



INSTITUTO  
UNIVERSITÁRIO  
DE LISBOA

---

The Trade-off Between Corporate Social Responsibility Response and Business Innovation of State-owned Enterprises in Large-scale Emergencies

HE Xilin

Doctor of Management

Supervisors:

PhD Renato Costa, Assistant Professor with Habilitation,  
ISCTE University Institute of Lisbon

PhD NI Debing, Professor,  
University of Electronic Science and Technology of China

September, 2023



**BUSINESS  
SCHOOL**

---

Marketing, Operations and General Management Department

The Trade-off Between Corporate Social Responsibility Response and Business Innovation of State-owned Enterprises in Large-scale Emergencies

HE Xilin

Doctor of Management

Supervisors:

PhD Renato Costa, Assistant Professor with Habilitation,  
ISCTE University Institute of Lisbon

PhD NI Debing, Professor,  
University of Electronic Science and Technology of China

September, 2023



BUSINESS  
SCHOOL

---

Marketing, Operations and General Management Department

The Trade-off Between Corporate Social Responsibility Response and Business Innovation of State-owned Enterprises in Large-scale Emergencies

HE Xilin

Doctor of Management

Jury:

PhD Sandra Maria Correia Loureiro, Full Professor,  
ISCTE University Institute of Lisbon

PhD Ricardo Jorge de Castro Correia, Assistant Professor,  
Universidade da Madeira

PhD Ma Yongkai, Full Professor,  
University of Electronic Science and Technology of China

PhD Pedro Miguel Ribeiro de Almeida Fontes Falcão, Assistant Professor,  
ISCTE University Institute of Lisbon

PhD Renato Costa, Assistant Professor with Habilitation,  
ISCTE University Institute of Lisbon

September, 2023

**The Trade-off Between Corporate Social  
Responsibility Response and Business  
Innovation of State-owned Enterprises in Large-  
scale Emergencies**

HE Xilin

## Declaration

I declare that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university and that to the best of my knowledge it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed: 何新霖

Date: 2023.9.21

Name: HE Xilin

## 作者声明:

本人郑重声明:除了论文致谢中明确说明并致以谢意的部分外,所呈交的论文不包含任何他人或作者本人已用于获得任何教育机构的学位和证书而使用过的材料。同时尽我所知,除了文中特别加以标注引用的内容外,本论文不包含任何其他个人或集体已经发表或撰写的成果作品。

作者签名: 何新霖

日期: 2023.9.21

姓名(拼音): HE Xilin

[This page is deliberately left blank.]

## Abstract

In early 2020, with the large-scale outbreak of COVID-19 in China, Chinese state-owned enterprises (SOEs) encountered challenges in finding a balance between their corporate social responsibility (CSR) practices and business innovation within their established strategic framework. Existing theories lack the relevant direct guidance and support for the specific management practices of SOEs under this unique situation. This study aims to offer an extended SCP (Surroundings-Conduct-Performance) model that aligns with how SOEs conduct their management practices to achieve better performance within this specific context. The findings aim to provide a theoretical basis for successful management practices for SOEs in this particular scenario.

This study comprises three parts. Firstly, a comprehensive literature review was conducted in the fields of measures for dealing with large-scale emergencies (LSEs), corporate social responsibility (CSR), market-based and resource-based strategic views, and competitive advantage in fast-changing or volatile environments. Through in-depth interviews, four environmental variables and two performance variables were identified. Secondly, an extended SCP model for this study was proposed, using enterprise trade-off as a mediating variable between the environment and performance. Thirdly, a final questionnaire survey was conducted, resulting in the collection of 397 effective questionnaires. The model was validated through statistical data analysis using the partial least squares structural equation model.

The extended SCP model proposed in this study, based on environmental variables, offers theoretical guidance for state-owned enterprises (SOEs) to implement specific management practices during large-scale emergencies (LSEs). Additionally, it sheds new light on similar cross-field research.

**Keywords:** environment, trade-off, performance, strategy, LSE, CSR

**JEL:** H12, O44

[This page is deliberately left blank.]



## Resumo

No início de 2020, o surto em grande escala de COVID-19 na China levou a que as empresas estatais chinesas encontrassem dificuldades em equilibrar as práticas de responsabilidade social e inovação dentro das suas estratégias empresariais. As teorias existentes carecem por isso de orientação direta e de apoio relevantes para uma boa gestão destas empresas estatais relativamente a esta situação específica.

Este estudo está dividido em três partes. Em primeiro lugar foi realizada uma revisão abrangente de literatura nos domínios da gestão de situações ligadas a emergência em grande escala (EGE), responsabilidade social das empresas (RSE), visão estratégica baseada no mercado e nos recursos e, vantagem competitiva em ambientes de mercado voláteis ou em rápida mudança. Combinando esta análise com entrevistas, quatro aspetos de variáveis ambientais e, dois aspetos de variáveis de desempenho, analisados em separado. Em segundo lugar, foi proposto um modelo PCS para este estudo usando o trade-off empresarial de ambiente e desempenho como variável mediadora. Em terceiro lugar, foi realizada a análise de questionários, tendo sido recolhidos 397 questionários validados, sendo o modelo trabalhado através da análise estatística dos dados com base em equações estruturais de mínimos quadrados parciais.

O modelo de PCS baseado em variáveis ambientais proposto neste estudo vem fornecer uma orientação teórica para que as empresas estatais realizem práticas específicas de gestão em casos de EGE, possibilitando também novas recomendações para estudos futuros, quer em termos de situações similares de investigação, ou situações em que se cruzem campos de investigação.

**Palavras-chave:** ambiente, trade-off, desempenho, estratégia, EGE, RSE

**JEL:** H12, O44

[This page is deliberately left blank.]

## 摘要

2020年初,伴随着新冠肺炎疫情在中国的大规模爆发,中国国有企业在既定战略框架内的社会责任实践和业务创新行为的权衡遇到困境。现有理论缺乏对这种具体情景下企业具体管理实践的相关直接的指导和支撑。本研究旨在提供一个基于上述具体环境下国有企业如何开展管理实践以实现更乐观的绩效的扩展的SCP模型,为其在特定情境下成功实践提供理论基础。

本研究包括三个主要部分。第一,从应对大规模突发事件的策略、企业社会责任、基于市场或资源的战略观点和快速变化或动荡的环境中的竞争优势领域进行系统性文献回顾,结合深度访谈,梳理出4方面的环境变量和2方面的绩效变量。第二,通过企业权衡作为环境和绩效的中介变量,建立了本研究独特的SCP模型。第三,通过问卷调查法收集了397份有效问卷,通过偏最小二乘法结构方程模型对数据进行统计分析,验证了模型。

本研究提出的基于环境变量的扩展SCP模型,为国企在大规模突发事件中开展具体的管理实践提供了理论指导,也为类似的跨领域研究提供了新的启示。

**关键词:** 环境, 权衡, 绩效, 战略, 大规模突发事件, 企业社会责任

**JEL:** H12, O44

[This page is deliberately left blank.]

## Acknowledgements

Choosing to pursue a Doctor of Management (DoM) was definitely one of the most challenging endeavors in my life.

When I made my choice in 2019, my parents were already old, and my daughter and son were only 5 and 1 years old, respectively. Moreover, my career was in a critical development period, and I needed to dedicate a significant amount of time to my studies. Over the past four years, I often had sleepless nights, and my hair has turned gray from the stress. I would like to express my deepest gratitude to my wife; without your unwavering support, I could not have completed my DoM. Thank you for standing by me silently during moments of hesitation, wandering, and struggle, and for taking care of our kids and managing the household. I am truly sorry for missing out on a lot of time with you and our kids due to my doctoral studies.

Embarking on a DoM journey is akin to sailing alone on a small boat. Professor Renato Costa, you have been my guiding light, my beacon of hope, and my navigator, always clearing the fog ahead of me. I affectionately call you boss, not because you pay me a salary, but because you provide nourishment for my soul. You have been my teacher and friend, igniting the flames of hope in me countless times when I was on the brink of despair. Thank you for meticulously reading every word of my thesis and guiding me through this challenging and thorny path of life. Your support and mentorship have been invaluable. I am immensely grateful for everything you have done, and I sincerely wish you continued success in your career and a life filled with happiness.

Prof. NI Debing is my supervisor on the Chinese side, who has provided me with meticulous guidance, answering my questions and doubts in numerous face-to-face meetings. Whether it was selecting my research direction, building the model, or understanding the guidance from my supervisor on the Portuguese side, Prof. Ni has always been there to assist me. I am grateful for your dual role as a friend and mentor, and for your support, which has been a combination of kindness and firmness. Your guidance has been instrumental in helping me achieve what initially seemed like an impossible task. Thank you for everything.

My daughter, HE Yuxuan, and my son, HE Yule, there have been countless weekends, holidays, and nights when I should have been there as a father to play with you and guide your studies. Regrettably, I had to leave you behind, allowing you to grow up without the company

of your father. You have witnessed my efforts, and I have seen your determination in growing up. I hope to be an example for both of you, and I wish for you to find your own path like a leaf boat in the vast ocean of knowledge, sailing towards endless horizons.

My parents never imagined that their child would one day earn a Doctor of Management degree. However, I clearly saw the flash of surprise and pride in your eyes when you learned that I was embarking on my DoM journey. Thank you for your decades of nurturing and teaching me. May you always be happy and live a long, fulfilling life.

And to all the others who have helped me with my DoM, thank you for everything. Life is long, let us ignite the passion for the future and face the burning years together.

## 致谢

选择攻读管理学博士学位，绝对是我人生最自虐的一件事，没有之一。

2019年抉择的时候，父母已老，一女一儿才分别5岁和1岁，自己的事业正处于关键发展期，但我还需要再额外花更多时间来读书。过去四年，经常夜半辗转反侧，斑白了自己的头发。我要谢谢我的妻子，没有你的全力支持，我不可能完成博士学业。感谢你对我无厘头的人生追求的无条件支持，感谢你为我们照顾儿女，为我们操劳家务。在我踌躇、徘徊、纠结的时候永远站在我的身后默默支持。同样十分抱歉，因为博士学业错失了许多陪伴你和儿女的时间。

读博士犹如孤舟泛海。雷纳托·科斯塔，您是我的灯塔，是我的启明星，是我的领航人。您为我驱散前方海面的迷雾。我一直称呼您老板，不是因为您给我发工资，而是您为我发放灵魂的食粮。您也是我的老师和朋友，多次在我快要绝望的时候再次为我点燃希望之火。谢谢您审阅过我论文的每一个单词，导引我趟过这条充满荆棘的坎坷人生路。感谢您所做的一切，希望您的事业更加成功，生活更加美满。

倪得兵是我的中方导师，多次面对面、手把手给我悉心的指导，为我答疑解惑，无论是在选择研究方向的时候，还是在模型构建的时候，甚至在帮助我理解外方导师的指导真意的时候。感谢您亦师亦友的对待和宽严结合的帮助，助我完成了这个不可能完成的任务。

我的女儿何禹萱、儿子何禹乐，在无数个节假日，无数个周末，无数夜晚，原本应该是由我这个父亲带着你们嬉戏游玩、指导你们学习的时候，我却将你们抛诸脑后，任由你们在没有父亲陪伴的情况下长大。你们看到了我的努力，我也看到了你们倔强的成长。我希望能成为你们的榜样，也希望你们能在知识的海洋中找到自己的那叶扁舟，航向那无尽的彼岸。

我的父母，虽从未想到过自己的孩子有一天能读博士。但我清楚地看到了当你们得知我开始读博士以后，眼里那一闪而逝但未能骗过我的惊喜和自豪。谢谢你们对我数十年的养育和教诲，希望你们能够永远快乐，长命百岁。

还有其他所有对我读博士提供过帮助的人们，谢谢你们的一切。人生路漫漫，让我们一起点燃未来激情燃烧的岁月。

[This page is deliberately left blank.]



# Contents

Chapter 1: Introduction .....	1
1.1 Research background .....	1
1.1.1 Practical background .....	1
1.1.2 Theoretical background .....	5
1.2 Research problem and questions .....	6
1.2.1 Research problem .....	6
1.2.2 Research questions .....	7
1.3 Research purpose.....	8
1.4 Expected contribution .....	8
1.5 Research method and framework .....	9
1.5.1 Research method .....	9
1.5.2 Research framework.....	12
Chapter 2: Literature Review .....	19
2.1 Studies on measures in response to LSEs .....	20
2.1.1 From a non-corporate perspective.....	21
2.1.2 From an enterprise perspective.....	24
2.1.3 Section summary .....	25
2.2 Relevant studies in the field of CSR .....	26
2.2.1 The concept and development history of CSR.....	26
2.2.2 The measurement of CSR.....	30
2.2.3 The relationship between CSR and CFP .....	33
2.2.4 Section summary .....	37
2.3 Theories from the market-based view .....	37
2.3.1 SWOT analysis.....	38
2.3.2 Five forces model .....	39
2.3.3 BCG Matrix.....	40
2.3.4 SCP analysis paradigm .....	41
2.3.5 Other strategic analysis models/methods .....	44
2.3.6 Section summary .....	45
2.4 Theories from the resource-based view.....	45

2.4.1 The rise of RBV .....	45
2.4.2 The evolution and development of RBV.....	46
2.4.3 The new momentum for RBV .....	50
2.4.4 Section summary .....	53
2.5 Relevant studies on strategies in rapidly changing or turbulent circumstances and conditions .....	55
2.6 Chapter summary .....	57
Chapter 3: Research Model and Hypotheses.....	59
3.1 Effect of environmental variables on enterprise trade-off.....	59
3.1.1 The effect of policy impact on enterprise trade-off.....	62
3.1.2 The effect of market impact on enterprise trade-off.....	63
3.1.3 The effect of technological impact on enterprise trade-off .....	64
3.1.4 The effect of resource impact on enterprise trade-off .....	66
3.2 The impact of trade-off between CSR behaviors and business innovations on enterprise performance.....	68
3.2.1 The effect of enterprise trade-off on economic performance .....	68
3.2.2 The effect of enterprise trade-off on CSR performance .....	71
3.3 The mediating role of trade-off between CSR response and business innovation .....	73
3.3.1 The effect of enterprise trade-off on economic performance .....	73
3.3.2 The effect of enterprise trade-off on CSR performance .....	74
3.4 Research model proposal .....	75
Chapter 4: Empirical Research Design and Methods.....	79
4.1 Research idea.....	79
4.2 Questionnaire design .....	79
4.3 Variable measurement .....	81
4.3.1 Environmental variable .....	81
4.3.2 Enterprise trade-off.....	85
4.3.3 Enterprise performance (P) .....	87
4.4 Pre-survey and questionnaire refinement.....	88
4.4.1 Pre-survey data collection .....	88
4.4.2 Data analysis methods .....	91
4.4.3 Pre-survey sample data analysis.....	92
4.4.3.1 Environmental impact .....	92
4.4.4 Formation of the formal questionnaire.....	95
Chapter 5: Empirical Analysis and Results Discussion .....	97

5.1 Data collection and descriptive statistics .....	97
5.1.1 Data collection.....	97
5.1.2 Descriptive statistical analysis .....	98
5.2 Common method bias.....	98
5.3 Empirical test.....	99
5.3.1 Partial least square-structural equation modelling .....	99
5.3.2 Measurement model .....	100
5.3.3 Structural model .....	101
5.4 Hypothesis testing result .....	102
5.5 Discussion of empirical results .....	103
Chapter 6: Conclusion and Discussion.....	109
6.1 Research conclusion .....	109
6.2 Theoretical contribution .....	112
6.3 Practical implications .....	114
6.3.1 Develop CSR and innovation strategies in a dynamic environment.....	114
6.3.2 Trade-off between CSR and business innovation in a context with limited resources.....	116
6.3.3 Focus on stakeholder relationship management of CSR and business innovation management .....	120
6.4 Research limitations and prospects .....	125
Bibliography.....	127
Webliography .....	143
Other References .....	145
Annex A: Glossary of abbreviations .....	147
Annex B: In-depth Interview.....	149
Annex C: Questionnaire Survey.....	151
Annex D: Reference statistical table and graphs.....	179
Annex E: Descriptive analysis of valid questionnaire data.....	183

[This page is deliberately left blank.]

