

The Impact of Corporate Social Responsibility on the Choice of R&D or Marketing: Evidence from the Chinese Listed Firms

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Abstract:

R&D and marketing are two basic skills for enterprise survival and development. It is difficult for enterprises to choose two tactics reasonably due to the high risk, long cycle of R&D and the asymmetry between the input and output of marketing. Marketing takes the improvement of customer satisfaction as its ultimate goal while R&D is based on the stakeholders' synergy, so that fulfilling corporate social responsibility as a way to meet the demand of stakeholders will have a significantly impact on how to choose R&D or marketing. Through theoretical analysis and data empirical study, this paper claims that better social responsibility activities will strengthen the role of R&D played in improving enterprise performance and weaken the effectiveness yielded by marketing in performance improvement. Therefore, enterprises which fulfill social responsibility better are more willing to choose R&D.

Keywords: Corporate Social Responsibility, R&D, Marketing, Choice, China

1. Introduction

Two basic skills for enterprise survival and development—R&D (research and development) and marketing, are important ways to deal with the current speed economy which are based on product diversity and differentiation and also powers to maintain rapid growth and sustainable development of enterprises. High-efficient R&D innovates products by integrating existing resources to keep the vitality of enterprise, accelerate the reform of production technique, improve the level of product differentiation, meet the demand of customers and lay a solid foundation for the promotion of brand cognition and the expansion of market share. The comprehensive, extensive and diversified marketing can maximize brand influence, provide high-quality sale and after-sale service, strengthen the communication among enterprises and customers or consumers and maintain a good relationship between them, with a view to escorting the launch and sale of new products, and then to expand the sales volume and enhance enterprises value simultaneously (Zhi-yong Niu, 2017). However, some enterprises hold that it fails to make satisfied achievements although marketing takes up more budgets in management practice, so they tend to increase R&D investment in order to maintain competitiveness and sustainable development. While some enterprises claim that R&D activity itself features high risky, long cycle, difficult economic benefit transformation and more resources consumption, so that they incline to increase marketing investment and change marketing modes gradually to achieve earnings growth. Accordingly, the appropriate choice of R&D or marketing has a great impact on enterprises' long-term development and earnings growth. From the perspective of strategic function and resource aggregation function of corporate social responsibility (CSR), CSR improves the scientificity of R&D, reduces associated risks significantly, ensures sufficient resources for R&D, accelerates R&D process and assists R&D work to improve business performance (Ran Jiao, 2020). At the same time, from the perspective of signaling function of CSR, social responsibility activities and marketing have the same function, which helps enterprises to maintain healthy relationships with stakeholders, especially with consumers and customers, so as to obtain stable inflow of benefits. Therefore, social responsibility fulfilled by enterprises plays an important role in how to choose R&D or marketing.

Relatively abundant achievements are made in studies of relationship between R&D or marketing and enterprise performance, which are also recognized up to a point in enterprises practice, but few studies are

done on R&D or marketing decision-making. Enterprises' marketing is mainly to communicate with their customers while R&D is viewed as an enterprise project which demands multi-sectors and various stakeholders to cooperate together, so both of them are deeply affected by stakeholders. CSR embodies comprehensively how enterprises meet the demand of stakeholders, which determines stakeholders' behavior. Therefore, fulfilling CSR determines the choice of R&D or marketing. Based on the study related to the role of R&D or marketing played in enhancing corporate performance, this paper analyzes the impact of CSR on the performance improved by R&D or marketing, so as to ensure a more accurate judgment on the choice of R&D or marketing. Compared with previous studies, this study investigates what role played by CSR in the process of R&D or marketing selection and gives them theoretical explanations, with a view to offering fresh ideas for enterprise performance management. In management practice, it provides the most direct guidance and reference for R&D management, marketing management and managers to make better decision on R&D or marketing investment.

