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The Relationship Between Corporate Social Responsibility and Enterprise Performance: The Dual Mediating Effect Test Based on Corporate Reputation and Brand Value

ความสัมพันธ์ระหว่างความรับผิดชอบต่อสังคมขององค์กรกับประสิทธิภาพองค์กร: ผลการทดสอบอิทธิพลการส่งผ่านแบบสองทางของชีวิสัยขององค์กรและคุณค่าของตราสินค้า

Xiaojian Lu ¹

Han Zhang ²

Abstract

The paper primarily employs quantitative research methods, including sample selection and data sources, variable measurements, and statistical analysis using a computer software package. A-share listed companies on the Shanghai and Shenzhen stock exchanges from 2011 to 2020 are selected as study samples from China's 500 Most Valuable Brands List released by World Brand Lab in this paper. It empirically studies the relationships among corporate social responsibility (CSR), corporate reputation, brand value, and enterprise performance, focusing on the mediating effect of corporate reputation and brand value. The results show that CSR has a significant positive impact on enterprise performance and corporate reputation, and corporate reputation partially mediates the relationship between CSR and enterprise performance. CSR has a significant positive impact on brand value, and brand value partially mediates the relationship between CSR and enterprise performance. This paper discusses corporate reputation and brand value from the perspective of the mechanism of corporate social

¹ Lecturer, College of Innovative Business and Accountancy, Dhurakij Pundit University, 110/1-4 Prachachuen Road, Laksi, Bangkok 10210, Thailand, Corresponding Author, email: 1828578985@qq.com

² Lecturer, College of Innovative Business and Accountancy, Dhurakij Pundit University, 110/1-4 Prachachuen Road, Laksi, Bangkok 10210, Thailand

responsibility on enterprise performance and suggests that enterprises should establish a sense of social responsibility, actively undertake social responsibility, strengthen reputation management, and ultimately improve enterprise performance.

Keywords: *Brand Value, Corporate Reputation, Corporate Social Responsibility, Enterprise Performance*

บทคัดย่อ

บทความนี้เข้ามีการวิจัยเชิงปริมาณเป็นหลัก ซึ่งรวมถึงใช้การเลือกตัวอย่างและแหล่งข้อมูล การวัดตัวแปร และการวิเคราะห์ทางสถิติโดยใช้ซอฟต์แวร์คอมพิวเตอร์ บทความนี้คัดเลือกบริษัทจดทะเบียน A-share ที่จดทะเบียนในตลาดหลักทรัพย์เซี่ยงไฮ้และเซินเจิ้น ตั้งแต่ปี 2554 ถึงปี 2563 จากรายชื่อ 500 แบรนด์ที่มีมูลค่ามากที่สุดของจีนที่เผยแพร่โดย World Brand Lab เป็นตัวอย่างการวิจัย บทความนี้ศึกษา ความสัมพันธ์เชิงประจักษ์ระหว่างความรับผิดชอบต่อสังคมขององค์กร (CSR) ซึ่งมีเสียงขององค์กร คุณค่า ของตราสินค้า และประสิทธิภาพขององค์กร โดยมุ่งเน้นที่ผลของอิทธิพลการส่งผ่านของซื่อเสียงองค์กรและ คุณค่าของตราสินค้า ผลการวิจัยแสดงให้เห็นว่า CSR มีผลกระทบเชิงบวกอย่างมีนัยสำคัญต่อ ประสิทธิภาพการทำงานขององค์กรและซื่อเสียงขององค์กร และซื่อเสียงขององค์กรมีอิทธิพลการส่งผ่าน บางส่วนระหว่าง CSR และประสิทธิภาพขององค์กร CSR มีผลกระทบเชิงบวกอย่างมากต่อ มูลค่าตรา สินค้า และมูลค่าตราสินค้ามีอิทธิพลการส่งผ่านบางส่วนระหว่าง CSR และประสิทธิภาพขององค์กร บทความนี้กล่าวถึงซื่อเสียงขององค์กรและคุณค่าของตราสินค้าจากมุมมองของกลไกความรับผิดชอบต่อ สังคมขององค์กรที่มีต่อประสิทธิภาพการทำงานขององค์กร และเสนอแนะให้องค์กรต่างๆ ควรหันถึงความ รับผิดชอบต่อสังคมและต้องกระทำอย่างจริงจังแข็งขัน เสริมสร้างการจัดการซื่อเสียงและการจัดการตรา สินค้า รวมถึงปรับปรุงประสิทธิภาพการทำงานขององค์กรด้วย

คำสำคัญ: มูลค่าของตราสินค้า, ซื่อเสียงขององค์กร, ความรับผิดชอบต่อสังคม, ประสิทธิภาพขององค์กร

Introduction

The development of the social economy requires enterprises to actively fulfill their social responsibilities, and the practice of corporate social responsibility (CSR) is related to the sustainable development of society and the country. By disclosing social responsibility information, enterprises can demonstrate their commitment to social responsibility, improve the

transparency of corporate information, and strengthen communication with consumers, investors, and other stakeholders. The research on the influence mechanism of CSR on enterprise performance has always been an important content in the field of CSR research. Its purpose is to provide favorable empirical evidence for the idea of CSR. Since the 1970s, although there have been numerous relevant studies, the conclusions were contradictory, ranging from positive correlation (Pang and Yuan, 2019) to negative correlation (Zhou, 2012) to mixed correlation (Huang and Zhu, 2018), even no correlation (Kotchen and Moon, 2012). Many empirical studies focused on testing the direct relationship between CSR and enterprise performance but ignored other important factors that may exist in the relationship, which also led to inconsistent and unreliable research conclusions. CSR sometimes does not directly affect enterprise performance, so what is the "black box" between them? Do corporate reputation and brand value play an intermediary role in the influence mechanism of CSR on enterprise performance? The questions above are the focus of this paper to explore the problem. Therefore, this paper takes "CSR -- corporate reputation/brand value -- enterprise performance" as the research logic and focuses on the process and intermediate path of CSR's influence mechanism on enterprise performance. It aims to open the "black box" of the transformation process from CSR to enterprise performance. In another word, it explores the dual mediating effect test based on corporate reputation and brand value in the relationship between CSR and enterprise performance.

