


Article

Corporate Social Responsibility and Firm Performance in China's Manufacturing: A Global Perspective of Business Models

Qianqian Hu ¹, Tianlun Zhu ¹, Chien-Liang Lin ^{2,*} , Tiejun Chen ¹ and Tachia Chin ¹

¹ School of Management, Zhejiang University of Technology, Hangzhou 310023, China; ruthhq@163.com (Q.H.); zhutianlun888@163.com (T.Z.); ctj@zjut.edu.cn (T.C.); tachiachin@zjut.edu.cn (T.C.)

² College of Science and Technology, Ningbo University, Ningbo 315211, China

* Correspondence: linjianliang@nbu.edu.cn

Abstract: In a globalized and digital world, manufacturing firms have used internet technology to conduct value appropriation (VA). However, during the COVID-19 crisis, export-led manufacturing firms around the world, particularly those in developing countries, have been forced to lay off workers and cope with VA-related problems, and serious survival problems have resulted in critical corporate social responsibility (CSR)-related challenges. Whereas limited research has discussed relevant issues in nonwestern contexts, we adopt a global perspective of business model and transactional cost theory, aiming to fill this gap by investigating the mechanisms among different dimensions of CSR implementation, firm performance, and VA herein. Based on a sample of listed Chinese manufacturing firms, the results show that the CSR technique dimension is negatively related to firm performance, that the CSR content dimension is positively related to firm performance, and that VA positively moderates the relationships of all three CSR dimensions to firm performance. The main contribution here is providing a more comprehensive understanding of how different CSR dimensions reflect firms' multiple ethical behaviors, which influence their sustainable performance, respectively, thus enriching the existing knowledge of CSR studies in a new digital era riddled with uncertainties and complexities. We also offer practical implications for other export-led manufacturing firms in developing countries facing turbulent times.

Keywords: corporate social responsibility; COVID-19; value appropriation; firm performance



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1. Introduction

In a globalized and digital world, manufacturing firms have used information and communication technologies (ICTs) to integrate their VA in different countries. However, while the COVID-19 crisis has made global governments seal the borders, firms have not only been confronted with severe problems in managing their foreign suppliers but also have been forced to lay off workers. As a result, global manufacturing firms, particularly export-led ones in developing countries, are encountering big challenges related to corporate social responsibility (CSR).

Along with the rising awareness of CSR concerns for decades, the relationships between firms' CSR implementation and performance have received widespread attention [1]. However, due to the difficulties in simultaneously maximizing economic, ecological, and social benefits, the impact of CSR on firm performance is still controversial [2,3], especially in developing economies [4]. Moreover, as far as the manufacturing industry is concerned, as indicated above, the prevalent use of artificial intelligence (AI) and ICTs has allowed firms to more easily adopt VA, so as to refine the way the company operates on a variety of values. In particular, ICTs-driven VA enables organizations to create competitiveness in a joint or independent way [5]. According to previous research, enterprises can get the maximum value in innovation only when they limit competition by creating imitation

barriers. VA is an indispensable part of the sustainable development of an enterprise [6]. For the manufacturing industry, ICTs-driven VA requires more different laws or standards to cooperate, which means that VA may have a moderating effect on CSR and firm performance for organizations. Whereas CSR–firm performance relationships are very likely to be context-specific [7], it is imperative to explore their relationships in a new digital yet volatile era where ICTs-driven VA has become a common strategy for manufacturing firms and CSR issues are raising concerns. VA can improve the evaluation and attitude of CSR and thereby enhance its recognition and credibility [8]. Although quite a few studies have discussed CSR–firm performance relationships in nonwestern, non-developed contexts [2–5], so far there has been limited research exploring the impact of ICTs-driven VA on such relationships in depth. We thus aim to fill this gap here.

The business-model (BM) perspective describes a more holistic picture of how multiple CSR stakeholders such as suppliers, manufacturers, customers, employees, and governments cooperate in a fast-changing, unpredictable environment, thus providing broader explanations about the CSR implementation of the firm [9–11]. Transaction-cost theory (TCT) [12] highlights the importance of reducing transaction costs in non-developed countries with weak institutional environments that are rife with informal gift exchanges and imperfect market regulations. Considering the foregoing arguments, we thus adopt the BM and TCT perspectives to explore the associations between different CSR dimensions (i.e., the macrocosm, content, technology, and industry dimensions) and firm performance, and the role VA plays in affecting such relations in large, nonwestern developing economies. Given that China is the world's largest non-developed economy and that its manufacturing industry is undergoing continuous transformation toward a high level of digitalization with growing ecological concern, the country is very suitable for use as our research setting herein.

Overall, this study makes several contributions to the literature. First, from the BM perspective, we provide a more comprehensive understanding of how different CSR dimensions embody firms' multiple ethical behaviors and influence their performance respectively, thus enriching the existing knowledge of CSR studies in a new digitalized world riddled with uncertainties and complexities. Second, building upon TCT, we identify the moderating effect of VA on CSR–firm performance relationships, which brings new insight into explaining the linkage between CSR implementation and VA. Third, to a certain extent, our research also provides practical implications for other export-led manufacturing firms in developing countries facing the pressure of digitalization.

The remainder of the study is structured as follows: Section 2 presents the literature review and hypothesis development; it explains how the hypotheses regarding CSR's effect on firm performance and regarding value appropriation's moderating effect on the relationship between CSR and firm performance were developed. Section 3 details the sample selection, research design, and measurement methods; Section 4 discusses the descriptive and empirical analysis results; and Section 5 provides recommendations as well as the study's limitations and contributions to future research according to the study results.

2. Literature Review and Hypotheses Development

2.1. Different CSR Dimensions and Firm Performance

The BM perspective indicates a new way of thinking of the environment for a firm, which deems a firm's BM as a distinct business ecosystem where the focal firm and its complementary actors create value together [13–16]. In recent years, facilitated by the rapid advancement of ICTs and the popularity of AI, it has become a prevalent phenomenon that focal firms create cross-border business models (CBMs) where their suppliers, customers, employees, goods, and services are located across separate geographic regions [17–19]. Such a scenario reveals that firms with CBMs have to perform a greater variety of CSR activities in diverse countries, as the CSR regulations and policies may vary across nations due to differences in economic, institutional, market, and social systems. In this vein, from the BM perspective, it is imperative to evaluate firms' CSR implementations through

a broader, more comprehensive lens. As a result, we investigate the impact of different dimensions of CSR practice on firm performance herein.

