



# The path selection of financial performance improvement of pharmaceutical companies under the perspective of social responsibility

## —Research on linkage effect based on fsQCA method

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**Abstract.** This paper uses 47 Chinese listed pharmaceutical manufacturing companies in 2019–2021 as a research sample to explore the path selection of the multidimensional linkage effect of social responsibility on pharmaceutical companies to improve their financial performance based on stakeholder theory and using the fsQCA method. It is found that: the combination of different dimensions of social responsibility can improve the financial performance of enterprises, and none of the individual dimensions of social responsibility is necessary for high financial performance; there are three different groupings that can help improve the financial performance of pharmaceutical enterprises, namely, shareholder-government-driven, shareholder-creditor-driven, and shareholder-employee-driven. employee-driven, where social responsibility to shareholders is key and there is a significant substitution effect between the social responsibility of employees and creditor and government portfolios. The findings reveal the linkage effect between the social responsibility of pharmaceutical companies and different stakeholders and can give relevant suggestions to pharmaceutical companies, i.e., to reasonably allocate social responsibility among different stakeholders according to their own situations to achieve the improvement of financial performance of pharmaceutical companies.

**Keywords:** pharmaceutical companies; social responsibility; financial performance; QCA approach

## 1 Introduction

In recent years, negative incidents involving pharmaceutical enterprises, such as the "tainted capsule incident" and the "Changsheng fake vaccine incident," have occurred frequently in China, and the fulfillment of social responsibility of pharmaceutical enterprises is questioned by the public. For pharmaceutical enterprises, due to the special nature of their industry, the quality and safety of their products are directly related to the life and health of the nation, and the fulfillment of their social

responsibility is particularly important. Academic studies on CSR are abundant, and research perspectives include institutional theory, triple bottom line theory, and organizational theory, but the stakeholder perspective is the most influential. Standing from the stakeholder perspective, organizational goals cannot be achieved without stakeholders, and companies should take social responsibility to shareholders, employees, the government, and other stakeholders. However, current research mostly focuses on a specific stakeholder and explores whether social responsibility to a single stakeholder (e.g., customers, investors, etc.) has an impact on financial performance, without considering the interaction effect between different stakeholders, and there is difficulty in guiding pharmaceutical companies to reasonably allocate social responsibility inputs from different stakeholders to achieve high financial performance. Therefore, in order to overcome the limitations of the above study, this paper uses the fuzzy set qualitative comparative analysis (fsQCA) method based on stakeholder theory to explore the impact of the linkage effect between multiple dimensions of social responsibility on the financial performance improvement of pharmaceutical enterprises from the perspective of the group state. The study aims to guide pharmaceutical enterprises to actively fulfill their social responsibility, optimize the resource allocation of pharmaceutical enterprises, regain public trust in the pharmaceutical industry, and promote the sustainable development of pharmaceutical enterprises.

## 2 literature review

Dodd's (1932) stakeholder theory argues that although ownership of a company belongs to shareholders, the company should also consider the interests of employees, customers, suppliers, creditors, and other parties that have an interest in the company (Li, 2014).<sup>[1]</sup> Stakeholder theory is considered to be the most commonly used theoretical framework for assessing CSR (Perrini, 2006)<sup>[2]</sup>, and it provides a strategic perspective for assessing CSR-related research (Moura-Leite and Padgett, 2011).<sup>[3]</sup> Based on stakeholder theory, most researchers believe that the objects served by pharmaceutical companies to fulfill their social responsibility should be their stakeholders, and social responsibility can be divided into five dimensions or seven dimensions according to different stakeholders. For example, Mehralian (2016)<sup>[4]</sup> used structural equation modeling through 933 questionnaires from Iranian pharmaceutical companies to consider the impact of social responsibility on organizational performance in five dimensions: governance, employees, social, environmental, and economic responsibility. Lau (2018)<sup>[5]</sup> classified social responsibility in Chinese manufacturing into seven dimensions: ethical behavior, social community, supplier management, customer rights, employee rights, investor rights, and environmental management.

The current academic studies on the relationship between social responsibility and the financial performance of pharmaceutical companies show that most researchers use empirical analysis to verify their correlation. Yang (2019)<sup>[6]</sup> et al. used sample

data from 125 pharmaceutical companies in China, and the test results showed that the CSR environmental dimension has a significant effect on corporate performance.

Therefore, based on this paper and stakeholder theory, the social responsibility of enterprises to their stakeholders is taken as the antecedent variable, and shareholders, creditors, employees, suppliers, and government are selected as stakeholders of pharmaceutical enterprises, respectively, to explore the interaction between each antecedent variable and the joint effect on financial performance, in an attempt to help pharmaceutical enterprises find efficient paths to fulfill their social responsibility, so as to: This is an attempt to help pharmaceutical companies find efficient ways to fulfill their social responsibility, so as to effectively improve their financial performance and better motivate them to actively fulfill their social responsibility.

