# A STUDY OF THE RELATIONSHIP BETWEEN CORPORATE SOCIAL RESPONSIBILITY AND BRAND PERFORMANCE—MEDIATING EFFECT OF CORPORATE REPUTATION AND B2B BRAND EQUITY

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**Abstract**

This study aims to explore the relationships between corporate social responsibility (CSR), corporate reputation, brand equity, and brand performance in China's B2B manufacturing sector. Utilizing a sample of purchasing managers from the top 500 manufacturing industries in Guangdong Province, we distributed 500 questionnaires, achieving a high response rate with 400 valid returns. Data analysis was conducted using structural equation modeling (SEM), to assess the mediating roles of corporate reputation and brand equity between CSR and brand performance. The results confirm a positive correlation between CSR and brand performance, mediated by corporate reputation and brand equity. These findings contribute significantly to the academic literature by integrating CSR into the strategic management framework of B2B industrial companies and empirically demonstrating the positive impact of CSR on brand equity and performance.

**Keywords:** Corporate Social Responsibility; B2B; Brand Equity; Brand Performance.

## 1. INTRODUCTON

The rapid evolution of the global market and the shift towards Industry 4.0 have underscored the necessity for corporations, especially in the industrial sector, to integrate corporate social responsibility (CSR) within their operational strategies to foster sustainable brand value and performance (Bianco et al., 2023). Despite the recognized influence of CSR on corporate reputation and stakeholder satisfaction, the specific mechanisms through which CSR impacts brand equity and performance in China's industrial sector remain underexplored (Rahman et al., 2023). This gap in understanding how CSR contributes to sustained competitive advantage and brand performance is particularly pronounced given the pivotal role of Chinese manufacturing in the global economy (Saeed et al., 2023). Therefore, this research aims to elucidate the complex interplay between CSR, corporate reputation, brand equity, and brand performance, providing insights into how these elements collectively foster a resilient and dynamic industrial brand in the context of increased economic globalization and technological advancements.

Corporate Social Responsibility (CSR) has been a focal point of academic and industry discussions since the 1950s, evolving into a crucial element of corporate strategy across the globe (Fatima & Elbanna, 2023). Enterprises are increasingly recognized as fundamental to societal and economic structures, with their expanding influence necessitating a greater commitment to CSR (Ortiz-Martínez et al., 2023). The modern corporate landscape, especially in China, has seen businesses at the nexus of social and economic development, propelled by their substantial contributions through employment and taxation (Zhang et al., 2024). This dual role has thrust CSR into the limelight, highlighting its significance in promoting environmentally sustainable and technologically advanced growth.

Theoretical frameworks such as stakeholder theory articulate that businesses should not solely focus on shareholder wealth but must consider the interests and contributions of all stakeholders (Carlisle et al., 2024). The growing expectations of stakeholders, coupled with the increasing demands of a globalized economy, position CSR as a strategic imperative for enhancing corporate reputation and achieving sustainable brand performance (Salam & Jahed, 2023). This perspective is crucial in understanding the broader impacts of CSR beyond immediate financial metrics, suggesting a profound influence on long-term brand equity and market competitiveness.

In the context of China's industrial growth, which has been marked by significant milestones such as leading global industrial output and transitioning towards high-quality brand-oriented manufacturing, the role of CSR becomes even more critical (Lin et al., 2021). This research seeks to explore the nuanced relationship between CSR and brand performance within the industrial sector, aiming to identify the mechanisms through which CSR initiatives can enhance brand equity and, consequently, corporate performance in a rapidly evolving economic landscape.

Hence, this research aims to 1) explore the logical relationship and influence mechanisms of corporate social responsibility, corporate reputation, brand equity, and brand performance based on stakeholder theory and reputation theory. 2) Provide scientific and reasonable reference for enterprise's brand building, guide enterprises to allocate resources scientifically and rationally, and formulate effective brand value enhancement strategies. 3) Help enterprises quickly enhance brand value, so as to obtain a favorable position in the market competition, promote the sustainable development of enterprises, and enhance market competitiveness 4) Expand and improve the relevant theoretical foundation of CSR in the field of human resource management, and provide some new ideas for other subsequent related researches.

## 2. LITERATURE REVIEW

In the academic discourse on corporate social responsibility (CSR), theories such as those posited by Freeman (1984) and Friedman (1970) suggest that CSR extends beyond mere economic benefits for the company. It is posited that CSR fosters a nexus of communication, interaction, and a shared community of fate between a corporation and its stakeholders, acting as a foundational behavioral code in establishing stakeholder relationships (Fritsch, 2023). This is especially pertinent in B2B contexts where manufacturing firms can derive multiple benefits from fulfilling diverse responsibilities—economic, environmental, legal, customer-related, community-focused, and internal (employee and political).

From a partnership perspective, CSR enhances trust between service companies and their upstream and downstream supply chain partners, fostering mutual benefits and stable supply relationships (Z. Cao et al., 2024). This, in turn, potentially lowers production costs and enhances profit margins. Regarding consumer relations, companies focusing on customer experiences and providing high-quality, personalized services not only meet consumer expectations but also enhance consumer recognition and satisfaction through CSR activities, thus building consumer trust and loyalty (P. Cao et al., 2024). These efforts contribute to an increased market share.

From an environmental and social standpoint, investments in CSR activities such as environmental conservation and charitable contributions positively impact corporate image and facilitate the establishment of beneficial relationships with government entities. Furthermore, fulfilling responsibilities towards internal stakeholders like shareholders and employees stabilizes cash flows, enhances operational efficiency, and fosters a robust corporate culture, thereby reducing turnover rates and management costs (Mushafiq et al., 2023).

