

Article

Strategic Orientation, Digital Capabilities, and New Product Development in Emerging Market Firms: The Moderating Role of Corporate Social Responsibility

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Abstract: Strategic orientation represents an important antecedent condition for new product development (NPD) performance, which can help firms create competitive advantage and promote sustainable growth. This study aims to explore the role of strategic orientation (i.e., technology orientation, customer orientation) in promoting firms' digital capabilities and NPD performance in the context of digital transformation. Using a resource-based view and its extended dynamic capabilities as a theoretical foundation, we provide a comprehensive framework by developing a set of hypotheses. In addition, we examine the moderating effect of corporate social responsibility (CSR) on the relationship between strategic orientation and NPD performance. Using data from a sample of 174 Chinese manufacturing firms, we perform structural equation modelling to empirically test our arguments. Our findings show that technology orientation and customer orientation play a critical role in driving firms' digital capabilities. Moreover, we find that the two dimensions of strategic orientation tend to exert different effects on NPD performance, with technology orientation playing a more significant role than customer orientation in contributing to NPD performance. Finally, our findings strongly suggest that a firm's CSR engagement moderates the relationship between its customer orientation and NPD performance, such that the higher the firm's engagement in CSR, the greater the contribution of customer orientation to the firm's NPD performance. Our findings provide new insights into non-market mechanisms such as CSR through which firms can compensate for their strategically oriented practices in the NPD process.

Keywords: strategic orientation; digital capabilities; corporate social responsibility; new product development performance; China



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1. Introduction

Corporate strategic orientation is a hot topic that has attracted the attention of scholars from fields such as marketing, innovation, and information. Strategic orientation reflects a firm's decisions, direction, and beliefs to create competitive advantage and promote sustainable development, and the way it is positioned affects firm performance [1–3]. Strategic orientation contributes to product innovation, for technological orientation and customer orientation are key strategic elements for the successful development of new products [4]. Technology-oriented firms focus on technology investment and emphasize the introduction or use of new technologies to create value [1], whereas customer-oriented firms tend to build strong ties with their target customers, and their value creation is mainly derived from customer demand [5]. Recently, the digital environment has been creating a new business model influenced by the rapid development of smart technologies and big

data [6,7]. First, companies are using these cutting-edge technologies to fundamentally change business processes and facilitate company capabilities and product innovation [8,9]. Second, companies are able to identify and understand customer needs by building direct and deep interactions with them [10]. Therefore, in the new business model, do companies have to weigh technology orientation against customer orientation, and are they equally important? We know little about this dynamic; hence, the issue of strategic positioning of emerging economies in the context of digital transformation is of great interest.

Firstly, rapidly evolving technologies have led to an increasingly competitive industrial environment where new product development (NPD) has become key to sustainable business growth [11]. Assessing the performance of NPD helps firms measure market performance, improve scientific management, and promote sustainable development [12]. Many scholars have only explored the direct impact of strategic orientation and firm performance, with few explanations of how strategic orientation affects firms' NPD performance [13]. Moreover, discussions of the two in the digital environment are mostly in the form of case studies and have not been fully investigated [14–16].

Secondly, researchers have found that resources and new capabilities are necessary for firms to compete effectively in the digital age [17,18]. Specifically, digital change in manufacturing has transformed traditional production management and offers great potential for innovation in customer service and product production development [19]. The higher the digital capability of a firm, the better their business performance [20–22]. Therefore, on the basis of previous studies [1,2,23,24], we use the resource-based view (RBV) and its extended dynamic capabilities as a theoretical basis to explain how strategic orientation affects new product performance. We further explore the mediating role of a firm's digital capabilities in shaping the relationship between strategic orientation and NPD performance and investigate how strategic orientation (technology orientation and customer orientation) generates competitive advantage through digital capabilities, thereby improving NPD performance.

Furthermore, creating a better and sustainable future for businesses requires serving all stakeholders in a harmonious manner. Corporate social responsibility (CSR) is a valuable source for businesses to seek new opportunities, to enhance employee responsibility, to identify customer needs, and to enhance social acceptance through product responsibility, philanthropy, and environmental awareness [25]. Therefore, in addition to establishing an appropriate strategic orientation, companies should strive to engage in CSR and increase innovative revenue through newer and better products [26].

Therefore, the objective of this study is to extend this stream of research by specifically examining the impact of customer orientation and technology orientation on firms' NPD performance. In addition, we aim to investigate how firms' engagement in CSR may moderate the relationships between different strategic orientations on NPD performance. We empirically test our conceptual framework by using survey data from 174 Chinese manufacturing firms. The reason for our focus on manufacturing firms is that the manufacturing industry has long been growing in a relatively stable environment. Moreover, rapidly evolving technology brings unprecedented opportunities and challenges to the manufacturing industry, and more importantly, the ability of firms to exploit technology during periods of environmental turbulence is key to achieving competitive advantage [27]. Manufacturing firms need to improve their dynamic capabilities to adapt to the environment to make rational integration and configuration to cope with possible future changes [28]. China, with its rapid economic and technological development, certainly provides a rich context for this research.

