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How Quasi-Internal Resources Enhance Firm Performance During Large-Scale Emergencies: The Role of Trade-Off Between CSR and Business Innovations

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Abstract: Although quasi-internal resources—such as strategic alliances, long-term partnerships, and collaborative networks—typically enhance a firm's adaptability, their effectiveness can be compromised in crisis situations due to supply chain disruptions, strained partnerships, and volatile market conditions. This research explores how quasi-internal resources influence firm performance through the trade-off between corporate social responsibility (CSR) and business innovation, with a particular focus on the moderating role of market environmental uncertainty. We developed a theoretical model grounded in resource dependence theory and tested our hypotheses using PLS-SEM analysis on data from 397 valid questionnaires collected from various companies. The findings reveal that quasi-internal resources do not directly enhance firm performance during large-scale emergencies. However, they play a critical role in strengthening the trade-off between CSR and business innovation, particularly through strategic adjustments and decision-making processes, which mediate their impact on performance. Conversely, the trade-off in incentive mechanisms does not significantly mediate this relationship. Additionally, market environmental uncertainty positively moderates the relationship between quasi-internal resources and the trade-offs in incentive mechanisms and decision-making processes, but it does not significantly affect strategic adjustments. These insights underscore the importance of strategic resource management in sustaining firm performance amidst uncertainty.

Keywords: quasi-internal resources; trade-off; corporate social responsibility; business innovations; large-scale emergencies

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1. Introduction

Quasi-internal resources—such as assets, capabilities, or networks that are not fully owned by a firm but are closely integrated into its operations, including strategic alliances, long-term partnerships, and collaborative networks—play a crucial role in enhancing a firm's adaptability and success [1]. A prime example is the strategic partnership between Apple Inc. and Foxconn Technology Group. This collaboration leverages Foxconn's manufacturing expertise alongside Apple's design and innovation strengths, significantly contributing to Apple's growth. Through this partnership, Apple has been able to rapidly scale production, maintain high-quality standards, and continuously innovate, all while managing operational costs efficiently. Quasi-internal resources extend a firm's capabilities beyond internal limits, offering the flexibility to swiftly respond to market changes and technological advancements [2]. Effectively managing these resources is therefore essential for sustaining a competitive advantage and driving long-term corporate success.

In the context of large-scale emergencies, such as the COVID-19 pandemic, the relationship between quasi-internal resources and firm performance becomes increasingly complex and, at times, less effective. Under normal circumstances, these resources play a vital role in enhancing firm performance by providing access to external expertise, technology, and

capabilities that complement internal resources [3]. However, during large-scale emergencies, the effectiveness of these quasi-internal resources can be compromised by supply chain disruptions, strained partnerships, and rapidly changing market conditions [4]. This observed reduction in effectiveness raises questions about the underlying mechanisms through which quasi-internal resources affect firm performance during crisis situations.

Scholars emphasize the pivotal role of quasi-internal resources, such as strategic alliances and long-term partnerships, in fostering business innovation and fulfilling corporate social responsibility (CSR) [1]. These resources provide essential external capabilities but present a double-edged sword. While CSR can enhance brand reputation, especially for innovative firms [5], it also increases the risks associated with business innovation. Successful innovations can create a financial foundation for CSR, but failures may result in significant CSR setbacks, particularly when multiple stakeholders are involved [6]. During large-scale emergencies, resource scarcity makes it challenging for firms to simultaneously pursue both innovation and CSR. Consequently, firms must carefully balance these priorities to choose the most strategic direction [7]. Despite the importance of this issue, it has received limited research attention, underscoring the need for further investigation.

Large-scale emergencies create increasingly volatile market environments, forcing firms to rely more heavily on quasi-internal resources due to the scarcity of internal resources. As market turbulence intensifies, the challenges associated with resource allocation become more pronounced, making it difficult for firms to strike a balance between CSR and business innovation, which is essential for navigating the complexities of a dynamic market more effectively [8]. In such unstable environments, the strategic use of quasi-internal resources enables firms to remain agile, access necessary external knowledge and expertise, and adapt to rapid market shifts while still fulfilling their CSR commitments [9]. Existing research suggests that firms that successfully harness these resources are better equipped to innovate and maintain stakeholder trust, even in the face of significant market disruptions [10]. Consequently, the more turbulent the market environment, the more critical quasi-internal resources become for firms seeking to balance CSR with innovation, ultimately enhancing their resilience and sustaining a competitive advantage in the long term.

To address the theoretical gaps identified, this study aims to examine whether quasi-internal resources influence firm performance by facilitating the trade-off between CSR and business innovation during large-scale emergencies. Additionally, it investigates the moderating role of market environmental uncertainty in this relationship. We developed a theoretical model grounded in resource dependence theory and tested our hypotheses using data from 397 valid questionnaires, analyzed through the PLS-SEM method. This research offers an in-depth exploration of resource utilization during large-scale emergencies, underscoring the crucial role of the trade-off between CSR and business innovation. The findings provide valuable theoretical and practical insights for firms navigating turbulent market environments, emphasizing the importance of strategic resource management in maintaining performance amid uncertainty.

2. Theoretical Foundation and Hypotheses Development

2.1. Resource Dependence Theory

Resource dependence theory holds that enterprises cannot produce all the resources they need on their own. Therefore, some resources must be obtained externally, including through exchanges with other enterprises and through alliances [11]. Resource dependence theory emphasizes that no organization can exist in isolation from its environment and is closely connected with it. Due to differences in the capabilities of the interacting parties, it is important to clarify the varying degrees of dependence. At the same time, attention must be paid to the potential adverse effects caused by excessive dependence on either side [12]. Only by doing so can both parties make reasonable decisions in the event of resource shortages to minimize unnecessary losses. Therefore, to mitigate the business risks associated with highly dependent relationships, companies can reduce the uncertainties of such dependencies through mergers and acquisitions or joint ventures, transforming the dependent relationship

into a stable resource supply and sharing arrangement. Additionally, measures such as executive succession planning can be adopted to stabilize the relationship [11].

When an enterprise's resources are insufficient, it can supplement its value through resource patchwork, thereby confirming the various resources it possesses, including human resources, skills, materials, customers, networks, systems, and other categories of resources [13]. Note that customers, suppliers, and employees are considered part of human resources [14,15]. Skill patchwork refers to technical resources, including technicians with specialized skills. Material patchwork encompasses both intangible materials, such as knowledge, and tangible materials, such as workshops and equipment. Customer patchwork involves timely communication with customers when market conditions change, allowing enterprises to collaboratively launch products or services that meet consumer needs.

2.2. Quasi-Internal Resources

Quasi-internal resources refer to assets and capabilities that are not fully owned or controlled by a firm but are closely integrated into its operations and strategic processes, functioning almost as if they were internal resources [16]. These resources typically include strategic alliances, long-term partnerships, collaborative networks, and other external relationships that provide firms with access to complementary capabilities, specialized knowledge, or critical technologies that are difficult or costly to develop in-house [3].