## List of Tables

Table 2.1: Summary of CSR concepts and development history .....	28
Table 2.2: Summary of positive correlation between CSR and CFP .....	34
Table 2.3: Summary of negative correlation between CSR and CFP .....	35
Table 2.4: Summary of nonlinear or uncertain correlation between CSR and CFP.....	36
Table 2.5: Summary of references on the rise of RBV .....	47
Table 2.6: Summary of RBV references on the evolution and development of RBV.....	49
Table 2.7: Summary of the new momentum for RBV .....	52
Table 3.1: Research objectives, questions, variables, and hypotheses .....	76
Table 4.1: Policy impact measurement scale.....	82
Table 4.2: Market impact measurement scale .....	83
Table 4.3: Technological impact measurement scale .....	83
Table 4.4: Resource impact measurement scale .....	84
Table 4.5: Strategic adjustment measurement scale.....	85
Table 4.6: Incentive mechanism measurement scale.....	86
Table 4.7: Decision-making process measurement scale .....	86
Table 4.8: Economic performance measurement scale .....	88
Table 4.9: Social performance measurement scale .....	88
Table 4.10: Validity and exploratory factor analysis of S (N=65) .....	92
Table 4.11: Reliability test results of S measurement scale (N=65).....	93
Table 4.12: Reliability test results of C measurement scale (N=65) .....	94
Table 4.13: Reliability test results of C measurement scale (N=65) .....	94
Table 4.14: Validity and exploratory factor analysis results of P (N=65) .....	95
Table 4.15: Reliability test results of P measurement scale (N=65).....	95
Table 5.1: Descriptive statistical analysis of respondent information (N=602).....	98
Table 5.2: Common method bias.....	99
Table 5.3: Measurement model result .....	100
Table 5.4: Discriminant validity test .....	101
Table 5.5: Structural model and hypothesis test.....	102

[This page is deliberately left blank.]

# List of Figures

Figure 1.1: Research framework ..... 13  
Figure 3.1: Research model and hypotheses ..... 76

[This page is deliberately left blank.]



## **Chapter 1: Introduction**

### **1.1 Research background**

H. Sun et al. (2021) defined large-scale emergencies (LSEs) as major events that occur unexpectedly due to certain inevitable factors, resulting in significant harm, loss, or impact on society, and requiring immediate action to address. Examples of LSEs include the sudden outbreak of large-scale wars, natural disasters, and public health events, which essentially fall under the category of crises or disasters. While crises or disasters are common, those on a large scale, particularly spanning multiple regions, provinces, or countries, are not the norm.

#### **1.1.1 Practical background**

Since the founding of the People's Republic of China (PRC) in 1949, there has never been a large-scale war in its territory. The large-scale natural disasters in the PRC primarily include the nationwide drought in the early 1960s and the floods in several river basins in 1998 (H. Li, 2018). Even the disasters of significant impact, such as the Yangtze River floods in Eastern China in 1959, the Tangshan earthquake in 1976, the wildfire in the Greater Khingan in 1987, and the massive Wenchuan earthquake in 2008, were limited to specific regions and not considered large-scale nationwide natural disasters.

Instead, there have been some occasional nationwide public health LSEs in recent years. For example, the severe acute respiratory syndrome (SARS) in 2002-2003, the coronavirus disease 2019 (COVID-19) that has affected China and the world since 2019, and the "Sanlu (milk powder) Incident" that shocked the entire China in 2008. Prior to those events, the plague, smallpox, and cholera, which are defined as Class A infectious diseases in China, were largely eliminated either before the founding of the PRC (plague and cholera) or in the early 1960s (smallpox) (Bo & Biao, 2021; Iijima, 2019; Meyer et al., 2020; Xiang et al., 2020). They have never caused massive outbreaks or significant mortality in the past four decades.

Before China's reform and opening, and even before the 21st century, when any LSEs occurred, the primary actors involved were governments of all levels. Enterprises had not played a significant role in dealing with LSEs, and their response to such incidents were relatively limited. It was not until the 1990s that Chinese enterprises began to get involved in

addressing LSEs, mainly through charitable donations (including funds and material contributions) accompanied by “big event marketing strategy” behaviors (Guo et al., 2018).

Chinese enterprises’ activities in response to LSEs peaked during the Wenchuan 5/12 Earthquake in 2008 (X. Q. Zhao & Wan, 2021). Excluding large central enterprises and financial institutions, 1,564 enterprises donated more than 50,000 yuan each, covering 31 provinces and regions. Among them, Wong Lo Kat made the highest donation of 100 million yuan and was the first to react, instantly establishing a positive image for the company and attracting significant market attention and interest. As a result, the brand value of Wong Lo Kat soared (L. Zhang, 2023).

The COVID-19 pandemic, which originated in 2019, began to spread globally in 2020. Although there are different accounts from different countries, the first confirmed COVID-19 cases were announced by the Chinese government through the news media. Since early 2020, the virus has rapidly and extensively spread throughout China, with Wuhan being the first city to be severely affected. This sudden and highly contagious COVID-19 pandemic has a long incubation period, and as of 2021, no specific drug or vaccine was available for it. The outbreak made a significant impact, causing severe losses to China and its people.

In addition, one prominent feature highlighted by the COVID-19 pandemic was the severe shortage of epidemic prevention and medical supplies and equipment, such as masks, protective suits, isolation suits, disinfectants, oxygen cylinders, ventilators, and medical beds. This shortage also extended to insufficient stock and capacity of supplies (Bown, 2022). Despite this backdrop, during the COVID-19 pandemic, the government remained at the forefront of the response and also called upon enterprises for support (S. Fei et al., 2020). Besides continuing to make donations, enterprises, especially state-owned enterprises (SOEs), began to play an increasingly prominent role during COVID-19. They contributed with donations and played a more significant role in the entire chain of production, supply, sales, storage, transportation, and distribution of epidemic prevention materials compared to previous years when facing similar LSEs. SMMG (a SOE) was among those enterprises actively involved in this effort.

In China, SOEs are defined as enterprises controlled by state-owned capital, and their business objectives are inevitably influenced by the preferences of state-owned assets. In practice, SOEs are regulated in a hierarchical manner. “Central enterprises”, directly under China’s central government, are supervised by the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council. Meanwhile, local SOEs, such as those at provincial and municipal levels, are supervised by the SASACs at their respective levels. Under this management system, the SASACs at different levels introduce assessment

indicators for the SOEs at their corresponding levels. These indicators mostly pertain to economic aspects, such as revenue, profits, and management quality. Additionally, public interest activities, including a series of “priorities”, are also included in the assessment criteria.

Unlike the private sector, the management of SOEs should be accountable to the public and accept public scrutiny (Klausen & Winsvold, 2021). Therefore, SOEs have not only market functions but also political functions. Hence, in their pursuit of profit and considering public accountability, sacrificing profit to a certain extent in exchange for public support becomes an inevitable option for SOEs. X. Chen (2018) also pointed out that SOEs have the dual nature of being both enterprises and public entities, which means they pursue both economic and non-economic goals.

The “priorities” usually align with CSR attributes. For instance, in 2019, the SASAC of Yibin City, as a major shareholder of state-owned assets, assigned specific tasks to Sichuan Yibin Wuliangye Group Co., Ltd. (Wuliangye Group), which is the sole shareholder of Sacred Mountain Molin Group Co., Ltd., Sichuan (SMMG). The tasks included assisting in investment promotion to boost local economic development, settling arrears owed to private enterprises within a specified time frame, and collaborating with top large hospitals in Sichuan Province to enhance medical facilities for residents in Yibin.

This example demonstrates that Chinese SOEs need to allocate resources to CSR while focusing on their business strategies as enterprises. As a result, they must carefully weigh and consider both their business objectives and CSR initiatives in their overall strategy. For enterprises in general, business and CSR are not necessarily mutually exclusive, but a trade-off in resource allocation is inevitable. This trade-off becomes even more crucial for SOEs, as they not only have to meet the economic and CSR indicators required by SASACs but also face higher expectations and demands from the public due to their “state-owned” nature.

In particular, during a LSE, both the public and the SASACs (representing the respective levels of government) tend to demand a higher level of CSR contribution from SOEs than other enterprises, imposing greater pressure on SOE managers to strike a balance between business objectives and CSR commitments. While LSEs often bring about changes in the operating environment of SOEs and even the macro-environment in which they operate, they may also provide SOEs with new strategic opportunities in response to such emergencies.

For example, the outbreak of SARS in 2003 significantly negatively impacted China’s economy. However, it also catalyzed the development of several prominent business models and industry sectors in the country, including e-commerce (online retailing), insurance, express delivery, automotive, and the pharmaceutical industry (Cai, 2003). It further highlighted that

when responding to emergencies, SOE managers should not only consider the resource implications of their CSR activities but also pay close attention to strategic opportunities that arise from the changing environment. They must then make new trade-offs between their CSR and business accordingly. Therefore, studying how SOE managers make trade-offs between CSR and business during LSEs will provide us with a more in-depth understanding of the strategic decision-making of SOEs.

Before the outbreak of COVID-19 in China, SMMG was primarily engaged in three main types of businesses: production of non-woven packaging bags for Wuliangye Group's alcohol products, production and sales of clothing (including uniforms for the internal staff of Wuliangye Group and clothing orders from both domestic and international market), and trade of goods. Kennedy et al. (2020) pointed out that most strategic decision-making processes were inherently political because they involved decisions with uncertain outcomes, participants with conflicting views, and the exercise of power to address and resolve problems.

After the outbreak of COVID-19, upon the approval of the board of directors, SMMG made the decision, with an apparent political characteristic, to produce and sell non-woven epidemic prevention supplies such as medical protective clothing, isolation gowns, surgical gowns, and masks for civilian use in response to government and public expectations. However, launching this new type of business required a trade-off with the existing business and a careful allocation of resources, which brought many challenges. Firstly, time was pressing, and the task was substantial. Secondly, SMMG faced a lack of or limited resources for the new business venture, such as capital, human resources, plants, equipment, and industry experience. Third, SMMG did not have the necessary conditions and legal qualifications to produce medical protective clothing. Fourth, during the COVID-19 pandemic, the prices of all kinds of raw and auxiliary materials for epidemic prevention skyrocketed, and it was tremendously challenging to procure those materials. Fifth, the management system and mechanisms applicable during normal circumstances could no longer meet the business needs during the pandemic period. Sixth, surviving and thriving in a volatile economic environment requires enterprises to have high awareness and responsiveness to the changing business environment (Gölgeci et al., 2020). Entering those entirely new industries entailed significant investment and operational risks for SMMG. If the investments in those new areas fail and result in the loss of state-owned assets, the managers involved might face career and even legal risks. Therefore, it required a high level of commitment and responsibility from the managers.

However, after several months of practice, the results are generally satisfactory in today's view, although some issues were indeed left unresolved or not resolved to our satisfaction in

this trade-off process. For example, SMMG has experienced a sharp decline in clothing orders for the international market. It was estimated that in 2020, SMMG would only be able to fulfill two-thirds of its initial plan for the year. However, despite many difficulties, the company has managed to overcome numerous challenges by effectively weighing the trade-off between CSR and its business.

As of the end of August 2020, SMMG achieved a total profit of 23.84 million RMB, marking a 25.08% increase compared to the total profit of 19.06 million accumulated during the same period in 2019. It accounted for 72.24% of its annual target (33 million RMB) and exceeded its scheduled staged progress of the same year (66.67%) by 5.57%. Additionally, SMMG achieved an operating income of 2.348 billion RMB, representing a 15.99% increase over the cumulative operating income earned in the same period of 2019, 2.024 billion RMB. It accounted for 67.08% of the annual target (3.5 billion RMB) and slightly exceeded the scheduled staged progress of the same year (66.67%).

In addition, starting from the end of January 2020, with the all-out efforts of SMMG employees and the coordination and support of Wuliangye Group and government authorities, SMMG successfully met the requirements for producing medical protective clothing in only 12 days and obtained the temporary production license for medical protective clothing (Li & Dan, 2020, February 14). Moreover, through bold innovation, SMMG managed to recruit all the relevant professional talents required to produce protective clothing within a short period. Even more exciting was that the brand-new clean workshops for making medical protective clothing were completed at the end of June 2020 and successfully passed the acceptance inspection. They were scheduled to undergo the first production system certification review by the relevant authorities in October.

Furthermore, from February to March, when China was in urgent need of masks, SMMG temporarily switched its clothing production line to the production of masks for civilian use and successfully produced a total of 1.4 million masks that met the acceptance standards. Despite the soaring prices of raw and auxiliary materials, SMMG achieved a gross profit of about 1.4 million RMB, with approximately 1 RMB per mask. The specific circumstances that SMMG experienced and the observations during COVID-19 prompted the author to find out the behavior pattern of SOEs and the trade-off between CSR and economic business in the event of LSEs.

### **1.1.2 Theoretical background**

There has been academic research on the definition and characteristics of “emergencies” and

“crises”, and response to them. The *Cambridge English Dictionary* defines “emergency” as something dangerous or serious that happens suddenly or unexpectedly and requires prompt action to avoid harmful results. It defines “crisis” as a time of great disagreement, confusion, or suffering, or an extremely difficult or dangerous point in a situation.

Scholars have described the characteristics of extreme events and serious emergencies from different perspectives and studied governments’ response measures and behavior patterns during disasters and LSEs. Additionally, there have been studies on the behavior patterns of organizations in the face of events, crises, or disasters and the strategies and behavior patterns of enterprises in similar situations. Furthermore, there have been studies on the response mechanisms, marketing tactics, emergency plans, and influencing factors of crisis management in the face of emergencies from the perspective of enterprises (Anikina et al., 2019, May 26-30; Coombs & Laufer, 2018; Cwalina & Falkowski, 2018; H. Sun et al., 2021).

However, it was not until 2004 that “LSE”, as a specialized term, gradually appeared and gained attention in academic research, as evidenced by research through Google Scholar (<https://scholar.google.com>). Theoretical research on enterprises’ behavior patterns and strategies in the face of LSEs is still scarce. Nevertheless, the existing academic research on strategies in rapidly changing or turbulent environments and the research on CSR bring us great inspiration to explore CSR response, business innovation, and behavioral patterns of enterprises in the face of LSEs.

We also acknowledge that over the years, there have been many studies using market-based and resource-based strategic approaches such as SWOT analysis, the five forces model, Boston Matrix, SCP analysis paradigm, and Resource-Based View (RBV), as well as the dynamic strategic approach and the “asymmetric” capability approach that have evolved in recent years. Those studies serve as a foundation for our analysis of enterprises’ strategic management and high-level decision-making under LSEs.

## **1.2 Research problem and questions**

### **1.2.1 Research problem**

Since the outbreak of COVID-19, SOEs have been confronted with the dilemma of how to make a new trade-off between their CSR response and business innovation. However, this new trade-off may only sometimes lead to positive outcomes. Specifically, if the new trade-off and innovative approaches are adopted successfully, it could result in positive outcomes for

enterprises; however, if the new trade-off fails, enterprises might find themselves in an even more challenging situation. Additionally, if enterprises simply follow conventional practices and make trade-offs without adjustments or innovation, they may also encounter difficulties.

The top managers of SOEs also face a few challenges. Firstly, they usually have term limits and do not encounter specific problems repeatedly during their tenure. Therefore, when such problems occur, it is unlikely that there will be existing management experience to draw upon. Secondly, as their positions are supervised by the government to a great extent, they cannot outright reject the CSR behaviors suggested by the government. Consequently, they cannot completely avoid CSR behaviors' potential negative impact on enterprise performance. Therefore, under such conditions, they must take actions to offset or resolve the negative effects and strive to overcome the dilemma.