In today's highly informatized global economy, where tangible resources are readily available and imitable, it is the intangible resources such as innovation capabilities, corporate reputation, and technological resources that constitute a company's heterogeneous advantage for sustainable development (Mady et al., 2023). Manufacturing firms that proactively fulfill their CSR obligations send positive signals externally, thereby enhancing corporate image and reputation among investors and improving competitiveness. This helps in attracting investment and reducing non-systematic risks, including stock price volatility (Wang et al., 2024).

Brand performance, defined as the financial outcome resulting from a supplier's brand and the purchaser's perception, is significantly influenced by the purchaser's perceptions of the supplier's CSR activities (Opoku et al., 2023). These perceptions motivate purchasers to engage with the brand's products or services, leading to improved brand performance (Hsu, 2023). Drawing on the literature, the following hypotheses are posited:

> H1: There is a positive correlation between CSR and brand performance.
>
> H2: CSR is positively correlated with corporate reputation.
>
> H3: Corporate reputation and B2B brand equity are positively correlated.
>
> H4: Brand equity is positively correlated with brand performance.
>
> H5: CSR is positively correlated with B2B brand equity.
>
> H6: Corporate reputation is positively correlated with brand performance.

The conceptual model depicted in figure 1 delineates a systematic framework for understanding the interrelationships among corporate social responsibility (CSR), corporate reputation, B2B brand equity, and brand performance. Central to this model is the hypothesis that CSR directly influences brand performance (H1) and simultaneously enhances corporate reputation (H2). The improved corporate reputation is posited to positively affect B2B brand equity (H3), demonstrating how a robust corporate reputation serves as a catalyst for strengthening brand equity in business-to-business markets. Additionally, the model asserts that B2B brand equity directly contributes to enhanced brand performance (H4), underscoring the pivotal role of strong brand equity in driving financial outcomes. A direct link from CSR to B2B brand equity (H5) also suggests that CSR activities independently foster brand equity, highlighting CSR's integral role in brand valuation. Lastly, the model explores the impact of corporate reputation on brand performance (H6), suggesting that a favorable reputation not only bolsters brand equity but also directly amplifies overall brand performance. This framework illustrates a dynamic interplay where CSR acts as a foundational driver, enhancing corporate reputation and brand equity, which in turn collectively enhance brand performance, reflecting the interconnected and mutually reinforcing nature of these constructs in a corporate context.
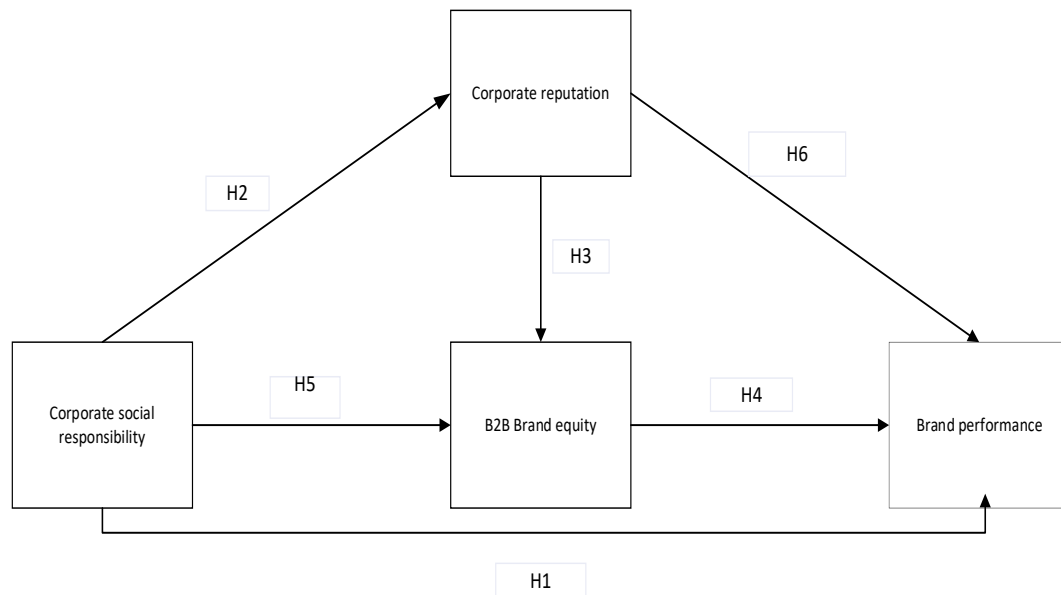
**Fig 1: Conceptual Model**

## 3. RESEARCH METHOD

### 3.1 Data collection

In this study, data collection was conducted via the online platform "Questionnaire Star," targeting purchasing managers and employees in the top 500 manufacturing industries in Guangdong Province for the year 2023. A total of 500 questionnaires were distributed, with 450 returned; after screening for completeness and consistency, 400 valid questionnaires were retained, resulting in an effective response rate of 90%.

### 3.2 Instrument

This study utilizes a comprehensive suite of measurement scales to quantitatively assess the constructs of Corporate Social Responsibility (CSR), Corporate Reputation (CR), B2B Brand Equity (BE), and Brand Performance (BP) using a five-point Likert scale ranging from "strongly agree" to "strongly disagree." Each scale incorporates items tailored to capture specific dimensions of the constructs, reflecting minor modifications to adapt to the current Chinese context while building upon established academic scales.