Quasi-internal resources differ fundamentally from traditional internal resources in terms of their structure, accessibility, and strategic impact [16]. Traditional resources, such as a firm's physical assets, intellectual property, and human capital, are fully owned and controlled by the firm, offering direct and immediate utility in operations, innovation, and competitive positioning. These resources are internalized within the firm's boundaries, providing a stable and consistent foundation for long-term strategic planning [17]. In contrast, quasi-internal resources, while not owned by the firm, function almost like internal resources due to their close integration into the firm's value chain. These resources include strategic alliances, long-term partnerships, and collaborative networks that are external to the firm but closely aligned with its strategic objectives [3]. The primary difference lies in the level of control: quasi-internal resources are managed through relationships and agreements rather than through ownership. This external nature provides firms with access to capabilities, knowledge, and technologies that would otherwise require significant time and investment to develop internally [18,19].

Moreover, quasi-internal resources offer greater flexibility and scalability compared to traditional resources [1]. They enable firms to rapidly adapt to market changes and uncertainties by leveraging external expertise and capabilities [20]. However, their effectiveness is contingent on the strength of the relationships and the alignment of interests between the firm and its partners. Thus, while traditional resources provide a stable base, quasi-internal resources offer dynamic adaptability, making them particularly valuable in rapidly changing or uncertain environments [2].

2.3. The Trade-Off Between CSR and Business Innovations

In enterprises, resources are utilized to fulfill social responsibility while also driving business innovation to achieve a sustainable competitive advantage. However, both CSR initiatives and business innovation efforts can have a "double-edged sword" effect.

The "double-edged sword" nature of CSR manifests in several key aspects. On the one hand, CSR offers significant benefits, such as enhancing competitive advantage, maintaining and improving corporate reputation and social legitimacy, and creating collaborative value [21]. Socially responsible and well-managed firms are typically better at assessing potential risks, reducing transaction costs, and ultimately improving financial performance [22]. On the other hand, CSR investments can increase costs and reduce economic profits, as CSR is a resource with diminishing marginal returns [23]. Companies may face trade-offs between CSR and financial performance, especially under stakeholder pressure

or when seeking social legitimacy [24]. Over-investment in CSR can lead to financial strain, making these companies more vulnerable in competitive markets.

Business innovation is a critical strategic tool for enterprises to enter new markets and expand their existing market share [25]. It serves as an internal driver for responding to changing market demands and achieving better financial performance. The development and utilization of innovation capabilities are widely recognized as key determinants of corporate performance and competitive advantage [26]. However, business innovation is a "double-edged sword". While it aims to enhance business performance and competitive advantage [27], it also carries significant risks. Despite its strategic importance in maintaining market leadership [28], the uncertainty surrounding costs and potential returns poses challenges.

Therefore, the relationship between CSR and business innovation is widely debated in the academic community. On the one hand, some scholars believe that the mutual promotion and penetration between CSR and business innovation can bring greater development space and competitive advantages for enterprises [29,30]. CSR initiatives provide better opportunities and avenues for business innovation by creating new working methods, products, services and markets that respond to social, economic, and environmental demands on enterprises. At the same time, CSR requires enterprises to carry out a lot of changes, so business innovation can become a tool to support the implementation of CSR.

On the other hand, business innovation and CSR compete for limited resources, so the relationship is negative [31,32]. In this view, given enterprises' limited resources, investing in both business innovation and CSR may be counterproductive, as each capability can independently yield competitive advantage. Investment in business innovation and corporate social responsibility creates an information asymmetry between managers and shareholders [33]. Therefore, the integration of business innovation and CSR is not the best choice to form competitive advantage.

In the context of large-scale emergencies, enterprises face numerous risks and crises, prompting a greater need to consolidate superior resources to ensure continuous and orderly operations. This study posits that during such emergencies, firms must strategically balance CSR and innovation. The trade-off between CSR and business innovation requires firms to allocate limited resources between CSR activities and business innovation in an optimal manner to achieve the best possible outcomes and support sustainable development [34]. To effectively manage this trade-off, firms must address three critical dimensions: strategic adjustments, incentive mechanisms, and decision-making processes. Investigating the role of quasi-internal resources in balancing this trade-off and their impact on corporate performance is crucial for advancing the research on the relationship between business innovation and CSR [35].

2.4. Firm Performance

Firm performance refers to the measurement of a company's overall operational effectiveness, profitability, and success in achieving its strategic objectives. It is a multidimensional construct that encompasses financial outcomes, such as profitability, return on assets (ROA), return on equity (ROE), and non-financial indicators, including operational efficiency, innovation capability, and stakeholder satisfaction [36]. Firm performance can be analyzed in terms of both short-term financial returns and long-term strategic growth, as it reflects how well a firm utilizes its resources and adapts to market changes.

Corporate social responsibility (CSR) has been widely studied in relation to firm performance, with scholars exploring its impact on financial performance, social performance, and CSR-specific performance. The relationship between CSR and financial performance has garnered considerable attention, with some studies suggesting a positive link due to the potential for improved brand reputation, customer loyalty, and operational efficiencies [37]. On the social side, CSR enhances a firm's standing with its broader stakeholders, including communities, employees, and regulators, which can, in turn, influence its long-term viability and sustainability [38]. Moreover, CSR performance itself—measured through initiatives aimed at environmental sustainability, ethical labor practices, and community

engagement—creates a platform for firms to demonstrate their commitment to broader societal goals [39]. While the relationship between CSR and financial performance is complex and sometimes debated, evidence increasingly suggests that CSR, when integrated strategically, can lead to both direct financial benefits and improved societal outcomes.

This study centers on the financial and marketing performance of firms, defined as a firm's ability to generate better profitability, achieve higher profit margins, increase overall business revenue, enhance brand value, capture greater market share, and drive sales growth.

2.5. Hypotheses Development

2.5.1. The Effect of Quasi-Internal Resources on Firm Performance

Quasi-internal resources enable firms to extend their capabilities beyond their internal assets, providing the flexibility to respond quickly to market changes and technological advancements. The positive impact of quasi-internal resources on firm performance can be attributed to several factors. First, these resources allow firms to access and integrate complementary capabilities without requiring direct ownership. This access enables firms to achieve higher efficiency and flexibility in their operations, as they can leverage specialized skills, technologies, or knowledge that reside outside the firm but are crucial to its competitive strategy [40]. For instance, strategic alliances with key suppliers can enhance a firm's ability to innovate and respond rapidly to market changes, thereby improving overall performance [41].