### **1.2.2 Research questions**

This study aims to delve into the dynamic relationship between CSR response and business innovation within SOEs under LSEs. Through an empirical study on SMMG, we attempt to comprehensively analyze the key drivers that influence the trade-off between CSR response and business innovation and examine their collective impact on enterprise performance. Specifically, we will focus on environmental uncertainty and investigate the intricate interplay between CSR activities and innovation strategies adopted by the target enterprise. This research will address the following intrinsically related questions:

First, what is corporate trade-off between CSR response and business innovation? This research question aims to provide a comprehensive understanding of the fundamental implications governing the equilibrium between CSR activities and innovation strategies. By examining relevant literature and theories, we aim to elucidate the core elements that contribute to the synergies and potential tensions between these two strategic choices.

Second, to what extent does environmental uncertainty drive the trade-off between CSR response and business innovation? Under the LSEs, what dimensions should we divide the environmental uncertainty into to fit the target enterprise's actual situation better? Answering this question will enable us to comprehend how external environmental factors influence an organization's decision-making process regarding CSR activities and innovation.

Third, how does the trade-off between CSR response and business innovation impact enterprises' economic and CSR performance? We will explore how the strategies interplay and influence financial outcomes, such as profitability and market value, and assess their impact on CSR performance metrics, such as reputation, stakeholder satisfaction, and social impact.

Fourth, to what extent does the trade-off between CSR response and business innovation mediate the relationship between environmental uncertainty and enterprise performance? This research question focuses on the mediating role of the trade-off between CSR response and business innovation in influencing enterprise performance outcomes, seeking to understand whether the trade-off acts as a mechanism through which environmental uncertainty impacts enterprise performance.

### **1.3 Research purpose**

Through an analysis of the target enterprise SMMG, this study attempts to find out the behavior pattern of SOEs in the face of LSEs, with a specific focus on the trade-off between CSR response and business innovation. This research aims to provide theoretical explanations and support for the decision-making, corporate institutions, mechanisms, and strategic thinking of the board of directors and senior management of SMMG. The specific research objectives are as follows:

Firstly, by collating and summarizing the relevant information of SMMG and comparing the situation before and after the outbreak of the LSE (COVID-19), we aim to identify the changes and the results caused by such changes.

Secondly, through a questionnaire survey and interviews with relevant organizations and personnel in the business chain involved in the above changes, we aim to identify SMMG's motivations behind the changes under the LSE (COVID-19).

Thirdly, using theoretical modeling methods, this study aims to find out whether SOEs, in the context of LSEs, take CSR response and corresponding business innovation actions and adjust incentive mechanisms to motivate the senior management and align them with shareholders' objectives, thereby maximizing corporate value.

Finally, the study aims to make theoretical contributions to research on the behavior patterns and strategic management of enterprises, especially SOEs, in the context of LSEs.

### **1.4 Expected contribution**

First, this thesis aims to address the dilemma faced by the subject company SMMG, an SOE, in deciding whether to make a new trade-off between CSR response and business innovation after the outbreak of COVID-19. It also seeks to resolve the incentive problem by identifying the conditions under which senior management of SOEs is motivated to make strategic choices



and take CSR and business innovation actions.

Secondly, for SOEs, mechanisms and motivation are fundamental issues to be addressed by senior management when making strategic choices and pursuing business innovation. By constructing a unique SCP model, this study offers insights into the behavior patterns of senior management in SOEs and serves as a reference for their decision-making process.

Thirdly, in this study, we introduce the “quasi-internal resource” concept as the bridge connecting corporate internal and external resources. It can make SOE managers understand that resources contributing to enterprise core competitiveness are not limited to the traditional “VRIN resources”, thereby helping SOEs to gain new competitiveness more effectively amid the backdrop of LSEs.

Finally, this study endeavors to make theoretical contributions to the research on the behavior patterns and strategic management of SOEs under the context of LSEs.

## **1.5 Research method and framework**

### **1.5.1 Research method**

The research methods applied in this thesis are as follows:

#### **A. Literature review**

Firstly, the literature review chapter comprehensively reviews the main viewpoints and theories pertaining to strategic analysis, positioning, and planning. The literature review involves a systematic examination and analysis of relevant academic works to identify key concepts, debates, and gaps in knowledge. Throughout the thesis (including the introduction and subsequent chapters), references to relevant literature will be cited, providing support to the arguments and viewpoints presented.

Academic journal databases such as Google Scholar, Scopus, Web of Science, Baidu Scholar, CNKI (China National Knowledge Infrastructure), Science Direct, and ResearchGate are utilized to access a wide range of scholarly studies and publications. Through these academic databases, we can access a diverse collection of peer-reviewed studies, conference documentations, and other scholarly works. This approach ensures that the thesis is built upon a solid foundation of existing knowledge and has incorporated the latest research findings and perspectives within the field.

#### **B. Empirical study**

The thesis focuses on SMMG’s response to the LSE (COVID-19) as the research object.

Following the principle of “from practice and back to practice,” in this study, we ensure that the research process is closely related to the management practices of the target enterprise, making the research logical and with practical value. The results were obtained through the collection, statistics, and analysis of primary data.

The research began with examining the resources possessed by SMMG, the changes in the environment and their influence, and the reactions, behaviors, and outcomes of different parties of SMMG when facing the LSE. Data and information were systematically collected, and in-depth analysis and discussion were conducted to explore the actual strategies, CSR response, and behavioral patterns of SMMG.

### **C. Qualitative analysis**

Due to its characteristics such as subjectivity, fuzzification, and interpretive nature, qualitative analysis was not widely accepted by academic circles until the 1998 Conference of the International Federation for Information Processing held in Philadelphia (Avison et al., 1999). It was recognized that qualitative and quantitative analysis were of equal value when used appropriately. One particular advantage of the qualitative approach is its ability to provide valuable insights into what has happened and what is happening in the organization. It can effectively link research and practice. Moreover, qualitative analysis can complement other research methods, making it a valuable approach for this study.

### **D. Quantitative analysis**

In this study, both qualitative and quantitative approaches are employed to comprehensively examine the target enterprise. Quantitative methods allow for a systematic and numerical examination of data, facilitating the identification of patterns, relationships, and trends. By employing statistical techniques and tools, researchers can analyze large datasets and draw objective conclusions based on numerical evidence. The quantitative analysis in this study involves a comparative analysis of information pertaining to the target enterprise.

This analysis can provide valuable insights and facilitate informed assessments of the company’s performance, financial outcomes, and CSR metrics. By quantifying relevant data, we can gain a deeper understanding of the trade-off between CSR response and business innovation within the target enterprise in the face of LSEs. Integrating different research methods can enhance the validity and reliability of the research findings and contribute to a more robust analysis of the subject matter.

### **E. Comparative analysis**

As stated above, a comparative analysis is utilized in this study for the horizontal or vertical comparison of relevant data. This approach can help us identify issues and evaluate the

company's management and business behavior performance. Comparative analysis usually involves systematically examining and comparing different variables, metrics, or indicators across different companies, time periods, or industries. By conducting such analyses, researchers can uncover patterns, differences, and areas of improvement or concern. This method allows for a more comprehensive understanding of the dynamics and performance of the target enterprise and provides insights into its management practices and business behaviors.

#### **F. In-depth interview**

The in-depth interview method is also applied in this study. This approach can facilitate discussions regarding the determination of variables, the relationships between the variables, the proposal of research models, and the design of questionnaire items. In-depth interviews involve conducting detailed, open-ended discussions with individuals who possess relevant knowledge or experience in the research domain. Such interviews allow for a deeper exploration of research topics and can provide valuable insights, perspectives, and expert opinions.

Through in-depth interviews, we can gather rich qualitative data that can inform the development and refinement of research models, questionnaire items, and variable determination. By engaging with knowledgeable participants, researchers can gain a better understanding of the complex dynamics and nuances associated with the research area. This method enables the researchers to capture in-depth insights and ensures that the research instruments and conceptual frameworks are well-informed and relevant to the research objectives.

Furthermore, the in-depth interview method allows us to explore any unexpected or emerging themes that may arise during the research process. During open-ended interviews, researchers can remain flexible in their approach and adapt their research focus based on the information gathered from participants. This flexibility allows for a more dynamic and responsive research process, leading to more comprehensive and nuanced findings.

#### **G. Questionnaire survey**

The questionnaire method is employed in this study to gather first-hand data from participants, which will then facilitate quantitative analysis. Questionnaire surveys involve systematically collecting data through structured questions that participants respond to. These questions are designed to elicit specific information and gather data on variables of interest. By administering questionnaires to a sample of participants, researchers can collect quantitative data that can be analyzed statistically.

The response obtained from the questionnaires can be quantified and processed to identify patterns, trends, and relationships among variables. This enables researchers to conduct

rigorous quantitative analysis, such as descriptive statistics, inferential statistics, and correlation analyses, depending on the research objectives. The questionnaire method allows for efficient data collection from a large number of participants, providing a broad perspective on the research topic. It enables researchers to obtain numerical data that can be analyzed quantitatively, complementing the insights gained from qualitative methods. This combination of methods enhances the robustness and comprehensiveness of the study's findings.

Using both the in-depth interview and the questionnaire method, this research can achieve a comprehensive and holistic understanding of the trade-off between CSR response and business innovation within the target enterprise facing LSEs. The qualitative insights from in-depth interviews will provide a nuanced exploration of the subject, while the quantitative data obtained from questionnaires will offer numerical evidence to support and validate the findings. This mixed-method approach ensures a well-rounded and rigorous investigation of the research topic and enhances the reliability and validity of the research results.

### **1.5.2 Research framework**

Taking into account that "environment" serves as a crucial keyword in this study and will feature prominently in numerous sections of this thesis, for the sake of facilitating variable configuration, model establishment, and reader comprehension, this study will treat the two English terms (environment and surroundings) corresponding to the Chinese term "环境 (Huanjing)" as having an identical meaning.

The research framework of this study is shown in the following figure (Figure 1.1). This thesis is composed of six chapters, specifically as follows:

Chapter 1 serves as the introduction, where the practical and theoretical background, problem statement, research questions, research purpose, expected contributions, research methods, and framework are elaborated upon. The main objectives of this chapter are to provide a context for the study, establish the significance of the research, and outline the overall structure and approach of the thesis. In the introduction, the practical background refers to the real-world context or industry setting that motivates the research. It highlights the importance and relevance of the study in addressing practical challenges or issues. The theoretical background, on the other hand, provides an overview of the relevant theories, concepts, and existing literature that form the foundation of the research.

The problem statement clearly articulates the specific problem or gap in knowledge that the research aims to address. It identifies the research questions that will guide the study and sets

the direction for the research. The research purpose explains the overarching goal or objective of the study, and the expected contributions highlight the potential theoretical, practical, or methodological contributions that the research is expected to make to the field. The research methods section outlines the approach, techniques, and procedures employed to collect and analyze data. This includes a description of the research design, data sources, data collection methods (such as surveys, interviews, or archival research), and data analysis techniques. Finally, the research framework provides an overview of the conceptual or theoretical framework that will guide the study. It also includes a graphical representation and description of the key concepts, variables, and their relationships.

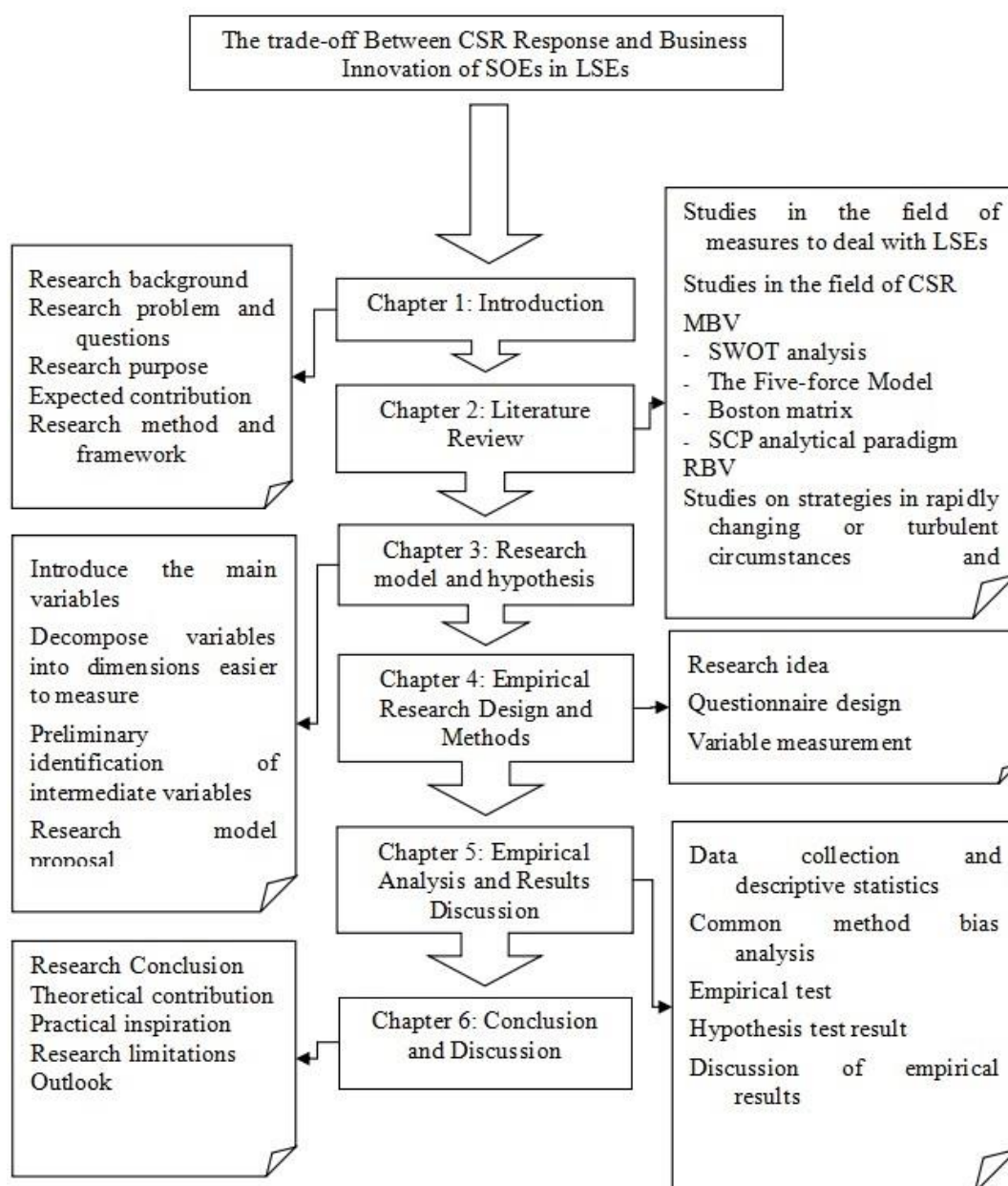


Figure 1.1: Research framework

Overall, Chapter 1 lays the foundation for the thesis by providing the necessary background,

research objectives, and methodological framework to guide the subsequent chapters of the thesis.

Chapter 2 is a literature review. The primary focus of this chapter is to review and synthesize the relevant viewpoints and existing literature. It aims to provide a comprehensive understanding of the research topic by examining prior studies and theories related to several key areas. Firstly, the literature review explores relevant studies on tactics for organizations at both non-corporate and corporate levels in response to LSEs. Next, the literature review encompasses research on Corporate Social Responsibility (CSR) and its impact on corporate strategy. It delves into the connections between CSR practices, organizational performance, stakeholder management, and reputation.

Additionally, the third major aspect reviews relevant literature in the field of corporate strategic management from three perspectives. First is the market-based view, followed by the resource-based view. It examines the theoretical foundations and key propositions of these perspectives, emphasizing their importance in understanding corporate performance, competitive advantage, and strategic decision-making. Following that, the literature review delves into strategic research conducted in rapidly changing or turbulent environmental conditions. It investigates how organizations adapt and respond to dynamic and uncertain environments, exploring concepts such as strategic agility, dynamic capabilities, and adaptive strategies.