The CSR scale evaluates suppliers' engagement in social initiatives beneficial to their stakeholders, such as workers, customers, and the community (Picasso et al., 2023). Derived from Maignan et al. (1999), the scale comprises five items designed to assess various aspects of social responsibility, including community involvement, environmental protection, buyer benefits, rights of female and disabled employees, and active participation in social initiatives.

Corporate reputation is assessed through a two-dimensional scale: cognitive capacity and affective influence, following Schwaiger (2004). This scale includes twelve items that measure perceptions of the company's industry leadership, operational capabilities, future prospects, likability, and emotional identification with the company. Additionally, it assesses respect, trustworthiness, long-term growth concern, and engagement with company-related news or reports.

The brand equity scale evaluates four dimensions of the supplier's brand within the industrial sector: brand loyalty, perceived quality, brand awareness/association, and brand satisfaction. Items were adapted from Yoo and Donthu (2001) and Washburn and Plank (2002), totaling between three and five items per construct. Brand loyalty measures repurchase intentions, perceived quality assesses the product and service quality against expectations, and brand awareness/association gauges recognition and mental association with the brand. Brand satisfaction items evaluate the overall satisfaction derived from all brand interactions.

Brand performance is assessed by purchasing managers through their perceptions of the financial impact of buying or using the supplier's brand products and services. This construct uses four items sourced from Lee et al. (2008), focusing on sales growth, market share expansion, profit margins, and overall company performance enhancement attributed to the brand. Each scale is meticulously designed to ensure the validity and reliability of the measurements, capturing the nuanced aspects of each construct while providing robust data for subsequent analysis. The five-point Likert scale facilitates the quantification of responses, allowing for detailed statistical analysis to explore the relationships among these critical business constructs.

## 4. RESULTS

### 4.1 Sample description

Table 1 describes the respondents were conducted in six aspects, namely, gender, education, education level, working hours, registered capital of the enterprise and the number of years the company has been established (as shown in Table 5-1). The respondents were predominantly male, accounting for 69.75% of the respondents. The respondents' positions in the company were 91% middle-level and below, and only 9% were senior managers. Respondents' education degree of bachelor degree and above accounted for 73.75%. The registered capital of the surveyed manufacturing companies is more than 78% above 5 million dollars.

**Table 1: Background statistics of the research sample (N=400）**

| Frequency | | | | |
|---|---|---|---|---|
| **Index** | **Categories** | **N** | **Percent (%)** | **Cumulative Percent (%)** |
| gender | Male | 279 | 69.75 | 69.75 |
| | Femal | 121 | 30.25 | 100 |
| duty | 1 Senior Managers | 36 | 9 | 9 |
| | 2 junior Managers | 226 | 56.5 | 65.5 |
| | 3 Primary Manager | 138 | 34.5 | 100 |
| education | 1 Master's Degree or above | 68 | 17 | 17 |
| | 2 Bachelor Degree | 227 | 56.75 | 73.75 |
| | 3 College Degree | 83 | 20.75 | 94 |
| | 4 Less Than College Degree | 22 | 6 | 100 |
| years of working for the company | 1-5yeaars | 72 | 18 | 18 |
| | 6-10yesrs | 129 | 32.25 | 50.25 |
| | above ten year | 118 | 29.5 | 79.75 |
| | | 81 | 20.25 | 100 |
| Size of enterprise | 1 Less than 5 million | 88 | 22 | 22 |
| | 2 5 million - 1 million | 134 | 33.5 | 55.5 |
| | 3 More than 1 million | 178 | 44.5 | 100 |
| Total | | 400 | 100 | 100 |

## 4.2 Reliability Analysis

One way to determine whether a questionnaire is trustworthy and reliable is to run it through a reliability test. Primarily, it relies on the reliability of the test instrument's findings, which represent the full scope of the data being measured.

The two main types of dependability are intrinsic reliability and extrinsic reliability. In order to find out if a group of questions measures the same notion and if the many topics that make up the scale are internally consistent, the intrinsic reliability test is used. The dependability of a questionnaire is directly proportional to its level of internal consistency. For this study, we used Cronbach's Alpha to check how reliable the questionnaire was internally.

The internal consistency of the questionnaire improves with increasing Cronbach's Alpha coefficient. When Cronbach's Alpha is between 0.7 and 0.8, dependability is good, and when it's larger than 0.8, reliability is high. The researcher argues that a value below 0.6 indicates poor reliability, whereas a value between 0.6 and 0.7 indicates adequate reliability.

By checking the validity of the scale items separately, we were able to determine the questionnaire's internal consistency. The outcomes are laid down in the table that follows. The questionnaire has a rather good level of internal consistency, as all of the scales have Cronbach's alpha levels higher than 0.7. Therefore, the questionnaire is appropriate for use in this study as a research tool.

Reliability for the "alpha coefficient of item deleted" remains relatively same after removing an item from a query. This raises concerns about processing the question item deletion. All of the examined items have a "CITC value" higher than 0.3, indicating a satisfactory degree of reliability and a robust correlation among them. With a result greater than 0.8 for the research data dependability coefficient, we can say with confidence that this data is reliable and suitable for additional investigation.

The examined items' CITC values range from more than 0.3 to more than 0.6, and the Cronbach's Alpha coefficient of the csr scale is 0.836, as shown in Table 4.3. It is clear from this that the data is reliable and suitable for additional examination.