Literature Review and Research Hypotheses

CSR and Enterprise Performance

Companies undertaking social responsibility positively affect their performance in many ways. First, companies assume social responsibility as a signaling mechanism. Companies expect a favorable business environment and resources from their stakeholders for their development. However, due to information asymmetry, stakeholders have no information about the companies' real situation and do not recognize which companies they should enter long-term contracts with. To appeal to stakeholders, companies must express their intention to cooperate through some signaling mechanism. To achieve that, companies need to take their due social responsibilities. It enables companies to be trusted and supported by their stakeholders and maintains long-term partnerships to achieve sustainable development (Jin,

2014). Second, companies take social responsibility as a transaction realization mechanism. Companies and stakeholders must take appropriate responsibilities and provide favorable resources and a business environment. Companies assume social responsibility to improve the quality and efficiency of such transactions and thus secure quality resources and business environment from their stakeholders (Donaldson, 1999). Third, companies take social responsibility as a value-creation mechanism. Companies can enhance brand loyalty, increase employee productivity, and improve their relationships with government regulators by taking social responsibility. As a result, companies can establish long-term partnerships with stakeholders, accumulate corporate capital, reduce business risks, and secure more value creation (Yin, Cui, and Zheng, 2008; Zhang, Jin, and Li, 2013). Therefore, taking social responsibility is not a simple altruism but a win-win mechanism of altruism and self-interest. Specifically, it facilitates stakeholders' intention to cooperate with the company in the long term, and through this cooperation, the company can accumulate abundant capital to achieve the goal of sustainability. Although a large amount of research has explored the relationship between CSR and corporate performance over the past few decades, the relationship between CSR and corporate performance is constantly evolving with the changes in social, economic, political, and technological environments. In addition, existing research also has some limitations, such as limitations in research scope, research methods, and data sources, which need to be further expanded and improved. Therefore, continuing to study the relationship between CSR and corporate performance can help to better understand the nature and mechanism of this relationship and provide more accurate and scientific guidance for corporate strategic and management decisions. Based on the above analysis, the following hypothesis is proposed:

H1: CSR positively affects enterprise performance.

The Mediating Effect of Corporate Reputation

As academic circles continue to deepen the research on the relationship between CSR and enterprise performance, scholars have found that there was a "black box" between them. So, reputation research has established a link between CSR activities and enterprise performance. Empirical research found that corporate reputation affected corporate value, potential earnings, and corporate financial sustainability (Little and Little, 2000; Roberts and Dowling, 2002). Orlitzky, Schmidt, and Rynes (2003) demonstrated that the relationship between corporate reputation and enterprise performance was stronger than that directly influenced by CSR. This evidence affirms that corporate reputation is one of the missing mediating variables between CSR and enterprise performance. Knox and Maklan (2004) put forward the relationship link between CSR, corporate reputation, and enterprise performance in their research. By

actively undertaking CSR, an enterprise can improve its relationship with stakeholders, gain their trust and enhance its reputation, and increase sales revenue by enhancing customer loyalty.

CSR can improve corporate reputation, but the purpose of enterprises is not to turn themselves into non-profit charities but to improve enterprise performance and promote sustainable development of enterprises. A good corporate reputation, as an intangible asset of an enterprise, is the basis of sustainable profits and makes an enterprise interact positively with its stakeholders (Surroca, Tribo, and Waddock, 2010). Roberts and Dowling (2002) believed that corporate reputation was the key to whether enterprises can benefit from CSR. Zhang (2006) believed that investment in CSR can maintain the reputation of enterprises. The more investment the more interaction between enterprises and internal and external stakeholders, to gain their recognition and support, establish and maintain corporate reputation, and improve enterprise performance. In other words, corporate reputation plays an intermediary role between CSR and enterprise performance. Therefore, it can be said that CSR affects enterprise performance through corporate reputation. The mediating role of corporate reputation in the relationship between CSR and corporate performance has been widely discussed. However, current research on this mediating effect is not sufficient. As the social environment and business competition continue to evolve, the role of corporate reputation in the relationship between CSR and corporate performance is also changing. Therefore, it is necessary to further study the mediating role of corporate reputation in the relationship between CSR and corporate performance, to better understand the relationship between social responsibility and corporate performance, and to improve management and decision-making in promoting sustainable development of businesses. Based on the above analysis, the following hypotheses are proposed:

H2: CSR positively affects corporate reputation.

H3: Corporate reputation positively affects enterprise performance.

H4: Corporate reputation mediates the effect of CSR influencing enterprise performance.

The Mediating Effect of Brand Value

Brand value is an intangible asset of an enterprise. With the development of economic globalization, the brand has become the focus of a new round of international competition (Liu, Li, Duan, and Meng, 2019). Empirical research proved that brand value played a catalytic role in CSR and enterprise performance. Sun (2014) proved the positive impact of CSR on brand value and enterprise performance and pointed out the mediating role of brand value in the influence of CSR on enterprise performance. Wang (2017) concluded that brand value played a partial mediating role in the influence of marketing ability on enterprise value. (Cui, 2019; Li,

2013) found that brand value can have an intermediary effect on the relationship between CSR and enterprise performance. Liu and Zhou (2013) took the data of manufacturing enterprises as samples and adopted structural equation technology to verify the relationship among brand positioning, value chain integration, brand value, and enterprise performance. The results showed that brand orientation and value chain integration had positive effects on the improvement of brand value and enterprise performance. In addition, brand value played a complete mediating role in the relationship between brand positioning and firm performance, while brand value plays a partial mediating role in the influence of value chain integration on firm performance. Jin (2006) studied the interaction between consumer loyalty and enterprise loyalty, and the results showed that consumers preferred the products and services of the enterprise, which indicated that the enterprise had brand value, which would promote the growth of sales and income of the enterprise. Enterprises that actively fulfill their social responsibilities will enhance their reputation, which will further enhance their brand equity value, attract more consumers, strengthen their brand loyalty, and ultimately improve their performance and competitiveness. There is currently a lack of research on the mediating role of brand value in the relationship between CSR and corporate performance. Therefore, further study in this area can help fill the research gap and provide a more comprehensive understanding of academia and the business community. Based on the above analysis, this study proposes the following hypothesis:

H5: CSR positively affects brand value.

H6: Brand value positively affects enterprise performance.

H7: Brand value mediates the effect of CSR influencing enterprise performance.

To sum up, this paper builds a conceptual framework of "CSR -- corporate reputation, brand value -- corporate performance", as shown in Figure 1.

