) used the KLD index to

evaluate and found that the implementation of social responsibility by the banking industry may have a negative impact on its financial performance level[3] ; Rezaul Kabir (2017) evaluated social responsibility from many aspects. Through the comparison of financial performance, it is concluded that corporate social responsibility and financial performance are positively correlated.

In recent years, the research results of domestic scholars on the relationship between corporate social responsibility and corporate performance can be roughly divided into three categories: positive correlation, no significant correlation and negative correlation. Xing Yujie (2014) takes 102 pharmaceutical manufacturing enterprises in 2012 as an example, takes the return on total assets as the performance measurement index, and establishes the social responsibility evaluation system. The research results show that there is a positive correlation between corporate social responsibility and corporate performance[4] ; Dou Xinfeng (2015) used the fixed effect analysis method to study the five-year data of 955 companies in Shenzhen and Shanghai stock markets with the total assets before interest and tax and the pre-tax profit margin as the performance. The study found that corporate social responsibility has no positive impact on financial performance[5] ; Wei Liling (2016) analyzed that the food and beverage industry 's active social responsibility can have a positive impact on financial performance[6] ; Xu Qianqian (2018) concluded that the better the performance of enterprises in the food industry, the more inclined enterprises are to assume social responsibility[7] ; Chen Cheng et al. (2019) found that the level of corporate social responsibility information disclosure has a significant negative impact on corporate financial performance[8].

On the whole, when analyzing the relationship between corporate financial performance and social responsibility, the regression analysis method is mainly selected. The conclusions are limited to positive correlation, negative correlation or uncertain relationship, and there are few studies on mutual influence and influence degree. This paper selects the pharmaceutical manufacturing industry which is closely related to social responsibility, and fills the shortcomings of linear regression research through path analysis.

3. Authentic Proof Analysis

3.1. Sample Selection and Data Sources

This paper takes the financial statements of listed companies in the A-share pharmaceutical manufacturing industry from 2018 to 2022 as the research sample, and uses the China Securities Regulatory Commission 's " Industry Classification Guidelines for Listed Companies " (revised in 2012) to define pharmaceutical manufacturing enterprises. By manually collecting data related to social responsibility in the financial statements and calculating the relevant indicators, some of which are derived from the Cathay Pacific database. In this paper, ST and * ST companies are eliminated from the sample; the data from 2018 to 2022 are selected. This period is an important period for pharmaceutical manufacturing enterprises to fulfill their social responsibilities and review the concerns of stakeholders. Pharmaceutical manufacturing enterprises have stronger motivation and willingness to fulfill their social responsibilities.

Finally, the samples were sorted out according to the screening criteria, and 187 listed companies met the requirements. At the same time, due to the selection of a large number of observation variables, there are differences in the dimensions of different indicators, so in order to unify the data, the data were standardized by z-score.

3.2. Variable Selection

There are three variable relationships in the structural equation model, which are observable variables, potential variables and error variables. The observable variables in this paper are directly obtained from the financial statements of the enterprise, and the potential variables such as social responsibility are constructed as potential variables by other observable variables.

First of all, the financial performance of the enterprise is composed of operating capacity, profitability and other comprehensive components. The measurement indicators are shown in Table 1.

Table 1. Enterprise financial performance variables corresponding relationship table

Variable	property	Variable name	Variable explanation
Financial performance	profitability	EVA(y1)	Net operating profit after tax-Investment capital × Variable weighted average capital cost
		ROE(y2)	Net profit / Total assets
		TAGR (y3)	Total assets change / Total assets
	debt paying ability	CR(y4)	Current assets / Current liabilities
		ER(y5)	Total liabilities / Shareholders ' equity

Table 2. The corresponding relationship table of corporate social responsibility variables and measurement indicators in pharmaceutical manufacturing industry