### Table 2: Reliability Statistics (Cronbach Alpha)

| Items | Corrected Item-Total Correlation(CITC) | Cronbach Alpha if Item Deleted | Cronbach α |
|---|---|---|---|
| CSR1 | 0.636 | 0.804 | |
| CSR2 | 0.638 | 0.803 | |
| CSR3 | 0.666 | 0.796 | 0.836 |
| CSR4 | 0.621 | 0.808 | |
| CSR5 | 0.631 | 0.806 | |

Corporate reputation, as illustrated in Tables 3-5, The data reliability is of high quality and can be used for further analysis if the Cronbach's Alpha coefficient of the two sub-dimension scales or the total scale is above 0.8, and the CITC values of the analysed items are greater than 0.3 and above 0.6.

### Table 3: Reliability Statistics (Cronbach Alpha)

| Items | Corrected Item-Total Correlation(CITC) | Cronbach Alpha if Item Deleted | Cronbach α |
|---|---|---|---|
| EC1 | 0.713 | 0.899 | |
| EC2 | 0.644 | 0.905 | |
| EC3 | 0.727 | 0.898 | |
| EC4 | 0.736 | 0.897 | 0.911 |
| EC5 | 0.749 | 0.896 | |
| EC6 | 0.689 | 0.901 | |
| EC7 | 0.738 | 0.897 | |
| EC8 | 0.693 | 0.901 | |

### Table 4: Reliability Statistics (Cronbach Alpha)

| Items | Corrected Item-Total Correlation(CITC) | Cronbach Alpha if Item Deleted | Cronbach α |
|---|---|---|---|
| CC1 | 0.646 | 0.775 | |
| CC2 | 0.639 | 0.778 | 0.821 |
| CC3 | 0.642 | 0.777 | |
| CC4 | 0.658 | 0.772 | |

### Table 5: Cronbach Alpha-CR

| N of Items | *n* | Cronbach α |
|---|---|---|
| 12 | 400 | 0.91 |

As illustrated in Tables 6-10, brand equity The data reliability is of high quality and can be used for further analysis when the Cronbach's alpha coefficient of the four sub-dimension scales or the total scale is above 0.7, and the CITC values of the analysed items are greater than 0.3 and above 0.6.

### Table 6: Reliability Statistics (Cronbach Alpha)

| Items | Corrected Item-Total Correlation(CITC) | Cronbach Alpha if Item Deleted | Cronbach α |
|---|---|---|---|
| BL1 | 0.633 | 0.658 | |
| BL2 | 0.585 | 0.712 | 0.77 |
| BL3 | 0.596 | 0.7 | |

### Table 7: Reliability Statistics (Cronbach Alpha)

| Items | Corrected Item-Total Correlation(CITC) | Cronbach Alpha if Item Deleted | Cronbach α |
|---|---|---|---|
| PQ1 | 0.662 | 0.715 | |
| PQ2 | 0.656 | 0.719 | 0.802 |
| PQ3 | 0.624 | 0.754 | |

### Table 8: Reliability Statistics (Cronbach Alpha)

| Items | Corrected Item-Total Correlation(CITC) | Cronbach Alpha if Item Deleted | Cronbach α |
|---|---|---|---|
| BAA1 | 0.695 | 0.821 | |
| BAA2 | 0.688 | 0.823 | |
| BAA3 | 0.646 | 0.834 | 0.857 |
| BAA4 | 0.666 | 0.829 | |
| BAA5 | 0.665 | 0.829 | |

### Table 9: Reliability Statistics (Cronbach Alpha)

| Items | Corrected Item-Total Correlation(CITC) | Cronbach Alpha if Item Deleted | Cronbach α |
|-------|------------------|----------------|------------|
| BS1 | 0.641 | 0.782 | |
| BS2 | 0.622 | 0.791 | 0.824 |
| BS3 | 0.666 | 0.77 | |
| BS4 | 0.666 | 0.771 | |

### Table 10: Cronbach Alpha-BE

| N of Items | *n* | Cronbach α |
|------------|-----|------------|
| 15 | 400 | 0.901 |

The Cronbach's Alpha coefficients of the brand performance scale are all above 0.8, and the CITC values of the analysed items are all greater than 0.3 and above 0.7, as seen in Table 11. This comprehensively indicates that the data reliability is of high quality and can be used for further analysis.

### Table 11: Reliability Statistics (Cronbach Alpha)

| Items | Corrected Item-Total Correlation(CITC) | Cronbach Alpha if Item Deleted | Cronbach α |
|-------|------------------|----------------|------------|
| BP1 | 0.735 | 0.838 | |
| BP2 | 0.728 | 0.84 | 0.875 |
| BP3 | 0.732 | 0.839 | |
| BP4 | 0.727 | 0.841 | |

## 4.3 Validity Analysis

The term "validity," which is often called "structural validity," refers to how well objects or variables match up with one another. A research item's reasonableness and importance can be assessed using it. The data was validated using factor analysis, a data analysis method that combines indicators including the KMO value, common degree, variance explained, and factor loading coefficients to determine the data's validity. In this study, the data was rotated using the maximum variance rotation method (varimax) to find the factors' correlation with the study items. The data extraction of the study items' factors and the relationship between the factors and the study items are shown in the table above. Using the variance explained value, we can see how much information has been extracted; using the KMO value, we can see how well the information has been extracted; using the commonality value, we can exclude outlandish study items; and using the factor loading coefficients, we can quantify how well the dimensions correspond to the question items. Each variable's measuring items in this study are based on the work of both local and international researchers, guaranteeing the scale's content validity.

Table 12 shows that all 36 question items have a common degree value larger than 0.4. With a KMO score of 0.924—greater than 0.6—the data can be effectively used for information extraction.