Second, quasi-internal resources foster collaboration and knowledge sharing, which are essential for innovation and strategic agility. By leveraging relationships with external partners, firms can enhance their learning and adaptation capabilities, leading to more effective decision making and quicker responses to market opportunities [42]. These collaborative networks act as conduits for information and resources, significantly boosting a firm's innovative output and market performance [43].

Third, quasi-internal resources help reduce transaction costs and enhance relational trust. Firms that maintain long-term, stable relationships with external partners benefit from lower uncertainty and reduced costs associated with finding and negotiating with new partners [44]. These relationships also foster mutual trust, which facilitates smoother operations, better alignment of goals, and more effective coordination, all contributing to improved firm performance [45]. Therefore, the following hypothesis is proposed:

H1. *Quasi-internal resources have a positive impact on firm performance.*

2.5.2. The Mediation of the Trade-Off Between CSR and Business Innovations

The relationship between quasi-internal resources and the trade-off between CSR and business innovation is as follows: Firstly, these resources provide access to knowledge, technology, and expertise that may not be readily available internally but are essential for balancing CSR with business innovation. Integrating these resources enables firms to make more informed strategic adjustments, aligning ethical obligations with competitive practices [46]. Secondly, incentive mechanisms that align employee behavior with CSR and innovation goals are crucial for fostering sustainable innovation. Quasi-internal resources influence these mechanisms by integrating external perspectives and best practices into the firm's reward systems. Strategic partners provide insights into balancing CSR with innovation, which can be used to motivate employees [47]. Thirdly, effective decision making that balances CSR and innovation requires an understanding of both the external environment and strategic objectives. Quasi-internal resources provide the external insights necessary for navigating these trade-offs, ensuring that both CSR and innovation are aligned with the firm's goals [48]. Based on the analysis above, we propose the following hypotheses:

H2a. *Quasi-internal resources have a positive effect on the trade-off between CSR and business innovations in strategic adjustments.*

H2b. *Quasi-internal resources have a positive effect on the trade-off between CSR and business innovations in incentive mechanisms.*

H2c. *Quasi-internal resources have a positive effect on the trade-off between CSR and business innovations in decision-making processes.*

The impact of the trade-off between CSR and business innovation on firm performance can be observed in several key areas. Firstly, strategic adjustments that align CSR with business innovation are vital for enhancing firm performance. Integrating CSR into strategic planning while fostering innovation enables firms to create sustainable competitive advantages. Aligning CSR with business strategies allows firms to address social and environmental concerns while pursuing profitability, reducing risks, and opening new market opportunities. Firms that achieve this balance can differentiate themselves, enhancing their reputation, customer loyalty, and financial performance [46]. Secondly, incentive mechanisms that balance CSR and innovation are crucial for driving performance. Effective incentives encourage employees and managers to pursue innovations that align with CSR objectives, fostering a culture of sustainable innovation [49]. Well-designed incentives motivate employees to integrate CSR into innovation, enhancing engagement, creativity, and productivity, and ultimately leading to better financial outcomes [47]. Thirdly, decision-making processes that balance CSR and innovation are essential for achieving superior performance. Integrating CSR into decision making allows firms to identify opportunities that align with both social responsibility and innovation [50,51]. This approach reduces reputational risks, enhances stakeholder trust, and ensures that business decisions contribute to long-term sustainability, thereby maintaining a competitive edge. Based on the discussion above, the following hypotheses are proposed:

H3a. *The trade-off in strategic adjustments between CSR and business innovations has a positive effect on firm performance.*

H3b. *The trade-off in incentive mechanisms between CSR and business innovations has a positive effect on firm performance.*

H3c. *The trade-off in decision-making processes between CSR and business innovations has a positive effect on firm performance.*

The trade-offs in strategic adjustments, incentive mechanisms, and decision-making processes between CSR and business innovation can mediate the relationship between quasi-internal resources and firm performance by aligning the firm's external and internal capabilities. Firstly, when firms strategically adjust to integrate these external resources with their CSR and innovation goals, they create synergies that enhance both their social impact and competitive positioning. This alignment ensures that the benefits of quasi-internal resources are effectively translated into improved firm performance by addressing both market demands and stakeholder expectations [22]. Secondly, quasi-internal resources provide firms with access to external capabilities and knowledge that can be leveraged to achieve both CSR and innovation objectives [16]. By implementing incentives that reward behaviors and outcomes integrating CSR with innovation, firms can ensure that their quasi-internal resources are effectively utilized to drive performance. This mediation happens as these incentives direct employee actions toward balancing social responsibility with innovative practices, ultimately enhancing firm performance [52]. Lastly, quasi-internal resources provide firms with external knowledge and capabilities that enhance both CSR initiatives and innovative practices [10]. By embedding CSR considerations into innovation-related decisions, firms can better align their quasi-internal resources with their strategic goals, leading to improved performance. These decision-making processes ensure that the potential of quasi-internal resources is fully realized by making informed choices that balance ethical responsibilities with the pursuit of innovation, thereby driving

sustained competitive advantage and organizational success [53]. Therefore, we propose the following hypotheses:

H4a. *The trade-off in strategic adjustments between CSR and business innovations mediates the relationship between quasi-internal resources and firm performance.*

H4b. *The trade-off in incentive mechanisms between CSR and business innovations mediates the relationship between quasi-internal resources and firm performance.*

H4c. *The trade-off in decision-making processes between CSR and business innovations mediates the relationship between quasi-internal resources and firm performance.*

2.5.3. The Moderating Role of Market Environmental Uncertainty

From a market perspective, environmental uncertainty refers to the degree of dynamism, complexity, and rapid change within an industry, reflecting the volatility and unpredictability of market demand conditions. Frequent market fluctuations make it increasingly difficult to forecast customer needs and preferences [54]. Rapid shifts in government policies, market dynamics, and financial conditions create a highly volatile environment, complicating efforts to accurately predict customer demand and anticipate responses to marketing strategies [55]. Consequently, firms must be adept at navigating dynamic changes in competitive market environments [56].

When environmental uncertainty is low, firms can effectively align their business innovation with CSR activities [57]. CSR initiatives help establish relationships with stakeholders, such as customers, investors, and suppliers, who often possess complementary expertise and skills that can enhance a firm's internal knowledge. For instance, upstream suppliers and downstream customers can provide technical or knowledge support in R&D decisions, product testing, and innovation processes [48]. The more a firm engages in CSR activities, the stronger its innovation capabilities become, leading to the release of more new products. However, during large-scale emergencies, the scarcity of knowledge and resources may cause CSR to hinder, rather than promote, innovation [57].

Under such conditions, the ability to quickly adapt and reconfigure resources becomes crucial. First, quasi-internal resources, such as strategic partnerships and collaborative networks, provide firms with external capabilities and knowledge needed to navigate uncertainty. As uncertainty increases, firms increasingly rely on these resources to make strategic adjustments that balance CSR and business innovation, thereby enhancing their competitive position while addressing social responsibilities [58,59].