2. Literature Review and Hypotheses Development

2.1 Literature Review

As the market environment has changed continuously, enterprise marketing gradually transformed the management content which aimed at distributing and exchanging goods in the initial stage into the process of enhancing enterprise value which takes the value creation as the core and the communication with customers as the means (Tai-hong Lu, 2008). The result that marketing improves enterprises performance is widely recognized by many scholars in theory. Overall, investing more money in marketing is able to increase more sales volume, transform the cost into economic benefits speedily and ensure the stable improvement of enterprise performance (Kamber, 2002), so that marketing is an essential and indispensable part in enterprise strategy (Shun-ping Han, 2006). Marketing will enhance enterprise performance and increase enterprise value more when enterprises attach more importance to customer value and formulate more marketing tactics to meet the current demand of customers (Srinivasan, 2009; Morgan, 2011). In addition, salesmen with strong competence consolidate the long-term cooperative relationship between enterprises and customers by improving their own sales capacity and actively promoting a healthy enterprise image, with a view to providing great support and help for the improvement of enterprise's revenue level (Akdeniz, 2010). Meanwhile, as an important way for enterprises to achieve value creation and profits continuously, it's beyond all question that R&D can enhance enterprise value and performance. Relevant studies holistically believe that R&D improves enterprise performance no matter in what economic regions (Hu, 2005) and promotes stock return (Duqi, 2011) and market performance since the return of R&D investment is higher than that of any other assets (Johnson, 2010). For example, some scholars found that the level of TFP (total factor productivity) and profit margin in enterprises with sufficient R&D investment was higher about 3 percentage than that in enterprises without (Yun-jie Qiu, 2016). But in management practice, due to the high risk and long cycle of R&D and the asymmetry between input and output of marketing, the difficult that enterprises choose one of two tactics appropriately is increasing. Marketing activity is mainly to meet customers' demand and R&D is based on the collaboration among stakeholders. Therefore, CSR fulfilled by enterprises as a way to satisfy customers and stakeholders has a significant influence on the choice of R&D and marketing.

After the concept of CSR defined by Bowen in the first place (Schnepp, 1954), Carroll followed Bowen's step to construct a pyramid model of CSR with four dimensions of economic responsibility, legal responsibility, moral responsibility and charitable responsibility (Carroll, 1979), which created a precedent for the study of CSR norms. And Wood further developed Carroll's pyramid model of social responsibility to gradually promote the mutual penetration of social responsibility research and stakeholder theory (Wood, 1991; 1995). CSR theory emphasizes managing enterprises from an external viewpoint, so that enterprises is able to obtain support by helping the whole society. While stakeholder theory stresses that enterprises should coordinate and manage the stakeholders' relationship from both the internal and external point of view,

which helps enterprises to operate so smooth that they increase the value-added. Thus, stakeholder theory provides a more comprehensive explanation for objects and goals of CSR. The object of CSR is stakeholders who are responsible for making special investment to enterprises, gaining capacity to assist enterprises producing and operating and undertaking corresponding risks. For example, shareholders and creditors invest monetary capital to form finance capabilities of enterprises; employees and managers invest intellectual capital to form capabilities of production and management; customers assist enterprise in gaining marketing capabilities. Aiming at different characteristics of each stakeholder, the goal of social responsibility is to satisfy demand of stakeholders as much as possible and to manage the relationship between stakeholders and enterprises, and then to create mutual benefit and a win-win situation.

2.2 Hypotheses Development

Enterprise R&D as a project that demand many stakeholders to work together can improve enterprises performance significantly. Fulfilling social responsibility actively will enhance the participation of stakeholders in R&D work, alleviate R&D itself featured by high risk, long cycle, high resources consumption and difficult economic benefit transformation, so as to strengthen enterprise performance.

Firstly, from the perspective of strategic function of CSR, social responsibility activities not only possess the attribute of value creation but an obligation undertaken by the enterprise, hoping to facilitate social progress and achieve harmonious development through the efforts made and influence created by the enterprise. Hence, CSR as a long-term strategy will consume a certain amount of resources and weaken the operating efficiency of enterprises in a short term. But this situation will be reversed through a period of efforts. Enterprises will obtain competitive advantages to maximize the long-term interests and sustainable development after they fulfill social responsibility actively. As such, R&D is also a long-term tactic, which requires a large amount of continuous investment and takes up a lot of resources, and begins to make profits after a period of time. Therefore, executives in the enterprise which fulfills CSR actively usually takes the sustainable value growth as their goal and operates the enterprise with a long-term perspective, which is conducive to the development of R&D, ensure the sustainability of capital investment demanded by R&D, provide sufficient impetus for R&D, reasonably plan the long-term development path of R&D, deeply tap the value of R&D and finally achieve the goal which improves enterprise performance.