Throughout the literature review, the aim is to identify theoretical support and innovation points within the existing viewpoints and research frameworks. This involves critically analyzing and synthesizing the literature and identifying gaps, inconsistencies, or areas that require further exploration. We will also discuss relevant conceptual frameworks or models proposed in prior research. By reviewing and organizing the existing literature, Chapter 2 establishes a solid foundation for the subsequent chapters of the thesis. It helps to position this study within the broader scholarly discourse, highlighting its theoretical contributions and novelties within the existing research frameworks.

In Chapter 3, the research model and hypotheses will be presented. This chapter primarily focuses on introducing the variables that are involved in the research. They include environmental variables, performance variables, and mediating variables that lie between them. Due to the complexity of directly measuring each variable, the applied approach is to decompose each variable into several dimensions or sub-components that are relatively easier to measure. The decomposition allows for a more nuanced and comprehensive analysis of the relationships and interactions between the variables.

In this chapter, hypotheses are proposed to articulate the potential relationships between the variables. These hypotheses are logical statements predicting the expected outcomes or associations between specific variables or dimensions. The hypotheses are grounded in the existing literature and theoretical frameworks and provide a theoretical foundation for the research model. Based on these hypotheses, a research model is developed in a structured manner. The research model visually represents the relationships and interactions between the variables, serving as a conceptual framework for the subsequent empirical analysis.

The research model provides a roadmap for understanding how the variables are interconnected and how they contribute to the research objectives. By establishing the research model and hypotheses, Chapter 3 sets the stage for the empirical study and analysis presented in the subsequent chapters. It outlines the logical framework for examining the relationships between the variables, guides the research process, and facilitates the interpretation of the findings.

In Chapter 4 of the thesis, the empirical research design and methods will be presented. This chapter primarily focuses on the practical aspects of the research, detailing the steps taken to collect and analyze data. The key components addressed in this chapter include the research idea, questionnaire design, variable measurement, questionnaire item development, pre-survey and questionnaire refinement, data analysis methods, data collection, and sample data analysis.

The description of the research idea provides a clear understanding of the objectives and scope of the empirical study. It explains the rationale behind the chosen research approach and how it aligns with the research objectives. The questionnaire design is outlined, including selecting relevant items and scales for measuring the variables of interest. The questionnaire design ensures that the measurement instruments are valid and reliable in capturing the intended constructs. Variable measurement is discussed, explaining the operationalization of the variables through appropriate measurement scales or techniques. This step ensures that the variables are accurately measured and aligned with the conceptual definitions.

This chapter will explain the process of questionnaire item development and detail how the test items are formulated based on the chosen measurement scales. This involves careful consideration of item wording, response formats, and the overall structure of the questionnaire. The pre-survey phase is described. It involves piloting the questionnaire with a small sample to assess its clarity, comprehensibility, and suitability. Based on the feedback received, necessary adjustments and refinements are made to improve the questionnaire's effectiveness. Data analysis methods are discussed, explaining the statistical techniques or analytical approaches employed to analyze the collected data. It includes descriptive statistics, correlation analysis,

regression analysis, and other methods relevant to the research objectives.

The data collection process is outlined, including the methods used to distribute and collect the questionnaires from the target participants. This involves online surveys, face-to-face interviews, and other relevant data collection methods. Sample data analysis is performed, analyzing the collected data to draw meaningful conclusions and insights. The results obtained inform the findings and contribute to addressing the research objectives. Ultimately, the formal version of the questionnaire is established, incorporating the refinements based on the pre-survey. This final version of the questionnaire is then ready for distribution to the intended sample. Chapter 4 provides a detailed account of the research design and methods, ensuring the systematic and rigorous execution of the empirical study.

In Chapter 5, the focus shifts to the empirical analysis and discussion of results. Through empirical tests and analyses, this chapter investigates various aspects of the research topic. One key area of investigation is the changes in the strategic management practice of the target SOE (SMMG) due to LSEs. This chapter explores how LSEs impact the external environment of SMMG and identifies any significant changer.

Furthermore, it explores the influence of these environmental changes on SMMG's CSR response and its trade-off with business innovation. It investigates how SMMG adapts its CSR practices to the changing environment and the potential trade-off between CSR and innovation activities. Additionally, the impact of environmental changes on enterprise performance is examined. The relationship between environmental changes and the performance of SMMG is analyzed, and whether environmental factors have positive or negative effects on the enterprise's performance is evaluated.

Moreover, the chapter also examines how the trade-off between CSR and business innovation mediates the relationship between environmental changes and enterprise performance. Through empirical tests and analyses, the results and findings are presented. The implications of these findings are also presented, providing an in-depth interpretation and discussion of the empirical results. Chapter 5 contributes to the overall understanding of the research topic by providing empirical evidence and insights derived from the collected data. The discussion of the results helps to answer the research questions and address the research objectives set out in Chapter 1.

In Chapter 6 of the thesis, the discussion and conclusion of the research findings are presented. This chapter serves as a culmination of the study and provides a comprehensive overview of the theoretical contributions, practical implications, limitations, and suggestions for future research. The theoretical contributions of the research will be discussed, highlighting



the novel insights, advancements, or extensions that the study has made to existing theories, concepts, or frameworks. This chapter emphasizes how the research findings contribute to the theoretical understanding of the research topic and potentially fill gaps in the existing literature.

The practical implications of the research will also be explored, discussing the practical relevance and applicability of the research findings to real-world contexts. This chapter will outline how the research outcomes can inform managerial decision-making, strategic planning, and policy formulation in relevant industries or organizations. It highlights the potential benefits or value practitioners can derive from the study. The research limitations will be acknowledged and discussed, objectively evaluating the study's constraints or shortcomings. It highlights the methodological limitations, data limitations, or constraints that may have influenced the research outcomes. Recognizing the limitations ensures a realistic interpretation and understanding of the research findings.

Finally, this chapter will conclude by offering insights and suggestions for future research. It identifies potential areas for further investigation, unresolved questions, or unexplored dimensions that could be addressed in subsequent studies. It encourages future researchers to build upon the current research to deepen the understanding of the research topic and expand the knowledge base. Chapter 6 serves as a reflective and forward-looking section, summarizing the key findings, highlighting the significance of the research, and providing a roadmap for future exploration. It offers closure to the thesis by discussing the broader implications of the research and setting the stage for future research endeavors.

[This page is deliberately left blank.]

## Chapter 2: Literature Review

Based on the research framework described, it can be seen that this thesis involves interdisciplinary research by integrating multiple research fields, including large-scale emergencies (LSEs), organizations' response to LSEs, and corporate social responsibility (CSR). Given the title of the thesis, it is clear that a literature review in both LSEs and CSR is necessary for a comprehensive understanding of the research topic. The literature review will help establish a theoretical foundation and contextualize the research within the relevant fields.

Furthermore, the sudden and significant impact of the COVID-19 outbreak in 2020 created a rapidly changing environment with drastic shifts in resources and conditions. In this context, the specific state-owned enterprise (SOE) under investigation in this research might have faced challenges in implementing subsequent innovative business strategies and supporting measures. Overcoming these challenges might require breaking through the constraints of existing strategic planning and business practices. Considering the dynamic nature of the environment and the need for adaptability, this research aims to explore how organizations, particularly the target SOE, could effectively respond to the changing landscape and navigate the challenges imposed by LSEs.

This may involve examining the strategic planning processes, resource allocation, innovation initiatives, and other factors that enable organizations to adapt and thrive in unexpected situations. The interdisciplinary nature of this research allows for a comprehensive exploration of the interplay between LSEs, strategic management practices, CSR, and the specific case of SOE. It will provide a broad perspective and offer insights into the complex dynamics and strategic decision-making processes in the face of large-scale changes and turbulence.

In addition to the literature review mentioned above, this thesis also includes a review of the literature on strategic management at the enterprise level and concrete measures at the micro level. This additional literature review aims to provide a comprehensive understanding of the strategic management practices employed by enterprises and the specific actions taken at the operational level to support strategic goals. The literature review on strategic management at the enterprise level involves exploring the theoretical frameworks, models, and concepts that guide strategic decision-making and execution within organizations. It helps establish a

foundation for understanding the strategic management process, including the formulation, implementation, and evaluation of strategies.

The literature review on concrete measures at the micro level delves into the specific actions, tactics, and practices organizations undertake to support their strategic objectives. This review focuses on the operational aspects of strategic management, covering topics such as resource allocation, performance management, innovation, and organizational design. To establish a connection between LSEs and strategic management, we will also examine relevant literature on rapidly changing or turbulent environments. This cross-disciplinary literature review explores how organizations navigate and adapt to dynamic and uncertain contexts, highlighting concepts such as strategic agility, dynamic capabilities, and resilience. By doing so, it helps establish a link between the macro-level impacts of LSEs and the strategic management practices employed by organizations to respond to and thrive in turbulent environments.

Through the additional literature reviews mentioned above, we aim to provide a comprehensive understanding of the research topic by integrating insights from multiple levels of analysis and bridging different fields of study. This interdisciplinary approach can enhance the richness and depth of the research, allowing for a more holistic examination of the strategic management challenges and opportunities arising from LSEs.

## **2.1 Studies on measures in response to LSEs**

In recent years, various crises, including LSEs, have occurred. Governments, enterprises, and other non-governmental organizations have implemented various measures to deal with these crises, and scholars have conducted research on crisis management strategies. The government's response primarily involve personnel evacuation, rescue operations, medical treatment, emergency supply support, logistics and transportation coordination, and establishing emergency mechanisms. H. Sun et al. (2021) defined LSEs as major events that occur unexpectedly due to certain inevitable factors, resulting in significant harm, loss, or impact on society and requiring immediate action to address.

McPhillips et al. (2018) conducted a review of studies on extreme events. They found that while it was easy to identify such events, defining them posed challenges. Specifically, 87% of the scholars provided a definition of extreme events, with 27% being general and 73% specific. Moreover, the definition of extreme events varies widely across disciplines. Consequently, the authors argued that it was inappropriate to define extreme events based solely on the impacts that occurred or using a single, uniform threshold value. Instead, they suggested that different

disciplines and fields should define extreme events differently. According to McPhillips et al., an appropriate definition of extreme events should encompass essential elements, such as the type of event, the social-ecological-technological system (SETS) that might be affected, and the threshold used to characterize the event as extreme. Furthermore, the definition should also include the rationale behind selecting the specific threshold.

The emergency possesses three fundamental characteristics: harm, urgency, and uncertainty (X. F. Li, 2018; Rodríguez et al., 2018). Research has pointed out that harm primarily encompasses four aspects: human, economic, environmental, and reputational. Urgency is mainly manifested in the need to control the situation, protect people's lives and property, restore infrastructure, and promptly respond to the evolving circumstances. The uncertainty component mainly consists of the uncertainty regarding the emergency's information, its prospects, and uncertainties caused by the management entity. All three aspects serve as a test of the emergency management entity's capabilities. The key to effectively managing emergencies lies in enhancing the emergency management entity's comprehensive management quality and capabilities (X. F. Li, 2018).

### **2.1.1 From a non-corporate perspective**

Crisis management was defined as a series of efforts aimed at minimizing the impact of urgent threats. They established a research framework for crisis approach, pointing out that crisis managers included both strategic (decision-making) level and more operational level personnel. Crisis management should vary according to the "knowability" of the situation. Effective and legitimate crisis management could be enhanced by the performance of several management functions: 1) Early detection, 2) sense making (i.e., consensus building), 3) making critical decisions, 4) crisis coordination, 5) meaning making, 6) accounting for performance, and 7) learning lessons (Rodríguez et al., 2018).

Stasavage (2020) believed that democratic states and authoritarian states had their respective advantages and disadvantages in dealing with LSEs. In autocracies, centralization of power allows for decisive actions but could also suppress information and ignore problems. In democracies, greater transparency makes it hard to cover up a threat, but the decentralization of power, which is inherent to democracies, could lead to a slow and potentially ineffective response to LSEs or even an inability to cope with LSEs; still, the high transparency of society makes it difficult to conceal and suppress information. Stasavage offered three options for democracies to act more decisively in the face of LSEs: 1) constitutional dictatorship under a state of emergency, 2) delegate emergency power to localities, or 3) build central state capacity

and limit emergency power. At the same time, he pointed out that the third option was the safest and most effective tactic.

Similarly, Carlson et al. (2018) also emphasized the importance of information transparency in government response to crisis events and pointed out that the stability of policies, the adequacy of communication, the trust of citizens, and external accountability mechanisms were also crucial to the management effectiveness of the government in dealing with crisis events. Governance institutions must increase trust in policy and reduce reliance on rumors to bolster policy compliance and, in turn, boost their own management capacities. X. F. Li (2018) also pointed out that news media should be fully used to actively report and post messages in public. H. Sun et al. (2021) proposed that in LSEs, capacity sharing could be carried out among different organizations to make up for their shortcomings. This approach could significantly reduce the risk of insufficient capacity and resources.

Howitt et al. (2009) believed that emergencies could be generally divided into two modes: 1) Model R (routine emergencies), which means that when a particular type of emergency happened frequently in places with resources to organize and prepare, it would become a routine event. 2) Model C (Crises) refers to an emergency situation of a specific one that had never occurred or of an unusual scale, or with unknown causes or an atypical combination of causes, making people face new challenges, and the facts and effects of such challenges could not be quickly understood and digested when the crisis occurred.

There are situations in Model C that are called “emergency crises.” They are crises that did not happen suddenly, but festered and grew in more ordinary circumstances that often masked their appearance and were invisible or misjudged. For example, severe acute respiratory syndrome (SARS) occurred in China from 2002 to 2003, and the coronavirus disease (COVID-19) ravaged the world from 2019 to 2021. This kind of emergency crisis is particularly difficult and challenging for people.

These authors pointed out that there were different response modes to different emergency modes. All emergencies involve a high level of risk and significant uncertainty. They almost always involve rapidly evolving events and correspondingly impose significant time pressures on decision-makers. They are highly “contingent”, and the final outcome depends largely on the actions taken by the various stakeholders affected by the emergency. An organization coping with an emergency must be able to choose a more favorable model for responding to the economic situation that is occurring. They also emphasized that both Model R and Model C were essential for better emergency response management and that response organizations must develop the ability to operate and switch between these two modes.

They highlighted that facing an emergency, the signs of an effective response were: (1) To have the capability to carry on the reasonable positioning of the situation and then creatively design new methods to cope with the emergency rapidly, and the capability to make use of different disciplines across departments and creatively put them together, producing new but untested solutions; (2) To prepare plans based on capability (rather than threat) beforehand; (3) To have the capability to reform the organization as needed.

Shi (2009) pointed out that the statistics, distribution, and recovery of emergency supplies needed were a process of mutual coordination, influence, and cohesion based on the information of material needs. Emergency supplies information platform and communication platform are the key components of emergency supplies support. The blindness, disorder, and chaos of emergency supplies scheduling and recovery could be improved through the coordination of the above three processes and the combination with the SMS platform, which has the advantages of instant messaging.

Tang (2009) established a multi-objective model that simulates the distribution of the needed emergency supplies among manufacturers in LSEs when the need for emergency supplies exceeds the supply. Taking the manufacturer's capacity, cost, and required production time as the constraints, with minimizing the emergency response time and emergency cost as the goals, it seeks quick and economical production and distribution of emergency supplies (especially the part of output gaps).

L. Chen and Wang (2010) believed that timely and efficient dispatch of emergency resources was crucial to the effectiveness of emergency response. They established a "satisfaction"-based optimal dispatch model of emergency materials to simulate the use of limited emergency relief materials with maximum efficiency at the initial stage of rescue. Gong (2010) pointed out the importance of psychological intervention in emergencies and believed that professional psychological teams should be established and trained to screen target groups, understand their psychological response, formulate and implement intervention plans, and track and evaluate the intervention effect.