### **3 Research Design**

#### **3.1 Research Methodology**

Qualitative comparative analysis (QCA) can be used to explain the joint effect of the interaction process between multiple factors on the outcome, which is precisely applicable to this study. Specifically, QCA was chosen to explore the impact of the joint effect of multiple dimensions of social responsibility on the financial performance improvement of pharmaceutical companies.

#### **3.2 Case-sample selection**

This paper selects the data of pharmaceutical manufacturing listed companies in China's Shanghai and Shenzhen A-shares for the past three years (2019–2021) as the research sample and averages the selected data, i.e., uses the average of the selected data for three consecutive years, which can effectively reduce the incomprehensibility of single data. In order to ensure the continuity of the sample data, this paper conducts the following screening: (1) excluding the listed companies with abnormal operations such as ST and ST\*; (2) obtaining the missing sample data; and finally, obtaining the case data for 47 companies. The data selected in this paper are mainly from the Guotaian database, the Juchao Information Network, and the social responsibility reports of listed companies. This paper uses fsQCA3.0 software for analysis.

#### **3.3 Variable measurement and calibration**

##### **Outcome variables.**

This paper draws on existing research (Zheng Pei, 2020) [7] and uses return on assets (ROA) as an alternative indicator of financial performance.

**Conditional variables.***Social responsibility to shareholders.*

This paper draws on the approach of scholars such as Zhang Jinsong (2021) <sup>[8]</sup> to use earnings per share as a measure of social responsibility to shareholders.

*Social responsibility to creditors.*

According to the index system constructed by Qi Yue (2017) <sup>[9]</sup>, this paper selects the current ratio as its measurement index.

*Bearing social responsibility to employees.*

This paper, like Jiang Hongyun (2013) <sup>[10]</sup> and other scholars, uses the wage-to-income ratio as its measurement index.

*Assuming social responsibility toward suppliers.*

In this paper, we adopt the accounts payable turnover ratio as its measurement index, drawing on Zhang Jinsong (2021) <sup>[8]</sup> and others.

*Social responsibility to the government.*

This paper selects the tax-to-income ratio as its measurement indicator.

**Variable calibration.**

In fsQCA, each conditional and outcome variable is considered an ensemble in which all cases in the ensemble can find their corresponding affiliation scores. Calibration is to assign affiliation scores to these cases in the set. In this paper, the 0.05, 0.5, and 0.95 quantile points are chosen as fully unaffiliated, crossover, and fully affiliated points for each variable indicator.

## 4 Research design

### 4.1 Necessity Analysis of Individual Conditions

In this paper, we analyse the necessity of individual conditions, i.e. it tests whether an individual condition constitutes a necessary condition for the outcome (high financial performance). According to mainstream QCA research, a condition is necessary for an outcome if the level of consistency of the individual condition is greater than 0.9. Based on the results of the QCA software calculations, it can be seen that the consistency levels of the individual antecedent variables affecting high financial performance are all below 0.9, so each variable is not a necessary condition for high financial performance to occur.

## 4.2 Sufficiency Analysis of Conditional Grouping

Adequacy analysis points to a number of pathways consisting of multiple antecedent variables that lead to the occurrence of the outcome. In this paper, we follow the general practice of setting the threshold of consistency to 0.8, and the research sample in this paper has 47 samples, which belong to the category of small and medium samples, so the frequency threshold is set to 1. The results of the adequacy analysis are shown in Table 1.

**Table 1.** Adequacy analysis of social responsibility practice

| Conditional variables. | Configuration |       |       |       |
|------------------------|---------------|-------|-------|-------|
|                        | L1            | L2a   | L2b   | L3    |
| Shareholder            | ●             | ●     | ●     | ●     |
| Creditors              |               | ●     | ●     | ⊗     |
| Employees              |               |       | ⊗     | ●     |
| Suppliers              | ⊗             |       | ●     |       |
| Government             | ●             | ●     |       | ⊗     |
| Consistency            | 0.968         | 0.988 | 0.981 | 0.961 |
| Raw coverage           | 0.490         | 0.529 | 0.375 | 0.409 |
| Unique coverage        | 0.029         | 0.036 | 0.019 | 0.074 |
| Consistenc             | 0.958         |       |       |       |
| coverage               | 0.732         |       |       |       |

The consistency of each solution and the overall solution of the four paths presented in the table are higher than the set threshold of 0.8, which indicates that fsQCA effectively identifies the four paths in which the multidimensional linkage of social responsibility of Chinese pharmaceutical companies leads to high financial performance, which are interpreted in this paper into three groupings according to the core conditions demonstrated by the four paths: shareholder-government driven, shareholder-creditor-driven, and shareholder-employee-driven. In each grouping, the existence of shareholder and government responsibility and the absence of supplier responsibility play a central role. In response to the results presented by the groupings, the above groupings are analyzed as follows in relation to actual cases.