Secondly, enterprise profits can be obtained only after the capital is invested into the R&D continuously since the long cycle of R&D. Thus, it is hard to judge the value of R&D projects through outside investors' own experience, which will weaken their confidence about investment. Meanwhile, based on the current accounting standards, R&D investment takes the form of expenses or intangible assets to be listed on the report. Still in terms of these standards, a certain degree of freedom exists in the process which determines its capitalization or expense, and the enterprise will make some appropriate changes to adjust the current operating situation. Thus, under this circumstance of asymmetric information, investors doubt that the information of R&D disclosed by enterprises is likely to be inaccurate, and obviously fail to make clear the real value of R&D through the information transmitted by enterprises. Meanwhile, customers don't always focus on R&D information due to its confidentiality, so that how to maintain consumers' enthusiasm and brand loyalty is also an urgent problem to be solved if current products are not popular anymore and new products are still not launched simultaneously. Fulfilling social responsibility actively can fully meet the demand of stakeholders, establish a good relationship between enterprises and stakeholders, contact with each other timely for the production and operation of enterprises. In this way, investors learn the R&D process and problems encountered clearly, assess the value of R&D accurately and enhance investment confidence. Also, they are able to know the concrete use of funds in R&D, which makes it easier for enterprise to obtain sufficient financial support from investors and ensure the R&D carrying out. Except that, based on the resource aggregation function of CSR (Ran Jiao, 2020), the enterprise which undertakes corresponding social responsibilities will enhance the trust from stakeholders and strengthen their emotion towards enterprises, so as to obtain all kinds of capital and resources investment, create a good R&D

environment, lower associated risks significantly and promote high-efficient R&D work. At the same time, it can also establish a good sales relationship with customers, improve consumer's cognition about enterprises, strengthen consumers brand loyalty, and avoid the loss of customers because of insufficient perception of R&D. Therefore, actively fulfilling social responsibility can make enterprises have more competitive advantages on the road of winning made by R&D, and it is easier to achieve enterprise performance improvement than before.

Finally, fulfilling social responsibility improves the R&D efficiency and deal with problems brought by long R&D cycle, strong risk and high uncertainty. In order to follow the step of scientific development, meet the demand of customers and consumers and avoid to be abandoned by the market, enterprises need to constantly increase R&D investment, improve the level of technologies and invent new but distinctive products. For R&D, research-oriented employees are the basic guarantee to make sure R&D carrying out smoothly, and these employees place more weight on the moral values under the condition of the same salary when enterprises have demand for such talents. Generally, enterprises that actively fulfill CSR possess a better social reputation and correct moral values, so that enterprises have more advantages in the labor market to attract outstanding talents who have the same social responsibility awareness, which ensures the intellectual capital demanded by R&D investing into continually and improves the R&D efficiency. Meanwhile, enterprises that actively fulfill their social responsibilities towards employees will increase investment in working environment, training, personal growth and welfare, which motivates employees from both material and spiritual aspect, to bring them a greater sense of belonging and improve their working enthusiasm. A positive working attitude enables employees to fully show their skills and wisdom, so that employees are aware of risks and difficulties caused by internal and external environment uncertainty in the R&D process timely, then effectively adjust R&D steps and avoid losses brought by long-term R&D stagnation. Furthermore, the positive working attitude also improves the degree and quality of employee participation in management, makes the handover of engineering technology in every department and the allocation of resources coordination more reasonable and effective, accelerates the R&D process and lowers associated risks.

Based on the above all, executives in the enterprises which actively fulfill social responsibilities will plan R&D activities from a long-term perspective and communicate with stakeholders like investors, employees and customers smoothly, so as to obtain sufficient resource support, reduce associated risks, improve R&D efficiency, promote the enterprise performance. Thus, the first hypothesis is as follows:

H1: Corporate Social Responsibility can significantly strengthen the role of R&D in improving enterprise performance.

Marketing activities take recommending products towards customers and maintaining a relationship with customers as main purposes, and satisfy their demand by providing high-quality products and great after-sales service, so as to handle the relationship between enterprises and customers in an appropriate way and ensure the source of operating cash flow. From the perspective of signaling function of CSR, positive social responsibility activities can consolidate relationship between enterprises and stakeholders, particularly the relationship among enterprise, customers and consumers, and can replace the role of marketing played in maintaining the strong relationship with customers to some extent.