Way and Yuan (2014) built a context-aware Multi-party Coordination System (CAMPCS) framework for large-scale complex event processing, extending the concept of dynamic decision making and the capabilities of dynamic decision support systems in response to large and complex events. Three new components in CAMPCS were emphasized: (1) context awareness, (2) multi-party relationship, and (3) task-based coordination. Xiao et al. (2018) believed that in LSEs, the logistics distribution system based on the hub-and-spoke network model was a very effective network structure. It has the characteristics of scale economy, can

give full play to the efficiency of transportation means and transportation network, and can help achieve the purpose of emergency support in LSEs. Government should systematically sort out the weaknesses of the national reserve system, build resilience in the long term, improve the reserve efficiency, optimize the production capacity layout of key materials, and improve the unified emergency supplies support system (J. Wang & Wang, 2020; Zhan & Chen, 2021).

Qi (2020) also proposed that reserve categories should be improved in their classification, grading, quality, and efficiency; the reserve structure should be optimized by combining government and society, central and local governments, physical objects and production capacity; guarantee of five aspects, namely, the system, organization, facilities, funds, and information, should be strengthened. Government and non-enterprise organizations' behaviors and outcomes in LSEs create the external market and environmental conditions for enterprises' behavior patterns in LSEs. There is plenty of literature on the behavior pattern of government in LSEs or crises, covering fields such as personnel evacuation, rescue, medical treatment, emergency supplies support and logistics transportation, legislation, emergency mechanism establishment, infrastructure construction, and information system establishment.

### **2.1.2 From an enterprise perspective**

Very little literature is devoted to enterprises' behavior patterns in LSEs or crises. One reason might be that, as the scholars reviewed above pointed out, although there are many stakeholders in the response to LSEs, the leading role is the government. On the other hand, most scholars focus their research on ordinary emergencies or crises rather than LSEs.

Coombs and Laufer (2018) divided crisis management into three stages: the pre-crisis stage (prevention and preparation), the crisis stage (response), and the post-crisis stage (learning and revision). In the pre-crisis phase, enterprises should focus on how to communicate with stakeholders to reduce the risk of a crisis. During the crisis stage, enterprises should seek the support of a reliable third party when communicating messages. In the post-crisis phase, businesses should focus on actions to promote post-crisis learning. Z. Peng et al. (2003) pointed out that to respond to emergencies quickly and accurately, enterprises must establish a set of response mechanisms to respond to emergencies.

On the one hand, a dedicated organization should be set up to deal with emergencies; on the other hand, enterprises should strengthen the education and training of employees, especially executives and marketing personnel, to improve their awareness of responding to emergencies. In the event of an external emergency, an enterprise should adjust its marketing



strategy from the aspects of Product, Price, Promotion, and Place (4P) under the guidance of its own enterprise strategy and marketing strategy.

Graham and Johns (2012) pointed out that in the case of enterprise-level emergencies, since executives simply could not “improvise” at all when a crisis stroke, it would be wise for companies to have deliberate contingency plans before a crisis stroke. A deliberate plan to cope with a crisis is good for a company’s reputation, can drive leaders to act in an orderly way, and can get them to focus on the most urgent priorities.

According to Graham and Johns, a company’s emergency planning should follow six principles: (1) identify the decision makers on the spot, (2) identify the disaster work from the administrative level down to the specific individuals, (3) “backup plan” and redundant resources prepared, (4) abandon or simplify the standard policies under internal control, (5) establish an emergency response organization parallel to the existing organization of the enterprise, (6) access to external organizations and capabilities that may be available during an emergency. At the same time, they pointed out six barriers to contingency planning: (1) hollow plan, (2) ineffective assumptions, (3) normalcy cognitive bias, (4) misinformation, (5) missing emergency response plan template, and (6) failing in plan updating.

In the context of economic crisis, Aboudzadeh et al. (2014) studied the influence of job satisfaction, income increase, cost reduction, and strategy change on crisis management through an empirical investigation of specific projects in Iran. The study confirmed that crisis management is positively associated with three factors, namely increased income, cost reduction, and strategy change, but not with job satisfaction. They pointed out that academic discussions and practical solutions were essential to prepare for crisis planning and strategic management processes, and that action plans could help managers assess dynamics in the business environment and familiarize them with similar changes. If crisis planning and management are properly performed, crises are not always a threat and may be translated into positive consequences.

### **2.1.3 Section summary**

There is very little literature devoted to discussing and studying the behavior patterns in LSEs or crises from the perspective of enterprises. On the one hand, as the scholars reviewed above pointed out, in response to LSEs, although there are a large number of stakeholders, the leading role is the government. On the other hand, most scholars focus their research on ordinary emergencies or crises rather than LSEs. Once enterprises take the main role in response to LSEs, the non-enterprise organizations’ coping tactics (especially the government’s) have a certain

guiding significance. Therefore, in this thesis, we reviewed relevant literature on how non-enterprise organizations (especially governments) respond to LSEs.

Literature review of non-enterprise organizations mainly involves the characteristics of emergency management in some major countries, the classification of emergency events, the establishment of crisis management mechanisms and early warning systems, and rescue model, among others. Studies such as those on establishing crisis management mechanisms have a guiding significance for enterprises dealing with LSEs. Although literature on the enterprise level mainly addresses how enterprises cope with ordinary incidents rather than LSEs like COVID-19, research on how to establish response mechanisms, how to make adjustments from specific business aspects, how to prepare emergency plans in advance, and principles to deal with emergencies serve as meaningful references for our research.

## **2.2 Relevant studies in the field of CSR**

### **2.2.1 The concept and development history of CSR**

The concept of Corporate Social Responsibility (CSR) was put forward nearly a century ago, but more consensus has yet to be reached regarding its concept. CSR has different meanings at different times, and different countries and regions have diversified focuses. For example, Chinese consumers are more concerned about enterprises' production of safe and high-quality products for the society, Germany is more concerned about enterprises providing more stable employment for the society, and South Africa is more concerned about enterprises' responsibility in health care and education (Weber & Wasieleski, 2018; Yevdokimova et al., 2019).

According to Bowen (1953), businessmen, as the implementers of CSR, should align with relevant policies according to the goals and values of the society, make corresponding decisions, and take specific actions and obligations in line with the ideal. The subjects undertaking social responsibility are businesses.

Bowen proposed that the businesses offered two types of products. The dominant type is products and services such as aircraft, clothing, Coca-Cola, and audit; the implicit type is the conditions for producing these products and services, such as salary benefits, working conditions, environmental protection, advertising, sales, financial status, and community relationships. He argued that CSR was based on a "voluntary" rather than a statutory obligation, though he later revised it himself. Twenty-five years later, he pointed out that the voluntary

principle could not effectively ensure that enterprises fulfill their social responsibilities, and CSR should be based on the social control of enterprises.

However, even in the 21st century, some scholars still argue that social responsibility is based on the “voluntary” actions of companies. According to Polish scholars Macuda et al. (2015), CSR means that companies “voluntarily” take social, moral, and ecological aspects into account in business operations, build long-term strategic ideas, and take responsibility for their decisions and activities. They believed that CSR affected the local community and the environment and triggered a dialogue between internal and external stakeholders.

Many scholars have provided their definitions of CSR. According to Davis (1960), CSR means businessmen’s decisions and actions taken for reasons at least partially beyond the enterprise’s direct economic or technological interest. This included several meanings: one is that the rationale of enterprises’ social responsibility behaviors includes direct economic or technological benefits; the other is that part of enterprises’ social responsibility is not triggered by direct economic or technological benefits. Davis also argued that “social responsibility” referred to socio-economy and socio-human’s obligations towards others, and that their responsibilities and powers coexisted and were proportionate or positively correlated.

He further pointed out that “business is business, and all act of social responsibility crosses the line”, and “companies should be godfathers of society because they have huge economic resources” were both wrong. He stressed that companies had both economic need and “human relationships” need, which is based on psycho-social need. Both needs could affect their decisions, and entrepreneurs’ primary social responsibility is to find feasible solutions regarding the nature and scope of their social responsibility. The European Commission described CSR as companies voluntarily deciding to contribute to a better society and a cleaner environment by integrating social and environmental concerns in their business operations and their interaction with their stakeholders (COM, 2001).

According to Hopkins (2005), CSR concerns should be ethical or socially responsible to the enterprise’s stakeholders inside and outside the enterprise. The purpose of fulfilling social responsibility is to create a higher standard of living for internal and external stakeholders of the enterprise while maintaining the enterprise’s profitability. This author also pointed out that it was difficult to define ethics and stakeholders. Still, at least stakeholders should include internal shareholders, investors (including institutions and individuals), board of directors, managers and employees, external suppliers, customers, natural environment, government, and local communities. Hopkins also described the concept framework of CSR in detail from three aspects: the social responsibility principle, social response process, and social responsibility

consequence.

Since the concept was put forward for decades, the idea of CSR has been developing continuously. From the 1930s, the prevailing view of CSR slowly changed to the idea that companies should be accountable to all stakeholders, including shareholders, employees, partners, and governments. Especially in the 1990s, with the acceleration of globalization, the global environment, including social, market, and ecological environments, changed significantly. With the aggravation of the gap between the rich and the poor, the intensification of international competition, the destruction of natural resources, and the deterioration of the ecological environment, people became increasingly dissatisfied with the enterprises' excessive emphasis on maximizing shareholders' interests.

Therefore in the 1990s, the Code of Practice Campaign came into being in Western developed countries (X. Zhou, 2012). The core of this campaign was to require multinational corporations to assume social responsibilities in operation and market competition, take into account the basic rights of workers, and fulfill social obligations such as environmental protection while pursuing profit maximization. This campaign continued into the early 21st century, with the participation of a large number of well-known multinational corporations, which promoted the trend of corporate fulfilling their CSR.

After nearly a century of development, the academic circles' understanding of CSR is constantly enriched. Nowadays, CSR has evolved from simple philanthropy to a more theoretical concept, a new corporate philosophy that considers all stakeholders' interests (Diez-Cañamero et al., 2020). Moreover, in recent years, the concept of CSR has shown signs of integrative development with the concept of sustainable development (SD), and research on CSR and SD has grown exponentially in the past 20 years (Meseguer-Sánchez et al., 2021). The proposals of the concept of CSR, the relevant viewpoints, and the development history of the definition of CSR in academic circles are shown in Table 2.1.

Table 2.1: Summary of CSR concepts and development history

Scholar	Year	Viewpoint
Weber & Wasieleski	2018	The concept of “corporate social responsibility” was first put forward. Businessmen are the implementers of social responsibility. According to the goals and values of the society, they approach relevant policies, make corresponding decisions, and take ideal
Bowen	1953	concrete actions and obligations. The subject of liability that undertakes social responsibility is the companies themselves. Their social responsibility is based on a “voluntary” rather than a statutory obligation.

Davis	1960	CSR means businessmen's decisions and actions taken for reasons at least partially beyond the firm's direct economic or technological interest. CSR refers to the obligations towards others that socioeconomic and sociohuman have, and that their responsibilities and powers coexist and are proportionate or positively correlated.
COM	2001	CSR means companies deciding voluntarily to contribute to a better society and a cleaner environment by integrating social and environmental concerns in their business operations and in their interaction with their stakeholders.
Hopkins	2005	CSR concerns should be ethical or socially responsible to the company's stakeholders inside and outside the companies. The purpose of fulfilling social responsibility is to create a higher standard of living for internal and external stakeholders of the companies, while maintaining the profitability of the companies.
Zhou	2012	The Code of Practice Campaign in 1990s required multinational corporations to assume social responsibilities in operation and market competition, take into account the basic rights of workers, and fulfill social obligations.
Macuda et al.	2015	CSR means that companies "voluntarily" take social, moral, and ecological aspects into account in business operations, build long-term strategic ideas, and take responsibility for the decisions and activities they make. CSR affects the local community and the environment and triggers a dialogue between internal and external stakeholders.
Diez-Cañamero et al.	2020	CSR has evolved from simple philanthropy to a more theoretical concept, which is a new corporate philosophy that takes into account the interests of all stakeholders.
Meseguer-Sánchez et al.	2021	The concept of CSR has shown signs of integrative development with the concept of sustainable development (SD), and research on CSR and SD has grown exponentially in the past 20 years.

Source: Weber & Wasieleski (2018), Bowen (1953), Davis (1960), COM (2001), Hopkins. (2005), Zhou (2012), Macuda et al. (2015), Diez-Cañamero et al. (2020) and Meseguer-Sánchez et al. (2021).

To sum up, from before the birth of the concept of CSR till now, there have been two extremes in academic circles about whether enterprises should undertake social responsibility. One is that enterprises should not bear social responsibility at all but only focus on economic responsibility. The other is that enterprises should assume the role of godfather of society. The definition of CSR has yet to reach a consensus. Still, most scholars' views fall between the above two extremes, only differing in the proportion of economic and non-economic responsibility, the category or nature of non-economic responsibility, and whether it is voluntary.

For example, the social responsibility of Chinese tobacco companies is mainly reflected in taxes, which are known to finance most of China's military spending. However, in China's textile raw materials industry, the most important part of social responsibility is clearly not paying taxes. We hold that since the birth of enterprises, no enterprise does not bear any social responsibility, even for "one-person limited liability company". As we all know, a company, in the first place, must operate legally within the legal framework of the country or region where it is located, which means it must fulfill its legal responsibilities. Otherwise, the company and

its shareholders or managers would be subject to legal sanctions. In the second place, it has to hire somebody to deal with its business. Therefore, it more or less undertakes the social responsibility of reducing the unemployment rate. Even if it is a one-person limited liability company, it will at least solve the employment problem of the shareholder. Thirdly, as Smith (2023) pointed out, the unemployment of many thousands of people would lead to disorder. While an enterprise makes a profit itself, it also gives constant employment to a number of industrious people, thus benefiting the country. In other words, since reducing unemployment directly and positively affects social stability, any enterprise naturally bears the responsibility for maintaining social stability. Fourthly, Samuelson et al. (2021) pointed out that gross domestic product (GDP) = investment (I) + household consumption (C) + government purchase (G) + net export (X). Since every enterprise must pay salaries to its employees, the salaries directly constitute the employees' payment capacity as consumers, and the payment capacity makes a social contribution to "household consumption" (C), one of the three essential parts of the country's GDP. Fifthly, every business, even a loss-making one, pays taxes more or less. Paying taxes by the law not only means that enterprises are fulfilling their legal responsibilities but also means that they are contributing to the government's ability to purchase services and products. Such capacity to pay makes a social contribution to the "government purchase" (G), an integral part of the country's GDP.

To sum up, the review of the concept and development history of CSR has a clear guiding significance for this thesis, which focuses on the trade-off between CSR response and business innovation of SMMG, the subject of the study.

## **2.2.2 The measurement of CSR**

### **2.2.2.1 Exponential method**

Regarding the measurement of CSR, index systems such as Dow Jones Sustainability Index (DJSI) (Schmutz et al., 2020), the Accountability 1000 Series (AA1000S), Social Accountability 8000 (SA8000) (Lozano, 2020), and Amnesty International Human Rights Guidelines for Companies (Macintyre, 2020; Muchlinski, 2021) have been put forward to quantify the performance of CSR. However, most of the information was based on weak nominal or, at best, ordinal data, which made these attempts appear weak. This kind of method is called the exponential method in academic circles. It usually uses the scores or rankings of various indexes to measure or compare enterprises' CSR performance and sustainable development status from the perspectives of stakeholders (such as employees, consumers, and

communities) (Currás-Pérez et al., 2018), the environment (Martini, 2021), and business ethics (Brunk & Boer, 2020; Ferrella et al., 2019).

The Milton Moskowitz ranking is based on the Reputation Index or content analysis to evaluate and rank enterprises from multiple dimensions of CSR, such as employee, consumer, and community. The downside of the Reputation Index is that the rankings are highly subjective, including three categories: outstanding, honorable mention, and worst. There may be significant variation among different observers, making it difficult to measure CSR adequately with this method (Barauskaite & Streimikiene, 2021; Özbay & Adıgüzel, 2019).