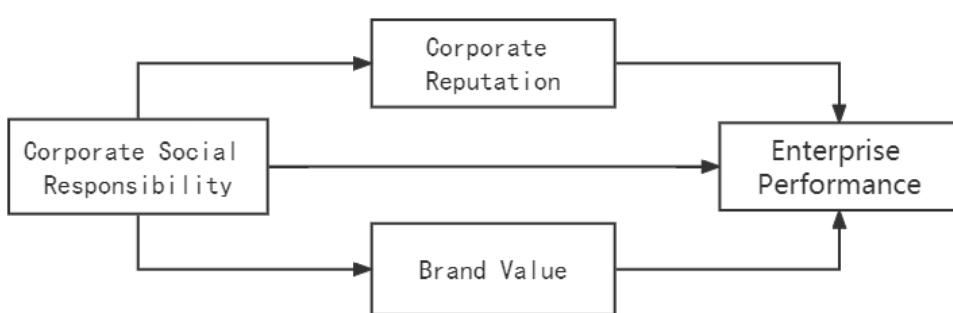


Figure 1 Conceptual framework of the research

Research Method

Sample Selection and Data Sources

The Chinese government has gradually increased its requirements and regulatory efforts on CSR in recent years, especially for listed companies, where disclosure of social responsibility information has become a necessary requirement. Therefore, studying Chinese A-share listed companies can better explore the relationship between CSR and corporate performance. This study sampled A-share listed companies in Shanghai and Shenzhen stock exchanges from 2011 to 2020. These companies were manually compared with the "China's 500 Most Valuable Brands" list released by World Brand Lab (WBL) from 2010 to 2020, and the companies selected in the list during the 10 years were retained. Financial companies, outliers, and missing values were excluded to ensure the integrity and continuity of the data. In addition, S.T. and *S.T. companies are listed companies in China that have received a special stock code indicating that they are facing financial difficulties. S.T. stands for "Special Treatment" and *S.T. stands for "Special Treatment on Delisting Risk." These companies have failed to meet certain financial or regulatory requirements, such as reporting a loss for two consecutive years or having negative net assets. As a result, they are considered high-risk investments and may face potential delisting from the stock exchange. When researching on the relationship between CSR and corporate performance, it is common practice to exclude S.T. and *S.T. companies from the sample due to their unique financial situations. These companies may have a distorted financial performance, making it difficult to draw accurate conclusions about the relationship between CSR and performance. Therefore, researchers often choose to exclude S.T. and *S.T. companies from their analyses to ensure the validity and reliability of their findings. Finally, we obtained the panel data of 199 sample companies with 1,464 valid observations.

The CSR of all sample companies was obtained from the social responsibility ratings of Hexun.com, a third-party rating agency. The quantitative brand value data were obtained from the ratings on the "China's 500 Most Valuable Brands" list by WBL, and the data were centralized. The data on corporate reputation was derived from factor analysis. Company popularity data were manually compiled from "Most Admired Companies in China" or "All-star List of Most Admired Companies in China" by Fortune. The data on executive popularity were manually compiled based on the winners of the top 50 best chief executive officers of China's listed companies by Forbes China and "CCTV Economic Person of the Year". The data on corporate violations were derived from CSMAR, other factors were obtained from Wind, and other related companies were derived from CSMAR. Thus, it can ensure the stability of the empirical results. These data were processed and statistically analyzed using computer software packages.

Selection and Measurement of Variables

(1) Dependent variable

The dependent variable of this paper is enterprise performance, which was measured by return on assets (ROA). Scholars generally believe that return on assets (ROA) is an important indicator for measuring corporate performance. ROA can not only reflect the efficiency of the use of corporate assets but also the profitability of the enterprise. For example, Waddock and Graves (1997) found that ROA is one of the important indicators for evaluating CSR performance. Other scholars have also used ROA as a measure of corporate performance in related studies, such as Gao and Zhang (2015) and Wang, Liu, Li, and Wang (2017). In addition, ROA can also reflect the decision-making ability and management level of corporate management. Therefore, ROA has been widely applied in the relevant fields of corporate performance research.

(2) Independent variables

The comprehensive social responsibility ratings of China's listed companies released by Hexun.com are derived from a comprehensive assessment of the annual and social responsibility reports disclosed by China's listed companies. The independent variable of this paper is CSR (CSRD), measured by the social responsibility ratings of Hexun.com. Thirteen secondary evaluation indexes and thirty-seven tertiary evaluation indexes were designed based on five aspects: shareholder responsibility, employee responsibility, supplier and consumer responsibility, environmental responsibility, and social responsibility.

(3) Mediator variables

A. Corporate reputation

In this paper, one of the mediator variables is corporate reputation (REP). Based on the practice of Song, Liu, and Zhang (2022) and the needs of this study, the criteria for index selection changed. The comprehensive scores from the corporate reputation system constructed in this study were used for the indexes. The corporate reputation indexes in this study are listed in Table 1. Corporate reputation is divided into three dimensions: image factor, social background factor, and value pursuit factor. The image factor examines the company's current competitive market position, products and services, and prospects. It comprises the evaluation indexes such as company popularity, violations, advertising expenditure, executive popularity, intangible assets, and market share. The social background factor is proposed based on China's unique capital market and China's basic national conditions, consisting of beta coefficient and tax aggressiveness. The value pursuit factor integrates companies' competitiveness and appeal, targeting their stakeholders, consisting of consumer performance, manufacturer performance, employee performance, P/B ratio, and book-to-market ratio.

Table 1 Corporate reputation indexes

Reputation dimension	Evaluation index	Index formula and data sources
Image factor	Company Popularity	1 for companies selected as "Most Admired Companies in China" or "All-star List of Most Admired Companies in China", and 0 otherwise (Fortune China)
	Violations	1 if the company has not been punished by the CSRC, SSE, or SZSE, and 0 otherwise (CSMAR)
	Advertising expenditure	Advertising expenses/selling expenses (Wind)
	Executive popularity	1 for winners of the top 50 best chief executive officers of China's listed companies by Forbes China and CCTV Economic Person of the Year, and 0 otherwise (Forbes China)
	Intangible assets	The natural logarithm of intangible assets (Wind)
	Market share	Share of main business revenue in the revenue of the industry (Wind)
	Beta coefficient	Returns on stocks in Shanghai and Shenzhen stock exchanges as market returns (Wind)
	Tax aggressiveness	$[\text{Total profit}_{t-1} - (\text{Income tax expense}_{t-1} - \text{Deferred tax expense}_{t-1}) - (\text{Ending deferred tax liability}_{t-1} - \text{Beginning deferred tax liability}_{t-1}) - (\text{Ending deferred tax asset}_{t-1} - \text{Beginning deferred tax asset}_{t-1})]/(\text{Year-end income tax rate}_{t-1} \times \text{Total asset}_{t-1})$ (Wind)
	Consumer performance	$(\text{Cash received from sales of goods and rendering of services}_{t-1} + \text{Notes receivable}_{t-1} + \text{Accounts receivable}_{t-1})/\text{Total operating income}_{t-1}$ (Wind)
	Manufacturer performance	$(\text{Cash paid for purchasing goods and receiving labor services}_{t-1} + \text{Notes payable}_{t-1} + \text{Accounts payable}_{t-1})/\text{Total operating income}_{t-1}$ (Wind)
Value pursuit factor	Employee performance	$(\text{Employee compensation payable}_{t-1} + \text{Cash paid to and for employees}_{t-1})/\text{Total operating income}_{t-1}$ (Wind)
	P/B ratio	$\text{Today's closing price in the current period}_{t-1} / (\text{Total owner's equity at the end of the period}_{t-1} / \text{Paid-in capital at the end of the current period}_{t-1})$ (Wind)
	Book-to-market ratio	$\text{Market value}_{t-1} / \text{Book value}_{t-1}$ (Wind)

