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The Role of Corporate Social Responsibility in the Growth of Listed Companies in Guangzhou

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Abstract: *Since the global economic crisis in 2008, enterprises have encountered numerous challenges, including the profound impact of the COVID-19 pandemic and the constraints imposed by the emerging dual-carbon era. As companies grapple with industry restructuring and an increasingly competitive environment, the question arises: Is Corporate Social Responsibility (CSR) a reliable variable that guarantees growth, or are there other significant factors at play? This paper delves into the data of manufacturing enterprises in Guangzhou from 2012 to 2022, providing an empirical analysis of the relationship between CSR investment and enterprise growth. The findings indicate that CSR investment positively correlates with enterprise growth, suggesting that CSR can be a crucial strategy for companies aiming to thrive in uncertain markets. This analysis offers valuable insights for businesses, highlighting the importance of integrating CSR into their strategic planning to foster sustainable development and competitive advantage in an ever-evolving economic landscape. The implications of this study underscore the need for companies to consider CSR not merely as a compliance requirement but as a strategic asset that can drive long-term growth and resilience.*

Keywords: *Corporate social responsibility, company growth, regional economy*

1. Introduction

Enterprises, as integral parts of society, can no longer rely solely on technological innovation to meet investors' and consumers' demands. The importance of fulfilling social responsibilities has become increasingly evident as companies seek sustainable growth and competitiveness. CSR is now seen as a key strategy to enhance corporate reputation and create business opportunities. However, the dual-carbon era introduces new technological pressures, leading to industry reshuffling and restructuring. This study uses data from Guangzhou, a pivotal area in China's reform and opening-up, to analyze the impact of CSR on enterprise growth.

2. Literature review

Corporate Social Responsibility (CSR) is defined as a company's duty to its consumers, employees, suppliers, the environment, and society while generating profits for shareholders (Siswati and Pudjowati, 2024) [1]. The dynamic nature of enterprise development means that companies' operational and financial strength varies at different stages, affecting their willingness to fulfill social responsibilities and invest in R&D and innovation.

Previous studies have explored the impact of CSR and R&D investment on financial performance, yielding inconsistent conclusions. Proponents argue that CSR enhances brand evaluation (Li and Wei, 2014) [2], employee attitudes (Zhu et al., 2014) [3], and reputation, translating into improved sales and financial performance (Tian and Xiao, 2014) [4]. However, some studies highlight negative impacts, such as decreased financial performance due to responsibilities to employees and customers (Chang, 2023) [5].

Recent qualitative studies, such as those conducted in East Java, indicate that CSR positively influences corporate sales through a diffusion process (Chen and Jia, 2014) [6]. Data from South Korea also shows that CSR is a management strategy that simultaneously pursues societal and enterprise growth, with high-growth industries exhibiting higher CSR levels (Kang et al, 2015) [7]. This study investigates whether China's CSR still functions as an economic engine, focusing on Guangzhou's economic landscape.

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3. Study Design

This study selects data from 56 manufacturing enterprises in Guangzhou between 2012 and 2022 for empirical testing. A panel regression model is constructed to assess the impact of CSR on company growth, with data sourced from iFind and CSMAR financial databases [8-9].

4. Model Design

The study proposes the following hypotheses to explore the relationship between CSR and enterprise growth:

Ho: Social responsibility is positively correlated with profit growth.

H1: Technological growth positively moderates the relationship between social responsibility and profit growth.

H2: R&D investment positively influences the correlation between social responsibility and profit growth.

H3: The interaction between R&D investment and technological growth impacts social responsibility and profit growth.

Three levels of analysis are conducted:

Level 1: Examines the influence of independent and moderator variables on the dependent variable.

(1) INC_{it} =a0+β1ASSETit + β2NPit+β3 CSRit +μit

(2) INC_{it} = a0+β1ASSETit + β2NPit+β3 TECit +μit

(3) INC_{it} = a0+β1ASSETit + β2NPit++β_3RD $_{it-1}$ +μit

Level 2: Explores the effect of moderator variables on the independent variable.

(4) INCit =a0+β1ASSET $_{it}$ + β2NP $_{it+\beta3}$ CSR $_{it}$ +β4TEC it+μ it

(5) INCit =a0+β1ASSET $_{it}$ + β2NP $_{it+\beta3}$ CSR $_{it}$ +β4 RD $_{it-1+}$μ $_{it}$

Level 3: Analyzes the interaction between independent and moderator variables on the dependent variable.

(6) INCit =a0+β1ASSET $_{it}$ + β2NP $_{it+\beta3}$ CSR $_{it}$ +β4TEC it+β5 CSR $_{it}$ *TEC $_{it}$ +μ it

(7) INCit =a0+β1ASSET $_{it}$ + β2NP $_{it+\beta3}$ CSR $_{it}$ +β4 RD $_{it-1}$ +β5 CSR $_{it}$* RD $_{it-1+}$μ it

(8) INCit =a0+β1ASSET $_{it}$ + β2NP $_{it+\beta3}$ CSR $_{it}$ +β3 TEC it+β4RD $_{it-1+\beta4RD\ it-1}$ *TEC$_{it+\beta5}$ RD $_{it}$-1* CSR $_{it+\beta6}$ TEC $_{it}$ *CSR $_{i+\mu it}$

The first level tests the influence of the independent variable and the moderator variable on the explanatory variable, the second level examines the influence of the moderator variable on the independent variable, and the third level examines the influence of the interaction between the independent variable and the moderator variable on the dependent variable.