The Dominion 400 Index (KLD400) is also commonly used to measure CSR. It is based on the social performance attributes consistently rated by 8 KLD in the S&P 500, such as employee relations, environment, diversity, product, and community relations. These attributes are assigned different weights, and the enterprise's CSR performance is assessed by the weighted mean of the CSR scores (Chhetri & Sharma, 2022; Ghoul & Karoui, 2022; Zavyalova & Popkova, 2022).

Although the exponential method has been adopted by a large number of scholars to measure CSR, its limitations are also evident. No index has been used consistently by scholars, and the indexes are highly subjective. Different indicators reflect different issues: some focus on the employees, some on the environment, and others on the relationship with other stakeholders. Regional and industry differences are difficult to address, and the accuracy with which indicators reflect reality is also controversial.

#### **2.2.2.2 Content analysis method**

Besides the Reputation Index, the Milton Moskowitz ranking can also use content analysis to analyze, evaluate, and rank multiple dimensions of CSR. Over the years, corporate self-disclosure reports have been the primary source of information for content analysis in both public and private companies, either in response to government initiatives or due to mandatory disclosure by regulations. More and more enterprises disclose their social responsibility performance information to the society using suitable models according to their needs. The most common forms of self-disclosure reports are periodic reports (such as annual reports), CSR reports, and sustainable development (SD) reports (Christensen et al., 2021; Gillan & Koch, 2021).

Then, relevant institutions and scholars would collate and analyze the information disclosed in public companies' annual reports, CSR reports, and SD reports and construct disclosure scales. By analyzing public companies' social response and its dimensions, and the relationship

between social participation and corporate financial performance, they design scoring systems and draw conclusions related to CSR, for example, whether the CSR behaviors of the companies contribute to their financial performance, community relationship, and consumer recognition (Jang & Ardichvili, 2019; Lubis et al., 2019; Torelli et al., 2020). This method can be called the content analysis method.

Meng et al. (2018) proposed a comprehensive corporate social responsibility model, that is, a “four-in-one” model involving responsibility management, economic responsibility, social responsibility, and environmental responsibility. With CSR reports, annual reports, and official website information as the primary information sources, they constructed a sector-specific social responsibility evaluation index system for evaluating the social responsibility management system construction status and social responsibility information disclosure level of China’s top 100 enterprises.

It can be seen that this method has a certain objectivity because the used reports are subject to audit and evaluation before disclosure (Gonçalves et al., 2020). However, there may be some biases in such information and data, such as exaggerated information. At the same time, it may also have limitations of incomplete or discontinuous information. Moreover, the individual differences and preferences of enterprises (or their managers) and scholars may make it difficult to standardize and unify the research model using this method.

### **2.2.2.3 Scale survey method**

There is a third type of method, namely the scale survey method. The classic Carroll’s four-dimension pyramid framework is often used to assess CSR and SD (Jarkovská, 2020; Junior et al., 2023). The four layers of the pyramid, from the bottom to the top, are economic, legal, moral, and charitable (or discretionary) responsibilities. Following Carroll’s four-dimension pyramid model, Meynhardt and Gomez (2019) developed an alternative method based on the concept of public value, integrating the micro basis of psychological research into basic human needs. It can occasionally adapt to different cultural contexts because it allows for adaptive internal reordering.

For another example, Weber and Wasieleski (2018) developed a multi-step measurement model, the “Corporate Social Responsibility Influence Model”, which measures the influence of corporate social responsibility activities on enterprises from the perspective of enterprises. The model divides the business benefits of CSR into five categories: “positive influence on corporate image and reputation”, “positive influence on employee motivation, retention, and recruitment”, “cost savings”, “increase in income by higher sales and market share”, and “risk



management and risk reduction for CSR”.

Some of the benefits are monetized and some are non-monetized (especially for qualitative variables). They are all incorporated into the model to ensure adequate monitoring. The model not only evaluates the added value of corporate social responsibility but also continuously evaluates and monitors the correlation between KPIs, qualitative indicators, and corporate strategy. The model was applied to Philips’ CSR program, and the conclusion was that “the CSR program helped Philips improve the relationship with stakeholders in direct transactions, such as employees, customers and business partners” and “the CSR program successfully promoted the realization of Philips’ charity goals”.

To a large extent, this method solved many problems in CSR measurement by using quantitative indicators, but it is time-consuming, labor-consuming, and with strong subjectivity. The three CSR measurement methods above could be mixed and matched to complement each other’s strengths (Chhetri & Sharma, 2022; Jang & Ardichvili, 2019; Meng et al., 2018). However, they have different focuses. Some tend to measure the overall CSR or corporate financial performance (CFP) situation of the enterprises in the market, some focus on the status of a single enterprise, and some focus on measuring a single enterprise’s CSR dimension. There is no unified pattern.

### **2.2.3 The relationship between CSR and CFP**

However, there are divergences in academic circles on whether CSR fulfillment will bring positive economic performance. Scholars’ views on the relationship between CSR and economic performance roughly fall into three categories.

#### **2.2.3.1 Positive correlation**

The first kind of view holds that there is a positive correlation between enterprises’ social responsibility fulfillment and the economic performance; that is, enterprises that undertake more social responsibilities have better economic performance. Walker et al. (2019) argued that CSR behavior was positively correlated with financial performance in planned economies. Similarly, Kao et al. (2018) believed that in China’s planned economy, CSR behaviors of non-SOEs were positively correlated with financial performance.

According to the research of Hasanudin et al. (2019), CSR has a positive impact on corporate reputation; it also has a positive impact on corporate financial performance (CFP) indirectly through the intermediary variables “corporate reputation” and “double-loop learning”. That is, CSR activities, supported by business interests such as corporate reputation and double-

loop learning, positively impact CFP.

S. J. Cho et al. (2019) from South Korea analyzed the relationship between CSR performance and financial performance by taking 191 public companies on the Korea Stock Exchange as samples. The results showed that although CSR activities positively impacted financial performance, not all CSR activities had a statistically significant effect on financial performance. Therefore, companies should focus on those CSR activities that showed significant effect to ensure the efficiency and effectiveness of their corporate activities.

H. Y. Ali et al. (2018) believed that CSR arose from enterprises' social pressure or economic benefits and was a core value contributing to sustainable development. The study on 229 public companies on Pakistan Stock Exchange indicated that corporate image and customer satisfaction played a partial mediating role in the relationship between CSR and financial performance. CSR could build a positive image among stakeholders, reduce the overall cost, and significantly positively affect the enterprise's financial performance (H. Y. Ali et al., 2020).

Through a study of data from non-financial companies listed on the Pakistan Stock Exchange, Butt et al. (2020) showed that there was a significant positive correlation between CSR and enterprise performance. For CSR, they mainly selected the dimensions of donation, education, and community development, and for corporate value, they selected the return on investment and Tobin's Q value. However, when corporate governance was used as a moderator, the interaction between CSR and corporate value weakened. Relevant views on the positive correlation between CSR and CFP are shown in Table 2.2.

Table 2.2: Summary of positive correlation between CSR and CFP

Scholar	Year	Main idea
Kao et al.	2018	In China, the CSR behavior of non-SOEs was positively correlated with CFP.
Walker et al.	2019	CSR behavior was positively correlated with CFP in planned economies.
Hasanudin et al.	2019	CSR activities, supported by business interests such as corporate reputation and double-loop learning, have a positive effect on CFP.
Cho et al.	2019	Some CSR activities had a positive effect on CFP, but not all.
Ali et al.	2018, 2020	CSR could build a positive image among stakeholders and reduce the overall cost. It had a significant positive effect on CFP.
Butt et al.	2020	There was a significant positive correlation between CSR and CFP. When corporate governance was used as a moderator, the interaction between CSR and corporate value weakened.

Source: Kao et al. (2018), Walker et al. (2019), Hasanudin et al. (2019), Cho et al. (2019), Ali et al. (2018, 2020), and Butt et al. (2020).

### 2.2.3.2 Negative correlation

The second type of view holds that there is a negative correlation between enterprises' social responsibility fulfillment and the economic performance; that is, enterprises that undertake

more social responsibilities have lower economic performance. Zhu and Yang (2009)'s empirical research on 691 A-share listed companies in Shanghai Stock Exchange (SSE) indicated that corporate responsibilities to employees and suppliers were significantly negatively associated with Return on Assets (ROA). Instead of talking about CSR in vague terms, they describe CSR as responsibilities to individual stakeholders, such as employees, suppliers, and public utilities.

Walker et al. (2019) argued that CSR behavior was negatively correlated with financial performance in liberal market economies. On the contrary, Kao et al. (2018) believed that in China's planned economy, CSR behavior of SOEs was negatively correlated with financial performance because the managers of SOEs were appointed by the government or government-authorized agencies (Giosi & Caiffa, 2021) and thus had a strong subjective motivation to over-invest in CSR behavior to better serve the national interest and ensure the survival of SOEs.

Parvin et al. (2020) reviewed the existing literature on the relationship between earnings management and CSR in different countries and showed that there might be a negative correlation between CSR and earnings management practices. This relationship depends on causality, information asymmetry, how resources are used, awareness of environmental issues and ethical issues, tax avoidance tendencies, corporate governance practices, corporate nature, political environment, opportunistic incentives, stakeholder capital, and manager psychology. Relevant views on the negative correlation between CSR and CFP are shown in Table 2.3.

Table 2.3: Summary of negative correlation between CSR and CFP

Scholar	Time	Main idea
Zhu & Yang	2009	Research on hundreds of public companies in SSE showed that there was a significant negative correlation between corporate responsibilities to employees and suppliers and ROA.
Kao et al.	2018	In China, the CSR behavior of SOEs was negatively correlated with CFP.
Walker et al.	2019	CSR behavior was negatively correlated with CFP in liberal market economies.
Parvin et al.	2020	There may be a negative correlation between CSR and earnings management practices.

Source: Zhu & Yang (2009), Kao et al. (2018) Walker et al. (2019), and Parvin et al. (2020).

### 2.2.3.3 Nonlinear or uncertain relationship

The third type of view holds that there is a nonlinear or uncertain relationship between enterprises' social responsibility fulfillment and financial performance. In other words, the relationship between social responsibility and enterprise performance is neither strictly negative nor positive and difficult to determine (Montoya-Cruz et al., 2020). From the perspective of industrial competitive level, K.-H. Kim et al. (2018) analyzed the data of 113 public companies

in the software industry in the United States between 2000 to 2005 and found that when the level of competitive actions was high, active CSR behaviors would improve the financial status of the companies. However, when the level of competitive actions was low, irresponsible CSR behaviors (negative CSR) could actually improve the company’s financial performance.

Yoon and Chung (2018) argued that positive internal CSR behaviors, such as corporate culture and working environment, could motivate employees and managers to make a strong commitment to their organization, which might reduce the staff turnover rate and ultimately enable the company to generate positive financial profitability. At the same time, external CSR activities could not effectively improve the company’s operating profitability in the short term. External CSR, such as consumer and community practices, had a direct negative effect on short-term financial performance. External CSR was effective in increasing market value but may not increase the operating profitability of a business. Corporate internal CSR was effective in improving short-term profitability but not in improving long-term profitability.

Kao et al. (2018) argued that in China, the relationship between CSR and CFP depended on whether the enterprise was state-owned or not. Wołowiec et al. (2019) used network analysis to implement the strategic vision of CSR into the organization. They argued that, in competitive markets, cost-benefit analysis of CSR programs could be tested using the resource-based view (RBV) theory. An enterprise with a strategy based on social responsibility could maintain a high return on its investment only if its strategy is not duplicable, otherwise, it would be challenging to maintain a high return.

Through the uni-variate test and the multivariate test involving control variables known to be related to financial performance indicators, Awaysheh et al. (2020) found that the enterprise’s performance level and relative valuation were higher among enterprises with better social responsibility performance. However, when the instrumental variable method was used to reduce latent endogenous variables, those enterprises no longer showed significantly higher level of financial performance. The expectations of CSR’s effect on financial performance evolve over time (Awaysheh et al., 2020; Kao et al., 2018). Relevant views on the non-linear or uncertain relationship between CSR and CFP are shown in Table 2.4.

Table 2.4: Summary of nonlinear or uncertain correlation between CSR and CFP

Scholar	Year	Main idea
Kim et al.	2018	They found that when the level of competitive actions was high, active CSR behaviors would improve the financial status of the companies. When the level of competitive actions was low, irresponsible CSR behaviors could actually improve the company’s financial performance.

Yoon & Chung	2018	They categorized CSR into internal-CSR and external-CSR, and indicated that internal-CSR was effective in improving short-term profitability but ineffective in improving long-term profitability. External CSR could not effectively improve the profitability of the company in the short term.
Kao et al.	2018	In China, the relationship between CSR and CFP depends on whether the enterprise is a state-owned one or not.
Wołowiec et al.	2019	The fulfilling of CSR does not necessarily have a positive effect on CFP. In addition to the degree of social responsibility fulfillment, it also depends on the number of variables. The effect also changes over time.
Awaysheh et al.	2020	The fulfilling of CSR does not necessarily have a positive effect on CFP. In addition to the degree of social responsibility fulfillment, it also depended on the number of variables. The effect also changes over time.

Source: Kim et al. (2018), Yoon & Chung (2018), Kao et al. (2018), Wołowiec et al. (2019), and Awaysheh et al. (2020).

To sum up, the relationship between CSR and CFP depends on many factors. The same CSR behavior may have different effects in different enterprises. In the same enterprise, the same type of CSR activities may still have different effects in different conditions or periods. It also depends on the degree of the enterprise's CSR fulfillment. We posit that the relationship between CSR and CFP is non-linear or uncertain as it is subject to specific conditions.

#### 2.2.4 Section summary

This section reviewed the literature related to CSR, including the first proposal of the concept of CSR, its development in the last decades, the measurement or monitoring of CSR, and the relationship between CSR and CFP. Regardless of the relationship between CSR behavior and CFP, there is no doubt that CSR behavior is beneficial to society. The difference lies in the enterprise's economic performance outcome resulting from CSR behaviors. The literature review of CSR has significant reference and guiding value for this thesis to discuss how Chinese state-owned enterprises respond and make trade-offs to achieve better CFP feedback when facing LSEs.

### 2.3 Theories from the market-based view

After decades of development, the discipline of strategic management has evolved into several schools (Lv et al., 2019). Based on the appropriate starting point for strategic analysis, we classify the theories into two broad categories, namely, theories from the market-based view (MBV) and theories from the resource-based view (RBV). We will mainly review the literature from these two views, with a focus on the business practices of Chinese SOEs. Considering the research background of "large-scale contingencies", we will also review the literature related to the strategies in rapidly changing circumstances and conditions and existing studies in the

field of CSR.

MBV is a self-defined expression based on RBV. It is not a technical term or expression in management or strategic management. It is a general term we use for convenience to compare with RBV and refers to theories from the perspectives of the market and external environment. RBV mainly includes theories of strategic analysis from the perspective of resources (usually internal) owned or controlled by an enterprise. From the inside out, they study how enterprises adapt to the environment and the market to seek competitive advantages by using and arranging their resources.

In terms of the schools of strategic management (Lv et al., 2019), we posit that the entrepreneurial school, the cognitive school, the power school, the cultural school, the learning school, and the views or theories that are directly labeled resource-based view are categorized as RBV. MBV, on the other hand, refers to the theories of strategic analysis that, from the perspective of the environment and market, study how enterprises respond to the environment and market to seek competitive advantages. The views and theories from the design school, the planning school, the positioning school, the power school, the configuration school, and the environmental school can be categorized as MBV, such as SWOT analysis, five forces model, Boston matrix, SCP analysis, competitive profile matrix (CPM matrix), and IFE (EFE) matrix.

### **2.3.1 SWOT analysis**

#### **2.3.1.1 Classic SWOT analysis**

Kenneth Andrews, Igor Ansoff, and Alfred D. Chandler jointly put forward and popularized the concept of business strategy (Benzaghta et al., 2021). Derived from business management practices, Koontz and Weihrich created the SWOT analysis or TOWS matrix (Griffin, 2019), also known as situational analysis, which is a conceptual framework for system analysis. This method takes an enterprise's four broad dimensions, namely, strengths, weaknesses, opportunities, and threats, to form a matrix for strategy analysis and the corresponding strategic decision-making. This strategy analysis method has been widely used (Jatmiko et al., 2022).