### Table 12: KMO and Bartlett test

| KMO | | 0.924 |
|-----|------|-------|
| Bartlett test | Approx. Chi-Square | 7048.687 |
| | *df* | 630 |
| | *p* value | 0.000 |

## 4.4 Validation Factor Analysis

The structure of the factors was examined using principal component analysis and exploratory factor analysis. The dataset's factor structure was investigated using exploratory factor analysis, and its structure was confirmed using confirmatory factor analysis. The methods used in this inquiry were derived from the literature. Based on the findings of O'Hair et al. (1998), confirmatory factor analysis (CFA) was used to ensure the constructs and factor structure were valid. Measurement modeling came first, then structural modeling followed Gerbing and Anderson (1988). Table 13 shows the CFA that was used for this study. As shown in Table 14 below, a validated factor analysis was carried out for a grand total of four factors and fifteen analytic items. With 400 objects analyzed, it is a moderately large sample size compared to the number of objects analyzed (by a factor of 10). The factor loading values show how well the examined items (explicit variables/measured items) correlate with the factors (latent variables). There is a statistically significant association (absolute value larger than 0.6) between corporate social responsibility (CSR), corporate reputation (CR), brand equity (BE), and brand performance (BP). Thus, the measurement relationship seems to be working well. All four of the aforementioned factors—corporate social responsibility (CSR), corporate reputation (CR), brand equity (BE), and brand performance—had AVE values higher than 0.5 and CR values higher than 0.7, indicating good aggregation (convergence) validity in the data from this analysis.

### Table 13: CFA analysis of basic summaries

| actor | number |
|---|---|
| CSR | 5 |
| CR | 2 |
| BE | 4 |
| BP | 4 |
| sum | 15 |
| sample | 400 |

### Table 14: Table of factor loading coefficients

| Factor | Items | Non Std. Coef. | Std. Error | CR | P | Std. Estimate |
|---|---|---|---|---|---|---|
| CSR | CSR1 | 1 | - | - | - | 0.708 |
| CSR | CSR2 | 0.966 | 0.077 | 12.571 | *** | 0.709 |
| CSR | CSR3 | 0.983 | 0.076 | 12.911 | *** | 0.731 |
| CSR | CSR4 | 0.91 | 0.074 | 12.35 | *** | 0.695 |
| CSR | CSR5 | 1.086 | 0.086 | 12.68 | *** | 0.716 |
| CR | EC | 1 | - | - | - | 0.689 |
| CR | CC | 1.288 | 0.155 | 8.311 | *** | 0.819 |
| BE | BL | 1 | - | - | - | 0.694 |
| BE | PQ | 1.086 | 0.088 | 12.312 | *** | 0.755 |
| BE | BAA | 0.927 | 0.083 | 11.208 | *** | 0.664 |
| BE | BS | 1 | 0.084 | 11.879 | *** | 0.716 |
| BP | BP1 | 1 | - | - | - | 0.794 |
| BP | BP2 | 1 | 0.06 | 16.789 | *** | 0.802 |
| BP | BP3 | 0.969 | 0.058 | 16.762 | *** | 0.801 |
| BP | BP4 | 0.969 | 0.059 | 16.541 | *** | 0.792 |
| Note: A horizontal bar '-' indicates that the item is a reference item.  *** P<0.001 | | | | | | |

### Table 15: Model AVE and CR indicator results

| Factor | Mean variance extraction AVE value | Combined reliability CR value |
|--------|-----------------------------------|-------------------------------|
| CSR | 0.507 | 0.837 |
| CR | 0.572 | 0.727 |
| BE | 0.501 | 0.801 |
| BP | 0.636 | 0.875 |

Discriminant validity analysis finds that CSR's AVE square root value of 0.712 is higher than the maximum absolute value of the factor correlation coefficient, which is 0.463. Accordingly, CSR appears to possess strong discriminant validity. At 0.757, the absolute value of the square root of the correlation coefficient for CR is higher than the maximum value of the components' correlation coefficient, which is 0.396. As a result, it has strong discriminant validity. Compared to the maximum absolute value of the factor-to-factor correlation coefficient (0.439), the AVE square root of BE (0.708) is higher. As a result, BE is believed to possess strong discriminant validity. With a square root of 0.797, the absolute value of the squared correlation coefficient between the components is higher than the factor's maximum value of 0.463. As a result, it has strong discriminant validity.

### Table 16: Distinguishing validity: Pearson's correlation vs. AVE square root values

| | CSR | CR | BE | BP |
|-----|------|------|------|------|
| CSR | 0.712 | | | |
| CR | 0.353 | 0.757 | | |
| BE | 0.348 | 0.284 | 0.708 | |
| BP | 0.463 | 0.396 | 0.439 | 0.797 |