4.1 Variable Description

- **Dependent Variable:**
  - **INC**: Enterprise growth level (measured by total profit)
- **Independent Variables:**
  - **CSR**: Performance of corporate social responsibility (CSR expenditure)
  - **TEC**: Technological growth level (software and hardware facilities)
  - **RD**: R&D investment level (total investment in research and development)
- **Interaction Variables:**
  - **RD&TEC**: Interaction between R&D investment and technological growth

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- **RD&CSR**: Interaction between R&D investment and social responsibility
- **TEC&CSR**: Interaction between technological growth and social responsibility

- **Control Variables:**
  - **ASSET**: Enterprise asset scale (total assets)
  - **NP**: Employee scale (total number of employees)

- **Error Term:**
  - **μ**: Random error (model residual)

5. Result and Discussion

Regression Analysis

To further explore the quantitative relationships between the variables, we performed OLS regression and panel regression using STATA 18 software. The results of the first to third levels of regression are as follows:

Table 1: M1-M3 Merge

Model	INC	INC	INC
CSR	0.02482***		-15.71862
ASSET	127.08541***	120.56241***	-1.46e+02***
NP	-0.46025	1.17574***	1.10492*
TEC		0.00009***	
l_Rd			0.00028***
_cons	1.20e+05***	-1.22e+04***	1.25e+05***
N	1086	1086	974
R2	0.26422	0.86077	0.34318
Adj. R2	0.26218	0.86038	0.34115

- t statistics in parentheses
- $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

The first-level regression results show that CSR has a negative moderating effect on INC, indicating that CSR, R&D, and technological asset investment significantly impact INC. The validity of Model 1 suggests that H0 and H3 are not valid under R&D investment lag.

Table 1 presents the results of the Level 1 regression analysis, examining the impact of CSR, technological investment, and R&D on enterprise growth (INC) in three models (M1, M2, M3). In Model 1 (M1), CSR positively affects enterprise growth with a coefficient of 0.02482, significant at the 1% level, indicating that CSR expenditures are linked to increased profitability. However, in Model 3 (M3), CSR shows a negative coefficient of -15.71862, suggesting a complex relationship where CSR may not always lead to immediate growth, possibly due to short-term financial burdens outweighing benefits.

The asset scale (ASSET) shows a strong positive correlation with enterprise growth in M1 and M2, indicating that larger companies have better growth prospects due to increased resources and capabilities. However, in M3, ASSET's impact turns negative, suggesting that other variables, such as R&D investment and technological advancements, may mediate this relationship. Employee scale (NP) demonstrates mixed effects; while it positively influences growth in M2 and M3, it has a negative coefficient in M1, highlighting the potential for inefficiencies or increased costs associated with larger workforces.

Technological investment (TEC) in M2 has a positive and significant effect on growth, emphasizing the role of technology in driving profitability and innovation. Similarly, lagged R&D investment (l_Rd) in M3 significantly correlates with growth, underscoring the importance of R&D in sustaining long-term growth and competitiveness. The overall fit of the models, as indicated by the R^2 values, reveals that M2 provides the best explanatory power, explaining approximately 86% of the variation in enterprise growth. The relatively high Adjusted R^2 values across the models suggest that the variables included adequately capture the relationships influencing enterprise growth.

The second-level regression reveals that TEC and lagging R&D have a negative moderating effect on CSR, with CSR's impact on INC being more pronounced due to accounting standards differentiating TEC

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as current assets and R&D between capitalization and non-capitalization.

Table 2: M4-M5 Merge

Model	**INC**	**INC**
CSR	0.01066***	0.01498***
TEC	0.00009***	
ASSET	95.96485***	-1.07e+02***
NP	0.37118	0.01111
l_Rd		0.00022***
_cons	-5.76e+03**	1.22e+05***
N	1086	974
R2	0.88928	0.39538
Adj. R2	0.88887	0.39289

- t statistics in parentheses
- p < 0.10 ** p < 0.05 *** p < 0.01

Table 2 presents the Level 2 regression results, which explore the moderating effects of technology and R&D investments on the relationship between CSR and enterprise growth (INC). In both models (M4 and M5), CSR positively impacts enterprise growth at the 1% significance level, reinforcing the notion that socially responsible activities can enhance business outcomes by improving reputation, customer loyalty, and stakeholder engagement.

In Model 4 (M4), technological growth (TEC) remains a significant contributor to enterprise growth, with a positive coefficient highlighting the essential role of technological advancements in enhancing company performance and market competitiveness. Lagged R&D investment (l_Rd) in Model 5 (M5) shows a significant positive effect on growth, suggesting that investment in research is crucial for fostering innovation and sustaining long-term profitability.