Second, in highly uncertain markets, firms face greater challenges in predicting trends and aligning internal practices with external demands, requiring a dynamic approach to managing and motivating employees. The development and implementation of incentive mechanisms that balance CSR and innovation increasingly depend on these resources to ensure alignment with broader strategic goals, thereby strengthening the relationship between CSR and innovation under high uncertainty [1].

Third, as environmental uncertainty increases, the reliance on these quasi-internal resources becomes more pronounced, as they offer firms the flexibility and external insights needed to make informed decisions that effectively balance CSR and innovation [16]. Therefore, under higher levels of market environmental uncertainty, the positive impact of quasi-internal resources on the trade-off in decision making between CSR and business innovation is likely to be stronger [60]. Therefore, we propose the following hypotheses:

H5a. *Market environmental uncertainty positively moderates the relationship between quasi-internal resources and the trade-off in strategic adjustments between CSR and business innovation, such that this relationship is stronger at higher levels of market environmental uncertainty.*

H5b. *Market environmental uncertainty positively moderates the relationship between quasi-internal resources and the trade-off in incentive mechanisms between CSR and business innovation, such that this relationship is stronger at higher levels of market environmental uncertainty.*

H5c. *Market environmental uncertainty positively moderates the relationship between quasi-internal resources and the trade-off in decision-making processes between CSR and business innovation, such that this relationship is stronger at higher levels of market environmental uncertainty.*

The conceptual framework underpinning our inquiry is illustrated in Figure 1.

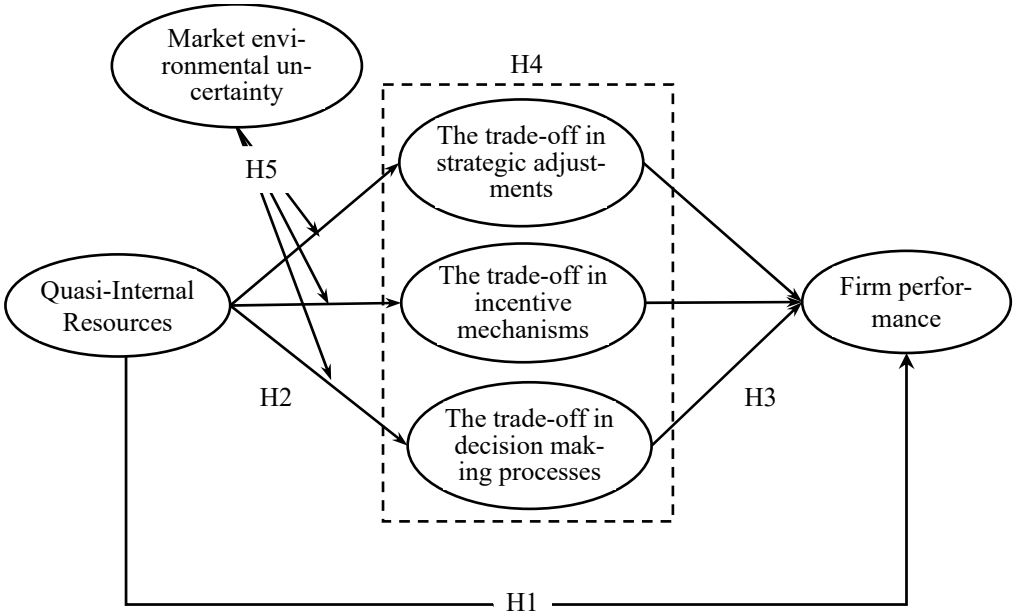

Figure 1. Research model.

3. Method

3.1. Data Collection and Sample

This study examines the mechanisms through which quasi-internal resources affect firm performance, emphasizing the mediating role of the trade-off between CSR and business innovation, as well as the moderating effect of market environmental uncertainty. Data were collected via a two-part questionnaire. The first part gathered basic information about the respondents and their firms, including the respondent's gender, age, education level, permanent residence, length of service, and the firm's organizational attributes. The second part measured the firm's quasi-internal resources, the trade-off between CSR and business innovation, firm performance, and market environmental uncertainty.

Given sample accessibility, we focused on distributing the questionnaire to senior executives from SMMG Group (Chengdu, China), a wholly owned subsidiary of Wuliangye Group (Yibin, China), and its partner firms. Prior to the COVID-19 pandemic, SMMG's primary business involved the production and sale of alcoholic packaging bags (mainly non-woven products) and clothing manufacturing and trade, excluding medical protective clothing or masks. Most surveyed companies were manufacturing firms. The questionnaire was distributed online, promoted via SMS containing the survey link to SMMG executives and their partners. Initially, we contacted SMMG's top managers and relevant department heads, requesting their participation and encouraging them to motivate their teams. We also reached out to officials in related government agencies and senior managers in SMMG's upstream and downstream partners through phone, WeChat, and other channels, attaching the survey link and seeking their assistance in having core department heads complete the survey.

A total of 850 questionnaires were distributed, and 602 responses were received, achieving a response rate of 70.82%. To ensure data validity, we conducted a three-step

screening process. First, we removed responses where participants indicated they had not fully understood the questionnaire background or did not voluntarily participate. Second, we excluded samples with a high duplication rate. Third, we identified and discarded responses with logical inconsistencies or anomalies. Ultimately, 397 valid responses remained. Descriptive statistics for the respondents and their organizations are presented in Table 1, providing an overview of the sample characteristics.

Table 1. Descriptive statistical analysis of respondent information (N = 397).

Characteristics	Type	Frequency	Percentage
Gender	Male	158	39.80%
	Female	239	60.20%
Age	18–24 years old	33	8.31%
	25–34 years old	77	19.40%
	35–44 years old	123	30.98%
	45–54 years old	84	21.16%
	55 years old or above	80	20.15%
Level of education	High school/technical secondary school and below	16	4.03%
	Associate college degree	59	14.86%
	Bachelor's degree	204	51.39%
	Graduate degree or above	118	29.72%
Permanent residence	City or town	309	77.83%
	Countryside	88	22.17%
Length of service	Within a year	45	11.34%
	1–3 years	79	19.90%
	4–6 years	123	30.98%
	7–9 years	106	26.70%
	10 years above	44	11.08%
Organizational attribute	Government agency	10	2.52%
	Industrial association	23	5.79%
	Enterprise	278	70.03%
	Other	86	21.66%

3.2. Measurement

We adapted measurement items for all variables from established studies, with all variables assessed using a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Measurement items are detailed in Appendix A. For quasi-internal resources, we utilized 10 items based on the work of Park et al., Speckbacher et al., and Wang et al. [61–63]. To measure the trade-off in strategic adjustments between CSR and business innovation, we incorporated four items from studies from Chen et al. [64], Giachetti and Lampel [65], Krishnamurti et al. [66], and Zhao et al. [46]. Similarly, we drew four items from the studies of Wang et al. [67], Xiong et al. [68], and Yigitcanlar et al. [69] which were used to assess the trade-off in incentive mechanisms between CSR and business innovation. For the trade-off in decision-making processes between CSR and business innovation, we used 12 items, referencing the studies of Flores-Garcia et al. [53], Oliveira et al. [70], and Randrianasolo and Semenov [57]. Finally, firm performance was measured using six items based on the research of Berguiga et al. [20] and Cannon [71]. Based on the scales developed by Mao et al. [72], and Han et al. [73], this study categorizes market environmental uncertainty into demand uncertainty and competitive intensity, measured using 11 items. Control variables are grouped into two main categories: the first includes gender, age, education level, permanent residence, and length of service; the second focuses on organizational attributes.