Limited studies have investigated the impact of different CSR dimensions on firm performance in China, among which most of them have used the RANKINS database as it is one of the most reliable ones [20–22]. Hence, we also referred to the instruction booklet of the RANKINS database to categorize CSR practices. The measure of CSR ratings includes four subdimensions: namely, (1) the macrocosm dimension (CSR-M), focusing on CSR issues related to an entity's overall strategy, governance, and information disclosure to stakeholders, (2) the content dimension (CSR-C), involving the CSR concerns about an organization's product and service offerings, protection of labors, human rights and environment, customer relationships, and its community participation and contribution, (3) the technique dimension (CSR-T), focusing on the CSR issues about corporate information transparency, as well as the standardization and integrity of annual reports, and (4) the industry dimension (CSR-I), demonstrating the industry-specific standards, such as raw materials, labor, and target markets. It should be noted that the rate of reporting completeness on the CSR-industry (CSR-I) dimension is relatively low due to a lot of missing data. Hence, we excluded the CSR-I scores herein.

The impact of CSR implementation on firm performance has long been discussed among scholars in decades while the results have remained controversial. Some scholars have found negative relationships between CSR and firm performance. Friedman (1970) argued that a firm only needs to meet minimal ethical requirements so as to maximize the interests of shareholders [20]. Following this logic, any investment in CSR activities can be seen as a waste of firms' resources, because this may transfer firm's limited, valuable resources from economic value-added internal projects to noneconomic value-added CSR activities [23,24]. Moreover, managers have incentives to overinvest in CSR activities due to various reasons, such as to build a positive reputation, get a higher salary, or distract attention from bad firm performance [25–27]. Thus, this implies that CSR implementation increases firms' cost and thereby is negatively related to firm performance.

Some scholars have found positive relationships between CSR and firm performance. This is because the implementation of CSR activities supports the interest of stakeholders, which raises the goodwill of a firm, thereby increasing its value, social legitimacy, and market potential, which thus improves its performance [28–33]. In fact, internal stakeholders' consensus or cooperation plays a critical role in the implementation of CSR practices [34]. Several studies have demonstrated that having a shared vision can enhance both innovation effectiveness and firm performance [34]. Choi and Yu [35] indicated that perceived CSR has a significant impact on organizational performance. Additionally, some studies have demonstrated that no significant relationship exists between CSR implementation and firm performance [36,37]. A review of relevant studies on CSR and firm performance in China is presented in Table 1.

Table 1. A review of relevant studies on corporate social responsibility (CSR) and firm performance in China.

Authors	General Findings
Bai & Chang [38]	This study examined whether marketing capabilities mediate the impact of CSR on firm performance, and it highlighted that CSR has a positive impact on China's marketing capabilities and firm performance in the fiercely competitive environment.
Wang, Yu, & Choi [39]	This study conducted the first empirical analysis on the relationship between CSR and firm performance from the perspective of employees in Chinese enterprises. The results indicated that CSR had a positive and significant impact on both.

Table 1. *Cont.*

Authors	General Findings
Yang, Bento, & Akbar [11]	Taking Chinese pharmaceutical companies as an example, CSR was divided into five aspects: namely, shareholders, employees, customers and suppliers, environmental practices, and society, to evaluate firm performance (composed of Tobin's Q, return on assets, return on equity, and earnings per share ratios). The results revealed that the overall CSR score had a positive and significant impact on the company's financial indicators. In addition, the overall aspect of CSR was positively correlated with firm performance, but the environmental practices of CSR had the most far-reaching impact on firm performance, followed by customers, suppliers, and employees. However, the impact of shareholders and society on firm performance was relatively small.
Kao et al. [40]	This study explored the impact of CSR on firm performance in both state-owned and non-state-owned enterprises in China. Overall, CSR was found to have a negative impact on firm performance in China. If the two are distinguished, state-owned enterprises were more likely to ignore the potential benefits of CSR, whereas the CSR of non-state-owned enterprises would have a significant impact on firm performance.
Sial et al. [41]	This study highlighted the impact of two different forms of Chinese CSR: substantive and symbolic (i.e., genuine CSR vs. greenwashing) on firm performance. The results revealed a positive and significant relationship between the two and firm performance.

The aforementioned ongoing debates on the impact of CSR practice on firm performance indicate the need to more comprehensively investigate relevant topics in the new digital era. Most studies still mainly focus on demonstrating the effects of the aggregate/overall score of different CSR indices on outcomes [2,7,42], but they seldom investigate how individual aspects of CSR implementation influence firm performance. Unlike the approaches adopted in the literature discussing CSR, Li [20] posited the use of the three dimensions of CSR as independent indicators to represent corporate performance. Therefore, compared with employing the conventional concepts used for CSR assessment [7,42], clarifying the effect of the three dimensions on corporate performance is more conducive to filling the current literature gap.

As indicated by Kolk et al. [42] and Arora et al. [43], in firms in nonwestern contexts such as China and India, CSR activities are primarily related to charity and philanthropy, which to some extent, are very costly, and the corresponding economic benefits are limited [42,43]. Compared to customers who pay more attention to the environmental friendliness and social sustainability of products in western countries, customers in developing countries prefer cheaper products and pay less attention to CSR-related characteristics of products [2]. CSR activities in these regions, which may raise market prices, will bring greater economic pressure to enterprises. Moreover, to ensure integrity and accountability, companies reaching a certain firm scale require an impartial and independent third party as an inspection agency when disclosing their CSR performance to the public, which is, as a matter of fact, very costly [44]. Evidence also indicates that it consumes enormous resources of enterprises to maintain credibility, transparency, standardization, and readability of the CSR reports in China [20]. In summary, previous research has predominantly focused their investigation on the effect of CSR on firm performance. Therefore, the present study further divided CSR into the CSR-M, CSR-C, and CSR-T dimensions and hypothesized that each of the dimensions negatively influences the performance of Chinese manufacturing

firms. Therefore, this study developed Hypotheses 1–3 to verify how the CSR-M, CSR-C, and CSR-T dimensions relate to firm performance, respectively.