Enterprises usually form a stable cooperative relationship with several key customers and make profits by relying on them to purchase products, so that key customers' purchase volume usually accounts for the vast majority of the gross sales volume in enterprises. In this case, meeting their various requirements on products has become the main task for enterprises since key customers have a greater saying and bargaining power. At this time, enterprises will invest a lot of special assets used in production and reserve a large amount of funds to meet customers' demand on production. When customers' enterprises operating situation fluctuates badly, the special assets invested by enterprises will fail to be sold or transformed, which might face great hazard. Thus, in order to ensure normal production and operation and control associated risks in

time, enterprises are not inclined to carry out other projects by investing a lot of resources into, so as to avoid failing to meet the demand of customers since occupying more additional resources. Otherwise, enterprise will further make the customer loss and reserve more unsalable products, resulting in irreparable losses.

Enterprises which fulfill social responsibility actively are able to meet all kinds of demand from customers, maintain a good cooperative relationship with customers and fully cope with potential risks. Firstly, CSR is the comprehensive embodiment of meeting the needs of stakeholders. Fulfilling social responsibility actively can convey the signal that the business is in good condition, products have high quality and enterprises focus on customer's demand. Correspondingly, enterprises can attract more attention from new customers in the market through this information, so that enterprises are capable of exploring potential customer properly, expanding new customer relationship and reducing risks caused by high degree of customer concentration. Secondly, social responsibility activities done by enterprises can optimize the relationship with existing customers under the competitive market environment. Through communicating with customers efficiently, enterprises will meet the requirements of customers on product characteristics and feedback their demand to relevant departments at once, and then to plan appropriately a production process which makes customers satisfied. Besides, enterprises also can report the production and craft process of products to customers through the communication and provide sufficient high-quality products and preferential policies in commercial credit, with a view to strengthening the trust between enterprises and customers, promoting a long-term and stable partnership, and ultimately enhancing the enterprise performance. Thirdly, compared with other activities, CSR activities occupy less funds and resources, which can avoid taking up funds reserved for key customers, so as to ensure the production process of products required by key customers and the delivery of the products timely to maximize enterprise profit.

According to the above, fulfilling social responsibility occupies fewer funds, so enterprises can explore relationships with new customers and simultaneously promote the stability and long-term partnership with existing customers. Accordingly, effectiveness yielded by CSR almost covers all marketing functions, so CSR are able to replace the role of marketing in enhancing enterprise performance. Therefore, we develop the second hypothesis as follows:

H2: Social responsibilities fulfilled by enterprises have capabilities to replace the role of marketing played in enhancing enterprise performance. That is, the role of marketing in the enterprise performance improvement will be weakened by CSR.

Based on the first and second hypothesis, hypothesis 3 is proposed as follows:

H3: Enterprises which fulfill social responsibilities actively are more willing to choose R&D than marketing to achieve their sustainable development and performance improvement.

3. Research Design

3.1 Sample Selection and Variable Definition

Listed enterprises are lack of precision when they reveal their own R&D conditions. This situation has been greatly improved with the continuous perfection of laws and enterprise's own system, but the available data resources are still very limited. Therefore, to obtain research data and apply research results widely in practice, this paper takes all Non-ST (special treatment) enterprises of A-share listed in Shanghai and Shenzhen stock markets from 2015 to 2019 as study samples. All financial data related to sample enterprises are from China Stock Market and Accounting Research (CSMAR) Database, and samples are screened as follows: (1) removing insurance and financial industries; (2) eliminating enterprises with missing data; (3) excluding enterprises that their asset liability ratios are higher than 1. Finally, a total of 2838 observations were obtained after removing and processing abnormal data.

Dependent Variable. There are many indicators to measure enterprise performance. This paper acts ROA (return on assets) which reflects enterprise production and operation capacities, development ability, profitability and capital structure comprehensively as a substitute variable of enterprise performance.

Independent Variable. R&D expenditure and marketing expenditure are the main independent variables. R&D expenditure represents the total capital investment of an enterprise for various R&D projects, while projects' R&D expenditures on the balance sheet only contain the spending that have capitalized but not formed intangible assets at the end of the period, which fails to completely show the financial support for R&D, so that this paper adopts data related to R&D projects disclosed in financial statement notes. Meanwhile, in order to increase the comparability of data, this paper applies the same method with most previous studies, using the ratio between R&D expenditure and operating income which represents the R&D intensity to replace the R&D expenditure.