The research contributions of this paper are threefold. First, on the basis of dynamic capabilities and stakeholder-related literature, this paper builds on previous research to explore the relationship between strategic orientation and NPD performance in a digital environment. Second, we assess how strategic orientation affects NPD performance through digital capabilities from an information systems perspective. Our observations reinforce that those digital capabilities supported by the RBV are the primary capabilities of firms in

a technological environment [17]. Third, we investigate the impact of different levels of CSR on the relationship between strategic orientation and NPD performance.

The study is structured as follows: In the next section we present an overview of our theoretical model and develop our hypotheses. In the third section, we outline the research methods. The fourth section reports the analyses and results. In the final section, we discuss the results, outline their theoretical and practical implications, and provide several possible avenues for future research.

2. Theoretical Background and Hypothesis Development

2.1. Theoretical Foundations

The RBV has long been regarded as one of the most important conceptual frameworks in academia. It states that the competitive advantage and superior performance gained by firms are derived from organizations' unique and not easily imitated resources and capabilities [29,30], thus explaining the differences in performance between organizations. In the digital age, resources and new capabilities are equally necessary to achieve sustainable competitive advantage [17,18]. Strategic orientation is seen as a corporate culture that reflects a firm's philosophy of action to gain competitive advantage, a belief in promoting sustainable development, and a direction for decision making, and the way it is positioned affects corporate performance [1,2,13]. Technology-oriented firms focus on technological investments and emphasize the introduction or use of new technologies to create value [1]. Specifically, the technological capabilities of firms facilitate the pursuit of higher performance [31]. Customer orientation is the most decisive element of market-oriented strategy; it emphasizes customer interests first and aims to maximize customer value [5]. This study examines the impact of technology orientation and customer orientation on NPD performance from a strategic marketing perspective [32].

As an extension of RBV, dynamic capabilities are seen as higher-order capabilities in the process of organizational renewal [33]. In the digital age, companies need strong perception, integration, and configuration capabilities to remain competitive. In particular, digital capabilities have become a key influencing factor for companies to manage resources and cope with turbulent environments [9]. We have focused on this in our research by introducing the new term "digital capability" [34]. It denotes a firm's digital capabilities in terms of a flexible IT infrastructure and well-developed information management capabilities to cope with rapidly evolving technologies and uncertainties [35].

With health crises, economic crises, social crises, environmental crises, and growing geopolitical tensions on the horizon, companies need to create a better and sustainable future that serves all stakeholders in a harmonious way. We are, so to speak, entering an era of stakeholders. The NPD process requires consideration of many factors, such as customer needs, advanced technology, competitor status, and environment, which cannot be circumvented by different stakeholders. Hence, new products that meet specific needs help achieve the goals of stakeholders [36]. According to stakeholder theory, firms that ignore different stakeholders are vulnerable to social and economic disruptions [37]. Therefore, CSR influences firms to produce valuable assets and achieve competitive advantage, which help justify strategic choices.

2.2. Strategic Orientation and NPD Performance

Strategic orientation is seen as a corporate culture that reflects a firm's philosophy of action to gain competitive advantage, where firms interact with the market through established beliefs to create quality corporate value [1,24]. On the basis of RBV [29], we explore the impact of technology orientation and customer orientation on firms' NPD performance in the context of digital transformation from a strategic marketing perspective [32].

Previous research has shown that market orientation has a positive and significant impact on firm performance, and market-oriented firms contribute to successful NPD [38]. Scholars considered customer orientation the most decisive factor in market-oriented strategies, and it is considered a set of beliefs that give the highest priority to customer

interests [39]. In turn, research on NPD has highlighted the role of customer orientation [40]. Although some scholars argue that this orientation is limited by the current level of customers to only incremental improvements unable to create radical innovation [41]. Still, many scholars see a positive relationship between customer orientation and innovation success [42].

Alongside customer orientation, technology-oriented firms prioritize investment in technology in the context of acquiring substantial technology, using it for NPD, and subsequently creating corporate value [1,43]. Technology orientation prioritizes technological factors, in contrast to customer-oriented attitudes that highlight customer value [44]. Firms that emphasize the application of technology to the development of new products and services that meet customer needs become more innovative by actively acquiring advanced new technologies [12]. By leveraging new technologies, technology-oriented firms efficiently connect to the market, integrating potential customer value and developing creation in the product development process [45]. In the face of rapidly changing technological developments and an increasingly competitive industrial environment, the use of digital technologies enables us to grasp market needs efficiently and precisely. In such an environment, technology orientation should have a positive impact on firms' NPD performance in the context of their digital transformation, because firms' technological capabilities facilitate the pursuit of higher performance [31]. Previous studies have documented this positive relationship, particularly for Chinese firms [4,24]. According to the RBV and the above, both technology orientation and customer orientation have distinct cultural influences on firm behavior. Therefore, we propose the following relationships:

Hypothesis 1a (H1a). *Greater technology orientation leads to higher NPD performance.*

Hypothesis 1b (H1b). *Greater customer orientation leads to higher NPD performance.*

2.3. The Mediating Role of Enterprises' Digital Capabilities

Scholars have argued that the direct impact of strategic orientation and performance is positive, whereas others have dismissed the positive relationship; thus, the process between the two deserves further exploration [24]. In the context of a turbulent digital environment, it is of great interest to understand how and to what extent firms understand how and what capabilities are required for strategic orientation to influence NPD performance [46]. In the new business environment where digital technology is developing rapidly, we encourage emerging economies to take a dynamic capabilities perspective on the mechanisms of intermediation [47]. Through these capabilities, companies sense and integrate resources and further reconfigure them to achieve a sustainable competitive advantage for the business in a volatile environment [9]. Dynamic capabilities plausibly explain why firms maintain a competitive advantage in times of environmental turbulence [48]. In particular, small and medium-sized enterprises (SMEs) may perform better if their resource allocation is bold and innovative, as technological capabilities raise firms' expectations of achieving higher performance [49].

Scholars are increasingly focusing on the flexibility needed for organizations to adopt technology and digitalization to cope with turbulent environments and thereby gain a competitive advantage [50]. Prior research based on RBV has found digital capabilities to be a key competency for firms in a technological environment [17]. We identified that a flexible IT infrastructure and well-developed information management capabilities define a firm's digital capabilities, which address the firm's response to rapidly evolving technologies and various uncertainties [35]. Taking industrial robots in the production process of manufacturing firms as an example, automated production lines not only provide accurate operations but also increase efficiency, reducing costs. The findings also suggest that digital capabilities can better facilitate businesses to create more value for their customers, which is an important finding for companies to build a competitive advantage [51]. This finding is supported by another study showing that the provision of competitive products from product producers is associated with the adoption of digital technologies [52]. In the food

industry and in pharmaceutical development, digital technology has even facilitated the development of new products, making it easier for companies to enter the market through big data and analytics. This ability facilitates the successful development of new products through accurate market forecasting, thus enhancing the ability of companies to launch new products and services [53] and to use them to a greater extent through better-quality digital capabilities. The increasingly digital business environment also requires the development of novel digital competencies [54]. Therefore, on the basis of the dynamic capabilities of an extended view of the enterprise resource base, we propose the following relationship:

Hypothesis 2 (H2). *A firm's digital capabilities mediate the relationship between strategic orientation and the firm's NPD performance.*

2.4. CSR and NPD Performance

Strategic orientation refers to the beliefs and directions of action that guide a firm to gain superior performance, and the beliefs established and values developed by the firm to interact with the market to create long-term competitive advantage [1,2]. On the basis of stakeholder theory, firms that ignore stakeholders are vulnerable to social and economic disruptions [37], as robust and sustainable growth is associated with many stakeholders through whom firms can access unexpected information resources and opportunities that can enhance competitive advantage [36]. This external sharing and communication become key predictors of corporate innovation [55], which can, in turn, be a beneficial business strategy if start-ups integrate CSR into product development [56].

CSR has been defined by several pioneering studies as a policy, activity, or action of a company that goes beyond multiple stakeholders inside and outside the company and beyond existing economic and legal obligations [57]. The integration of social factors in new product design is an innovative way for companies to achieve sustainable business [58]. In turn, new products that meet specific needs help achieve the goals of some stakeholders [36], as NPD takes into account many factors, such as customer needs, advanced technology, the state of competitors, and environmental issues. These factors cannot be circumvented by different stakeholders. We believe that corporate environmental responsibility promotes the development of innovative cleaner production technologies, and that this mutually beneficial behavior not only enhances innovation but also helps companies develop their strategic capabilities [59]. Academics analyzed data from Chinese manufacturing firms and found that the needs of specific stakeholders led these firms to engage in more active CSR activities, which, in turn, led to green innovation [60]. Neglecting CSR issues can lead to a gradual loss of competitiveness [61,62]. Therefore, CSR issues in NPD cannot be avoided by companies.