Note: Based on the practice of Song, Liu, and Zhang (2022) and the needs of this study, the criteria for index selection changed; t denotes the year.

B. Brand value

The World Brand Lab (WBL) was founded in 2003 in the United States and is chaired by Nobel Prize-winning economist Professor Robert Mundell. It comprises experts in big data, economics, and finance from leading universities.

The World Brand Value Lab's brand strength factor is based on Inter-brand's seven factors (market, stability, leadership, international image, trend, support, and protection), with the innovative addition of industry factors. In this way, it can effectively reflect marketing effectiveness, facilitate the development of marketing budgets, and quantify the value of marketing's contribution to the company. In addition, the evaluation is based on the classification of the position of companies in the industry chain, combining financial and market factors. The results are comprehensive and highly authoritative, given the objective and consumer perspectives (Wang, 2020).

Based on the above characteristics of the brand value (B.V.) evaluation method and considering having scientific quality and applicability, this study adopted the brand score assessed by this list as the brand value index. It was consistent with the measurement method used in many studies on brand value (Li, Liu, and Duan, 2021).

(4) Control variables

In this paper, organizational slack (Slack), leverage ratio (Lev), property rights nature (State), firm age (Age), firm size (Size), and growth (Growth) were selected as control variables. Among these variables, Slack is an important indicator of internal resource allocation in enterprises, reflecting the management efficiency and survival space of the enterprise, and has a significant impact on corporate performance. Meanwhile, Lev can reflect the level of financial risk of the enterprise, which also has a certain impact on corporate performance. State can reflect the ownership structure of the enterprise, which can also affect corporate performance and social responsibility. Age and Size are also important factors that affect corporate performance and social responsibility. Growth potential can reflect the future development potential of the enterprise, and its impact on corporate performance and social responsibility cannot be ignored.

Therefore, selecting control variables such as organizational slack, asset-liability ratio, property rights, enterprise age, enterprise size, and growth potential can help researchers eliminate the influence of other factors and more accurately study the relationship between CSR and performance. Scholars have already used these control variables in relevant research, such as Husted and Allen (2006), Vlachos et al. (2014), and so on. The definitions and measures of the variables are shown in Table 2.

Table 2 Definitions and measurements of variables

Type	Name	Symbol	Measurement
Dependent variable	Return on assets	ROA	Net profit/total assets
Independent variable	CSR	CSRD	The total social responsibility score is taken from a third-party organization, Hexun.com
Mediator variable	Corporate reputation	REP	Composite value of factors based on the evaluation system
	Brand value	B.V.	Centralized data from "China's 500 Most Valuable Brands" published by World Brand Lab
	Organizational slack	Slack	Current assets/current liabilities
	Leverage ratio	Lev	Total liabilities/total assets
	Property rights nature	State	1 for state-owned property, 0 otherwise
Control variable	Firm age	Age	The number of years from the establishment of the firm to the statistical year
	Firm size	Size	Natural logarithm of the firm's total assets at the end of the period
	Growth	Growth	(Operating income of the current period - Operating income of the previous period)/Operating income of the previous period

Data source: organized in this study

Statistical Analysis and Results

Descriptive Statistical Analysis

First, a descriptive statistical analysis was performed on the results of the variables, and the mean, standard deviation, maximum, and minimum values were elaborated based on the results to analyze the representations of the data results. The results of the data are shown in Table 3.

Table 3 Descriptive statistical analysis of the results of variables

Variable name	Mean	Standard deviation	Maximum	Minimum
CSRД	32.9323	20.3288	90.8700	-9.5700
REP	0.0052	0.3895	4.6190	-3.6910
B.V.	5.0806	1.0760	8.0410	2.3730
Slack	1.6990	1.2463	11.0000	0.0000
Lev	0.5148	0.5000	1.0000	0.0000
State	0.5658	0.4958	1.0000	0.0000
Age	19.5525	5.1449	40.0000	4.0000
Size	23.6154	1.6169	29.0000	19.0000
Growth	0.1021	2.3755	87.0000	-1.0000
ROA	0.0875	0.1074	2.9390	-0.2060

Data source: organized in this study

Correlation Analysis

First, the relationships between the variables were investigated. For the present data results, except for the categorical variables with the outcome value of 0 and 1 for State, the other variables CSRД, REP, B.V., Slack, Lev, State, Age, Size, Growth, and ROA are all non-continuous variables in the numerical category. Therefore, according to statistical principles, Pearson correlation analysis was conducted for the independent relationships of variables to verify significant linear relationships between variables pairwise. Generally, if the p-value of Pearson correlation analysis is less than 0.05, it indicates a significant correlation, and no correlation if it is greater than 0.05. The results of the analysis are shown in Table 4.

Table 4 Correlation test of variables

Variable	CSRD	REP	B.V.	Slack	Lev	State	Age	Size	Growth	ROA
Independent variable	CSRD	1								
	REP	.094**	1							
Mediator variable										
	B.V.	.101**	.210**	1						
	Slack	0.0086	0.0221	-.234**	1					
	Lev	-.087**	0.0162	.183**	-.503**	1				
	State	-0.0008	-.087**	.214**	-.073**	.117**	1			
Control variable										
	Age	-.185**	0.0523	0.0360	0.0059	.080**	-.069*	1		
	Size	.199**	.235**	.599**	-.369**	.360**	.258**	-0.0048	1	
	Growth	-0.0325	.096**	-.055*	-0.0116	0.0268	-0.0290	0.0460	-.085**	1
Dependent variable	ROA	.121**	.190**	.082**	.200**	-.277**	-.115**	.073**	-0.0155	-0.0153
										1

Note: * means $p < 0.05$; ** means $p < 0.01$; *** means $p < 0.001$

According to the results in Table 4, the independent variable CSDR was significantly correlated with the dependent variable ROA with a coefficient value of 0.121 ($p < 0.01$). Corporate reputation and B.V. were significantly correlated with the dependent variable ROA, with coefficient values of 0.190 ($p < 0.01$) and 0.082 ($p < 0.01$), respectively. In addition, it was found that some control variables such as Slack, Lev, State and Age were also correlated with ROA with coefficient values of 0.200 ($p < 0.01$), -0.277 ($p < 0.01$), -0.155 ($p < 0.01$), and -0.073 ($p < 0.01$), respectively. Overall, there are some significant correlations among the variables, but further analysis is needed to verify their effects.