Hypothesis 1. *The CSR-M dimension is negatively related to firm performance.*

Hypothesis 2. *The CSR-C dimension is negatively related to firm performance.*

Hypothesis 3. *The CSR-T dimension is negatively related to firm performance.*

2.2. The Role of Value Appropriation on CSR–Firm Performance

TCT can be used to explain the actual cost related to all the VA activities that focal firms need to cover, which results in miscellaneous transaction costs, including contracting costs, coordination costs, and search costs [45]. Traditionally, this involves a variety of transaction costs for focal firms to adopt the VA in CBMs, especially in developing countries where the protection of intellectual property rights and asset specificity are weak and contract enforcement is imperfect [46,47]. Nowadays, the rapid development of ICTs has allowed focal firms to synchronously share and process a massive amount of information and knowledge with a wide range of stakeholders spanning national borders within their CBMs. The phenomenon promotes the emergence and popularity of a new, modern type of VA that accelerates knowledge and information flow among participating actors but also requires far less resources than the traditional one [48,49].

On the one hand, ICTs-driven VA enables an increasing number of organizations to be integrated into such contexts where VA may enable focal firms to build better, tighter relationships with their stakeholders and help a focal firm to fulfill the CSR expectations of its stakeholders while aiming for performance improvement [50,51], which thereby reduces opportunistic behaviors among strategic partners in VA. On the other hand, organizations which are from different regions of the world are usually coupled with diverse CSR standards and regulations, which increase the complexity of such a virtual system. In this vein, CSR implementations consume far more resources than when managing implementations in single country, while the integration of a VA can reduce the risk of CSR implementations and improve the performance of enterprises by strengthening their links (such as ethical aspects) [52,53]. In addition, VA can improve the evaluation and attitude of CSR and stakeholders, thus enhancing their credibility and improving their competitiveness [8], while Jia [54] believes that VA can improve the impact of CSR on firm performance. Moreover, the prevalent use of artificial intelligence (AI) and ICTs has allowed firms to more easily share information and messages together, and, in this way, reduce transaction cost. In summary, this study inferred that new value appropriation moderates the negative relationships of CSR-M, CSR-C, and CSR-T with firm performance. Accordingly, Hypotheses 4–6 were proposed as follows:

Hypothesis 4. *VA moderate the relationship between CSR-M and firm performance.*

Hypothesis 5. *VA moderate the relationship between CSR-C and firm performance.*

Hypothesis 6. *VA moderate the relationship between CSR-T and firm performance.*

3. Materials and Methods

3.1. Sample Selection

Unlike developed economies, China, as a manufacturing power, is still in a stage of transition. On the one hand, there is the demand of economic development, while, on the other hand, there is the appeal of social progress to corporate social responsibility and environmental protection. Therefore, Chinese manufacturing firms are suitable for being used as our research setting. According to McGuinness et al. [55] and Jia [54], we selected the listed Chinese manufacturing companies' annual data from the Shanghai and Shenzhen stock exchanges. Corporate financial data were from The Win.d database, and CSR ratings

were from the RANKINS database. Both databases are famous and reliable datasets in China, where Win.d includes more than 90% of the listed companies in China and RANKINS, as a professional CSR database that organizes expert panels to assess the CSR report quality of the listed companies, provides the CSR ratings in four aspects annually. In addition, RANKINS's CSR scoring system utilizes an expert scoring methodology (overall, macrocosm represents 30 points; content represents 45 points; technique represents 15, and industry represents 10) with the maximum obtainable score being 100.

In consideration of extraneous variance, we thus excluded financial companies (e.g., insurance companies and banks), ST and ST* companies (companies facing a delisting risk warning), nonprofit organizations, and special treatment companies [56]. Given the truth that the quantitative information disclosure of social responsibility reports of A-share listed companies is at the initial stage in China, we removed companies that only contained CSR rating scores of two years or less. More specifically, RANKINS's CSR report is usually updated in the following year. However, due to some internal issues and the influence of the COVID-19, the CSR data of 2018 have not been published so far. Therefore, finally, we obtained 2007 useable data points for formal analysis. Moreover, to avoid outliers which would influence the results, we trimmed all the variables at the 1st and 99th percentiles.

3.2. Measures

CSR rating score. As mentioned above, we adopted the scores of three dimensions of CSR implementation in RANKINS's CSR report (i.e., CSR-M, CSR-C, and CSR-T).

Firm performance. According to Arulvel [57], we used the ROE (i.e., return on equity) to measure firms' performance. Furthermore, we address potential endogeneity issues by using lagged ROE (labeled lag2ROE) data as the firm's performance data.

Value appropriation. As indicated by Li [58], strategic integration is a multidimensional concept, therefore, each different measure assesses a specific dimension of a vertical integration, which can help provide complementary insights into an extremely complex phenomenon. In the present study, as we choose Chinese manufacturing factories as our section of study, following correction Han et al. [5] and Jia [56], we measured VA as value added to sales (VAS) divided by total output:

$$VA = \text{added value} / \text{total output} \quad (1)$$

Other control variables. Referring to a prior study [59], we controlled for the following variables: namely, earnings before interest and tax (labeled EBIT), long-term debt ratio (labeled Lev), firm age, firm size, operating cash flow (labeled OCF), sales expenses (labeled SER), R&D expenses (labeled RER), and financial costs (labeled FIC). We also controlled the complementary assets (labeled CA), which are believed to influence firm performance [60].

3.3. Model Specification

We utilized the ordinary least squares (OLS) regression method to test our hypotheses. Table 2 presents the definitions of all variables used in our research.