According to regulations and explanations from accounting policies, selling expenses refer to various expenses in the process of selling goods and providing labor services. Expenses not only include common transportation costs and packaging charges but expenditures in exhibition, advertisement, special sales agencies and after-sales service, so that selling expenses in enterprises cover almost all costs related to marketing activities. Thus, the ratio between marketing expenditure and operating income represents the intensity of marketing expenditure. Here, both R&D intensity and marketing intensity are positive indicator, which mean that the higher the value, the more investment enterprises will make.

Moderating Variable. This paper argues that enterprises which actively fulfill their social responsibilities are more willing to choose R&D to maintain sustainable development and improve enterprise performance. Therefore, this paper uses Hexun.com's social responsibility score to measure the degree of corporate social responsibility (Jian-ling Wang, 2018). According to the international guideline for the preparation of GRI3.0 and the evaluation guideline of sustainability report, Hexun.com combines with Chinese national conditions to establish an appraisal comprehensive system of CSR from five aspects including shareholder responsibility, employee responsibility, supplier and customer responsibility, environmental responsibility and social responsibility. Then collecting data from social responsibility report and annual report released by all enterprises of A-share listed in Shanghai and Shenzhen stock markets every year through their official websites, which gets the high accuracy and authenticity of data.

Control Variables. The capital structure, cash flow and operation condition will all have an impact on the enterprise performance. The enterprise value, size, property rights and locale attribute determine the choice of enterprise strategy and will also indirectly affect the enterprise performance. In addition, studies related to corporate governance found that the nature of equity and management fee rate also have an impact on enterprise performance. Based on all of them, this paper applies 12 indicators including financial leverage, cash flow, asset turnover ratio, the efficiency of inventory management and others as control variables. All variables contained detailed information and calculation methods in this paper are summarized in Table 1.

Table 1: Variable Definitions

	Variable Name	Symbol	Data Source or Calculation Method
Dependent Variable	Return on Assets	<i>ROA</i>	Net Profit / Average Total Assets
Independent Variables	R&D Intensity	<i>R&D</i>	R&D Expenditure / Operating Income
	Marketing Intensity	<i>M&S</i>	Sales Expenses / Operating Income
Moderating Variable	Corporate Social Responsibility	<i>CSR</i>	Social Responsibility Score of Hexun.com
Control variables	Financial Leverage	<i>Lev</i>	Average Total Liabilities / Average Total Assets
	Cash Flow	<i>Cash</i>	Net Cash Content of Operating Income

Asset Turnover	<i>Operate</i>	Operating Income / Average Total Assets
Inventory Management Efficiency	<i>Inve</i>	Ln (Operating Income / Net Inventory)
Management Efficiency of Receivable	<i>Rece</i>	Ln (Operating Income / Net Receivables)
Basic Earnings per Share	<i>Stock</i>	Net Profit / Number of Ordinary Shares
Enterprise Value	<i>Value</i>	Tobin Q
Enterprise Scale	<i>Size</i>	Ln (Total Assets)
Equity Concentration	<i>Share</i>	The Square Sum of the Shareholding Proportion of the Top 5 Shareholders
Management Rate	<i>Manage</i>	Management Expenses / Operating Income
Locale Attribute	<i>Province</i>	1 if the company is developed regions, 0 otherwise
Property Right	<i>Property</i>	1 if the company is state-owned, 0 otherwise

3.2 Regression Model

Based on the theoretical analysis and hypotheses, a regression model is designed to verify the effect of CSR, through comparing which one, R&D or marketing, improves enterprise performance higher under the condition that enterprises fulfill different degree of social responsibilities.

$$ROA = \beta_0 + \beta_1 R \& D(M \& S) + \sum \beta_i Control_i + \varepsilon \quad (1)$$

4. Empirical Results

4.1 Descriptive Statistics of Variables

The descriptive statistics and correlation coefficients of variables are shown in Table 2 and Table 3.