Based on the results, figure 2 portray the diagram of confirmatory factor analysis (CFA)
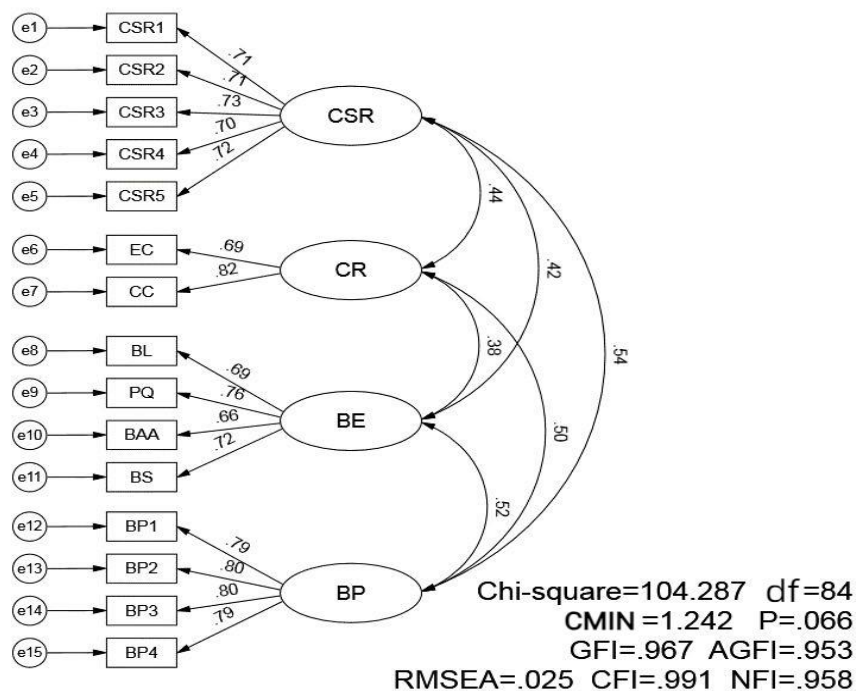


**Fig 2: Confirmatory factor analysis**

The model fit index is used to analyze the overall model fit validity situation. From The sub-model fit is very good, as evidenced by the NFI of 0.958, the TLI of 0.989, the CFI of 0.991, the GFI of 0.967, and the AGFI of 0.953, all of which are greater than 0.9. The RMSEA of this study is 0.025, which is less than 0.1.

The structural model's fitness test is satisfactory, as evidenced by the test data. Primarily, the intrinsic quality test of the model is satisfactory, the causal relationship between the latent variables is defined according to the theory, the reflective relationship between the observed variables and the latent variables is reasonable, the correlation between the variables is moderate, and the structural model has a high degree of stability and reliability. Secondly, the structural model's overall fitness test results are superior, the multiple parameter tests satisfy the corresponding fitness criteria, the theoretical model and the sample data are more closely aligned, and the hypothesised theoretical model is highly accepted.

**Table 17: Model Fit Indicators**

| Commonly used indicators | p | χ2/df | RMSEA | GFI | AGFI | CFI | NFI | TLI | IFI |
|---|---|---|---|---|---|---|---|---|---|
| Judgment criteria | >0.05 | <3 | <0.10 | >0.9 | >0.9 | >0.9 | >0.9 | >0.9 | >0.9 |
| Value | 0.066 | 1.242 | 0.025 | 0.967 | 0.953 | 0.991 | 0.958 | 0.989 | 0.991 |

## 4.5 Structural equation modeling

In this paper, the SEM method was used for hypothesis testing. This is because it is much better than the conventional regression method (Schuberth et al., 2023). The structural model of this study is shown in Figure 3. According to Urbach and Ahlemann (2010), SEM can analyze the association between multiple exogenous and endogenous variables simultaneously. SEM is superior to regression techniques in mediation analysis (Deng & Yuan, 2023). This is the reason why SEM was used for data analysis in this study. According to the structural equation modeling path relationship table can be seen:

1) The value of the standardized path coefficient is 0.445>0 when there is an effect of CSR on CR. This route demonstrates significance at the 0.01 level (C.R.=6.024, p<0.001), which indicates that CSR will have a strong positive effect relationship on CR, hence providing support for hypothesis H2.

2) The value of the standardized path coefficient is 0.317, which is greater than zero, when CSR has an effect on BE. This route exhibits significance at the 0.01 level (C.R.=4.498, p<0.001), so showing that CSR will have a substantial positive effect relationship on BE, which is in favor of hypothesis H5.

3) The standardized path coefficient value is 0.24>0 when there is an effect of CR on BE. This path demonstrates significance at the 0.01 level (C.R.=3.311, p<0.001), which indicates that CR will have a strong positive effect relationship on BE, hence providing support for hypothesis H3.

4) The standardized path coefficient value is 0.301>0 when CSR has an effect on blood pressure (BP), and this route demonstrates significance at the 0.01 level (C.R.=4.799, p<0.001). This indicates that CSR will have a significant positive effect relationship on blood pressure (BP), which is in favor of hypothesis H1.

5) The value of the standardized path coefficient is 0.248>0 when there is an effect of CR on blood pressure (BP). This path demonstrates significance at the 0.01 level (C.R.=3.875, p<0.001), which indicates that CR will have a substantial positive effect relationship on blood pressure (BP), hence providing support for hypothesis H6.

6) Because the standardized path coefficient value is 0.303>0 when BE is influencing on BP, and because this path demonstrates significance at the 0.01 level (C.R.=4.926, p<0.001), it can be concluded that BE will have a strong positive influence connection on BP, which is in agreement with hypothesis H4.

**Table 18: Structural Equation Modeling Path Relationship**

| Path | | | Non Std. Coef. | S.E. | C.R. | P | Std. Estimate | Conclusion |
|---|---|---|---|---|---|---|---|---|
| CR | <--- | CSR | 0.325 | 0.054 | 6.024 | *** | 0.445 | Accepted |
| BE | <--- | CSR | 0.245 | 0.055 | 4.498 | *** | 0.317 | Accepted |
| BE | <--- | CR | 0.253 | 0.077 | 3.311 | *** | 0.24 | Accepted |
| BP | <--- | CSR | 0.392 | 0.082 | 4.799 | *** | 0.301 | Accepted |
| BP | <--- | CR | 0.441 | 0.114 | 3.875 | *** | 0.248 | Accepted |
| BP | <--- | BE | 0.511 | 0.104 | 4.926 | *** | 0.303 | Accepted |

In this study, we employed the Bias-Corrected Bootstrap method to evaluate the impact of mediating factors. By employing iterative random sampling, 2,000 Bootstrap samples were extracted from the original dataset (n = number of samples) to construct an essentially uniform sampling distribution. The 95% confidence intervals for the mediation effect were determined using the 2.5th percentile and the 97.5th percentile as the estimation intervals.