3.3. Data Analysis

For the purposes of data analysis and hypothesis testing in this study, we utilized Partial Least Squares Structural Equation Modeling (PLS-SEM), a technique highly regarded for its adaptability and reliability in management research [74]. PLS-SEM is particularly well-suited

for handling intricate structural models like the one employed in this study, which integrates six variables [75]. It is also a powerful tool for analyzing both mediating and moderating effects, offering valuable insights into the interactions and relationships within the model [76]. Additionally, PLS-SEM can accommodate various sample sizes, making it applicable to both large and small datasets [77]. To ensure the robustness of the mediating effects identified, we applied a bootstrap approach with 5000 sub-samples, enhancing the credibility of our results. The path model analysis was conducted using the SmartPLS 4.0 software package. In line with the recommendations of Henseler et al. [78], we followed a two-step process in interpreting the PLS-SEM results: initially, we evaluated the measurement model to ensure that the constructs accurately represented the theoretical concepts; subsequently, we assessed the structural model to test the validity of the proposed hypotheses.

4. Results

4.1. Common Method Bias

To enhance data reliability and mitigate common method bias, we designed the survey to be completed anonymously and randomized the order of questions to counteract potential order effects [79]. To assess multicollinearity, we conducted a variance inflation factor (VIF) test, where values above 5 typically raise concerns [77]. Our analysis indicated that all VIF values were below this threshold, confirming the absence of multicollinearity. Furthermore, we employed the unmeasured latent common method factor (ULCMF) technique, which indicated minimal common method variance [80]. A confirmatory factor analysis (CFA) demonstrated strong support for a six-factor model ($\chi^2/df = 2.055$, CFI = 0.950, TLI = 0.943, RMSEA = 0.030), which significantly outperformed a single-factor model ($\Delta\chi^2 = 901.881$, $\Delta df = 10$, $p < 0.001$). The differences between the six-factor model and the ULCMF model were negligible ($\Delta\chi^2/df = 1.955$, ΔCFI = 0.009, ΔTLI = 0.006, ΔRMSEA = 0.003), underscoring the robustness of our measurement approach in controlling for common method bias. Detailed results of this analysis are presented in Table 2.

Table 2. Common method bias analysis.

Model	χ^2	*df*	CFI	TLI	RMSEA
Single-factor model	1399.231	252	0.776	0.755	0.125
Five-factor model	497.350	242	0.950	0.943	0.030
ULCMF model	428.119	219	0.959	0.949	0.027

4.2. Measurement Model

This study assessed the model structure through a comprehensive evaluation of reliability and validity, as detailed in Table 3. First, all factor loadings exceeded 0.7, affirming the reliability of the individual indicators. Second, the Cronbach's α values for all variables surpassed 0.8, well above the commonly accepted threshold of 0.7, while composite reliability (CR) values were all above 0.9, exceeding the minimum standard of 0.6, indicating strong construct reliability [81]. Lastly, the average variance extracted (AVE) for each construct exceeded 0.5, confirming the convergent validity of the measurements [58].

Lastly, this paper evaluates the discriminant validity among the variables, as summarized in Table 4. Discriminant validity was assessed by comparing the average variance extracted (AVE) of each construct with the squared inter-construct correlations, which measure the shared variance between constructs in the model. For discriminant validity to be confirmed, the shared variance between constructs must be lower than their respective AVE values [77]. Moreover, the heterotrait-monotrait (HTMT) ratio for all correlations was found to be below the 0.9 threshold, providing further evidence of strong discriminant validity for the measurement scale.

Table 3. Measurement model result.

Variables	Items	Factor Loading	t-Value	α	CR	AVE
Quasi-internal resources (QIR)	QIR-1	0.766	22.821	0.934	0.944	0.629
	QIR-2	0.731	20.386			
	QIR-3	0.798	25.979			
	QIR-4	0.722	17.585			
	QIR-5	0.807	30.768			
	QIR-6	0.821	36.666			
	QIR-7	0.826	36.733			
	QIR-8	0.831	35.521			
	QIR-9	0.83	35.082			
	QIR-10	0.788	24.654			
Trade-off in strategic adjustments (TSA)	TSA-1	0.869	31.112			
	TSA-2	0.909	37.585			
	TSA-3	0.924	64.807			
	TSA-4	0.903	45.569			
Trade-off in incentive mechanisms (TIM)	TIM-1	0.86	29.644			
	TIM-2	0.875	41.074			
	TIM-3	0.854	34.999			
	TIM-4	0.738	14.899			
Trade-off in decision-making processes (TDP)	TDP-3	0.851	36.766	0.962	0.965	0.583
	TDP-4	0.845	38.809			
	TDP-5	0.839	41.9			
	TDP-6	0.809	27.379			
	TDP-7	0.83	30.243			
	TDP-8	0.867	41.169			
	TDP-9	0.856	38.944			
	TDP-10	0.85	39.253			
	TDP-11	0.905	73.175			
	TDP-12	0.888	42.623			
Firm performance (FP)	FP-1	0.914	61.021	0.942	0.954	0.775
	FP-2	0.95	99.78			
	FP-3	0.937	76.285			
	FP-4	0.936	85.061			
	FP-5	0.941	78.144			
	FP-6	0.898	35.709			
Market environment uncertainty (MEU)	MEU-1	0.734	19.811	0.915	0.929	0.594
	MEU-2	0.734	20.539			
	MEU-3	0.757	22.377			
	MEU-4	0.798	25.486			
	MEU-6	0.779	24.106			
	MEU-7	0.772	23.17			
	MEU-8	0.701	19.093			
	MEU-9	0.823	34.048			
	MEU-10	0.831	39.223			
	MEU-11	0.822	33.127			

Table 4. Discriminant validity.