Variable	property	Variable name	Variable explanation
Social responsibility of business	Government	Income tax rate(x1)	Income tax expense / Total profit
		Tax contribution rate(x2)	(Taxes paid - Tax refunds received)/ Average total assets
	Employee	Salary benefit rate(x3)	Employees ' salaries payable / Main business receipts
	Client	Operating cost rate(x4)	Main business cost / Main business income
	Partner	Accounts payable turnover rate(x5)	Main business cost / Accounts payable average
		Revenue growth rate(x6)	Operating income growth / Total operating income
	Stock holder	EPS(x7)	Net profit / Paid-in capital
		Dividend payment rate(x8)	Dividend per share / Net earnings per share
	Society	Donation expenditure rate(x9)	Non-operating expenses / Operating income

At the same time, based on the ' Guidelines for the Implementation of Social Responsibility of Chinese Pharmaceutical Enterprises' and the stakeholder theory, pharmaceutical manufacturing should not only create profits and be responsible for shareholders, but also assume social responsibility for the government, employees, customers, partners and society. The measurement indicators are detailed in Table 2.

According to the selection of indicators, the conceptual model is transformed into a structural equation model, and the variable relationship path diagram is shown in Figure 1.

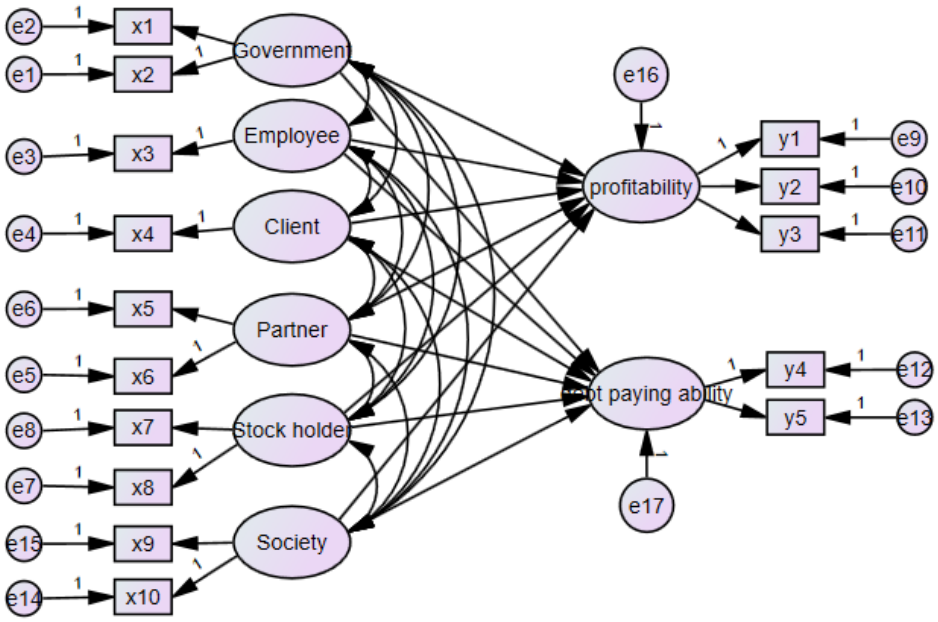


Figure 1. Variable relationship path diagram

3.3. Research Hypothesis

Quantifying the fulfillment of corporate social responsibility is a complex task. Starting from the research results of the predecessors, this paper combines the China Corporate Social Responsibility Reporting Guidelines (CASS-ESG5.0) with the stakeholder perspective and divides social responsibility into six stakeholder responsibilities. In the long run, corporate fulfillment of social responsibility is bound to have a positive impact on financial performance. However, from the short-term perspective, there may be different impacts of corporate fulfillment of social responsibility on financial performance, mainly due to the fact that corporate fulfillment of social responsibility will pay some costs, and it will take a long time for enterprises to recover the costs, and there is a lag effect, so it may lead to a negative impact of corporate fulfillment of social responsibility on financial performance. So from the short-term proofreading point of view, the fulfillment of social responsibility to the government will increase the expenditure of tax and other payments, which will have a negative impact on the growth of assets in the short term; the fulfillment of social responsibility to the employees will increase the salary and related security expenditures, which will negatively affect the company's profitability in the short term; the fulfillment of social responsibility to the customers will increase the expenditures of product research and development, technological upgrading, and after-sales service, which will affect the financial performance in the short term growth; fulfillment of social responsibility to partners, the establishment of a responsible supply chain, and partners to promote each other and seek long-term development; fulfillment of social responsibility to shareholders is the basis for enterprises to realize their social responsibility, which is conducive to attracting more investment; fulfillment of social responsibility to the community, and actively participate in public welfare, which helps to enhance the value of the corporate brand. In summary, the following hypotheses are derived:

H1: Social responsibility to government has a negative impact on financial performance in pharmaceutical manufacturing companies

H2: Social responsibility to employees of pharmaceutical manufacturers has a negative impact on financial performance.

H3: Social responsibility to customers of pharmaceutical manufacturers has a negative impact on financial performance

H4: Social responsibility to partners of pharmaceutical manufacturers has a positive impact on financial performance

H5: Financial performance is positively affected by a pharmaceutical manufacturer's social responsibility to its shareholders.

H6: Social responsibility to society has a positive impact on financial performance of pharmaceutical manufacturers

3.4. Structural Equation Construction

In this paper, the structural equation model is constructed with the help of AMOS 26.0, and the most suitable model is optimized and formed through several fitting tests. The commonly used fitting indexes in structural equation modeling are divided into two categories: absolute fit index and relative fit index. Among them, the absolute fit index refers to the degree of fit between the model and the sample data, mainly including $\boldsymbol{\chi^2/df}$, GFI, AGFI, RMSEA, RMR, etc.; the relative fit index refers to the degree of fit between the model to be tested and the benchmark model, mainly including NFI, IFI, CFI, etc.

The fitting indexes and fitting effects of the structural equation model in this paper are shown in Table 3. Where χ^2/df, i.e., the ratio of the chi-square to the degrees of freedom, depends on the size of the chi-square and is generally considered to be in an ideal state when it is less than 5. In this paper, the χ^2/df is 8.1, which is greater than the ideal standard, but considering the large number of samples, which has a certain impact on the model, the fitting index of 8.1 is acceptable; RMSEA is the approximate error mean square error, reflecting the difference between the model and the perfect model, and the value of the RMSEA in this paper is 0.097, which is close to 0.08 and is acceptable. The other fitting results of the model are within the standard range, the fitting effect is ideal, reflecting that the path setting of the model is consistent with the reality.

Table 3. Main fitting metrics for structural equation modeling

	Inspection Indicators	Model fit index	Fitting effect
Absolute fit index	χ^2/df	8.1	<10, acceptable
	GFI	0.924	>0.9, good
	AGFI	0.86	>0.8, good
	RMR	0.075	<0.08, good
	RMSEA	0.097	<0.1, acceptable
Relative fit index	NFI	0.826	>0.8, good
	IFI	0.845	>0.8, good
	CFI	0.843	>0.8, good

Table 4 shows the path coefficients and P-values of enterprises' fulfillment of social responsibility, reflecting the importance of their fulfillment of social responsibility, such as in the case of being responsible to the government, the income tax rate is more weighted than the tax contribution rate. From the table, it can be seen that the main factors affecting the fulfillment of corporate social responsibility are the government, partners and shareholders, and enterprises pay more attention to the stakeholders that directly affect the survival and development, focusing on being responsible to the government in order to obtain better policy support; focusing on being responsible to the partners to increase the competitiveness of the market through strong alliances; focusing on being responsible to the shareholders to attract more external funds, in order to pursue higher economic interests. This is in line with the situation showing that most enterprises seek to maximize profits and are only willing to do what is in their own interest, choosing to avoid social responsibilities that do not bring benefits, resulting in frequent medical accidents and a more adverse impact on society.