Table 2: Descriptive Statistics of Variables in Model

Variables	Mean	Std. Dev.	Min	Max	N
ROA	0.05	0.04	0	0.21	2838
R&D	0.03	0.03	0	0.20	2838
M&S	0.10	0.10	0	0.50	2838
CSR	24.48	12.25	-4.13	85.24	2838
Lev	0.40	0.19	0.03	0.97	2838
Cash	0.09	0.15	-1.05	2.84	2838
Operate	0.63	0.44	0.03	5.65	2838
Inve	1.39	1.15	-2.63	15.18	2838
Rece	1.61	1.06	-0.63	10.23	2838
Stock	0.42	0.45	-0.23	5.92	2838
Value	2.60	1.75	0.82	20.84	2838
Size	22.41	1.26	19.20	27.74	2838
Share	0.15	0.11	0	0.79	2838
Manage	0.12	0.07	0	0.67	2838
Province	0.49	0.50	0	1	2838
Property	0.36	0.48	0	1	2838

Table 3: Coefficients of Variables in Model

Variables	ROA	R&D	M&S	CSR	Lev	Cash	Operate	Inve	Rece	Stock	Value	Size	Share	Manage	Province
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<i>ROA</i>	1														
<i>R&D</i>	0.127**	1													
<i>M&S</i>	0.289**	0.040*	1												
<i>CSR</i>	0.297**	-0.005	0.097**	1											
<i>Lev</i>	-0.436**	-0.232**	-0.314**	-0.047**	1										
<i>Cash</i>	0.251**	0.046*	0.149**	0.098**	-0.179**	1									
<i>Operate</i>	0.076**	-0.214**	-0.098**	0.111**	0.243**	-0.147***	1								
<i>Inve</i>	0.044*	-0.099**	-0.135**	0.059**	0.059**	0.027	0.346**	1							
<i>Rece</i>	0.191**	-0.196**	0.067**	0.165**	0.070**	0.143**	0.413**	0.188**	1						
<i>Stock</i>	0.621**	0.008	0.163**	0.279**	-0.051**	0.112**	0.174**	0.052**	0.220**	1					
<i>Value</i>	0.242**	0.183**	0.170**	0.054**	-0.348**	0.110**	-0.115**	-0.025	-0.050**	-0.043*	1				
<i>Size</i>	-0.178**	-0.172**	-0.196***	0.166**	0.564**	-0.027	0.130**	0.077**	0.187**	0.197**	-0.430**	1			
<i>Share</i>	0.082**	-0.109**	-0.041*	0.080**	0.080**	0.057**	0.096**	0.074**	0.205**	0.155**	-0.122**	0.246**	1		
<i>Manage</i>	0.035	0.396**	0.221**	-0.066**	-0.397**	0.080**	-0.426**	-0.124**	-0.265**	-0.127**	0.351**	-0.392**	-0.155**	1	
<i>Province</i>	0.055**	0.068**	-0.037*	0.059**	-0.046*	-0.014	-0.011	0.092**	-0.098**	0.056**	0.055**	0.008	0.023	0.097**	1
<i>Property</i>	-0.210**	-0.083**	-0.235**	0.050**	0.284**	-0.060**	0.124**	0.033	0.148**	0.003	-0.217**	0.371**	0.234**	-0.213**	-0.094**

Note: * and ** indicate that P-value are 5% and 1% respectively.

In terms of table 2 and table 3, enterprises attach great importance to investment in R&D and marketing. The fund investment related to R&D and marketing accounts for a considerable part of the operating income in those years, but the total amount of marketing investment is slightly larger than that of R&D. The highest R&D investment can reach about 20% of operating income in current year while the marketing investment accounts for even half of operating income. Besides, state-owned enterprises account for about 36% in samples and the number of enterprises in developed and underdeveloped regions are roughly equal. As for the correlation, there are significant positive correlations between R&D or marketing and enterprise performance, so that both of two indeed enhance enterprise performance, which verifies the rationality of hypotheses in this paper. Moreover, a certain correlation exists between CSR and R&D or marketing, indicating that CSR plays an important role in choosing R&D or marketing for enterprises. Also, there is a significant correlation between control variables and dependent variables, which ensures that data can be operated in later analyses.

4.2 Benchmark Regression Analysis

According to data in Table 4, R&D and marketing can improve enterprise performance significantly, which is consistent with previous studies and lays the foundation for the next step of this study. Results are shown in Table 4.