Equations (2)–(4) were built for testing Hypotheses 1–3. We used a two-year lag dependent variable (lag2ROE) to attenuate the endogeneity problem.

$$\text{Lag2ROE}_{i,t} = \alpha_0 + \alpha_1 \text{CSR-M}_{i,t} + \alpha_2 \text{SER}_{i,t} + \alpha_3 \text{RER}_{i,t} + \alpha_4 \text{Firm size}_{i,t} + \alpha_5 \text{EBIT}_{i,t} + \alpha_6 \text{Firm age}_{i,t} + \alpha_7 \text{OCF}_{i,t} + \alpha_8 \text{FIC}_{i,t} + \alpha_9 \text{Lev}_{i,t} + \alpha_{10} \text{CA}_{i,t} \quad (2)$$

$$\text{Lag2ROE}_{i,t} = \alpha_0 + \alpha_1 \text{CSR-C}_{i,t} + \alpha_2 \text{SER}_{i,t} + \alpha_3 \text{RER}_{i,t} + \alpha_4 \text{Firm size}_{i,t} + \alpha_5 \text{EBIT}_{i,t} + \alpha_6 \text{Firm age}_{i,t} + \alpha_7 \text{OCF}_{i,t} + \alpha_8 \text{FIC}_{i,t} + \alpha_9 \text{Lev}_{i,t} + \alpha_{10} \text{CA}_{i,t} \quad (3)$$

$$\text{Lag2ROE}_{i,t} = \alpha_0 + \alpha_1 \text{CSR-T}_{i,t} + \alpha_2 \text{SER}_{i,t} + \alpha_3 \text{RER}_{i,t} + \alpha_4 \text{Firm size}_{i,t} + \alpha_5 \text{EBIT}_{i,t} + \alpha_6 \text{Firm age}_{i,t} + \alpha_7 \text{OCF}_{i,t} + \alpha_8 \text{FIC}_{i,t} + \alpha_9 \text{Lev}_{i,t} + \alpha_{10} \text{CA}_{i,t} \quad (4)$$

Table 2. Definitions of variables.

Variable		Definition and Measurement
Independent variables	CSR-M	The macrocosm dimension, focusing on the CSR issues related to an entity's overall strategy, governance, and information disclosure to stakeholders
	CSR-C	The content dimension, involving the CSR concerns about an organization's product and service offerings, protection of labors, human rights and environment, customer relationships, and its community participation and contribution
	CSR-T	The technique dimension, focusing on the CSR issues about corporate information transparency, as well as the standardization and integrity of annual reports
Dependent variable	Lag2ROE	A two-year lag return on equity, ROE = net returns/net assets
Moderator variable	VA	The degree of VA, VA = added value/total output
Control variables	RER	R&D expenses, RER = R&D expense/operating income
	ROE	Return on equity, ROE = net returns/net assets
	SER	Sales expenses, SER = sales expense/operating income
	Firm size	Enterprise size, size = ln total assets
	Firm age	Company age, age = (observation year – incorporation year) + 1.
	CA	Complementary assets, CAS = (machine and equipment value + sales expense + cash paid to and for staffs)/commodity and labor cash incomes
	EBIT	Earnings before interest and tax, EBIT = Earnings before interest and tax/operating income.
	OCF	Operating cash flow, CF = operating cash flow/total assets
	Lev	Firms' long-term debt ratio
	FIC	Financial expenses, FIC = financial expenses/operating income

CSR: Corporate social responsibility. ROE: Return on equity. VA: value appropriation. RER: R&D expenses. SER: Sales expenses. CA: Complementary assets. EBIT: Earnings before interest and tax. OCF: Operating cash flow. Lev: Long-term debt ratio. FIC: Financial costs.

Equations (5)–(7) were built for testing Hypotheses 4–6, CSR-M \times VA, CSR-C \times VA, and CSR-T \times VA as the interaction term, representing the moderating effect, respectively. If the result of α_1 is significant, the moderating effect is valid:

$$\text{Lag2ROE}_{i,t} = \alpha_0 + \alpha_1 \text{CSR-M}_{i,t} \times \text{VA}_{i,t} + \alpha_2 \text{CSR-M}_{i,t} + \alpha_3 \text{SER}_{i,t} + \alpha_4 \text{RER}_{i,t} + \alpha_5 \text{Firm size}_{i,t} + \alpha_6 \text{EBIT}_{i,t} + \alpha_7 \text{Firm age}_{i,t} + \alpha_8 \text{OCF}_{i,t} + \alpha_9 \text{FIC}_{i,t} + \alpha_{10} \text{Lev}_{i,t} + \alpha_{11} \text{CA}_{i,t}, \quad (5)$$

$$\text{Lag2ROE}_{i,t} = \alpha_0 + \alpha_1 \text{CSR-C}_{i,t} \times \text{VA}_{i,t} + \alpha_2 \text{CSR-M}_{i,t} + \alpha_3 \text{SER}_{i,t} + \alpha_4 \text{RER}_{i,t} + \alpha_5 \text{Firm size}_{i,t} + \alpha_6 \text{EBIT}_{i,t} + \alpha_7 \text{Firm age}_{i,t} + \alpha_8 \text{OCF}_{i,t} + \alpha_9 \text{FIC}_{i,t} + \alpha_{10} \text{Lev}_{i,t} + \alpha_{11} \text{CA}_{i,t}, \quad (6)$$

$$\text{Lag2ROE}_{i,t} = \alpha_0 + \alpha_1 \text{CSR-T}_{i,t} \times \text{VA}_{i,t} + \alpha_2 \text{CSR-M}_{i,t} + \alpha_3 \text{SER}_{i,t} + \alpha_4 \text{RER}_{i,t} + \alpha_5 \text{Firm size}_{i,t} + \alpha_6 \text{EBIT}_{i,t} + \alpha_7 \text{Firm age}_{i,t} + \alpha_8 \text{OCF}_{i,t} + \alpha_9 \text{FIC}_{i,t} + \alpha_{10} \text{Lev}_{i,t} + \alpha_{11} \text{CA}_{i,t}, \quad (7)$$

In the above equations, Lag2ROE_{i,t} is the performance of firm i at period t; CSR-M_{i,t} is the macrocosm of CSR score of firm i at period t; VA_{i,t} is the degree of VA of firm i at period t; and SER_{i,t}, RER_{i,t}, Firm size_{i,t}, EBIT_{i,t}, Firm age_{i,t}, OCF_{i,t}, FIC_{i,t}, Lev_{i,t}, and CA_{i,t}, represent sales expense, R&D expense, enterprise size, earnings before interest and tax, enterprise age, operating cash flow, financial expense, long-term debt ratio, and complementary assets of firm i at period t, respectively (please refer to Table 2).