The positive impact of CSR has also been confirmed by many recent studies, where companies build a good reputation, which helps them improve their business outcomes [63]. Bereskin and Hsu (2015) found that the integration of social responsibility by pharmaceutical companies into research institutions led to better collaboration in innovation by the latter [64], which, in turn, increased the effectiveness of launching new drugs [65]. Zhang and Lv (2014) argued that CSR encourages employees to participate actively in the company's innovative activities and practices [66], thereby increasing their sense of innovation and their own value. Moreover, strategic CSR has a positive impact on a company's technology and product innovation, regardless of company size [57]. The more a company is committed to CSR, the better it is able to build and maintain relationships with its stakeholders, thus enabling them to benefit from more technological opportunities to innovate in processes and products [67]. Therefore, in addition to establishing a suitable strategic orientation, companies should also strive to undertake CSR, not only because environmental protection reduces operational costs, but to increase innovative revenues through new and better products [26]. When facing many constraints to product innovation in the stage of mass production, companies that ignore CSR issues in the process of NPD can gradually lose their competitive advantage [61]. Thus, firms achieving sustainability

must focus on both NPD activities and CSR issues. Therefore, based on stakeholder theory, we propose the following relationships:

Hypothesis 3a (H3a). *CSR positively moderates the relationship between technology orientation and NPD performance, such that the higher the CSR engagement of a firm, the greater the contribution of technology orientation to the firm's NPD performance.*

Hypothesis 3b (H3b). *CSR positively moderates the relationship between customer orientation and NPD performance, such that the higher the CSR engagement of a firm, the greater the contribution of customer orientation to the firm's NPD performance.*

In summary, on the basis of RBV and its extended dynamic capability theory, we construct a new model to explore the relationship between strategic orientation (technology orientation and customer orientation), digital capability, and CSR and NPD performance. Specifically, this study examines the mediating effect of digital capabilities between strategic orientation and NPD performance, and the moderating mechanism of CSR between strategic orientation and NPD performance. Through this approach, we further explain the relationship between strategic orientation and NPD performance in the context of digital transformation. Our findings aim to provide empirical support and theoretical guidance for strategic orientation research in the digital environment.

3. Methodology

3.1. Sample and Data Collection

Our questionnaire was completed by middle and senior managers of Chinese manufacturing companies for two main reasons. (1) Across the world, manufacturing is the core industry for solid economic development and maintaining national competitiveness. (2) China's manufacturing industry has ushered in opportunities and brought many challenges during the period of digital transformation of enterprises, especially traditional manufacturing enterprises, whose long-standing and stable operating model has made the transformation difficult. Rapidly developing technologies have brought unprecedented challenges to the manufacturing industry, and enterprises need to improve their dynamic capabilities and rationalize and allocate resources to cope with possible future changes [28]. In addition, the ability to leverage technology becomes critical for firms during periods of environmental turbulence [27], and these behaviors are guided by the strategic direction of the firm [68]. To enhance the feasibility and operationalization of the study, our measurement projects are based on previous more established studies, which were carefully reviewed, compared, introduced, and translated into Chinese by translators fluent in both languages.

We surveyed manufacturing companies in a variety of industries including chemical and petrochemical products, machinery and steel manufacturing, electronics and electrical equipment, and medical devices and biopharmaceuticals, to ensure that the findings were varied and generalizable [69]. We were assisted in the distribution of the questionnaire by government departments and industry associations with which we had a relationship. We also interviewed a number of business owners during this period to ensure validity. To be objective and rigorous, we surveyed 30 pilot companies and made minor modifications to improve the clarity of the questionnaire. In the end, we received 190 questionnaires, excluding those with incomplete information and those with obvious patterns of answers, resulting in 174 valid questionnaires, with a valid return rate of 91.5%. Table 1 illustrates the basic characteristics of the sample companies. In general, the sample covered enterprises of different ages, types, sizes, and industrial attributes, indicating that the sample of this study is representative.

Table 1. Demographic characteristics of the sample.

Variables	Frequency	%
<i>Firm age</i>		
Below 10	57	32.8
11–30	97	56.3
Over 30	19	10.9
<i>Ownership structure</i>		
State-owned enterprise	11	6.3
Private enterprise	108	62.1
Foreign-owned enterprise	38	21.8
Joint venture	5	2.9
Others	12	6.9
<i>Firm size</i>		
Below 300	117	67.2
301–2000	40	23.0
Over 2000	17	9.8
<i>Average annual sales</i>		
Below 3 million	12	6.9
3 million–20 million	43	24.7
20 million–400 million	79	45.4
Over 400 million	40	23.0
<i>Product category</i>		
Consumer durables	14	8.0
Consumer non-durables	7	4.0
Complete industrial products	32	18.4
Raw materials/component industrial goods	50	28.7
Others	71	40.8

Note: $n = 174$.

On the basis of procedural controls for possible common method bias (CMB) (e.g., anonymous completion), we further tested for CMB by using a single-factor procedure [70,71]. If a one-factor structure consisting of all conformational frames explains all, then common method variation is present. First, the confirmatory factor analysis model M1 was constructed. Second, the model M2 containing the method factor was constructed. A comparison of the main fit indices of model M1 and model M2 yielded: $\Delta\chi^2/df = 8.47$, $\Delta GFI = 0.372$, $\Delta IFI = 0.376$, $\Delta NFI = 0.362$, and $\Delta RMSEA = 0.143$. The large variation in each fit index indicates that the measurements do not show significant common method bias.

3.2. Variables and Measurements

All items in this study were measured on a 7-point Likert scale ranging from 1, “strongly disagree”, to 7, “strongly agree”.