Table 4: Regression Results of R&D, Marketing and Performance

<i>Variables</i>	<i>ROA</i>	
<i>R&D</i>	0.07** (5.27)	
<i>M&S</i>		0.05** (3.60)
<i>Lev</i>	-0.32** (-20.32)	-0.31** (-19.95)
<i>Cash</i>	0.11** (8.64)	0.11** (8.43)
<i>Operate</i>	0.04** (2.81)	0.04** (2.75)
<i>Inve</i>	0.01	0.01

	(0.43)	(0.71)
<i>Rece</i>	0.07**	0.05**
	(4.72)	(3.77)
<i>Stock</i>	0.57**	0.57**
	(44.61)	(43.92)
<i>Value</i>	0.13**	0.13**
	(9.48)	(9.59)
<i>Size</i>	-0.08**	-0.07**
	(-4.56)	(-4.38)
<i>Share</i>	0.04**	0.04**
	(3.44)	(3.17)
<i>Manage</i>	-0.11**	-0.09**
	(-7.07)	(-6.22)
<i>Province</i>	0.001	0.01
	(0.40)	(0.77)
<i>Property</i>	-0.10**	-0.09**
	(-7.79)	(-6.89)
<i>N</i>	2838	2838
<i>Adj.R²</i>	0.61	0.61
<i>F</i>	339.72	336.83

Note: * and ** indicate that P-value are 5% and 1% respectively.

4.3 Analysis of the Influence of CSR on the Choice of R&D or Marketing

Enterprises that fulfill their social responsibilities actively will plan R&D activities more reasonably, obtain abundant resource support, lower associated risks, increase R&D efficiency and improve enterprise performance effectively. Meanwhile, enterprises can also appropriately explore relationships with new customers in appropriate ways and maintain a long-term cooperative relationship with existing customers steadily, so that CSR replaces parts of role played by marketing. Based on it, active social responsibility activities strengthen the function of R&D in improving enterprise performance and weaken the role of marketing in the performance improvement.

Table 5 shows enterprises are divided into different groups according to median of CSR score in different years. Enterprises that the score of fulfilling social responsibility is higher than the median of that year are judged into the group of high social responsibility, others are divided into the group of low social responsibility. Based on data, in enterprises with active social responsibilities, R&D improves their performance higher than those with poor social responsibilities, which support the first hypothesis. As for marketing, in enterprises which actively fulfill social responsibility, marketing produces a positive but not significant role in improving performance. While marketing enhances enterprise performance significantly in those which fulfill social responsibility worse, which indicates that better social responsibility activities weaken the role of marketing played in improving enterprises performance. Therefore, enterprises with better CSR performance are more willing to choose R&D, proving the hypothesis 2 and hypothesis 3 simultaneously.

Table 5: Analysis of the Effect of CSR

<i>Variables</i>	<i>R&D</i>		<i>M&S</i>	
	<i>CSR High</i>	<i>CSR Low</i>	<i>CSR High</i>	<i>CSR Low</i>

<i>R&D</i>	0.07** (3.77)	0.05* (2.13)		
<i>M&S</i>			0.001 (0.24)	0.05* (2.10)
<i>Lev</i>	-0.36** (-16.59)	-0.25** (-9.60)	-0.37** (-16.61)	-0.25** (-9.56)
<i>Cash</i>	0.13** (7.88)	0.01 (0.66)	0.14** (8.03)	0.01 (0.45)
<i>Operate</i>	0.05** (2.65)	0.02 (0.92)	0.05** (2.65)	0.02 (0.92)
<i>Inve</i>	-0.03 (-1.84)	0.05* (2.19)	-0.03 (-1.89)	0.05* (2.22)
<i>Rece</i>	0.07** (3.95)	-0.00 (-0.12)	0.07** (3.56)	-0.01 (-0.53)
<i>Stock</i>	0.50** (30.01)	0.60** (28.26)	0.51** (29.84)	0.61** (28.65)
<i>Value</i>	0.14** (7.55)	0.13** (5.46)	0.14** (7.71)	0.13** (5.51)
<i>Size</i>	-0.13** (-5.72)	-0.08** (-2.92)	-0.13** (-5.55)	-0.08** (-2.80)
<i>Share</i>	0.06** (3.22)	-0.01 (-0.43)	0.05** (2.90)	-0.01 (-0.38)
<i>Manage</i>	-0.14** (-6.66)	-0.07* (-2.41)	-0.12** (-5.80)	-0.06* (-2.17)
<i>Province</i>	0.01 (0.38)	0.001 (0.10)	0.01 (0.59)	0.01 (0.31)
<i>Property</i>	-0.11** (-5.95)	-0.07** (-3.21)	-0.10** (-5.65)	-0.06** (-2.74)
<i>N</i>	1618	1220	1618	1220
<i>R²</i>	0.60	0.49	0.59	0.49
<i>F</i>	185.68	92.20	182.99	92.18
<i>Inter group coefficient</i>	0.065*		—	

Note: * and ** indicate that P-value are 5% and 1% respectively.