In the above, the following abbreviations are used: Lag2ROE (firm performance); the macrocosm aspect of CSR score (CSR-M); the content aspect of CSR score (CSR-C); the technique aspect of CSR score (CSR-T); VA (value appropriation); SER (sales expenses); RER (R&D expenses); Firm size (enterprise scale); EBIT (earnings before interest and tax); Firm age (company age); OCF (operating cash flow); FIC (financial expense); Lev (long-term debt ratio), and CA (complementary assets).

4. Results

4.1. Descriptive Statistics

The descriptive statistical results of each variable are shown in Table 3, which lists the observation numbers, mean, standard deviation, and minimum and maximum value of

the relevant variables of the selected manufacturing firms in China. In the sample data, the mean, standard deviation, and minimum and maximum values of the ROE were 0.052, 0.043, 0.000, and 0.026, respectively, which indicates that the firm performance of our sample firms is generally low. Among the three dimensions of the CSR implementation, the means of CSR-M, CSR-C, and CSR-T were 13.355, 17.271, and 6.760, respectively. These values show that the scores of CSR-M and CSR-C are much higher than those of CSR-T. The standard deviations of CSR-M, CSR-C, and CSR-T were 4.040, 5.198, and 1.570, respectively, which indicates that the CSR-C implementations are quite different among our samples and that CSR-T remains similar. As for the control variables, the standard deviations of SER, EBIT, OCF, and Lev were 7.28, 8.604, 10.092, and 16.009, respectively. This shows that the sale expense, earnings before interest and tax, operating cash flow, and long-term debt ratio are quite different among the sample companies, and the Lev difference shares the greatest difference among these variables. Moreover, the mean value of VA was 0.107, its standard deviation was 0.061, the minimum value was 0.001, and the maximum value was 0.328. The VA degree of our selected samples is relatively low.

Table 3. Descriptive statistics.

Variable	Observations	Mean	Std. Dev.	Min	Max
CSR-M	2007	13.355	4.040	3.280	26.836
CSR-C	2007	17.271	5.198	4.922	39.590
CSR-T	2007	6.760	1.570	3.640	17.280
VA	1888	0.107	0.061	0.001	0.328
ROE	1970	0.052	0.043	0.000	0.206
SER	1969	7.293	7.280	0.234	40.494
RER	1986	0.033	0.026	0.000	0.139
Firm size	1971	22.847	1.257	20.358	26.054
Firm age	1965	17.764	4.477	7.167	32.083
EBIT	1974	11.056	8.604	−27.705	47.939
OCF	1975	8.295	10.092	−28.171	42.346
FIC	2007	1.224	2.353	−16.392	20.785
Lev	2007	15.529	16.009	−15.754	134.984
CA	1971	16.927	1.397	13.899	20.535

Table 4 shows the analysis Spearman's rank correlation coefficients between the variables. The correlations between sales expenses and CSR-M, CSR-C, and CSR-T were 0.127, 0.117, and 0.114, respectively, which indicates that the CSR-M, CSR-C, and SCR-T increase with increasing sales expenses. The correlation between sales expenses and VA was 0.170, indicating that the VA increases with increasing sales expenses. The correlations between R&D expenses and CSR-M, CSR-C, and CSR-T were 0.1, 0.03, and 0.03, respectively, which indicates that CSR-M, CSR-C, and CSR-T increase with increasing R&D expenses. The correlation between R&D expenses and VA was 0.170, indicating that VA increases with increasing R&D expenses.

Table 4. Spearman's rank correlation coefficients.

	CSR-M	CSR-C	CSR-T	VA	ROE	SER	RER	Firm Size	Firm Age	EBIT	OCF	FIC	Lev	CA
CSR-M	1.000													
CSR-C	0.734	1.000												
CSR-T	0.711	0.556	1.000											
VA	0.042	0.097	0.096	1.000										
ROE	0.017	0.102	−0.002	0.635	1.000									
SER	0.127	0.117	0.114	0.170	0.242	1.000								
RER	0.093	0.054	0.103	−0.047	0.089	0.176	1.000							
Firm size	0.229	0.299	0.253	−0.003	−0.002	−0.122	−0.177	1.000						
Firm age	0.096	0.078	0.218	0.058	−0.077	−0.024	−0.038	0.128	1.000					
EBIT	0.017	0.010	0.014	0.652	0.535	0.221	0.123	−0.022	−0.016	1.000				

Table 4. Cont.

	CSR-M	CSR-C	CSR-T	VA	ROE	SER	RER	Firm Size	Firm Age	EBIT	OCF	FIC	Lev	CA
OCF	0.084	0.085	0.081	0.457	0.251	0.139	0.038	−0.009	0.040	0.423	1.000			
FIC	−0.015	−0.042	−0.031	−0.342	−0.384	−0.138	−0.131	0.189	0.035	−0.004	−0.079	1.000		
Lev	0.126	0.132	0.074	−0.281	−0.304	−0.130	−0.064	0.502	0.017	−0.096	−0.085	0.600	1.000	
CA	0.207	0.301	0.230	0.062	−0.049	−0.066	−0.206	0.867	0.123	−0.079	−0.001	0.206	0.450	1.000

Spearman rho = 0.450.

In addition, the variance inflation factor was used to test whether there was multicollinearity among the variables, where the results show that the VIF values are less than 10, indicating that there is no serious multicollinearity in this model.

4.2. Regression Result Analysis

We ran three OLS regression models (i.e., Models A1 to A3) to examine the direct effect of three dimensions of CSR implementation on firm performance. As shown in Table 5, Model A2 shows that CSR-C ($\alpha = 0.000501$, $p < 0.05$) is significantly and positively related to firm performance, which goes against Hypothesis 2, indicating that the better the implementation of CSR-C is, the better the firm performance is. Model A3 indicates that CSR-T ($\alpha = 0.00166$, $p < 0.05$) is significantly and negatively related to firm performance, which means that firms focusing on the technique part of the firms' CSR report do harm to the firms' performance, supporting Hypothesis 3. However, Model A1 indicates that CSR-M is negatively but not significantly related to firm performance, thus Hypothesis 1 is not supported.