### **Shareholder-government driven.**

#### *L1: Shareholder\*~Supplier\*Government.*

This path demonstrates how pharmaceutical companies can improve their financial performance by focusing more on shareholder and government social responsibility while investing less in supplier responsibility. The representative company under this configuration is China Resources Shuanghe. China Resources Shuanghe fully considers the rights and interests of shareholders, has been rewarding shareholders and investors with cash dividends since its listing, and has been paying taxes in a timely manner in strict accordance with relevant regulations during the development process, thus better fulfilling the social responsibility it should bear to the government.

### **Shareholder-creditor-driven.**

In L2, the two paths L2a and L2b form a second-order equivalence grouping, both of which have the core condition of valuing the input of shareholders and creditors' social responsibility responsibilities as a way to achieve high corporate financial performance.

#### *L2a: Shareholders\*Creditors\*Government.*

This path shows that pharmaceutical companies can achieve high financial performance when they pay attention to the social responsibility of shareholders and creditors and also pay attention to the social responsibility of the government. As a typical enterprise of this structure, Pientzhuang always pays attention to protecting the legitimate rights and interests of creditors when making various business decisions. The company taking measures to alleviate poverty for poor groups, and the total tax payment will reach 900 million yuan in 2020.

#### *L2b: Shareholders\*Creditors\*~Employees\*Suppliers.*

This path shows that pharmaceutical companies can achieve high financial performance when they pay attention to the social responsibility of shareholders, creditors, and suppliers, while at the same time reducing their investment in the social responsibility of employees. As a typical enterprise of this configuration, Hualan Bio, while its business performance continues to grow, pays attention to reasonable returns to investors. In addition, the company establishes supplier files, and proactively fulfills contracts on time to ensure the interests of suppliers.

### **Shareholder-employee-driven.**

#### *L3: Shareholders\*, Creditors\*, Employees\*, Government.*

This path shows that pharmaceutical companies can generate high financial performance by placing high emphasis on social responsibility to shareholders and employees when creditors and government social responsibility are absent. A typical company in this configuration is China Resources Sanjiu. The company has been

adhering to the philosophy of "creating value for shareholders, providing opportunities for employees, and taking responsibility for society", focusing on protecting the interests of shareholders and fully protecting the legitimate rights and interests of employees while pursuing economic benefits. As employees of the company, they enjoy not only statutory benefits but also birthday benefits, shuttle bus transportation, and other supplementary benefits. The company continues to improve the health management of its employees and protects their physical and mental health through programs such as "Love Clinic" and "Stress Relief Training".

## 5 Research Conclusion

This paper stands on the perspective of social responsibility, based on stakeholder theory, identifies the dimensions that constitute the social responsibility of pharmaceutical enterprises in China, uses the fsQCA method to explore the complex causal mechanism of pharmaceutical enterprises to obtain high financial performance by taking social responsibility, and how to make reasonable decisions for the social responsibility practice of pharmaceutical enterprises to improve financial performance under the condition of limited corporate resources, this study provides a referenceable path. This study provides a reference path.

The results of the necessity analysis show that individual condition variables do not constitute the necessary conditions for the outcome variables, i.e., the "net effect" of a single dimension of social responsibility cannot significantly affect the high financial performance of enterprises. Therefore, the improvement of the financial performance of pharmaceutical companies depends on the synergistic effect of multiple dimensions of social responsibility, and the practice of a single dimension of social responsibility is not sufficient to effectively improve the financial performance of companies.

The results of the adequacy analysis of the conditional groups show that the multivariate combination of social responsibility dimensions can significantly improve the financial performance of the company, and the different groups verify the characteristic of "different paths" of QCA. Four paths do not have full coverage of all dimensions of social responsibility, revealing that it is difficult for pharmaceutical enterprises to satisfy the responsibility input from all stakeholders to generate high financial performance, and the realization of high financial performance does not emphasize the joint effect of all dimensions. The investment in one economic resource will inevitably lead to a reduction in the investment in another economic resource. Pharmaceutical companies should adopt a holistic perspective, fully consider their own economic strength and the environment they are in, and develop practical social responsibility practice plans to maximize their own interests.

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