Hausman Test

According to this study design, the effects of CSDR, REP, B.V., and ROA were mainly considered. First, the stability of cross-section fixed effects among the tested variables was investigated, and the final test results are shown in Table 5. From the results, the cross-section fixed effects test statistic for CSDR, REP, B.V., and ROA were 43.879, and its p -value was significantly less than 0.001. According to the test results of fixed effects, although the variables

in the data of 199 listed companies in this study are random, there is no random effect in the effect, so the fixed effect model should be chosen in the later study.

Table 5 Cross-section fixed effects test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	43.879	-1972	0.000
Cross-section Chi-square	368.871	13	0.000

Data source: organized in this study

A Hausman test is further applied to the fixed model to determine whether to choose the generalized linear mixed model or the generalized linear model. The final analysis results are shown in Table 6, indicating that the statistical value of the generalized linear mixing test is close to 0, and the significance probability p -value is significantly greater than 0.05. The hypothesis of selecting the generalized linear mixed model is rejected, and the conclusion proves that the generalized linear model, that is OLS (ordinary least square method) regression, should be selected in the later stage.

Table 6 Hausman test results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000	13	1.000
Period random	0.000	13	1.000

Data source: organized in this study

Hypothesis Testing

Regression analysis was further used to verify the hypothesis and the influence coefficient relationship among variables. In the regression study, to avoid collinearity problems, the variance expansion coefficient (VIF) is calculated on the model results. It is generally believed that when the tolerance of the independent variable is greater than 0.1, the range of variance expansion coefficient less than 10 is acceptable, indicating that there is no multicollinearity problem among the independent variables.

(1) Relational test between CSR and enterprise performance

According to the variable design, the independent variable CSRD and the dependent variable ROA were first introduced to build Model 1. Further, control variables Slack, Lev, State,

Age, Size, Growth, and ROA were added to Model 1, and finally, Model 2 was built. The final test results are shown in Table 7.

According to the results, the coefficient of the effect of CSRD on ROA in Model 1 was 0.0006 ($t = 4.4959$, $p < 0.001$). After adding other control variables, the coefficient did not change significantly and remained at 0.0005 ($t = 3.4237$, $p < 0.01$). It indicated that the effect of CSRD on ROA was stable and significant. Secondly, in Model 2, it was also found that Slack, Lev, State, Age, and Size were also significantly related to ROA with coefficient values of 0.0093 ($t = 3.5468$, $p < 0.001$), -0.0550 ($t = -8.3222$, $p < 0.001$), -0.0222 ($t = -3.8401$, $p < 0.001$), 0.0022 ($t = 3.9304$, $p < 0.001$), and 0.0083 ($t = 4.1493$, $p < 0.001$), respectively. It was demonstrated that CSR was positively correlated with enterprise performance. It indicates that the higher the total CSR score, the higher the enterprise performance. Conversely, enterprise performance is lower. In other words, H1 was true in this study.

Table 7 Results of models between CSR and enterprise performance

Variable	Model 1			Model 2		
	β	t-	VIF	β	t	VIF
CSR	0.0006	4.4959***	1.1883	0.0005	3.4237**	1.0285
Slack				0.0093	3.5468***	1.2198
Lev				-0.0550	-8.3222***	1.4038
State				-0.0222	-3.8401***	1.5102
Age				0.0022	3.9304***	1.9807
Size				0.0083	4.1493***	1.5070
Growth				-0.0001	-0.0508	1.4712
C	0.0663	12.0115***	1.0895	-0.1417	-2.9906**	1.6290
R-squared		0.0148			0.1212	
Adjusted R-squared		0.0140			0.1167	
S.E. of regression		0.1066			0.1009	
F-statistic		20.2135***			26.4917***	
Prob. (F-statistic)		0.0000			0.0000	

Note: * means $p < 0.05$; ** means $p < 0.01$; *** means $p < 0.001$

(2) Relational test between CSR and corporate reputation

According to the variable design, firstly, the independent variable CSRD and the dependent variable REP were introduced to build Model 3. Furthermore, the control variables

Slack, Lev, State, Age, Size, Growth, and REP were added to Model 3 to build Model 4. The results are shown in Table 8.

According to the results, the coefficient of the effect of CSRD on REP in Model 3 was 0.0018 ($t = 3.4515$, $p < 0.001$). This coefficient changed to 0.0011 ($t = 2.3297$, $p < 0.01$) when other control variables were added further (Model 4). It indicated that the addition of other control variables attenuated the effect of CSRD on REP, but still positive. Generally, it was demonstrated that CSR positively correlated with corporate reputation. It indicates that the higher the total CSR score, the higher the corporate reputation. On the contrary, enterprise performance is lower. Thus, H2 was true.

Table 8 Results of models between CSR and corporate reputation

Variable	Model 3			Model 4		
	β	t-	VIF	β	t	VIF
CSR	0.0018	3.4515***	1.4287	0.0011	2.3297**	1.4506
Slack				0.0375	3.9149***	1.9649
Lev				-0.0224	-0.9300	1.9830
State				-0.1212	-5.7597***	1.3846
Age				0.0035	1.7436	1.0329
Size				0.0802	10.9907***	1.3851
Growth				0.0198	4.6549***	1.0480
C	-0.0538	-2.6799***	1.8116	-1.9651	-11.3735***	1.9743
R-squared		0.0087			0.1112	
Adjusted R-squared		0.0080			0.1066	
S.E. of regression		0.3880			0.3682	
F-statistic		11.9132***			24.0244***	
Prob. (F-statistic)		0.0006			0.0000	

Note: * means $p < 0.05$; ** means $p < 0.01$; *** means $p < 0.001$

(3) Relational test between corporate reputation and enterprise performance

According to the design of variables, the independent variable REP and the dependent variable ROA were first introduced to build Model 5. Further, the control variables Slack, Lev, State, Age, Size, Growth, and ROA were added to Model 6, and Model 10 was built. The results are shown in Table 9.