Table 5. The effect of CSR on firm performance.

	Model A1	Model A2	Model A3
VARIABLES	lag2ROE	lag2ROE	lag2ROE
CSR-M	−0.000280 (0.000296)		
CSR-C		0.000501 ** (0.000215)	
CSR-T			−0.00166 ** (0.000747)
SER	0.000787 *** (0.000149)	0.000708 *** (0.000148)	0.000822 *** (0.000149)
RER	−0.0749 * (0.0411)	−0.0906 ** (0.0410)	−0.0666 (0.0411)
Firm size	0.00562 *** (0.00178)	0.00489 *** (0.00177)	0.00610 *** (0.00179)
Firm age	−0.000913 *** (0.000251)	−0.000948 *** (0.000250)	−0.000851 *** (0.000252)
EBIT	0.00283 *** (0.000154)	0.00285 *** (0.000154)	0.00283 *** (0.000154)
OCF	9.07×10^{-5} (0.000119)	6.60×10^{-5} (0.000119)	9.10×10^{-5} (0.000119)
FIC	−0.00518 *** (0.000621)	−0.00500 *** (0.000620)	−0.00521 *** (0.000619)
Lev	−0.000497 *** (9.75×10^{-5})	−0.000520 *** (9.72×10^{-5})	−0.000503 *** (9.70×10^{-5})
CA	0.000773 (0.00156)	0.000560 (0.00156)	0.000796 (0.00155)
Constant	−0.0865 *** (0.0234)	−0.0768 *** (0.0235)	−0.0918 *** (0.0235)
Observations	1017	1017	1017
R-squared	0.457	0.460	0.459

Standard errors in parentheses: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

In Table 6, Models B1 to B3 explain the moderating effect of VA on the CSR–firm performance relationship. In order to introduce the moderator, we mean-centered all main variables. From Models B1 to B3, we can tell that VA is significantly and positively related to firm performance in all three models, and when it comes to the relationship between different aspects of CSR and their interaction terms, the results differ. Among the three models, the model fits of Models B1, B2, and B3 ($R^2 = 0.557, 0.560$, and 0.559 , respectively) are better than those of Models A1, A2, and A3 ($R^2 = 0.457, 0.460$, and 0.459 , respectively). Model B1 tells us that the regression coefficient of the moderator is significantly positive ($\alpha = 0.0116, p < 0.05$), Model B2 reveals that the regression coefficient of the moderator is significantly positive ($\alpha = 0.0111, p < 0.001$), and Model B3 indicates that the regression coefficient of the moderator is significantly positive ($\alpha = 0.0205, p < 0.1$). The results suggest that in China's context, VA practices can help the relationship between CSR–firm performance, and, to some extent, this means that the integration behavior in the VA will help firms control their overall performance. VA may help in the following aspects: (1) reducing the nonprofit CSR implementation of a firm (such as donation) to maximize profits; (2) having more comprehensive information about the company to reduce the resources required in CSR disclosure; and (3) in addition, the implementation of vertical integration can also help enterprises reduce their transaction costs, reduce the increase in commodity prices caused by CSR activities, and thus increase their market competitiveness. We therefore validated the moderating effects of the VA on CSR–M–firm performance, CSR–C–firm performance, and CSR–T–firm performance associations. Hypotheses 4–6 are supported as well.

Table 6. Moderating effect of VA on CSR–firm performance.

	Model B1	Model B2	Model B3
VARIABLES	lag2ROE	lag2ROE	lag2ROE
Moderator 1 (CSR–M \times VA)	0.0116 ** (0.00450)		
CSR–M	−0.00160 *** (0.000573)		
Moderator 2 (CSR–C \times VA)		0.0111 *** (0.00331)	
CSR–C		−0.000877 ** (0.000418)	
Moderator 3 (CSR–T \times VA)			0.0205 * (0.0119)
CSR–T			−0.00434 *** (0.00149)
VA	0.195 *** (0.0659)	0.162 *** (0.0614)	0.217 ** (0.0845)
SER	0.000743 *** (0.000136)	0.000702 *** (0.000135)	0.000801 *** (0.000135)
RER	0.0426 (0.0381)	0.0295 (0.0380)	0.0536 (0.0383)
Firm size	0.0112 *** (0.00168)	0.0105 *** (0.00166)	0.0118 *** (0.00168)
Firm age	−0.000892 ** (0.000230)	−0.000912 *** (0.000229)	−0.000812 *** (0.000231)
EBIT	0.00118 *** (0.000186)	0.00119 *** (0.000186)	0.00118 *** (0.000186)
OCF	−0.000225 ** (0.000111)	−0.000241 ** (0.000110)	−0.000234 ** (0.000110)
FIC	−0.00255 *** (0.000600)	−0.00254 *** (0.000598)	−0.00261 *** (0.000598)

Table 6. Cont.

	Model B1	Model B2	Model B3
VARIABLES	lag2ROE	lag2ROE	lag2ROE
Lev	−0.000206 ** (9.21×10^{-5})	−0.000197 ** (9.22×10^{-5})	−0.000218 ** (9.19×10^{-5})
CA	−0.00726 *** (0.00152)	−0.00733 *** (0.00152)	−0.00723 *** (0.00152)
Constant	−0.111 *** (0.0223)	−0.0931 *** (0.0224)	−0.127 *** (0.0229)
Observations	975	975	975
R-squared	0.557	0.560	0.559

Standard errors in parentheses: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.3. Robustness Check

In order to further verify our findings on CSR–firm performance, a three-year lag of ROE (lag3ROE) was used to validate our assumptions. In Table 7, Models A4 to Model A6 show the impact of the three dimensions of CSR on lag3ROE. From Model A4, we can tell that CSR-C ($\alpha = 0.000474$, $p < 0.1$) still contains a positive and significant influence on firm performance in the long-term, thus supporting Hypothesis 2. Meanwhile, CSR-T still negatively affects firm performance but not significantly. As shown in Models B4–B6, the moderators remain to have a positive and significant impact on lag3ROE, which means that the moderate effect of VA remains strong as time passes and that Hypotheses 4–6 are supported. The robustness of our results is thus assured.