Using SWOT analysis, an organization can conduct a detailed, comprehensive, and thorough investigation and study of its internal resources and external environment to identify its strengths and weaknesses, opportunities, and existing and potential threats in its environment. Through a matrix combination, the organization can make its strategic choices. Under this framework, the organization has four alternative strategic directions or strategy profiles, namely, WT, WO, ST, and SO.

Specifically, the WT strategy focuses on minimizing weaknesses and threats in the environment; the WO strategy aims to minimize weaknesses and maximize opportunities; ST encourages the organization to bring its strengths into full play to overcome threats in the environment; and SO emphasizes that the organization should leverage its strengths to seize opportunities as much as possible. In a nutshell, SWOT analysis studies how an enterprise can gain and maintain competitive advantages through trade-offs aimed at maximizing its strengths while minimizing its weaknesses and seeking opportunities while avoiding threats in the market and environment.

### **2.3.1.2 New analysis tool “SWOT i”**

SWOT analysis has been widely used and popularized in strategic analysis and has become one of the most commonly used tools in enterprise strategy. It has also attracted criticism and opposition. However, of these criticisms and opposition, only Leandro L Pereira et al. (2021) have raised the criticism that the classical SWOT analysis never paid attention to sustainability and climate change. Based on this, they reinvented the SWOT analysis framework with a “SWOT i” analytical tool that put values at the center of strategy development for a forward-looking and sustainable world.

“SWOT i” integrates the concern with sustainability as one of its pillars, placing the values and impacts that each decision can have at the center of the strategic formulation, allowing their performance to leverage. The tool elaborates a map based on strategic pillars, assuming that the strategy is planned based on the dimension of each of these pillars. Simultaneously, this tool allows a transversal approach over all the strategic paths, working as a “lens” to visualize the strategy (L Pereira et al., 2021).

Each strategic pillar will always be defined according to the organization, and all SWOT analyses will be framed with the strategic pillars considered, forcing us to contextualize the analysis and put it in perspective. In turn, the SWOT i matrix integrates the concern with the scope of sustainability since this is an increasingly relevant issue and is present in management decision making. This happens because organizations have established a strategic framework based on certain values with environmental, social, and economic concerns (L Pereira et al., 2021).

### **2.3.2 Five forces model**

The five forces model is a classical theory to analyze competitive strategy (Griffin, 2019). According to the model, the competitiveness of existing competitors, the entry ability of

potential competitors, the substitution ability of substitutes, the bargaining power of suppliers, and the bargaining power of buyers in the same industry are five forces, and their comprehensive strength jointly determines the intensity of competition in the industry. Moreover, these five competitive forces are negatively correlated with the competitiveness of the enterprise itself. The stronger these five forces are, the weaker the enterprise's competitiveness is; the weaker the five forces are, the stronger the enterprise's competitiveness is. This strategy analysis method has been widely used (Abalkhail, 2019; Dimitkova, 2022; Juliana & Nyoman, 2019).

Based on this, three competitive strategies were derived: differentiation, cost leadership, and focus. A differentiation strategy aims to differentiate the organization's output and create uniquely desirable products and services in its competitive field. Differentiation can be achieved in all aspects of the organization's products or services, including brand image, technological roadmap, performance characteristics, customer experience, and terminal outlets. The ideal scenario is to have differentiation characteristics in a number of key areas. However, gaining competitive advantages often entails the sacrifice of market share and turnover as well as an increased total cost.

A cost leadership strategy requires the organization to reduce costs through refined, rigorous, and efficient management of the costs in various aspects, such as production, overheads, accounting, research and development, services, marketing, and advertising based on the appropriate scale of production or service and efficient and cost-effective facilities and equipment to achieve leadership in the total cost and unit cost. In turn, cost leadership will enable the organization to have competitive advantages in investment in other areas compared to its rivals. However, implementing a cost leadership strategy may also put the organization at risk, as the scale investment that guarantees cost reduction is highly likely to cause the organization to experience a rapid decline in the case of conditions such as a technological revolution. A focus strategy requires the organization to identify and focus its resources on a specific customer group, a specific or several segments, or a specific regional market. A focus strategy can also take many forms. However, it is often implemented at the expense of market share and turnover.

### **2.3.3 BCG Matrix**

Bruce Henderson, founder of Boston Consulting Group, founded the Boston Matrix (Griffin, 2019). This matrix is also known as the "market growth rate - relative market share matrix" and "four-quadrant analysis". From the product or business portfolio perspective, it guides



enterprises to carry out and evaluate strategic planning and determine key business units and resource allocation. The matrix takes the market growth rate and relative market share as the vertical and horizontal axes and divides different businesses or product combinations into four quadrants:

1) Products or businesses with slow growth and high market share are “cash cows”, generating large amounts of cash in excess of the reinvestment required to maintain the share. 2) Products or businesses with slow growth and low market share are “pets” (or “thin dogs”). This kind of product or business is substantially useless and should be liquidated. 3) Products or businesses with high growth and high market share are the “stars”, which generally always show that they can generate profits and, if they can maintain their leadership position over the long term, may turn into cash cows when growth slows down and their reinvestment needs are reduced. 4) Products or businesses with high growth and low market share are “question marks”, which are often not self-sufficient in cash and require substantial additional cash investment to expand market share. If they cannot become a market leader, they are going to either die or become thin dogs and be liquidated.

The Boston Matrix is widely used for market strategy analyses (Gorb et al., 2022; Nogalski et al., 2022; Saputra et al., 2020; Sinaga, 2022) and other areas of management (X. Zhang et al., 2019). It shows that every business needs a product that can generate cash and should ultimately be a cash cow; otherwise, it is worthless. Therefore, from a strategic perspective, only diversified enterprises with balanced portfolios can take advantage of their strengths and seize their growth opportunities.

A balanced portfolio includes 1) stars who assure the future, 2) cash cows that supply funds for future growth, and 3) question marks to be converted into stars with the added funds. Although the Boston Matrix has certain guiding significance on the product or business (portfolio) level for the enterprise strategic management, there are also some evident disadvantages (Mohajan, 2018), for example: 1) high subjectivity; 2) the division of four quadrants is too simple and rough; 3) lack of predictive value; 4) insufficient consideration of environmental factors.

### **2.3.4 SCP analysis paradigm**

Despite the huge differences between management and economics, in fact, many of the theoretical concepts in strategic management originate from other disciplines, including economics. For instance, the SCP paradigm was derived from industrial organization economics. Porter (1997) pointed out that market structure strongly influenced the establishment of

competition rules and the potential strategies available to enterprises, and that understanding market structure is always the starting point of strategic analysis.

The SCP analytical paradigm (Tirole, 2018) has been established for over half a century. It adopted an “external” and “behaviorist” approach, concerned with the market environment in which enterprises operate and the behavior and performance of enterprises participating in the market environment in various capacities (as producers, sellers, or buyers). The founder of the SCP paradigm studied the market structure patterns of enterprises in a wide range of industries, the types and forms of behavior of every trading party, and their ultimate market performance. The research showed that there was a one-way causal relationship between the market structure of the industry and the market behavior and performance of the enterprise, and the market structure determined the market behavior and performance. Different industries have different requirements of scale economy, and therefore, different industries show different market structure characteristics.

Market structure of the industry(S) determines the enterprise’s competitive state in the industry and its conduct (C) and strategy, thereby ultimately determining the enterprise’s performance (P). Here, this theory highlights the decisive role of market structure, which refers to the relationship between the number, market share, and scale of enterprises in a specific market. Factors such as the relationship between market competition and scale economy, vertical integration, enterprises’ pursuit of efficiency and profit, enterprises’ desire to limit competition, and the barriers to entry jointly determine the industrial concentration, among which barriers to entry play a decisive role.

In other words, industrial concentration results from enterprises pursuing economies of scale, efficiency, and profit in market competition. If enterprises gain monopolies based on economies of scale, they may use this exclusive or collusive monopoly to limit production and raise prices in order to reap excess profits. At the same time, the industry’s monopolies have built barriers to ensure that they can gain excess profits in the long run. Therefore, the market structure determines the performance of the enterprises.

Scherer (2018) further developed and explained the SCP paradigm. He emphasized the “market behavior” of enterprises, highlighting the market behavior from Bain’s “two-stage” SCP framework. He believed that market structure determined market behavior and market behavior determined market performance. Thus, the SCP paradigm evolved from a “two-stage” structure to a “three-stage” structure, which means, from “ $S \xrightarrow{C} P$ ” to “ $S \rightarrow C \rightarrow P$ ”.

Caves and Porter (1977) further enriched and extended the exogenous “entry barriers” theory of the SCP paradigm for potential competitors to the theory of “mobility barriers”, which

have both “exogenous” and “endogenous” attributes and can also be applied to other current competitors. They pointed out that enterprises entering an industry could be either new potential businesses or businesses already established elsewhere. Enterprises already operating in one sector of the same industry could enter other sectors of the industry, and more broadly, enterprises already existing in the industry could exit from the industry for various reasons. Thus, the SCP paradigm was extended to a general theory of enterprise mobility across industry sectors, including entry, exit, and internal transfers.

Since then, the SCP paradigm has become more mature and stable and has been widely recognized and applied in strategic analysis and the field of industrial organization. However, there are also different voices. Scholars represented by McWilliams and Smart (1993) pointed out that the grafting of theories from one discipline to another might lead to inappropriateness or high cost. For practitioners, focusing on the industry’s market structure rather than competitive processes might lead to missing out on optimal investments or mis-investing resources from strategies aimed at developing unique enterprise resources to strategies aimed at identifying or creating the optimal market structure.

They pointed out that the SCP paradigm had three fatal flaws: 1) The wrong level of analysis. The SCP paradigm is a theory used to explain and predict industry-level phenomena, assuming the homogeneity of enterprises, while strategic management requires a theory specific to explain and predict the enterprise-level phenomenon, assuming that enterprises are heterogeneous. 2) Using static analysis. The SCP paradigm uses cross-sectional data to test the relationship between structure and performance, whereas the real business environment in which an enterprise operates is not in equilibrium. In a changing environment, strategic management requires dynamic analysis to understand and predict an enterprise’s relative ability to maintain competitive advantage. 3) Reliance on barriers to entry as a determinant of profitability. Since entry barriers are an industry-level phenomenon, it is necessary to provide access protection for all enterprises in the industry.

Therefore, they pointed out that for a specific enterprise, the “free riding” phenomenon would make it in a dilemma when it invested in order to raise industry barriers. Investment would lead to its competitive disadvantage compared with existing free-riding competitors, and non-investment would lead to the disappearance of barriers over time. Therefore, they put forward an “efficiency paradigm”, which is different from the market structure paradigm. The efficiency paradigm assumes that markets are dynamic and require both vertical and dynamic analysis.

They view competition as a process, believing that any economic conditions affecting an

industry are never in static equilibrium and that achieving excess profits does not require barriers to entry, but greater efficiency in meeting consumer demand or reducing costs. Over time, their market share would increase. Higher average profits depend on the excess profits of large, efficient enterprises, not on concentration levels or barriers to entry. Therefore, barriers to entry have little relevance to performance at the enterprise level, and investment strategies should not be based on barriers to entry. They stressed that corporate strategy should not be based on market structure but on other factors outside the structure, such as the development of the company's resources.

### **2.3.5 Other strategic analysis models/methods**

In addition, there are other models or methods, such as the CPM matrix and the IFE (EFE) matrix (Griffin, 2019). The IFE (EFE) matrix is established in five steps: 1) List 10-20 internal (external) key factors, including advantages and disadvantages; 2) Assign weights of 0-1 to each factor, and the sum of weights equals 1.0; 3) Each factor is scored on a scale of 1-4, with 3 or 4 points for advantages and 1 or 2 points for disadvantages; 4) Calculate the weighted score of each factor; 5) Calculate the total weighted score of all the key internal (external) factors. Finally, compare the weighted total score with the average score of 2.5. Suppose the weighted total score is higher (lower) than 2.5. In that case, it indicates a strong (weak) position of the internal (external) part. In this way, the enterprise's internal (external) part stress is depicted, providing a basis to guide enterprises to conduct strategic analysis.

The CPM matrix has both similarities and differences with the IFE (EFE) matrix. They both use similar five steps to score the key factors and calculate the total score of all the key factors. However, CPM grades all the key factors on a scale of 1 to 4 from weak to strong, instead of 3 to 4 for strengths (advantages) and 1 to 2 for weaknesses (disadvantages). The key factors are mainly opportunities and threats rather than strengths (advantages) and weaknesses (disadvantages). In the comparative analysis, the total score is not compared with the average score of 2.5, but with the score of competitors, so as to obtain strategic information relative to competitors and guide the enterprise to carry out positioning and strategic analysis and formulation. However, the compared scores only represented a comparison of the enterprises' relative strengths, not an accurate comparison of their absolute strengths.

In general, the market-based view (MBV) is the classical and traditional view and has been explored and enriched by many management gurus. Numerous scholars have explored and expanded the theories by studying the market and environment's influence on enterprises' strategy and operations, with a focus on the external factors of an enterprise. They hold that the

environment in which an enterprise operates and the enterprise's correct assessment of and better adaptation to the environment are crucial to gaining competitive advantages and achieving market success. It implies that an enterprise can only perform better by appropriately positioning itself in the market.

### **2.3.6 Section summary**

This section reviewed relevant literature on how to conduct strategic management based on changes in the market and external environment to seek competitive advantage, including SWOT analysis, Five Forces Model, Boston Matrix, SCP paradigm, CPM matrix, and IFE (EFE) matrix. When enterprises face LSEs, the external market and environmental conditions change significantly. These studies undoubtedly offer meaningful inspiration for the research on how enterprises carry out strategic adjustment under such circumstances. In particular, the newly developed strategic analysis tool "SWOT i" has important implications for this research, linking strategy formulation and sustainable development goals.

## **2.4 Theories from the resource-based view**

### **2.4.1 The rise of RBV**

Penrose's enterprise growth theory is the avant-courier of the RBV theories. It holds that a company is a collection of material and human resources and an administrative planning unit that coordinates interrelated business activities through policy. It emphasizes that the maintenance of competitive advantage is the result of enterprises' dynamic capabilities and the acquisition and use of organizational knowledge (Sousa et al., 2021).

Penrose's enterprise growth theory also identified heterogeneous innovation resources and incomplete mobility, such as user-technology interactions, track-dependent capabilities, specialized assets, R&D capabilities, and network connections. Penrose found that through continuous execution of the innovation process, unique core competencies could be formed to improve the heterogeneity and incomplete mobility of innovation resources. For the innovation process to have the potential to generate sustainable competitive advantage and enable the enterprise's growth, it is crucial to develop unique, essential competencies based on the potential of the available resources through the continuous execution of the innovation process, so as to develop heterogeneous and imperfectly mobile innovation capabilities (Sousa et al., 2021).

In 1984, based on Penrose's theory of enterprise growth, Wernerfelt's resource theory defined resources as kinds of tangible and intangible assets of a company. As companies are users of resources, their returns would be reduced if the resources they need are controlled by monopolies (Assensoh-Kodua, 2019). Similarly, the returns of a provider of a product or service would be similarly affected if the applicable market for that product or service is a buyer's monopoly (Musa et al., 2022).

Wernerfelt's resource theory also developed the concept of Resource Position Barriers (RPB), stating that the first occupier had the protection of a RPB similar to a barrier to entry, which heralded a possibility of high returns. The protection of the resource barrier is equivalent to minimizing the possibility of other competitors imitating (I) the resource. When a resource position barrier is translated into an entry barrier in at least one market, it could be considered valuable (V) (Assensoh-Kodua, 2019; Freeman et al., 2021; Musa et al., 2022).