Technology orientation and customer orientation. We used the highly developed Technology Orientation Scale [1]. The scale follows the concepts proposed in technology orientation research, including that firms use cutting-edge technology in NPD, that firms readily accept technological innovations based on research findings, and that firms always consider the latest production technologies available. Similarly, using the scale developed by these two scholars to measure market orientation [5], we identified five question items to measure customer orientation.

Digital capabilities. The construction of digital capabilities consists of three dimensions: IT infrastructure capabilities (hardware and software), technological business support capabilities, and creative capabilities using technological resources [34,68]. In particular, the enterprise infrastructure capability is measured by the status of the enterprise’s IT hardware and other facilities that support the connection of various digital platforms and the status of the enterprise’s system software that supports the integration and expansion of digital platforms. Enterprise technology business support capability is measured by the enterprise’s planning, developing, and using information (digital) technology to support

business activities, application solutions, and cooperation mechanisms. Enterprise technology business support capability is measured by information (digital) technology working with partners to develop the company's ability to use technological resources to create new markets, exploit Internet-based business opportunities, and respond to markets.

Corporate social responsibility. Given that CSR research in China started late and no cultural or value differences with Western countries are evident, we used a scale from domestic scholars [72]. The scale's validity in the Chinese context was empirically tested and is in line with the Chinese context. The scale is adopted from the well-established overseas 42-item CSR measure [73], which consists of five dimensions: employee responsibility, product responsibility, integrity and fairness responsibility, philanthropic responsibility, and environmental responsibility.

NPD performance. We measure NPD performance indicators in terms of a firm's satisfaction with its corporate performance over the past three years, including the quantity, speed, and quality of new product launches; contribution of new products in terms of overall corporate profit; and actual sales [30].

Control variables. In line with previous literature on strategy-oriented research [3,69], we included firm age and firm size in our control variables. We measured firm age as the number of years since the firm was established. We measured firm size using the natural logarithm of the number of employees.

4. Results and Analysis

To examine the hypotheses empirically, we adopted a structural equation modeling approach, which is deemed appropriate because our model included multiple mediating relationships. As suggested by Jensen and Szulanski (2004, p. 515) [74], "structural equation modeling is particularly suitable for testing models that are path analytic, especially those including mediating variables, allowing for simultaneous estimation of the relationship between all of the specified variables in the model." We first tested the quality of the model through the reliability and validity of the data to ensure the validity and reliability of the findings, and then used structural equation modelling to examine the hypotheses [75].

4.1. Reliability and Validity

We evaluated reliability using the internal consistency alpha coefficient and combined reliability (CR). Table 2 shows the results of the comparative factor analysis. All structures had Cronbach's alpha values greater than 0.9 (from 0.907 to 0.980), and the combined reliability was greater than 0.80 (from 0.909 to 0.984), which is greater than the baseline value of 0.70, indicating good internal consistency [76]. The factor loadings (FL) for all constructs exceeded 0.6 and were all statistically significant, indicating that the measurement models were reliable. In addition, our initial measurement instruments were based on well-established scales, which ensured good construct validity. The average variance (AVE) for each construct took values ranging from 0.676 to 0.886, which are greater than the critical value of 0.50, indicating good convergent validity of our measure [76]. We assessed discriminant validity by comparing the square root of each construct's AVE and the correlation between that construct and the other constructs in the model. As shown in Table 3, the square root of each construct's AVE was higher than the correlation between that construct and the other constructs, indicating good discriminant validity [76]. Furthermore, the loading values for each single indicator were higher than the cross-loading values with the other indicators, providing further evidence of high discriminant validity.

Table 2. Constructs and indicators.

Construct and Indicators	Mean	SD	Factor Loading
Technology orientation (AVE = 0.716, alpha = 0.907, CR = 0.909)			
Cutting-edge technology is used in new product development	5.14	1.274	0.880
Always uses the most advanced technology	5.11	1.267	0.905
Readily accepts technological innovations based on research findings	5.42	1.139	0.821
Considers the latest production technologies available	5.30	1.265	0.772
Customer orientation (AVE = 0.756, alpha = 0.937, CR = 0.939)			
Creates new products with customers in mind	6.08	1.005	0.811
Understands and meets customers' needs	6.22	0.892	0.908
Aims to achieve customer satisfaction	6.23	0.940	0.918
Frequent assessment of customer satisfaction	6.06	0.969	0.889
Focuses on and continuously improves the quality of after-sales service	6.14	0.984	0.817
Digital capabilities (AVE = 0.886, alpha = 0.980, CR = 0.984)			
Status of IT hardware and smart manufacturing facilities	5.09	1.253	0.914
Status of system software and functional components	5.21	1.264	0.897
Technical support for intersectoral business activities	5.09	1.269	0.964
Development of information system applications	5.11	1.261	0.939
Establishes effective cooperation mechanisms	5.13	1.235	0.945
Uses technology to develop new markets with partners	5.03	1.237	0.964
Leverages Internet-based business opportunities	5.17	1.203	0.956
Shares information and responds to the market	5.20	1.205	0.951
New product performance (AVE = 0.830, alpha = 0.971, CR = 0.978)			
Number of new product developments	5.24	1.048	0.876
Speed of new product development	5.18	1.128	0.927
Quality of new products launched	5.42	0.938	0.922
Contribution of new products in the overall corporate profit	5.33	1.071	0.979
Sales of new products	5.14	1.131	0.981
Sales growth rate of new products	5.17	1.155	0.806
Number of new customers gained from new products	5.13	1.148	0.864
Customer satisfaction with new products	5.36	1.075	0.890
Captures the market with new products	5.19	1.135	0.940
Corporate Social Responsibility (AVE = 0.676, alpha = 0.910, CR = 0.912)			
Corporate employee responsibility	5.71	0.953	0.844
Corporate product responsibility	6.05	0.856	0.816
Corporate integrity and fairness responsibility	6.04	0.907	0.905
Corporate philanthropic responsibility	5.57	1.035	0.765
Corporate environmental responsibility	5.83	0.985	0.772