According to the results, the coefficient of the effect of REP on ROA in Model 5 was 0.0524 ($t = 7.1061, p < 0.001$), and it decreased to 0.0441 ($t = 5.9556, p < 0.001$) when other control variables were added (Model 6). It showed that the effect of REP on ROA was stable and remained positive despite the weakened effect by other control variables. Overall, it was demonstrated that corporate reputation was positively correlated with enterprise performance. It indicated that the better the corporate reputation, the higher the enterprise performance. Conversely, enterprise performance is lower. Thus, H3 was true.

Table 9 Results of models between corporate reputation and enterprise performance

Variable	Model 5			Model 6		
	β	t-	VIF	β	t	VIF
REP	0.0524	7.1061***	1.0294	0.0441	5.9556***	1.0958
Slack				0.0079	3.0224**	1.0006
Lev				-0.0568	-8.7388**	1.0125
State				-0.0180	-3.1210**	1.3523
Age				0.0017	3.1425**	1.5658
Size				0.0064	3.1675**	1.7171
Growth				-0.0009	-0.7942	1.9874
C	0.0872	30.393*** ⁷	1.0734	0.0702	3.4321***	1.5851
R-squared		0.0361			0.1364	
Adjusted R-squared		0.0353			0.1319	
S.E. of regression		0.1055			0.1001	
F-statistic		50.4960***			30.3189***	
Prob. (F-statistic)		0.0000			0.0000	

Note: * means $p < 0.05$; ** means $p < 0.01$; *** means $p < 0.001$

(4) Mediating effect test of corporate reputation

To test the mediating effect of this hypothesis, according to statistical analysis methods, the relationship between independent variables and dependent variables should first be verified to verify the significance of coefficient c . Secondly, the relationship between independent variables and mediating variables will be constructed to verify the significance of coefficient a . Finally, the relationship among independent variables, mediating variables, and dependent variables were constructed to verify the significance of coefficients c' and b .

Firstly, the relationship between CSRD and ROA is verified. Further, verifying the relationship between CSRD and REP. Finally, Model 7 is built together with CSR and REP to verify whether the effects on ROA are still significant. The final analysis results are shown in Table 10.

Table 10 Results of mediating effect test of corporate reputation

Variable	Model 2			Model 4			Model 7		
	β	t-	VIF	β	t	VIF	β	t	VIF
CSR	0.0005	3.4237**	1.0285	0.0011	2.3297**	1.4506	0.0005	3.2513***	1.2528
REP							0.0433	5.8550***	1.0668
Slack	0.0093	3.5468***	1.2198	0.0375	3.9149***	1.9649	0.0077	2.9484**	1.0486
Lev	-0.0550	-8.3222***	1.4038	-0.0224	-0.9300	1.9830	-0.0541	-8.2734***	1.9270
State	-0.0222	-3.8401***	1.5102	-0.1212	-5.7597***	1.3846	-0.0169	-2.9316**	1.7224
Age	0.0022	3.9304***	1.9807	0.0035	1.7436	1.0329	0.0020	3.6961***	1.2191
Size	0.0083	4.1493***	1.5070	0.0802	10.9907***	1.3851	0.0048	2.3421*	1.3152
Growth	-0.0001	-0.0508	1.4712	0.0198	4.6549***	1.0480	-0.0009	-0.7885	1.1858
C	-0.1417	-2.9906**	1.6290	-1.9651	-11.3735***	1.9743	-0.0567	-1.1566	1.6440
R-squared		0.1212			0.1112			0.1431	
Adjusted R-squared			0.1167			0.1066		0.1380	
S.E. of regression			0.1009			0.3682		0.0997	
F-statistic		26.4917***			24.0244***			28.0393***	
Prob. (F-statistic)		0.0000			0.0000			0.0000	

Note: * means $p < 0.05$; ** means $p < 0.01$; *** means $p < 0.001$

As shown in Table 10, the results of Model 7 show that CSR still significantly affects enterprise performance after adding the intermediary variable (corporate reputation). It demonstrates that coefficient c' is significant ($\beta = 0.0005$, $p < 0.001$), and coefficient b ($\beta = 0.0433$, $p < 0.001$) was also significant, indicating the existence of a partial mediating effect. The results show that the mediating effect of CSR on enterprise performance is not completely achieved through the intermediary variable (corporate reputation). CSR has a direct effect on enterprise performance, and the ratio of the mediating effect to the total effect is $\text{Effect} = ab/c = 0.0011 \times 0.0433 / 0.0005 = 9.526\%$. The mediating effect explained the variance of the dependent

variable as SQRT (0.1380 - 0.1167) = 2.130%. The results show that corporate reputation plays a partial mediating role in CSR on enterprise performance, Thus, H4 was true.

(5) Relational test between CSR and brand value

According to the variable design, firstly, the independent variable CSRD and the dependent variable B.V. were introduced to build Model 8. Furthermore, the control variables Slack, Lev, State, Age, Size, Growth, and B.V. were added to Model 8 to build Model 9. The results are shown in Table 11.

Table 11 Results of models between CSR and corporate reputation

Variable	Model 8			Model 9		
	β	t-	VIF	β	t	VIF
CSRD	0.0054	3.7406***	1.3052	0.0047	3.5717***	1.8302
Slack				-0.0368	-1.6470	1.4300
Lev				-0.1382	-2.4608*	1.1122
State				0.1488	3.0357**	1.0871
Age				0.0098	2.1012	1.7775
Size				0.3937	23.1684***	1.9876
Growth				-0.0018	-0.1772	1.6748
C	4.9040	88.4264***	1.7716	-4.3358	-10.7743***	1.3031
R-squared		0.0103			0.3681	
Adjusted R-squared		0.0095			0.3648	
S.E. of regression		1.0708			0.8576	
F-statistic		13.9918***			111.8413***	
Prob(F-statistic)		0.0002			0.0000	

Note: * means $p < 0.05$; ** means $p < 0.01$; *** means $p < 0.001$

According to the results, the coefficient of the effect of CSRD on B.V. in Model 8 was 0.0054 ($t = 3.7406, p < 0.001$). This coefficient changed to 0.0047 ($t = 3.5717, p < 0.001$) when other control variables were added further. It indicated that the addition of other control variables attenuated the effect of CSRD on B.V., but still positive. Secondly, in Model 9, it was found that Lev, State, and Size were also significantly correlated with B.V. with coefficient values of -0.1382 ($t = -2.4608, p < 0.05$), 0.1488 ($t = 3.0357, p < 0.01$), and 0.3937 ($t = 23.1687, p < 0.001$), respectively. Generally, it was demonstrated that CSR positively correlated with brand value. It indicates that the higher the total CSR score, the higher the brand value. On the contrary, enterprise performance is lower. Thus, H5 was true.