Table 7. Robustness check 1.

	Model A4	Model A5	Model A6	Model B4	Model B5	Model B6
Variables	lag3ROE	lag3ROE	lag3ROE	lag3ROE	lag3ROE	lag3ROE
CSR-M	4.59×10^{-5} −0.000366			−0.00130 * −0.000752		
CSR-C		0.000474 * −0.000255			−0.000872 * −0.000522	
CSR-T			−0.001 −0.000946			−0.00538 *** −0.002
Moderator 4 (CSR-M × VA)				0.0104 * −0.006		
Moderator 5 (CSR-C × VA)					0.0110 *** −0.00421	
Moderator 6 (CSR-T × VA)						0.0329 ** −0.016 0.137 −0.116
VA				0.217 ** −0.0891	0.172 ** −0.0785	
SER	0.000866 *** −0.00018	0.000814 *** −0.000179	0.000907 *** −0.00018	0.000802 *** −0.000168	0.000768 *** −0.000166	0.000856 *** −0.000167
RER	−0.0613 −0.0509	−0.0715 −0.0508	−0.0537 −0.051	0.0532 −0.048	0.0473 −0.0479	0.0682 −0.0481
Firm size	0.00702 *** −0.00208	0.00655 *** −0.00206	0.00755 *** −0.0021	0.0128 *** −0.00201	0.0122 *** −0.00199	0.0136 *** −0.00203
Firm age	−0.000714 ** −0.000316	−0.000742 ** −0.000316	−0.000679 ** −0.000318	−0.000527 * −0.000295	−0.000527 * −0.000295	−0.000469 −0.000296
EBIT	0.00259 *** −0.000185	0.00260 *** −0.000185	0.00259 *** −0.000185	0.000944 *** −0.000233	0.000952 *** −0.000232	0.000912 *** −0.000233
OCF	7.14×10^{-5} −0.000143	5.59×10^{-5} −0.000142	7.86×10^{-5} −0.000142	−0.000242 * −0.000134	−0.000250 * −0.000134	−0.000236 * −0.000134

Table 7. Cont.

	Model A4	Model A5	Model A6	Model B4	Model B5	Model B6
Variables	lag3ROE	lag3ROE	lag3ROE	lag3ROE	lag3ROE	lag3ROE
FIC	−0.00422 *** −0.000751	−0.00410 *** −0.00075	−0.00427 *** −0.000749	−0.00140 * −0.000746	−0.00141 * −0.000743	−0.00142 * −0.000743
Lev	−0.000571 *** −0.000114	−0.000582 *** −0.000114	−0.000568 *** −0.000114	−0.000351 *** −0.00011	−0.000335 *** −0.00011	−0.000349 *** −0.00011
CA	−0.000284 −0.00187	−0.000476 −0.00187	−0.000385 −0.00187	−0.00807 *** −0.00188	−0.00820 *** −0.00187	−0.00832 *** −0.00188
Constant	−0.106 *** −0.0276	−0.0984 *** −0.0278	−0.110 *** −0.0277	−0.136 *** −0.0267	−0.123 *** −0.0269	−0.152 *** −0.0274
Observations	764	764	764	727	727	727
R-squared	0.406	0.409	0.407	0.504	0.508	0.508

Standard errors in parentheses: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

In order to enhance the sensitivity of our findings, another firm performance measure (ROA) was conducted to further validate our results as dependent variables. As shown in Table 8, Models A7–A9 represent the robustness results of the CSR–firm performance associations. Models B7–B9 represent the robustness results of the moderating effect to such relationships. It is obvious from Table Models B7–B9 that Hypotheses 4–6 are fully supported. From the regression results of Models A7 to A9, we can see that the direction of CSR on enterprise performance remains unchanged, but the significance level differs.

Table 8. Robustness check 2.

	Model A7	Model A8	Model A9	Model B7	Model B8	Model B9
Variables	ROA	ROA	ROA	ROA	ROA	ROA
CSR-M	−0.000309 * −0.000167			−0.000546 *** −0.000169		
CSR-C		0.000207 −0.000133			−0.000245 * −0.000134	
CSR-T			-2.47×10^{-5} −0.000434			−0.000870 * −0.000457
Moderator 4 (CSR-M × VA)				0.00443 *** −0.00134		
Moderator 5 (CSR-C × VA)					0.00348 *** −0.00109	
Moderator 6 (CSR-T × VA)						0.00670 * −0.00369
VA				0.474 *** −0.0185	0.471 *** −0.0199	0.486 *** −0.0254
SER	-9.67×10^{-5} -9.36×10^{-5}	−0.000145 -9.35×10^{-5}	−0.000123 -9.36×10^{-5}	−0.000124 *** -4.61×10^{-5}	−0.000137 *** -4.59×10^{-5}	−0.000119 ** -4.61×10^{-5}
RER	−0.168 *** −0.0251	−0.181 *** −0.0248	−0.176 *** −0.0248	−0.00126 −0.0125	−0.00666 −0.0124	−0.00321 −0.0124
Firm size	−0.00275 *** −0.00106	−0.00324 *** −0.00106	−0.00302 *** −0.00107	0.00479 *** −0.000541	0.00454 *** −0.000539	0.00475 *** −0.000545
Firm age	−0.000258 * −0.000142	−0.000306 ** −0.00014	−0.000294 ** −0.000141	−0.000319 *** -7.01×10^{-5}	−0.000338 *** -6.94×10^{-5}	−0.000325 *** -7.01×10^{-5}
EBIT	0.00406 *** -8.71×10^{-5}	0.00407 *** -8.69×10^{-5}	0.00407 *** -8.69×10^{-5}	0.00134 *** -5.75×10^{-5}	0.00135 *** -5.74×10^{-5}	0.00135 *** -5.76×10^{-5}
OCF	9.10×10^{-5} -6.92×10^{-5}	7.42×10^{-5} -6.92×10^{-5}	8.13×10^{-5} -6.91×10^{-5}	−0.000323 *** -3.48×10^{-5}	−0.000330 *** -3.47×10^{-5}	−0.000327 *** -3.48×10^{-5}
FIC	−0.00597 *** −0.000347	−0.00589 *** −0.000349	−0.00595 *** −0.000348	−0.00182 *** −0.000183	−0.00184 *** −0.000183	−0.00185 *** −0.000183

Table 8. Cont.