	QIR	TSA	TIM	TDP	FP	MEU
QIR	**0.793**	0.747	0.727	0.768	0.694	0.727
TSA	0.703	**0.901**	0.785	0.712	0.709	0.604
TIM	0.655	0.655	**0.834**	0.775	0.708	0.504
TDP	0.724	0.673	0.701	**0.824**	0.880	0.559
FP	0.652	0.660	0.635	0.739	**0.880**	0.536
MEU	0.715	0.575	0.463	0.532	0.509	**0.759**

Note: HTMT ratios are presented over the diagonal. The Fornell–Larcker criterion is shown as the square root of the AVE on the diagonal (in bold), with construct correlations below the diagonal.

4.3. Structural Model

This study assesses the predictive strength of the endogenous constructs within the model by analyzing R^2 and f^2 values, which reflect the in-sample explanatory power of the constructs [78]. According to Henseler et al. [78], R^2 values are categorized as substantial (0.75), moderate (0.50), or weak (0.25). Our analysis produced R^2 values of 0.506 for TSA, 0.476 for TIM, 0.559 for TDP, and 0.721 for FP, indicating that the model demonstrates moderate to strong explanatory power across these constructs [82]. In addition, we evaluated Q^2 values to determine both the in-sample explanatory power and the out-of-sample predictive accuracy of the model. All Q^2 values were well above zero, measured at an omission distance of 7 (Q^2TSA = 0.468, Q^2TIM = 0.446, Q^2TDP = 0.537, Q^2FP = 0.440), providing robust evidence for the predictive relevance and accuracy of the structural model [75].

4.4. Hypothesis Testing

The hypothesis verification results are shown in Table 5 and Figure 2. The results indicate that, during large-scale emergencies, quasi-internal resources do not directly impact firm performance (β = 0.017, t = 0.298), and thus, H1 is not supported. However, quasi-internal resources positively influence the trade-off in strategic adjustments between CSR and business innovation (β = 0.590, t = 9.254), the trade-off in incentive mechanisms between CSR and business innovation (β = 0.692, t = 9.869), and the trade-off in decision-making processes between CSR and business innovation (β = 0.728, t = 12.337), thereby supporting H2a-c. Additionally, the results show that the trade-off in strategic adjustments between CSR and business innovation positively affects firm performance, with a path coefficient of 0.162 (t = 2.798), supporting H3a. Similarly, the trade-off in decision-making processes between CSR and business innovation has a positive impact on firm performance (β = 0.708, t = 10.317), supporting H3c. However, the trade-off in incentive mechanisms between CSR and business innovation does not significantly impact firm performance (path coefficient = 0.015, t = 0.214), indicating that H3b is not supported.

Table 5. Structural model and hypothesis testing results.

	Path	t-Value	f^2	95% CI		H	Supported
Direct effects					VIF		
QIR→FP	0.017	0.298	0.000	[−0.092, 0.128]	2.601	H1	NO
QIR→TSA	0.59	9.254 ***	0.340	[0.462, 0.711]	2.065	H2a	YES
QIR→TIM	0.692	9.869 ***	0.442	[0.557, 0.831]	2.065	H2b	YES
QIR→TDP	0.728	12.337 ***	0.582	[0.610, 0.839]	2.065	H2c	YES
TSA→FP	0.162	2.798 **	0.037	[0.061, 0.288]	2.538	H3a	YES
TIM→FP	0.015	0.214	0.000	[−0.134, 0.137]	2.469	H3b	NO
TDP→FP	0.708	10.317 ***	0.672	[0.572, 0.845]	2.675	H3b	YES
Moderating effects							
Moderating effects→TSA	−0.012	0.243	0.001	[−0.075, 0.123]	1.267	H5a	NO
Moderating effects→TIM	0.125	3.218 **	0.090	[0.022, 0.172]	1.267	H5b	YES
Moderating effects→TDP	0.108	3.311 ***	0.080	[0.029, 0.175]	1.267	H5c	YES
Indirect effects							
QIR→TSA→FP	0.095	2.638 **		[0.035,0.178]		H4a	YES
QIR→TIM→FP	0.010	0.212		[−0.089,0.099]		H4b	NO
QIR→TDP→FP	0.515	7.327 ***		[0.001,0.161]		H4C	YES

Note: N = 397; ** $p < 0.01$, *** $p < 0.001$.

The mediation effect of the trade-off between CSR and business innovations on the relationship between quasi-internal resources and firm performance was tested using a bootstrap approach with 5000 sub-samples. The results indicate that the trade-off in strategic adjustments between CSR and business innovation mediates the relationship between quasi-internal resources and firm performance, with a path coefficient of 0.095 (t = 2.638), supporting H4a. However, the mediation effect of the trade-off in incentive mechanisms between CSR and business innovation is not significant, with a path coefficient of 0.010 (t = 0.212), indicating

that H4b is not supported. In contrast, the trade-off in decision-making processes between CSR and business innovation significantly mediates the relationship between quasi-internal resources and firm performance (β = 0.515, t = 7.237), supporting H4c.

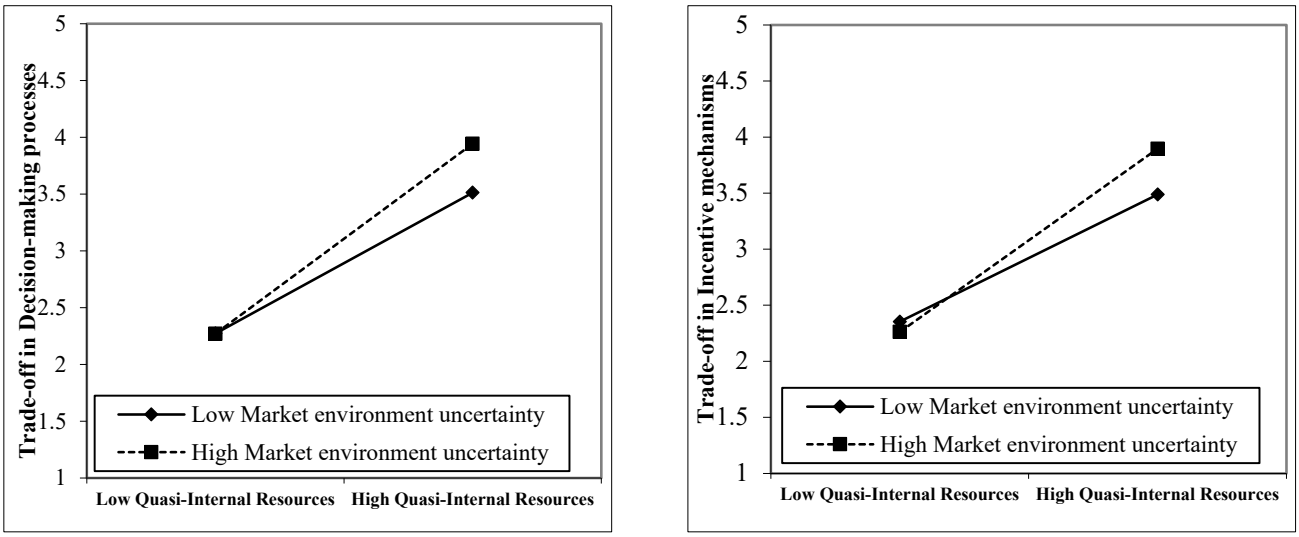

Figure 2. The moderating effect of marketing environmental uncertainty.