Table 4. Path coefficient and p-value of corporate social responsibility

	Variable name	Path coefficient	P Value
Government	x1	0.777	***
	x2	0.115	0.089
Employee	x3	-0.227	0.01
Client	x4	-0.841	***
Partner	x5	0.225	***
	x6	0.366	***
Stock holder	x7	0.644	***
	x8	0.366	***
Society	x9	-0.083	0.007

Note: t/z statistics are in parentheses, *, ** and *** correspond to 1%, 5% and 10% significance levels, respectively.

Table 5 shows the extent to which the CSR factor influences the financial performance factor, indicating the contribution of corporate fulfillment of social responsibility to each stakeholder to financial performance. From the conclusion, it can be seen that the fulfillment of corporate social responsibility to partners, shareholders and customers has a greater impact on the variation of financial performance. Combined with the reality, the highest path coefficient of the enterprise's fulfillment of social responsibility to partners affects financial performance, which shows the importance of the joint progress of partners to the enterprise's financial performance; the enterprise's fulfillment of social responsibility to shareholders affects financial performance, which shows the importance of shareholders in attracting external investment in the development of the enterprise; the enterprise's fulfillment of social responsibility to the community affects financial performance, which shows the importance of the pharmaceutical manufacturing enterprises to be socially responsible in the period of epidemic, and enterprises are more likely to be The importance of social responsibility of pharmaceutical manufacturing enterprises in the epidemic period, the enterprise is more likely to be accepted by the public.

Meanwhile, Table 5 shows that the standardized coefficient of β= -0.310 ($P<0.05$) of the fulfillments of social responsibility to the government on financial performance - solvency, indicating that it is significantly negatively correlated with financial performance, and that hypothesis 1 is valid.

The standardized coefficient of β= -0.273 ($p<0.05$) of fulfilling social responsibility to employees on financial performance - profitability indicates a significant negative

relationship on financial performance and hypothesis 2 is valid.

The standardized coefficient of β= -0.547 (P<0.001) for fulfilling social responsibility to customers on financial performance-profitability and β= -0.486 (P<0.001) for financial performance-solvency indicates a significant negative relationship on financial performance, and Hypothesis 3 is established.

The standardized coefficient of β= 1.198 (P < 0.001) of fulfilling social responsibility to partners on financial performance-profitability indicates a significant positive relationship on financial performance and hypothesis 4 is established.

The standardized coefficient of β= 0.280 (P < 0.001) of fulfilling social responsibility to shareholders on financial performance-solvency indicates a significant positive relationship on financial performance and hypothesis 5 is established.

The standardized coefficient of β= 0.299 (P < 0.05) for fulfilling social responsibility to society on financial performance-profitability and β= -0.107 (P < 0.05) for financial performance-profitability indicates a significant positive correlation on financial performance, and hypothesis 6 is established.

Table 5. The extent to which the CSR factor influences the financial performance factor

		Corporate social responsibility					
		Government	Employee	Client	Partner	Stock holder	Society
Financial performance	profitability		-0.273	-0.547	1.198		0.299
	debt paying ability	-0.310		-0.486		0.280	-0.107

4. Conclusion and Recommendations

4.1. Conclusion

1. Fulfillment of social responsibility to the government is negatively correlated with the financial performance of enterprises, and for every one unit increase in fulfillment of social responsibility to the government, the financial performance indicator decreases by 0.31 units. The standardized regression coefficients between the income tax rate, tax contribution rate and the fulfillment of social responsibility to the government are 0.115 and 0.777, respectively. when the enterprise's tax contribution rate increases, the enterprise's economic benefit decreases accordingly. Therefore, when the enterprise fulfills its social responsibility to the government, in a short period of time, the financial performance of the enterprise will be negatively affected.

2. Fulfillment of social responsibility to employees is negatively correlated with the financial performance of the enterprise, and for every 1 unit increase in fulfillment of social responsibility to employees, the financial performance indicator decreases by 0.273 units. When the enterprise increases the salary and welfare of the employees, it will increase the operating costs of the enterprise, affecting the enterprise's income and negatively affecting the financial performance.