(6) Relational test between brand value and enterprise performance

According to the design of variables, the independent variable B.V. and the dependent variable ROA were first introduced to build Model 10. Further, the control variables Slack, Lev, State, Age, Size, Growth, and ROA were added to Model 10, and Model 11 was built. The results are shown in Table 12.

According to the results, the coefficient of the effect of B.V. on ROA in Model 10 was 0.0082 ($t = 3.0359, p < 0.01$), and it decreased to 0.0138 ($t = 4.2977, p < 0.001$) when other control variables were added (Model 11). It showed that the effect of B.V. on ROA was stable and remained positive. Overall, it was demonstrated that brand value was positively correlated with enterprise performance. It indicated that the better the brand value, the higher the enterprise performance. Conversely, enterprise performance is lower. Thus, H6 was true.

Table 12 Results of models between brand value and enterprise performance

Variable	Model 10			Model 11		
	β	t-	VIF	β	T	VIF
B.V.	0.0082	3.0359**	1.5996	0.0138	4.2977***	1.5559
Slack				0.0101	3.8506***	1.8356
Lev				-0.0562	-8.5679***	1.6419
State				-0.0255	-4.4321***	1.6188
Age				0.0017	3.1035**	1.6350
Size				0.0046	2.0164*	1.8667
Growth				0.0000	-0.0233	1.4203
C	0.0457	3.2512**	1.5713	-0.0985	-2.0106*	1.0516
R-squared		0.0068			0.1256	
Adjusted R-squared		0.0060			0.1210	
S.E. of regression		0.1071			0.1007	
F-statistic		9.2170			27.5793	
Prob(F-statistic)		0.0024			0.0000	

Note: * means $p < 0.05$; ** means $p < 0.01$; *** means $p < 0.001$

(7) Mediating effect test of brand value

The method is like the mediating effect test of corporate reputation. Firstly, the relationship between CSRD and ROA is verified, then, verify the relationship between CSRD and

B.V. Finally, Model 12 is built together with CSR and B.V. to verify whether the effects on ROA are still significant. The final analysis results are shown in Table 13.

Table 13 Results of mediating effect test of corporate reputation

Variable	Model 2			Model 9			Model 12		
	β	t-	VIF	β	t	VIF	β	t	VIF
CSR D	0.0005	3.4237**	1.0285	0.0047	3.5717***	1.8302	0.0005	3.514***	1.2423
B.V.							0.0139	4.370***	1.4043
Slack	0.0093	3.5468***	1.2198	-0.0368	-1.6470	1.4300	0.0098	3.763***	1.1173
Lev	-0.0550	-8.3222***	1.4038	-0.1382	-2.4608*	1.1122	-0.0531	-8.067***	1.5813
State	-0.0222	-3.8401***	1.5102	0.1488	3.0357**	1.0871	-0.0242	-4.213***	1.9276
Age	0.0022	3.9304***	1.9807	0.0098	2.1012	1.7775	0.0020	3.700***	1.7549
Size	0.0083	4.1493***	1.5070	0.3937	23.1684***	1.9876	0.0028	1.1970	1.5666
Growth	-0.0001	-0.0508	1.4712	-0.0018	-0.1772	1.6748	0.0000	-0.0300	1.8966
C	-0.1417	-2.9906**	1.6290	-4.3358	-10.7743***	1.3031	-0.0812	-1.6560	1.2879
R-squared		0.1212			0.3681			0.1336	
Adjusted R-squared		0.1167			0.3648			0.1284	
S.E. of regression		0.1009			0.8576			0.1003	
F-statistic		26.4917***			111.8413***			25.8795***	
Prob(F-statistic)		0.0000			0.0000			0.0000	

Note: * means $p < 0.05$; ** means $p < 0.01$; *** means $p < 0.001$

As shown in Table 13, the results of Model 12 show that CSR still significantly affects enterprise performance after adding the intermediary variable (brand value). It demonstrates that coefficient c' is significant ($\beta = 0.0005, p < 0.001$), and coefficient b ($\beta = 0.0139, p < 0.001$) was also significant, indicating the existence of a partial mediating effect. The results show that the mediating effect of CSR on enterprise performance is not completely achieved through the intermediary variable (brand value). CSR has a direct effect on enterprise performance, and the ratio of the mediating effect to the total effect is $\text{Effect} = ab/c = 0.0047 \times 0.0139 / 0.0005 = 13.066\%$. The mediating effect explained the variance of the dependent variable as $\text{SQRT}(0.1284 - 0.1167) = 1.170\%$. The results show that brand value plays a partial mediating role in CSR on enterprise performance, Thus, H7 was true.

Robustness Test

The study further considers whether the relationship among variables is consistent and stable, so A-share listed companies in Shanghai and Shenzhen stock exchanges from 2008 to 2010 are selected for the stability test. Before regression, the fixed effects analysis method or random effects analysis method should be determined. Therefore, the Hausman test is conducted on the original data, and the results show that Prob. $>$ chi-square = 0.9433. So, accepting the null hypothesis and using the fixed effect model. Based on this, the research mainly varies the relationship results of CSR and enterprise performance, CSR and corporate reputation, corporate reputation, and enterprise performance, CSR and brand value, brand value, and enterprise performance, and the final analysis results are shown in Table 14.

The results show that Stability results in 3 years between CSR and enterprise performance, CSR and corporate reputation, corporate reputation, and enterprise performance, CSR and brand value, and brand value, and CSR, are consistent with the research hypothesis results. There is no significant change. Therefore, the stability test results pass and show that the results of this study are stable.

Discussion

There is a positive relationship between CSR, corporate performance, corporate reputation, and brand value, with corporate reputation and brand value exhibiting dual mediating effects in the relationship between CSR and corporate performance. We will discuss several topics as follows:

(1) The relationship between CSR and corporate performance. It has been studied by scholars, with results showing positive, negative, mixed, or no correlation. Our empirical study found a positive impact of CSR on corporate performance, using A-share listed companies from Shanghai and Shenzhen stock markets, selected from the "China's 500 Most Valuable Brands" list released by World Brand Lab during 2011-2020. CSR enhances a company's reputation, image, trust from consumers and investors, business opportunities, and economic benefits. Our representative sample and long-time span add credibility and stability to the results.