Note: SD = standard deviation, AVE = average variance extracted, CR = composite reliability.

Table 3. Descriptive statistics and correlation analysis results.

Variables	1	2	3	4	5
1. CSR	0.822				
2. NPD	0.405 ***	0.911			
3. Digital capabilities	0.472 ***	0.591 ***	0.941		
4. Customer orientation	0.529 ***	0.300 ***	0.419 ***	0.869	
5. Technology orientation	0.527 ***	0.528 ***	0.550 ***	0.492 ***	0.846

Note: $n = 174$. The diagonal values denote the square root of the AVE of each construct. *** $p < 0.001$.

4.2. Hypothesis Testing

Figure 1 shows the results of our structural equation model ($\chi^2/df = 2.220$, CFI = 0.964, IFI = 0.964, TLI = 0.955, RFI = 0.921, NFI = 0.937, RMR = 0.046, RMSEA = 0.08). The findings indicate that technology orientation has a positive and significant impact on NPD performance ($b = 0.423$, $p < 0.001$). Technology-oriented companies contribute to successful NPD when conducting business and operations. The results support Hypothesis 1a. However, no statistically significant relationship exists between customer orientation and

NPD performance ($b = -0.042, p = 0.599$). This finding suggests that in an era of rapid technological development, customers are more receptive to products with technological advantages [13]. However, customers do not have latent needs beyond their current thinking [77], and too much customer bias leads to strategic and market myopia [24], and thus, loss of innovation [77]. Therefore, although both technology orientation and customer orientation have distinct cultural influences on firm behavior, in the context of digital transformation, a firm's technology orientation enhances NPD performance, whereas customer orientation fails to have a direct impact. These findings provide strong support for Hypothesis 1a and suggest rejecting Hypothesis 1b.

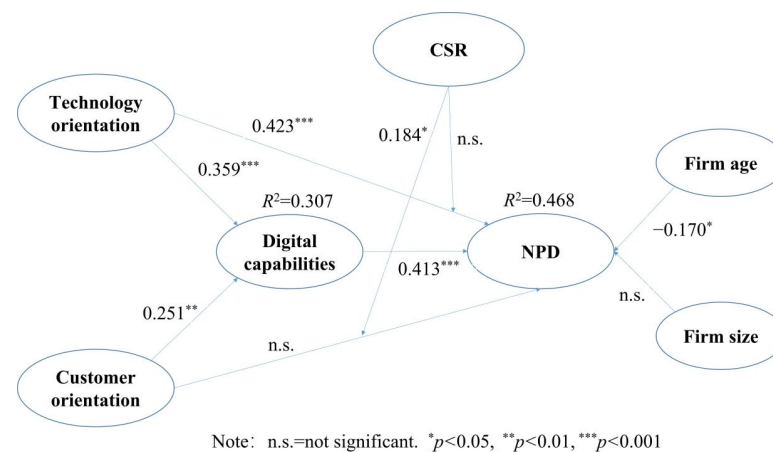


Figure 1. Estimation results of structural equation analysis.

We also examined the contribution of strategic orientation to digital capability. Figure 1 shows the empirical results, which indicate that all coefficients are positive and significant. There was a significant positive relationship between technology orientation and digital capability ($b = 0.359, p < 0.001$), a significant positive relationship between customer orientation and digital capability ($b = 0.251, p < 0.05$), and a significant positive correlation between digital capability and NPD performance ($b = 0.413, p < 0.001$). This result reveals that both technology orientation and customer orientation have a significant positive effect on digital capability, and digital capability has a significant positive effect on NPD performance. The finding suggests that firms with higher digital capability are more conducive to successful NPD. We further verify the mediating effect of digital capability, as shown in Table 4. The results of the study indicate that technology orientation not only predicts NPD performance directly, but also a firm's NPD performance through the mediating effect of digital capability. By comparison, customer orientation, which was previously verified to have no direct significant relationship with NPD performance, predicts NPD performance through the mediating effect of digital capability. The results provide strong support for Hypothesis 2.