3. Fulfillment of social responsibility to customers is negatively correlated with the financial performance of the enterprise. For every 1 unit increase in fulfillment of social responsibility to customers, the financial performance-profitability indicator decreases by 0.547 units, and the financial performance-solvency indicator decreases by 0.486 units. When a company is responsible to its customers, the company's fixed expenses and costs rise, which negatively affects financial performance.

4. Fulfillment of social responsibility to partners is positively related to the financial performance of the enterprise, and for every 1 unit increase in fulfillment of social responsibility to partners, the financial performance indicator increases by 1.198 units. The standardized regression coefficients of accounts payable turnover, operating income growth rate and fulfillment of social responsibility to partners are 0.225 and 0.366 respectively, which can strengthen the trust between the enterprise and its partners by being responsible for its partners, promote the joint development of the enterprise and its partners, enhance the competitiveness of the enterprise and improve the efficiency, and thus increase the financial performance of the enterprise.

5. Fulfillment of social responsibility to shareholders is positively correlated with the financial performance of the enterprise, and for every 1 unit increase in fulfillment of social responsibility to shareholders, the financial performance indicator increases by 0.28 units. The standardized regression coefficients of dividend payout ratio, earnings per share and fulfillment of social responsibility to the government are 0.369 and 0.644, respectively. by being responsible to the shareholders, the enterprise can attract more investors, enhance the sustainable development ability of the enterprise, and thus increase the enterprise's financial performance.

6. Fulfillment of social responsibility to the society is positively related to the financial performance of the enterprise. For every 1 unit increase in fulfillment of social responsibility to the society, the financial performance-profitability index increases by 0.299 units. Enterprises taking responsibility for society as their own responsibility can enhance their social image and popularity, which is conducive to safeguarding the long-term interests of enterprise development and has a positive impact on financial performance.

4.2. Recommendations

1. Optimize the relationship between enterprises and the Government and enhance the Government's positive guidance to enterprises. There is a sound legal basis for enterprises to be accountable to the Government. The government should play an exemplary leading role and encourage enterprises to actively fulfill their social responsibility through recognition and policy support. At the same time, it should establish a strong regulatory system to raise enterprises' awareness of their social responsibility and improve their vision to rationally look at short-term and long-term interests.

2. Strengthen education on social responsibility and raise enterprises' awareness of protecting employees' rights and interests. Although enterprises are responsible for their employees in the short term, which has a negative impact on the financial performance of the enterprise, when the enterprise undertakes the moral and legal obligations to the

employees, it can increase the employees' sense of mission and happiness, which is conducive to the long-term interests of the enterprise and social benefits.

3. Strengthen the production norms of pharmaceutical manufacturing enterprises. Pharmaceutical manufacturing is a special industry, which is related to people's health, and in order to gain long-term benefits, it must be responsible to customers and produce high-quality products. Strengthening the production norms of pharmaceutical manufacturing enterprises can help ensure the production of safe products to meet customer needs, enhance the social image of the enterprise, promote the long-term development of pharmaceutical manufacturing enterprises, and better fulfill their social responsibility.

4. Strengthen the strategic cooperation among enterprises. Enterprises are responsible for their partners, which is conducive to generating agglomeration effects, realizing the goals of collaborative innovation, market development, resource sharing, etc., improving the level of innovation and service capacity of enterprises, promoting the growth of corporate financial performance, and better fulfilling social responsibility.

5. Standardize information disclosure regulations. Standardize corporate information disclosure regulations and urge enterprises to disclose true, accurate and complete information on operation and management, financial status, etc., so that shareholders can have a more comprehensive understanding of the enterprise. While the enterprise is responsible to shareholders, it attracts foreign investors, promotes the sustainable development of the enterprise, and better fulfills its social responsibility.

6. Active participation in social welfare. Enterprises actively participating in social welfare undertakings can demonstrate their social responsibility and civic awareness, enhance corporate visibility, broaden social resources, enhance the competitiveness of enterprises, and have a positive impact on the company's financial performance and long-term development.

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