The asset scale (ASSET) shows a positive impact on growth in M4, indicating that a larger asset base provides a competitive advantage and supports expansion. However, this relationship becomes negative in M5, suggesting potential capital misallocation or inefficiencies in managing large-scale operations. Employee scale (NP) also demonstrates a limited positive impact, indicating that while a larger workforce can drive growth, it must be managed effectively to avoid diminishing returns.

The model fit, as indicated by the R^2 values, demonstrates that M4 provides a robust explanation of enterprise growth, with an R^2 of 88.93%. This indicates that asset size, technology, and CSR are key drivers of growth. In contrast, M5, with lower explanatory power, suggests that additional factors outside the model may influence growth. The findings highlight the nuanced relationship between CSR, technology, and R&D, emphasizing the need for strategic alignment and efficient resource management to optimize growth outcomes.

Table 3: M6-M8 Merge

Model	**INC**	**INC**	**INC**
CSR	0.01348***	0.01719***	0.00705***
TEC	0.00009***		0.00008***
TEC_CSR	-0.00000***		0
ASSET	115.18759***	-57.37056	158.90818***
NP	1.06821***	1.26675**	0.86087***
l_Rd		0.00022***	0.00009***
l_RdCSR		-0.00000***	0
l_RdTEC			-0.00000***
_cons	-4.83e+03**	1.16e+05***	-4.05E+03
N	1086	974	974
R2	0.89374	0.4113	0.91035
Adj. R2	0.89325	0.40826	0.90961

- t statistics in parentheses
- p < 0.10 ** p < 0.05 *** p < 0.01

The third-level regression indicates a significant interaction between technology growth and lagging R&D investment at the 1% level. In contrast, the interaction between CSR and lagging R&D investment is not significant, highlighting the model's robustness.

Table 3 presents the Level 3 regression results, examining the interaction effects between CSR,

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technological growth, and R&D investment on enterprise growth (INC). Across all three models (M6, M7, M8), CSR consistently shows a positive and significant impact on growth at the 1% level. This underscores CSR's role in enhancing enterprise performance through improved stakeholder relationships, brand reputation, and competitive advantage.

The interaction terms, particularly TEC_CSR in M6 and l_RdCSR in M7, reveal complexities in how CSR interacts with technology and R&D investments. The negative coefficient for TEC_CSR suggests that while CSR and technology independently boost growth, their interaction may lead to diminishing returns, potentially due to resource allocation conflicts or strategic misalignments. Similarly, the negative impact of l_RdCSR indicates potential over-investment or misalignment between CSR and R&D activities, suggesting that balancing these investments is crucial for optimizing growth.

R&D and technology (TEC) maintain a positive influence on growth, with significant coefficients highlighting their critical role in driving innovation and sustaining competitive advantage. However, the interaction between R&D and technology in M8 reveals a negative effect, suggesting potential inefficiencies or saturation effects when these factors are not strategically aligned. This highlights the importance of a coordinated approach to investment in R&D and technological advancements to achieve optimal growth outcomes.

The asset scale (ASSET) consistently shows a positive impact on growth in M6 and M8, emphasizing the importance of resource availability and efficient asset management in driving business success. Employee scale (NP) also positively influences growth, suggesting that a well-managed workforce can contribute significantly to performance improvements. The model fit, with R^2 values demonstrating high explanatory power, particularly in M8 (91.03%), emphasizes the nuanced interplay between CSR, technology, and R&D in shaping enterprise growth. These findings highlight the need for strategic alignment and integration of CSR with technological and R&D efforts to maximize growth potential.

6. Conclusions

The analysis of the regression models reveals that Corporate Social Responsibility (CSR) is a significant driver of enterprise growth, positively impacting profitability and competitive advantage through enhanced brand reputation and stakeholder relationships. While technological investment and R&D also play critical roles in fostering innovation and sustaining growth, the interaction effects highlight the need for strategic alignment among these elements. Proper management of asset and employee scale further amplifies growth outcomes, indicating that companies with substantial resources and effective human capital strategies are better positioned for success. Overall, the study underscores the importance of integrating CSR, technology, and R&D efforts into a cohesive strategy to optimize business performance and achieve sustainable growth in the competitive landscape of Guangzhou.

7. Recommendations

To optimize business performance and achieve sustainable growth, companies in Guangzhou should integrate Corporate Social Responsibility (CSR) into their core business strategies, ensuring alignment with technological and R&D investments. By embedding CSR into the business model, companies can enhance brand reputation, build customer loyalty, and differentiate themselves in competitive markets. Additionally, prioritizing investments in technology and R&D will drive innovation and maintain a competitive edge. It is crucial to strategically coordinate these efforts to maximize their impact on growth outcomes. Furthermore, effective management of asset and employee scale is essential, as companies with substantial resources and well-managed workforces are better equipped to navigate challenges and seize opportunities for success.

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