The 95% confidence interval (CI) for the indirect effect of "CR" in the "CSR=>CR=>BP" pathway, which ranges from 0.074 to 0.250, does not include zero. Additionally, the significance level of P=0.001 is less than the threshold of 0.05. Therefore, we can conclude that there is a statistically significant mediating effect.

This is corroborated by the observation that the confidence intervals do not encompass the value of zero. Based on the statistically significant mediating effect with a non-standardized effect value of 0.143, it may be inferred that hypothesis H8 is accurate.

In this specific pathway, the causal impact of the independent variable "CSR" is represented by a confidence interval with a 95% level of confidence, ranging from 0.238 to 0.576. The confidence interval excludes the value of 0, and the significance threshold is P=0.001, which is less than 0.05.

The value of the effect is 0.392. Moreover, this indicates that the mediating variable "CR" plays a partial mediating role in the "CSR=>CR=>BP" pathway, with a mediating effect of 20.37%, confirming the presence of this mediating pathway.

This discovery provides additional evidence that the mediating pathway indeed exists. When analyzing the chained mediation path, the absence of the number 0 in the 95% confidence interval (95% CI: 0.018-0.084) strongly suggests the presence of the mediation path 'CSR⇒CR∗BE∗BP'.

## Table 19: Mediation effects table test table

| Path | Effects | Lower | Upper | P | Conclusion | Effect Ratio |
|---|---|---|---|---|---|---|
| Indirect Effects | | | | | | |
| CSR_CR_BP | 0.143 | 0.074 | 0.25 | 0.001 | Partial Mediation | 20.37% |
| CSR_BE_BP | 0.125 | 0.061 | 0.216 | 0.001 | Partial Mediation | 17.81% |
| CSR_CR_BE_BP | 0.042 | 0.018 | 0.084 | 0.001 | Chain Mediation | 5.98% |
| Direct Effects | | | | | | |
| CSR_BP | 0.392 | 0.238 | 0.576 | 0.001 | | 55.84% |

Note: The terms "Lower" and "Upper" denote the lower and upper limits of the Bootstrap sampling 95% interval, respectively.



Chi-square=104.287 df=84
CMIN=1.242 P=.066
GFI=.967 AGFI=.953
RMSEA=.025 CFI=.991 NFI=.958
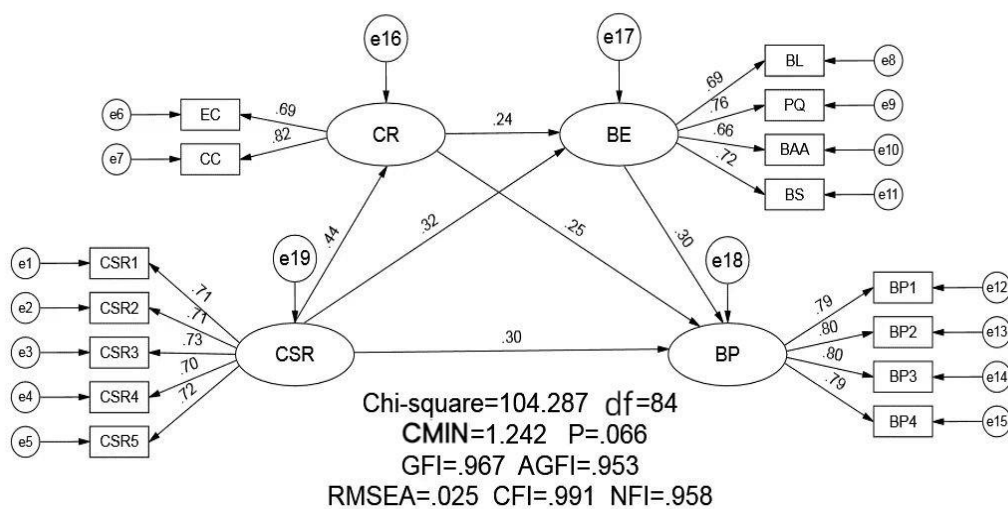
**Fig 3: Structural equation modeling path relationship diagram**

## 5. DISCUSSION AND CONCLUSION

This study explores the relationship between corporate social responsibility (CSR), corporate reputation, B2B brand equity, and brand performance, particularly within the context of the Chinese manufacturing industry. The research findings clearly indicate that CSR activities positively correlate with brand performance, highlighting that enterprises engaging responsibly in social actions not only fulfill societal expectations but also enhance their brand value. Empirical analysis further underscores the mediating roles of corporate reputation and B2B brand equity: CSR actions strengthen corporate reputation, which in turn improves brand equity and thereby elevates overall brand performance. This linkage underscores the profound impact of CSR on influencing consumer perception and loyalty, which is critical for the sustainability and competitive advantage of B2B brands. The study offers a comprehensive framework for understanding how CSR directly and indirectly impacts brand performance through the lenses of corporate reputation and brand equity, providing significant theoretical contributions and practical implications for enhancing strategic CSR integration in business practices.