The results of the moderating effect analysis indicate that marketing environmental uncertainty does not significantly moderate the relationship between quasi-internal resources and the trade-off in strategic adjustments between CSR and business innovation (β = −0.012, t = 0.243), and thus, H5a is not supported. However, marketing environmental uncertainty positively moderates the relationship between quasi-internal resources and the trade-off in incentive mechanisms between CSR and business innovation (β = 0.125, t = 3.218), supporting H5b. Similarly, marketing environmental uncertainty positively moderates the relationship between quasi-internal resources and the trade-off in decision-making processes between CSR and business innovation (β = 0.108, t = 3.311), supporting H5c. Figure 2 illustrates the moderating effect of marketing environmental uncertainty on the relationship between quasi-internal resources and both incentive mechanisms and decision-making processes in balancing CSR and business innovation.

5. Discussion

This research uncovers several key findings. First, during large-scale emergencies, quasi-internal resources do not directly enhance firm performance. Second, quasi-internal resources strengthen the trade-off between CSR and business innovations, including strategic adjustments, incentive mechanisms, and decision-making processes. However, these strategies have varying impacts on firm performance. Specifically, the trade-off in strategic adjustments and decision-making processes mediates the relationship between quasi-internal resources and firm performance, whereas the trade-off in incentive mechanisms does not. Lastly, marketing environmental uncertainty exhibits differing moderating effects in these relationships: it positively moderates the relationship between quasi-internal resources and the trade-off in incentive mechanisms and decision-making processes, but does not significantly moderate the relationship between quasi-internal resources and the trade-off in strategic adjustments.

The reasons for the unsupported hypotheses can be explained as follows: First, the failure of quasi-internal resources to directly enhance firm performance during large-scale emergencies stems from the extreme volatility and unpredictability of such situations. These conditions strain organizational relationships and diminish the effectiveness of quasi-internal resources, limiting their direct impact on performance [73]. Moreover, quasi-internal resources typically require time to integrate and generate value, which is not feasible in the immediate

aftermath of a crisis. In such scenarios, firms often prioritize internal resources and immediate tactical actions, reducing the short-term relevance of quasi-internal resources.

Second, the lack of a significant effect of the trade-off in incentive mechanisms on firm performance, and its inability to mediate the relationship between quasi-internal resources and performance, can be attributed to several factors. Incentive mechanisms generally function as supporting structures rather than primary strategic drivers [47]. The complexity of balancing CSR and business innovation through incentives may lead to conflicting objectives, thereby diluting their overall effectiveness [46]. Employees may face challenges in prioritizing between CSR and innovation efforts, leading to suboptimal outcomes. Furthermore, quasi-internal resources, which often depend on external relationships, may not be fully integrated into the firm's internal incentive structures, reducing their potential to mediate the relationship with performance [1].

Third, the lack of significant moderation by market environmental uncertainty in the relationship between quasi-internal resources and strategic adjustments can be explained by the embedded nature of strategic adjustments within a firm's core operations and long-term planning. In highly uncertain environments, firms tend to rely more on stable, internal decision-making processes rather than adapting strategies to external inputs [83]. Additionally, the complexity and specificity of strategic adjustments often require a more stable environment to fully leverage quasi-internal resources. In such conditions, firms may prioritize maintaining operational stability over making substantial strategic shifts, reducing the moderating effect of environmental uncertainty on this trade-off [16].

5.1. Implications for Theory

First, this study introduces the innovative concept of quasi-internal resources and examines their effectiveness and underlying mechanisms in enhancing firm competitiveness during large-scale emergencies. By conceptualizing quasi-internal resources, this research expands the traditional understanding of resource-based advantages, emphasizing the vital role of external partnerships and networks in crisis situations [43]. The findings highlight the importance of leveraging these resources to maintain strategic flexibility and adaptability, providing new insights into how firms can sustain, and even enhance, their core competencies in the face of extreme uncertainty [84]. This contribution enriches the theoretical discourse by illustrating how quasi-internal resources function as critical assets in dynamic and unpredictable environments. By emphasizing their role in navigating complex business landscapes, this study demonstrates how firms can strategically harness external partnerships and networks to bolster resilience and maintain a competitive advantage in volatile markets.

Second, this research advances the existing literature on CSR and business innovation by investigating the necessity of implementing a trade-off between CSR and innovation during large-scale emergencies. It explores the internal mechanisms and boundary conditions through which quasi-internal resources influence firm performance amidst market environmental uncertainty. This inquiry deepens our understanding of how firms strategically balance social responsibility with innovation in turbulent environments and how this equilibrium is shaped by external resource dependencies [46]. By extending the theoretical framework of CSR and innovation, this study highlights the dynamic interplay between these elements in crisis contexts, offering a more nuanced perspective on their role in enhancing firm resilience and performance in uncertain markets [6]. The insights gained can guide firms in making informed decisions that align CSR initiatives with innovative strategies during challenging times.

Third, this study advances resource dependence theory by introducing the concept of quasi-internal resources, thereby broadening its applicability to contexts where internal resources are limited. By demonstrating how quasi-internal resources—such as strategic alliances and partnerships—can effectively mitigate resource constraints, this research underscores their significance in helping firms navigate internal limitations while preserving core competitive advantages [11]. These external yet integrated resources provide the neces-

sary flexibility and adaptability for firms to maneuver through complex environments and pursue long-term strategic objectives [83]. By leveraging quasi-internal resources, firms not only alleviate resource shortages but also enhance their competitive positioning, ensuring sustainable growth and resilience. This expanded perspective on resource dependence theory offers valuable insights into how firms can strategically utilize external capabilities to overcome limitations and achieve enduring success.

5.2. Implications for Practice

This study offers valuable practical insights on how firms can strategically manage resource constraints, particularly during large-scale emergencies. First, when internal resources are limited, firms must strategically leverage quasi-internal resources to secure and sustain their core competitive advantages. Quasi-internal resources—such as strategic alliances, long-term partnerships, and external networks—are instrumental in augmenting internal capabilities that may prove insufficient in times of crisis. These resources enable firms to tap into external knowledge, advanced technologies, and specialized expertise, effectively filling the gaps left by internal resource shortages. This not only bolsters operational resilience but also enhances strategic agility [16]. By seamlessly integrating these quasi-internal resources, firms can maintain or even improve their competitive positioning, despite constraints on internal resources.