Table 4. Form for reporting intermediary variables.

Variables	Point Estimate	Product of Coefficients		Bias-Corrected 95% CI		Percentile 95% CI	
		SE	Z	Lower	Upper	Lower	Upper
Total Effects							
Technology orientation→NPD	0.51	0.107	4.841	0.305	0.726	0.323	0.735
Customer orientation→NPD	0.068	0.103	0.660	-0.145	0.281	-0.138	0.281
Indirect Effects							
Technology orientation→NPD	0.134	0.060	2.233	0.043	0.267	0.045	0.270
Customer orientation→NPD	0.114	0.059	1.932	0.026	0.258	0.028	0.266
Direct Effects							
Technology orientation→NPD	0.384	0.110	3.491	0.186	0.612	0.168	0.597
Customer orientation→NPD	-0.046	0.095	-0.484	-0.218	0.180	-0.243	0.155

Finally, we tested Hypothesis 3a,b by examining the possible role of CSR in moderating the contribution of strategic orientation and NPD performance. As shown in Figure 1, the interaction between technology orientation and NPD is not statistically significant. Therefore, Hypothesis 3a is not supported. However, the path coefficient for the interaction between customer orientation and NPD was positive and statistically significant ($b = 0.184$, $p < 0.05$). The analysis also showed that the R^2 for NPD performance increased further from 0.449 to 0.468 when the moderating variable (CSR) was concluded. This finding indicates that CSR has a moderating effect on the relationship between customer orientation and NPD performance. For Hypothesis 3a, which was not supported by the analyses in the study, this result leads us to believe that technology orientation is positively associated with technological innovation but has no effect on market innovation [24]. For example, social demands on the environment promote innovation in cleaner production technologies. In other words, this may be a reminder that technology-oriented firms also need to integrate market orientation in order to make more precise strategic decisions with today's rapid development of digital technologies.

5. Discussion and Conclusions

5.1. Discussion

Strategic orientation can represent an important antecedent condition for NPD performance [78]. It is a belief that firms create competitive advantage and promote sustainable development. This study explores the relationship between strategic orientation and new product performance in a digital context. The research is based on RBV and its extended dynamic capability theory, and the role that digital capability resources play in the relationship. First, our findings confirm that technology orientation has a direct positive impact on NPD performance, and Hypothesis 1a is supported. As the new generation of digital technologies today facilitate the rapid development of the digital economy, technology-oriented companies are more conducive to NPD and are important drivers of superior corporate performance. This observation is consistent with previous research findings [79]. Second, the study confirms Hypothesis 2. The results show the mediating role of digital capabilities between strategic orientation and NPD performance, which is also relevant for customer-oriented firms. This finding implies the importance of customer-oriented firms' enhancement of their digital capabilities. Therefore, firms need to focus on building such capabilities to create new corporate value.

In addition, this study further focuses on the contribution of CSR to strategic orientation and NPD performance in the stakeholder era. The results reveal that CSR played a moderating role between customer orientation and NPD performance, thus confirming research hypothesis 3b, which empirically showed that the predictive effect of customer orientation on firms' NPD performance increased significantly with increased CSR. However, hypothesis 3a is not supported. The results show a positive relationship between technology orientation and technological innovation, but not a positive and significant effect on market innovation [24], which also suggests that digitalization has expanded the range of resources available to firms [6]. Moreover, technology-oriented firms are better able to identify data and capabilities generated in the digital environment and organize them to make rational allocations [80].

5.2. Theoretical and Practical Implications

5.2.1. Theoretical Contributions

We propose a new model that links technology orientation and customer orientation, digital capabilities, CSR, and NPD performance. By doing so, we examine the impact of internal digital capabilities and external CSR on the relationship between strategic orientation and NPD performance. The contributions of this study are threefold.

First, we examine the relationship between two important types of strategic orientation—technology and customer orientation—and new product performance in the context of digital transformation. Second, assessing how strategic orientation affects NPD

performance through digital capabilities from an information systems perspective is fundamentally an innovation in the study of firm performance. Our use of RBV in combination with digital solutions in information systems is another novel approach of this study, and we argue that this multidisciplinary discussion is necessary [79]. Although researchers have recognized that resources and new capabilities are necessary to achieve sustainable competitive advantage, our observations reinforce that those digital capabilities based on RBV support are the primary capabilities of firms in a technological environment [17]. The higher the digital capability, the better the business performance [35], which is confirmed by our study. This study extends the RBV and its extended dynamic capability theory in the digital context to facilitate an understanding of how corporate capability resources achieve high performance. Third, we investigate the impact of different levels of CSR on the relationship between strategic orientation and NPD performance. In summary, our study builds on the dynamic capabilities and stakeholder literature to provide an in-depth understanding of the boundary conditions of corporate strategy in the digital environment. Furthermore, we build on previous work and further shed light on how the organization of a firm's digital transformation strategy affects performance.