Table 14 Robustness test results of the model

Variable	Model 18 (Y=ROA)		Model 19 (Y=REP)		Model 20 (Y=ROA)		Model 21 (Y=B.V.)		Model 22 (Y=ROA)	
	β	t	β	t	β	t	β	t	β	t
CSRD	0.0019	4.1087***	0.0077	2.1190*			0.0072	2.3720**		
REP					0.0211	2.6213**				
B.V.									0.0014	2.3994**
Slack	0.0128	1.0285	-0.2871	-2.9625**	0.0263	3.8287***	-0.0015	-0.2116	0.0038	3.7321***
Lev	0.0150	0.2650	-0.8883	-4.2840***	0.0047	0.7672	-0.0056	-2.0484*	0.0014	0.6283
State	-0.0553	-2.8508**	-0.0018	-0.0117	-0.0021	-1.9542	0.0020	1.3353	-0.0029	-1.9642
Age	-0.0077	-3.6164***	-0.0050	-0.3016	-0.0172	-3.0212***	0.0037	1.9427	-0.0075	-4.0393***
Size	-0.0013	-0.2130	0.1657	3.4270***	0.0057	0.7614	0.0039	1.5867	0.0074	1.1133
Growth	0.0581	1.1091	0.3792	0.9297	0.0090	0.6606	-0.0005	-0.8111	0.0049	0.7585
C	0.0117	1.9408*	-0.9434	-2.6979**	0.0104	4.0026***	-0.3383	-4.7515***	-0.0107	-4.2294***
R-squared	0.3858		0.4733		0.2208		0.3445		0.2179	
Adjusted R-squared	0.3154		0.4128		0.2014		0.3063		0.1282	
S.E. of regression	0.0628		0.4891		0.0707		2.5880		0.0708	
F-statistic	5.4745***		7.8304***		5.4193***		6.4721***		5.4281***	
Prob(F-statistic)	0.0001		0.0000		0.0008		0.0000		0.0002	

Note: * means $p < 0.05$; ** means $p < 0.01$; *** means $p < 0.001$

(2) The relationship between CSR and corporate reputation. Most scholars believe that corporate performance has a positive impact on corporate reputation, and this article also comes to the same conclusion. The main reasons for this are: CSR is the manifestation of a company's concern for social and environmental issues and its willingness to take responsibility. Such behavior can enhance the public's trust and favorability towards the company, thereby improving its reputation and image. Corporate performance, on the other hand, is the company's performance in economic and financial terms. If a company can perform well in these areas, such as achieving good profits and returns, it will further enhance the public's recognition and positive evaluation of the company, thereby improving its reputation. Therefore, both CSR and corporate performance have a positive impact on corporate reputation, which is also a widely accepted view among most scholars.

(3) Corporate reputation is widely believed by scholars to have a positive influence on performance, a conclusion supported by this study. The primary reason is that a strong reputation translates into improved business and financial performance. This is because trusted and respected companies often attract more consumers and investors. Additionally, a strong reputation can lead to increased brand awareness and identification, thereby increasing market share for products and services. These factors work together to drive corporate performance, which in turn reinforces corporate reputation.

(4) The relationship between CSR and brand value. Previous scholars generally believed that CSR has a positive impact on brand value, and this article also agrees with this view. This study agrees with this view by using data from the "China's 500 Most Valuable Brands" ranking by the World Brand Lab as a sample and finding a positive correlation through empirical research. This can be explained by the fact that fulfilling social responsibilities can establish a good image and reputation, increase brand awareness and recognition, and attract more consumers and investors, ultimately enhancing brand value.

(5) The Relationship between Brand Value and Corporate Performance. Scholars generally believe that brand value has a positive impact on corporate performance, and this research also agrees with this view. The main reason is that brand value is considered an essential component of corporate performance that contributes to improving market share and profitability. A higher brand value can attract more customers and increase sales, thus

improving competitiveness and profitability. Moreover, a strong brand value can foster consumer trust and loyalty, leading to long-term profitability. This conclusion is consistent with the views of most scholars.

(6) The relationship between corporate reputation, CSR, and corporate performance is mediated by corporate reputation. This conclusion suggests that corporate reputation plays a mediating role between CSR and corporate performance. Previous studies have found a high likelihood that corporate reputation plays a mediating role between CSR and corporate performance. In this study, the corresponding conclusion was also obtained through analysis and testing of the sample data.

(7) Brand value plays a mediating role in the relationship between CSR and corporate performance. Previous studies found that brand value mediates the relationship between CSR and corporate performance. Consensus has been established in this field, but variations in samples and methods exist. This study expands the scope and time frame, aiming for more representative results. Further research will enhance the understanding of brand value's mediation mechanism and facilitate the formulation of effective CSR and brand strategies.

In addition, due to the inevitable limitations of time, cost, manpower, and other factors, this study also has some defects. Given this, the research prospect is proposed. First, there is limitation of data samples. The secondary data obtained is very convincing. However, it does not include listed companies, non-listed companies, or listed companies that are not listed in the list of "China's 500 Most Valuable Brands", so the sample size has certain limitations. Thus, the sample size can be expanded in future research to cover listed and unlisted companies as much as possible. Second, there is a single dimension of variables. In the future, we can try to use the questionnaire to measure some variables, such as corporate reputation which is difficult to use secondary data to do. Quantitative and qualitative research methods can be combined to make the study more comprehensive and scientific.

Conclusion

This study samples A-share listed companies in Shanghai and Shenzhen stock exchanges from 2011 to 2020. It empirically studies the relationship among CSR, corporate reputation, brand value, and enterprise performance, and focuses on the mediating effect of

corporate reputation and brand value. Results show that: (1) CSR positively correlates with enterprise performance (H1 is supported). The proactive approach to social responsibility facilitates companies to improve their performance. (2) Corporate reputation plays a partial mediating role between CSR and enterprise performance (H2, H3, and H4 are supported), indicating that corporate reputation plays an important bridging role in the mechanism of CSR's influence on enterprise performance. (3) Brand value has a partial mediating effect between CSR and enterprise performance (H5, H6, and H7 are supported), indicating that enterprises actively undertake and disclose social responsibilities, show a good corporate image to the public, enhance corporate awareness and reputation, enhance the core competitiveness of the brand, and ultimately improve enterprise performance.

Given the above, companies should be aware of their social responsibilities, and actively undertake social responsibility. Moreover, they should reinforce reputation management, accumulate reputation capital, and strengthen brand value management, to enable companies to develop higher quality more efficiently, equitably, and sustainably.

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