5. Conclusions and Implications

This paper holds that marketing and R&D are deeply affected by stakeholders. And CSR comprehensively embodies the satisfaction of stakeholders and determines their behaviors. Correspondingly, the fulfillment of CSR impacts on how to choose R&D or marketing. Based on the study of the enterprise performance improved by R&D and marketing, this paper investigates the impact and mechanism of CSR in the process that which one, R&D or marketing, improves enterprise performance better, concluding that better social responsibility activities assist R&D to improve performance, replace the role of marketing to a certain extent and weaken the role of marketing in the improvement of performance. Therefore, enterprises with better CSR performance are more willing to choose R&D.

The conclusion of this study assists enterprises to find some guides and evidence managing their R&D and marketing, provides a theoretical foundation for the selection of R&D or marketing, reduces blindness in decision making and lays a certain foundation for further studies in this field. In management practice, this study gives fresh ideas for the management of enterprise performance, provides the guidance and reference for the management in R&D and marketing, and ensures the rising of enterprise value.

References

- i. Akdeniz M B, Gonzalez-Padron T, Calantone R J. 2010. *An integrated marketing capability benchmarking approach to dealer performance through parametric and nonparametric analyses. Industrial Marketing Management* 39(1): 150~160.
- ii. Carroll A B. 1979. *A Three-dimensional Conceptual Model of Corporate Performance. Academy of Management Review* 4(4): 497~505.
- iii. Duqi A, Mirti R, Torluccio G. 2011. *An analysis of the R&D effect on stock returns for European listed firms. European Journal of Scientific Research* 58(4): 482~496.
- iv. Hu A G Z, Jefferson G H, Jin Chang Q. 2005. *R&D and Technology Transfer: Firm-Level Evidence from Chinese Industry. Review of Economics and Statistics* 87(4): 780~786.
- v. Johnson L D, Pazderka B. 2010. *Firm value and investment in R&D. Managerial & Decision Economics* 14(1): 15~24.
- vi. Jian-ling Wang, Yue-ting Li, Xuan Wu. 2018. *Signaling role of social responsibility: a study based on Chinese market. China Management Science* 26(8): 31~41
- vii. Kamber T. 2002. *The brand manager's dilemma: Understanding how advertising expenditures affect sales growth during a recession. Journal of Brand Management* 10(2): 106~120.
- viii. Morgan N A. 2011. *Marketing and Business Performance. Journal of the Academy of Marketing Science* 40(1): 102~119.
- ix. Ran Jiao, Su-bin Wen, Jin-quan Zhang. 2020. *Research on Threshold Phenomenon of R&D Influencing Performance and the Mitigation of Corporate Social Responsibility. China Soft Science Magazine* (03): 110~121.
- x. Schnepf R B G J, S. M. 1954. *Social Responsibilities of the Businessman by Howard R. Bowen. American Catholic Sociological Review* 15(1):42~43.
- xi. Shun-ping Han, Yong-gui Wang. 2006. *Research on marketing capability and its effect on performance. Management World* (6): 153~154.
- xii. Srinivasan S, Hanssens D M. 2009. *Marketing and Firm Value: Metrics, Methods, Findings, and Future Directions. Journal of Marketing Research* 46(3): 293~312.
- xiii. Tai-hong Lu. 2008. *Review of marketing management evolution. Foreign Economy & Management* 30(1): 39~45.
- xiv. Wood D J. 1991. *Corporate Social Performance Revisited. Academy of Management Review* 6(4): 691~718.
- xv. Wood D J. 1995. *Stakeholder mismatching: A theoretical problem in empirical research on corporate social performance. The International Journal of Organizational Analysis* 3(3): 229~267.
- xvi. Yun-jie Qiu, Wei Wei. 2016. *The impact of R&D investment on Enterprise Performance: a study based on PSM. Contemporary Finance & Economics* (03): 96~106
- xvii. Zhi-yong Niu, Jun Wang. 2017. *Market Competition, Marketing Expense and Firm Performance-Evidence from China's Manufacturing Firms. Journal of Shanxi University of Finance and economics* (6): 113~124.