Second, during large-scale emergencies, firms must carefully balance CSR and business innovation to ensure the optimal allocation and utilization of resources. The pressures to address social responsibilities intensify during crises, as firms also face the challenge of maintaining innovation to stay competitive. Managing the trade-off between CSR and business innovation becomes a critical strategic task, ensuring that limited resources are deployed in a way that maximizes brand loyalty, social impact and market competitiveness [46,85]. Effectively managing this balance allows firms to achieve long-term sustainability while navigating immediate external challenges. By aligning social responsibility initiatives with innovative pursuits, firms can position themselves for success, even amid significant uncertainty.

Finally, the more volatile and unpredictable the market environment, the more imperative it becomes for firms to leverage quasi-internal resources to advance both CSR and business innovation. In highly turbulent markets, these external resources become indispensable, providing the adaptability, flexibility, and external insights that firms need to swiftly respond to changing conditions. Quasi-internal resources offer the strategic support necessary to navigate complex and uncertain environments, where internal capabilities alone may not suffice. This research, therefore, highlights the crucial role of quasi-internal resources in fostering sustainable competitive advantages and enhancing firm resilience in dynamic, unpredictable market landscapes [58].

5.3. Limitations and Future Directions

This study acknowledges several limitations that future research should address. First, the reliance on self-reported questionnaires may introduce common method bias, potentially impacting the reliability of the findings. Future studies could mitigate this by incorporating objective data or using longitudinal designs. Second, the research sample is limited to Chinese firms, which may restrict the generalizability of the results to other industries or geographical regions. Expanding the sample to include diverse cultural and economic contexts could provide a more comprehensive understanding. Third, our conceptual framework does not account for individual-level factors, such as leadership characteristics, which could influence perceptions and utilization of quasi-internal resources, CSR, and innovation. Future research should explore these variables to deepen the understanding of their roles in shaping strategic outcomes.

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Data Availability Statement: The dataset is available on request from the authors.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A. Research Items

Quasi-Internal Resources

QIR1: After the outbreak of COVID-19, quasi-internal resources appeared or were more easily identified.
QIR2: After the outbreak of COVID-19, quasi-internal resources seemed to be greater.
QIR3: After the outbreak of COVID-19, quasi-internal resources played a greater role in state-owned enterprises than in private ones.
QIR4: After the outbreak of COVID-19, some resources such as raw and auxiliary materials for epidemic prevention products were transferred from other industries to the epidemic prevention product industry.
QIR5: After the outbreak of COVID-19, a large amount of capital was transferred from other industries to the epidemic prevention product industry.
QIR6: After the outbreak of COVID-19, it became easier for manufacturers of epidemic prevention products to obtain capital.
QIR7: After the outbreak of COVID-19, more professionals were moving from other industries to epidemic prevention enterprises.
QIR8: After the outbreak of COVID-19, it became easier for epidemic prevention manufacturers to integrate external resources.
QIR9: After the outbreak of COVID-19, other enterprises were more willing to support epidemic prevention manufacturers in the field of resource integration.
QIR10: After the outbreak of COVID-19, it became easier for epidemic prevention product manufacturers to obtain the support and cooperation of their employees.

Trade-off in Strategic adjustment

TSA1: Our company's business strategy was helpful to overcome the original strategic regarding of corporation social responsibility as a burden.
TSA2: Our company's business strategy focused more on the explanation and publicity of business innovation in corporation social responsibility.
TSA3: Our company's business strategy focused more on capturing potential business innovation opportunities from corporation social responsibility activities.
TSA4: Our company's business strategy put more emphasis on the balance between business vision and social expectation.

Trade-off in incentive mechanism

TIM1: Governments strengthened the coordination between the assessment indicators such as corporation social responsibility performance and business innovation performance for our company.
TIM2: Our company emphasized the basic requirements of corporation social responsibility behavior in salary design and employment contract.

TIM3: Our company strengthened incentives mechanism (material or moral) for internal departments and employees to encourage their corporation social responsibility contribution in business innovation behaviors.
TIM4: Our company has increased penalties for internal departments and employees who exhibit socially irresponsible behavior in business innovation for corporation social responsibilities.

Trade-off in decision-making process

TDP1: Shareholders' approval of our company's corporation social responsibility business became easier.
TDP2: External government departments became easier in their administrative approval of corporation social responsibility business for state-owned enterprises.
TDP3: External government departments became more efficient in the administrative approval of corporation social responsibility business of state-owned enterprises.
TDP4: Our company's internal decision-making and approval procedures for corporation social responsibility activities became simpler and more efficient.
TDP5: Our company's approval procedures from higher-up for corporation social responsibility business have become more efficient, which is helpful for the improvement of the company's performance.
TDP6: It became easier for our company to allocate resources to carry out corporation social responsibility activities.
TDP7: It became easier for our company to deploy employees for corporation social responsibility activities, and employees showed more cooperation with such deployment.
TDP8: Our company's internal organizational changes became easier.
TDP9: It became easier for our company to develop and implement internal systems and policies.
TDP10: It became easier for shareholders to authorize our company in the field of corporation social responsibility.
TDP11: It became easier for our company to authorize downward in the field of corporation social responsibility.
TDP12: Our company's corporation social responsibilities tended to support the government's epidemic prevention and control measures.

Firm performance

FP1: Compared with competitors in the industry, the corporation has better profitability.
FP2: Compared with competitors in the industry, the corporation has higher profit margins.
FP3: Compared with competitors in the industry, the corporation has higher business revenue.
FP4: Compared with competitors in the industry, the corporation has a higher brand value.
FP5: Compared with competitors in the industry, the corporation has a higher market share.
FP6: Compared with competitors in the industry, the corporation has a higher sales growth rate.

Marketing environmental uncertainty

MEU1: After the outbreak of COVID-19, the market demand for epidemic prevention materials has increased.
MEU2: After the outbreak of COVID-19, the increase in market demand for epidemic prevention products is huge.
MEU3: At the beginning of the COVID-19 outbreak, the number and scale of manufacturers of epidemic prevention products were insufficient.
MEU4: At the beginning of the COVID-19 outbreak, the market supply of epidemic prevention products was insufficient.
MEU5: At the beginning of the COVID-19 outbreak, the market supply of raw and auxiliary materials for epidemic prevention supplies was insufficient.

MEU6: With the increase in market demand and production enterprises, the market supply of raw and auxiliary materials for epidemic prevention materials has increased.
MEU7: After the outbreak of COVID-19, market prices of raw and auxiliary materials for epidemic prevention materials rose sharply.
MEU8: After the outbreak of COVID-19, the number of suppliers of raw and auxiliary materials for epidemic prevention increased.
MEU9: With the development of COVID-19, the supply of raw and auxiliary materials for epidemic prevention materials on the market has increased rapidly.
MEU10: After the outbreak of COVID-19, the market price of epidemic prevention products increased significantly.
MEU11: Compared to the pre-epidemic period, producing epidemic prevention products and raw materials has been more remunerative.

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