5.2.2. Practical Implications

Research on the factors influencing the effectiveness of mediating between strategic orientation and NPD performance contributes to the development of RBV theory. Moreover, from a practical perspective, this black box model helps business operators understand the maximized strategic value of new technology capabilities in play [81].

First, with the emergence of a new generation of digital technologies such as the Internet of Things, big data, and artificial intelligence, digital resources are beneficial for enterprises to capture new market opportunities, reduce costs, and improve operational efficiency. These benefits are prominent for SMEs with few resources. This study shows that technology orientation promotes the belief that companies embrace digital technology and actively engage in digital transformation, which also further enhances their digital capabilities [8]. The two types of orientation reinforce each other to produce a competitive advantage to achieve superior performance. Currently, digital transformation is still in the developmental stage. As developed and developing countries are in the exploratory stage, technology orientation can help foster digital orientation, accelerate the acceptance of new digital technologies, and assist in successful transformation.

Second, the digital wave has led to a significant change in user information asymmetries. Thus, firms need to have a flexible information (digital) technology infrastructure and well-developed information management capabilities to cope with rapidly evolving technologies and uncertainties. Our findings provide firm managers with a better understanding of how to successfully achieve such capabilities. Our results clearly demonstrate that market orientation and technology orientation represent important factors driving digital capabilities, which can be further transformed into better NPD performance.

Lastly, firm managers should recognize the fact that strategic orientation alone may not be a unique strategic resource, its successful implementation being complementary to non-market resources such as those obtained by engaging in CSR. In particular, we find strong support for the positive moderating effect of CSR engagement in shaping the relationship between customer orientation and NPD performance. This provides important practical implications for customer-oriented firms in the context of digital transformation. That is, customer-oriented firms should strive to undertake CSR in order to achieve better NPD performance, such as by increasing employee service awareness, identifying customer needs, and developing environmentally friendly products. More specifically, this suggests that customer-oriented firms need to consider not only their commitment to their customers but also to their stakeholders by seeking new opportunities through enhanced CSR. In doing so, they should not only effectively identify customer needs but also actively engage in CSR, because successful NPD requires a wealth of resources from inside and outside of the organization [82,83].

5.3. Limitations and Avenues for Future Research

Future research is encouraged to deal with some limitations of this study. First, we empirically examined the conceptual model by Chinese manufacturing firms; hence, a clear limitation of this study is its generalizability to firms from developed or other emerging economies. We hope future research can extend the generalizability of our findings to different market contexts. Second, we explored the effects of different strategic orientations in the short term, and future research may utilize a longitudinal research design to empirically assess the long-term and dynamic benefits of various types of strategic orientation. Third, this paper only explores the relationships between a limited aspects of strategic orientations and NPD performance. However, we believe many other organizational factors may play an important role in affecting the NPD performance outcomes or shaping this NPD process. Future research should examine how additional dimensions of strategic orientation, such as entrepreneurial orientation and learning orientation, may influence NPD performance and firm financial performance differently in a digital context. Finally, future research is also encouraged to extend this stream of research by theorizing and empirically examining how other organizational or environmental factors, such as knowledge gaps, path dependence, and market uncertainty, may shape the relationship between different dimensions and firm performance.

5.4. Conclusions

Strategic orientation is an important driver for successfully developing new products, creating competitive advantages, and promoting sustainable growth. Building on a RBV and its extended dynamic capabilities theory, this study constructs a new theoretical framework to explore the role of technology orientation and customer orientation in predicting firms' digital capabilities and NPD performance within the context of digital transformation. In addition, we further investigate the moderating role of CSR in the relationship between strategic orientation and NPD performance. Using data from a sample of 174 Chinese manufacturing firms, we used a structural equation modelling approach to empirically test our arguments. The findings suggest that technology orientation and customer orientation play an important role in promoting firms' digital capabilities which, in turn, positively impact NPD performance. Furthermore, we find that the two dimensions of strategic orientation have different effects on NPD performance, with technology orientation making a more significant direct contribution to NPD performance. We also find that CSR moderates the relationship between customer orientation and NPD performance, with higher CSR being associated with a greater contribution of customer orientation to NPD performance. This provides new insights into non-market mechanisms through which firms can compensate for their strategically oriented practices in the NPD process.

Overall, our study explores the boundary conditions of corporate strategy in the digital environment in greater depth by integrating the RBV, dynamic capabilities, and stakeholder-related literature, and reviewing prior research in the field. The study enriches our understanding of how organizational strategic orientation specifically affects NPD performance. We will continue to focus on the limitations of the paper and explore them further.

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Abbreviations

CSR	Corporate Social Responsibility
NPD	New Product Development
RBV	Resource-Based View
SMEs	Small and Medium-Sized Enterprises

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