## 5.1 Theoretical implication

The theoretical contributions of this study are multifaceted and build upon existing research while providing new insights into the dynamics of corporate social responsibility (CSR), corporate reputation, brand equity, and brand performance in the B2B context. Firstly, this research enriches the existing body of literature by empirically validating the positive relationship between CSR and brand performance, a connection that has been suggested but less explored in the B2B industrial sector compared to the consumer goods sector. Notably, prior studies such as those by Le et al. (2024) have emphasized the potential for CSR to enhance corporate reputation and financial performance, but they have predominantly focused on consumer markets.

Secondly, this study extends the work on brand equity models, particularly in industrial settings, by demonstrating the mediating role of corporate reputation and B2B brand equity in the relationship between CSR and brand performance. Previous studies, including those by Fombrun, Opoku et al. (2023), have acknowledged the impact of corporate reputation on consumer perception and corporate performance, but less attention has been paid to how these elements function within B2B markets. This research fills this gap by showing how enhanced corporate reputation, facilitated by effective CSR, leads to improved B2B brand equity and subsequently boosts brand performance. This finding aligns with and extends the brand equity model proposed by Marvi et al. (2024) by integrating CSR as a pivotal factor influencing brand equity in B2B contexts.

Moreover, the current study advances our understanding of how CSR activities influence different stakeholders in the B2B sector, which has been underexplored in previous literature that typically focuses on direct consumer responses. By addressing how CSR perceptions among purchasing managers and other key enterprise decision-makers impact corporate reputation and brand equity, this research adds a new layer of understanding to stakeholder theory in the realm of industrial marketing. This aspect of the research draws upon and expands the stakeholder theory discussions by Freeman (1984) and its application in the corporate social responsibility framework, as discussed by McWilliams and Siegel (2001).

Furthermore, this study contributes to the literature on strategic management by suggesting that CSR should be integrated into the strategic management framework of companies to enhance brand equity and performance. This recommendation builds on Alibakhshi et al. (2024) idea of creating shared value and suggests specific pathways through which CSR integration can enhance brand equity in the B2B context. This strategic integration not only supports the business case for CSR as discussed by Tiep Le et al. (2023)but also shows the operational pathways through which CSR activities can be leveraged to improve brand performance in the industrial sector.

In conclusion, this study provides a comprehensive framework that integrates CSR with corporate reputation and B2B brand equity to influence brand performance, thereby offering a novel contribution to the fields of CSR, brand management, and industrial marketing. These insights are particularly valuable for practitioners and scholars interested in the strategic implementation of CSR within industrial markets to achieve sustainable competitive advantages.

## 5.2 Practical implication

The practical implications of this study are significant for various stakeholders within the industrial B2B sector, including corporate managers, policymakers, and CSR practitioners. One of the primary practical applications is the reinforcement of the strategic value of integrating CSR into core business strategies. For corporate managers, particularly those in B2B industries, this research underscores the importance of not only implementing CSR initiatives but also strategically aligning these initiatives with the firm's broader business objectives to maximize brand equity and performance. This approach suggests that CSR should be viewed not as a peripheral activity but as a central strategy that can drive business success. By enhancing corporate reputation through responsible business practices, companies can elevate their brand equity in the industrial market, leading to increased customer loyalty and potentially higher financial returns. This strategic alignment can help firms differentiate themselves in competitive markets, where buyers are increasingly valuing sustainability and ethical practices in their purchasing decisions.

Furthermore, for CSR practitioners and policymakers, this study provides insights into the effective communication of CSR activities. It is crucial for businesses to not only engage in CSR but also effectively communicate these efforts to their stakeholders. Transparent and consistent communication can help build trust and strengthen corporate reputation, which this study has shown to be a mediator between CSR and brand performance. Policymakers can also draw from these findings to foster frameworks that encourage companies to disclose their CSR activities more openly and regularly. This could include the development of standardized reporting guidelines that make CSR efforts more visible and comparable across the industry, helping stakeholders to make more informed decisions. Such policies would not only aid in building consumer trust but also enhance the overall impact of CSR initiatives on brand performance within the industrial sector.

## 5.3 Conclusion

This study significantly contributes to the understanding of the dynamic interplay between corporate social responsibility (CSR), corporate reputation, brand equity, and brand performance in the B2B sector, particularly within China's industrial manufacturing landscape. It empirically substantiates the positive correlation between CSR and brand performance, illustrating that effective CSR strategies not only enhance corporate reputation but also bolster B2B brand equity, subsequently leading to improved brand performance. This finding highlights the strategic importance of CSR initiatives, suggesting that corporations can leverage CSR not just as a compliance or ethical imperative but as a core element of strategic business operations that directly contributes to brand and financial success. Moreover, the study elucidates the mediating roles of corporate reputation and B2B brand equity, providing a nuanced understanding of how these constructs link CSR to brand performance. These insights offer a robust framework for industrial companies to integrate CSR into their strategic planning and execution to strengthen brand equity and achieve competitive advantage.

However, one major limitation is the geographical and industrial focus on the Chinese manufacturing sector, which may not fully generalize to other cultural contexts or industrial settings. Future studies could expand the scope to include diverse geographical locations and different industries to explore whether the identified

relationships hold across broader contexts. Additionally, the study primarily relies on cross-sectional data, which can limit the ability to infer causality. Longitudinal studies could provide deeper insights into how the impact of CSR on brand equity and performance evolves over time. Further research could also explore the impact of different types of CSR activities (e.g., environmental, social, governance) to determine if some types of CSR are more influential on brand performance than others. Exploring these dimensions will enhance the understanding of nuanced CSR strategies that can be tailored to specific stakeholder groups or market conditions, ultimately aiding companies in crafting more effective and impactful CSR policies and practices.

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