	Model A7	Model A8	Model A9	Model B7	Model B8	Model B9
Variables	ROA	ROA	ROA	ROA	ROA	ROA
Lev	−0.000456 *** −5.46 × 10 ^{−5}	−0.000462 *** −5.47 × 10 ^{−5}	−0.000458 *** −5.47 × 10 ^{−5}	−6.19 × 10 ^{−5} ** −2.82 × 10 ^{−5}	−5.91 × 10 ^{−5} ** −2.84 × 10 ^{−5}	−6.41 × 10 ^{−5} ** −2.83 × 10 ^{−5}
CA	0.00811 *** −0.000923	0.00802 *** −0.000925	0.00810 *** −0.000924	−0.00345 *** −0.000484	−0.00344 *** −0.000484	−0.00340 *** −0.000485
Constant	−0.0381 *** −0.0139	−0.0313 ** −0.0139	−0.0346 ** −0.0139	−0.0584 *** −0.00728	−0.0522 *** −0.00729	−0.0580 *** −0.00737
Observations	1797	1797	1797	1712	1712	1712
R-squared	0.684	0.684	0.683	0.913	0.913	0.912

Standard errors in parentheses: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5. Conclusions and Discussion

5.1. Discussion

With our sample of Chinese listed companies in the manufacturing sector, we obtained some interesting and unexpected findings. Hypotheses 1 and 2 were not supported, whereas Hypothesis 3 was examined further. Our results were consistent with those of studies that have supported Hypothesis 3 [11,39,41], but they differed from those of studies that have supported Hypotheses 1 and 5. The main reason for this is that the present study evaluated the Chinese retail industry, whereas the aforementioned studies have employed data on Chinese firms in general. In particular, because the Chinese manufacturing industry has been dominated by export-led manufacturing companies since the COVID-19 pandemic, this finding is relevant for export-led manufacturing companies in other countries. Specifically, CSR-M does not relate to firm performance; CSR-C positively relates to firm performance, which is opposite to our assumption of a negative effect of CSR-C on firm performance; and CSR-T negatively relates to firm performance, supporting Hypothesis 3. As far as the moderating effect of VA goes, value appropriation positively moderates the positively relationship between CSR-C and firm performance, and VA positively moderates the negative relationship between CSR-T and firm performance. The reason for these results may be that with the rapid development of ICTs, CSR implementations are becoming more and more important, even in nonwestern markets. Managers will pay more attention to the economic benefits of adopting CSR strategies, rather than donating money alone. At the same time, with the improvement of living standards, consumers also slowly accept the importance of environmental protection and health. They are more open to accept healthier products within their capacity. However, because the information systems in these countries are not sound enough, it still costs companies a lot of resources to create CSR reports. Moreover, the interaction of VA and CSR-M is also positively related to firm performance.

The above results against our hypotheses may be due to the following reason: as indicated by Mani et al. [61], CSR implementation enhances the collaboration of the focal firm and its multiple stakeholders, including employees, customers, the environment, and community-related issues to achieve ecological, economic, and environmental sustainability. This could improve the image and reputation of the focal firm, increase customer favor, and help the firm to feel more satisfied with its products [62,63]. By doing so, it may be easier for the focal firm to gain the government's support [64]. In addition, CSR implementation emphasizes the importance of the employees' rights, which have not always been defended and considered before, which will raise employees' morale, increasing productivity and firm performance [65]. In general, CSR practice which reflects firms' ethical behavior contributes to firm performance by increasing organizational legitimacy.

Along with the 2008 financial crisis, the 2010 Euro zone debt crisis, and the 2015 Brexit 'yes' vote, the world's economic and political situation has become more volatile and unpredictable. In this vein, manufacturing around the world is facing a new round of restructuring. China is no exception to this developmental trend [66]. Hence, Chinese

manufacturing factories have been facing a turbulent time all these years, and because we cannot get the CSR score from 2018, we thus used the annual data from 2010 to 2017. In this paper, we made some theoretical contributions. First and foremost, our result contributes to the existing knowledge on CSR implementation. Based on the BM perspective, we have analyzed the impact of different CSR dimensions on firm performance, thus providing a more comprehensive understanding of firms' business ethic activities in nonwestern contexts in a new digitalized world. Secondly, grounded in TCT, we have identified the moderating effect of ICTs-driven VA on CSR–firm performance relationships, which sheds some light on the linkage between CSR implementation and VA within the popularity of CBMs. Additionally, our study implies that the rising awareness of CSR, coupled with the popularity of digital technologies, may result in new VA challenges in turbulent times.

As for the practical implications, with increasing ecological concerns, our results shed some light on how manufacturing firms can capitalize on digital technology to manage their VA to more rapidly adapt, such as to fit dynamic market changes and consumer demands, thereby coping with the new challenges for sustainable development in turbulent times. Moreover, this can capture the dynamic, system-wide changes of a firm's VA, implying that the multifaceted aspects of CSR practice reflect a wider range of firms' ethical behaviors that should be taken into consideration.

5.2. Limitation and Future Research

This study is still subject to certain limitations. First, our research investigated the relationship between CSR implementation and firm performance and examined the moderating effect of VA on such relationships in the context of China's digitalized manufacturing. This, to a certain extent, fills the knowledge void about the lack of evidence regarding CSR–performance associations in nonwestern, non-developed contexts. However, China is merely one of many developing economies. It is vital for future research to investigate relevant issues in other nonwestern, non-developed countries, as to more clearly characterize the mechanism between CSR practice and corporate performance. Second, we only obtained the listed companies of China's manufacturing sector as our sample. Future research is encouraged to include a greater range of organizations, such as small- and medium-sized enterprises (SMEs) and social organizations, because different types and sizes of organizations may or may not conduct the same VA when facing the pressure of digitalization [67]. Third, we only focus on firms' financial performance in this paper; it is necessary to conduct future research on other aspects which also indicate firms' concern for sustainable development of society, such as green innovation performance [68]. In this vein, further studies are needed to discuss relevant issues in more depth.

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