The theory also pointed out that the resource perspective provided the basis for solving some key problems in the strategy formulation of diversified enterprises, such as that by acquiring rare resources (R), enterprises could *ceteris paribus* increase their chances of earning good returns in imperfect markets. Finally, the theory states that the availability of substitute resources tends to depress returns to the holders of a given resource. In other words, the non-substitutability (N) of resources is of great significance for resource holders to obtain high returns. Except for the direct combination of the VRIN initials, the prototype of the "VRIN" framework was formed in fact. Since then, the theoretical system of RBV has been formally established (Assensoh-Kodua, 2019; Freeman et al., 2021; Musa et al., 2022). Relevant views on the rise of the resource-based view are shown in Table 2.5.

#### **2.4.2 The evolution and development of RBV**

However, the RBV did not stop there. In 1991, based on Wernerfelt's resource theory, Barney completed the last building block of the "VRIN" research framework. Finally, the four initials of VRIN were directly combined. The "VRIN" resource framework not only described the essential attributes of the enterprise's core resources but also defined the key concepts of "corporate resources", "competitive advantage", and "sustained competitive advantage". It is a research framework to evaluate whether specific corporate resources can be a source of sustained competitive advantage (Jay B Barney et al., 2021).

This theory assumes that the ability of enterprise managers to manipulate all the attributes and characteristics of the company is limited, and that the company's resources are heterogeneous and not completely immobile. In order to become the source of the company's

sustainable competitive advantage, the resources of the company must have four attributes: 1) be valuable to the company to achieve its strategic objectives, 2) be rare, 3) not be fully imitable, and 4) there be no strategically equivalent substitutes. These are well-known as “VRIN resources” (Jay B Barney et al., 2021).

Table 2.5: Summary of references on the rise of RBV

Scholar	Time	Main idea
Penrose	1959	A company is an aggregation of material resources and human resources, and its size is the present value of all the resources devoted to its business objectives. Its existing inventory of entrepreneurial services would restrict its expansion. The external incentives for company expansion are mainly the new market, technological change, and innovation, while the internal incentives are mainly the unused resources yet. The direction of expansion is determined by the inherited resources.
Assensoh-Kodua Freeman et al.	2019 2021	They introduced Wernerfelt’s resource view theory. The “VRIN” resource framework not only described the essential attributes of the company’s core resources, but also defined the key concepts of “corporate resources”, “competitive advantage”, and “sustained competitive advantage”. The research framework was developed to evaluate whether specific corporate resources could be a source of sustained competitive advantage. “VRIN” resource must be 1) valuable, 2) rare, 3) not fully imitable, and 4) no strategically equivalent substitutes.
Musa et al.	2022	

Source: Assensoh-Kodua (2019), Sousa et al. (2021), Freeman et al. (2021), and Musa et al. (2022).

However, the “VRIN” research framework continued to evolve. Only four years later, Barney’s research framework of resources was expanded to the “VRIO” framework, with O (Organization) replacing the original “N” (Non-substitutability). The new framework puts more emphasis on “organizational capacity,” the capacity of companies to utilize resources or capabilities (Jay B. Barney, 1995; Miethlich & Oldenburg, 2019). This is the first important theoretical supplement of the “VRIN” research framework.

Barney and his research team Helfat et al. (2023) have recently added further information. We consider that as the second theoretical supplement to the “VRIN” research framework, which interpreted new contexts (artificial intelligence and digitization, distributed organizations, and stakeholders and sustainability), introduced new concepts (resource redeployment, market shaping through resources and capabilities) and new methods (text analysis and machine learning, formal models, policy capturing) (Helfat et al., 2023).

The third crucial theoretical supplement is the alternative model (VRIO-VCS) constructed by Costa et al. (Costa et al., 2019; Costa et al., 2021), based on the advantages and criticisms of the conceptual model of the VRIO framework. It introduced the concepts of Values, Dynamic capabilities, and Governance sustainability. This reproduced model emphasizes that companies must consider the “O” in the model as a dynamic capability so that companies can appropriately

reorganize resources and capabilities in the face of external challenges, and that the new analytical parameters contribute to the robustness of the VRIO model.

Hamel and Prahalad (2019) pointed out that organizations should shape their ability to “predict the future” by establishing a strategic development framework (SDF). They consider SDF as fundamentally a high-level blueprint for a range of issues, such as the deployment of new benefits or capabilities that they wish to offer to customers in the future, the acquisition of new expertise (or the transfer of existing expertise), and the redesign of the customer interface.

What they called “expertise”, namely, competency or capability, refers to a set of skills and technologies. The core expertise is the sum of learning of various technologies and the sum of the knowledge from various organizations. They noted that SDF was not a detailed plan, but rather the expertise to be developed. They also argued that expertise was the key to the future and that core expertise was the trump card to defeat rivals. An organization’s decision to develop its new core expertise means creating or refining a range of user benefits, rather than simply seizing business opportunities in specific product markets.

That is because competition for expertise leadership usually precedes competition for product leadership, as the former is the competition between companies where expertise, especially core expertise, often exceeds the resource capacity of a single department and needs to be developed with the concerted efforts of the whole company. They pointed out that expertise, especially core expertise, was not limited to individual products but would contribute to the competitiveness of a range of related products or services and enhance their competitiveness.

Furthermore, competition for expertise is multilayered. Specifically, it is composed of four levels: the competition to develop and acquire the skills and technologies that constitute expertise, the competition to integrate core expertise, the competition to increase the share of core products, and the competition to increase the share of final products. In general, both the ability to predict the future and the core expertise are endogenous factors derived from the use of an enterprise’s resources, based on which the enterprise can win a place in the market.

Based on RBV, Azeem et al. (2021) collected data from 294 industrial managers, verified the data using partial least squares - structural equation model (PLS-SEM), and conducted an empirical study. The research showed that organizational culture, knowledge sharing, and organizational innovation, as firm-level resources, had a positive effect on the competitive advantage of enterprises. Organizational culture is indispensable to the success of enterprise operations as it enables enterprises to gain competitive advantage through knowledge sharing and organizational innovation as intermediaries and key drivers.



The mere possession of knowledge resources does not produce the power to improve the overall performance of the enterprise. The retention and sharing of knowledge is a necessary condition for correctly managing knowledge, overcoming difficulties, and transforming it into knowledge assets and productivity. Therefore, in order to achieve long-term success in a competitive environment, managers should focus on accelerating organizational capabilities driven by “knowledge and innovation” to sustain competitive advantage.

Unlike the classic RBV, Acquier et al. (2019) developed a type of sharing economy business model based on building centralized resource pools across organizations, organizing peer-to-peer exchanges, and promoting access over ownership. They revealed four configurations: shared infrastructure providers, commoners, mission-driven platforms, and matchmakers. The resources included in the centralized resource pool are mainly underutilized resources collected or shared through digital platforms, or a more centralized “product service system” is established to provide access to improve the use efficiency of idle assets. The resources in the resource pool are clearly different from “VRIN” resources but can be utilized by enterprises.

Among the configurations, the shared infrastructure providers is a profit-making initiative that creates value by providing a proprietary resource pool that is monetized and temporarily accessed. Shared infrastructure providers provide “access” rather than ownership. Matchmakers are the media for profit purposes. They first identify decentralized and under-exploited resources with high shared value and then intermediate among peers in order to develop decentralized market transactions. Instead of having to own productive assets, matchmakers outsource most of them from their peers and act as brokers, collecting commissions from the market transactions they enable. Relevant views on the evolution and development of RBV are shown in Table 2.6.

Table 2.6: Summary of RBV references on the evolution and development of RBV

Scholar	Year	Main idea
Hamel & Prahalad	2019	Organizations should shape their ability to “predict the future” by establishing a strategic development framework, which is essentially a high-level blueprint for the deployment of new benefits or functionality that enterprises wish to provide to their customers in the future, the acquisition of new expertise (or transfer of existing expertise), and the redesign of the customer interface.
Acquier et al.	2019	They developed a type of sharing economy business models based on the idea of building centralized resource pools across organizations, organizing peer-to-peer exchanges, and promoting access over ownership. They revealed four different configurations: shared infrastructure providers, commoners, mission-driven platforms, and matchmakers.
Miethlich Oldenburg	& 2019	The “VRIN” framework was expanded with “O” (Organisation) replacing “N” (Non-substitutability). The new framework puts

		more emphasis on “organizational capacity,” the capacity of companies to utilize resources or capabilities.
Costa et al.	2019 2021	The “VRIO” framework was reproduced to VRIO-VCS, based on the advantages and criticisms of the conceptual model of the VRIO framework. It introduced the concepts of Values, Dynamic capabilities, and Governance sustainability. This reproduced model emphasizes that companies must consider the “O” in the model as a dynamic capability so that companies can appropriately reorganize resources and capabilities in the face of external challenges, and that the new analytical parameters contribute to the robustness of the VRIO model.
Barney et al.	2021	Key concepts such as “corporate resources”, “competitive advantage”, and “sustained competitive advantage” were defined, “VRIN resources” were proposed. The importance of corporate resource endowment in creating sustainable competitive advantage is emphasized to guide enterprises to analyze what kind of resources can become the source of their sustainable competitive advantage. The company should explore its competitive advantage based on its advantages and disadvantages.
Azeem et al.	2021	Organizational culture, knowledge sharing, and organizational innovation, as firm-level resources, had a positive effect on the competitive advantage of enterprises. Organizational culture is indispensable to the success of enterprise operation, and it enables enterprises to gain competitive advantage through knowledge sharing and organizational innovation as intermediaries and key drivers. The mere possession of knowledge resources does not produce the power to improve the overall performance of the enterprise. In order to achieve long-term success in a competitive environment, managers should focus on accelerating organizational capabilities driven by “knowledge and innovation” to sustain competitive advantage.
Helfat et al.	2023	The “VRIN” framework was added with new content: it interpreted new contexts (artificial intelligence and digitization, distributed organizations, and stakeholders and sustainability) and introduced new concepts (resource redeployment, market shaping through resources and capabilities) and new methods (text analysis and machine learning, formal models, policy capturing).

Source: Hamel & Prahalad (2019), Acquier et al., (2019), Barney. (1995), Miethlich & Oldenburg (2019), Costa et al. (2019, 2021), Barney et al. (1995, 2021), Azeem et al., (2021), Miethlich & Oldenburg (2019), and Costa et al. (2019, 2021)

### 2.4.3 The new momentum for RBV

The academic circle has long been concerned about whether the VRIO theoretical framework should be categorized as static or dynamic theory. Costa et al. (2019) believe that the VRIO framework is a dynamic theory. There are a few reasons. Firstly, dynamic capability can improve the continuous learning of enterprise project management between projects (Patrício et al., 2022). Secondly, project management can, in turn, promote the establishment of dynamic capabilities through the accumulation, integration, utilization, and reconfiguration of

capabilities and knowledge acquired in the project (Patrício et al., 2021).

Thirdly, an enterprise must treat the “O” of the model as a dynamic capability to be able to properly reorganize its resources and capabilities in the face of external challenges (Costa et al., 2019; Costa et al., 2021). Fourthly, dynamic capabilities can enable an organization to transform its core and support competencies to adapt permanently and quickly to habitat and external context, becoming the basis for achieving strategic objectives and sustainable growth (L. Pereira et al., 2022). We also hold that dynamic capability belongs to the capability and resource category. At the same time, “asymmetry” can also be regarded as the capability to dynamically differentiate from other competitors. In this thesis, dynamic capability and asymmetry are regarded as part of RBV.

#### **2.4.3.1 Dynamic capability perspective (DCP)**

A representative of DCP is Teece et al., who further developed the dynamic capability analysis framework established in 1997 (Bogers et al., 2019; Stoyanova, 2018). They discussed the source of enterprises’ competitive advantages from the perspective of enterprises’ dynamic capabilities and analyzed how to obtain super profit in the environment of rapid technological change. Besides affirming the theoretical contribution of RBV, they also put forward criticism.

According to their theory, “enterprise” is a dynamic system composed of processes, practices, and resources, and its competitive advantages come from the effective use of enterprise management and organizational processes. Enterprises’ long-term competitiveness depends on “dynamic capability”, which is enterprises’ capability to integrate, construct, and reconfigure internal and external capabilities to cope with the rapidly changing environment and to obtain new forms of competitive advantage (Bogers et al., 2019; Patrício et al., 2022).

After nearly three decades of development, (Bogers et al., 2019) noted that open innovation had become an emerging requirement for organizational innovation and redefined it as a distributed innovation process based on purposeful management of the flow of knowledge across organizational boundaries and the utilization of monetary and non-monetary mechanisms consistent with the organization’s business model. They argued that open innovation was imperative because: 1) Sources of knowledge were very fragmented; 2) Intellectual property had become a critical enabler to accessing external ideas and letting others use one’s ideas; 3) Internal R&D was declining; 4) Digitization had dramatically changed the ease and nature of information flows.

They also pointed out that the technology development business model and intellectual property strategy were the two most essential variables of open innovation. Open innovation

requires new management approaches and deep (systems) capabilities for technological ‘integration’, and ‘systems integration’ or systems architecture capabilities are of particular value in an open innovation environment. By integrating the open innovation concept into the dynamic capabilities framework, one could better understand co-invention/co-innovation opportunities and strategic choices (Bogers et al., 2019).

#### 2.4.3.2 The new rising of the asymmetry view

It is well-founded that we categorize the “asymmetry” based view as RBV in this study. What Miller et al. called “asymmetries” refers to a company’s skills, processes, or assets their competitors do not have and cannot replicate at economic rent cost, which are rare, inimitable, irreplaceable, and usually hidden (Wei et al., 2018). “Asymmetries” usually show little obvious function and benefit, need to be discovered, developed, and applied by companies, and be embedded and empowered into the organizational design and strategic plan of the companies, in an appropriate market timing, leveraging to become sustainable, effective, differentiated capabilities and competitiveness of the companies.

It is basically consistent with the description of the “heterogeneity” of resources in the classical RBV (Costa et al., 2021) and the acquisition method of dynamic capability described in VRIN and VRIO frameworks (Costa et al., 2019; Costa et al., 2021). Chinese scholars Wei et al. (2018) extended the “asymmetry” viewpoint based on individual enterprises proposed by Miller et al. to a more macro level. They pointed out that in the former stage of lacking world-leading technologies, Chinese enterprises mainly relied on asymmetric resources and capabilities embedded in Chinese system, technology, and market environment. They transformed those “asymmetries” into sustainable capabilities and matched them with market opportunities by developing asymmetric innovation strategies. In such a unique way, they managed to catch up with the Western world with advanced technologies. Relevant views on the new momentum for RBV are shown in Table 2.7.

Table 2.7: Summary of the new momentum for RBV

Scholar	Year	Main idea
Wei et al.	2018	They extended the “asymmetry” viewpoint based on individual enterprises proposed by Miller et al. to a more macro level. They pointed out that Chinese enterprises, when lacking world-leading technologies, mainly relied on asymmetric resources and capabilities embedded in Chinese system, technology, and market environment. They transformed these “asymmetries” into sustainable capabilities, and matched them with market opportunities by developing asymmetric innovation strategies. In such a unique way, they managed to catch up with the Western world with advanced technologies.

Stoyanova	2018	The DCP theory discussed the source of enterprises' competitive advantage from the perspective of dynamic capabilities and analyzed how to obtain super profit in the environment of rapid technological change.
Bogers et al.	2019	The "enterprise" is a dynamic system, and its competitive advantages come from the effective use of enterprise management and organizational processes. The long-term competitiveness of enterprises depends on "dynamic capability", the capability to integrate, construct, and reconfigure internal and external capabilities to cope with the rapidly changing environment and obtain new forms of competitive advantages.
Bogers et al.	2019	Open innovation has become a new requirement for organizational innovation. The technology development business model and intellectual property strategy are the two most essential variables of open innovation. Open innovation requires new management approaches and deep (systems) capabilities for technological 'integration', and 'systems integration' or systems architecture capabilities are of particular value in an open innovation environment. By integrating the open innovation concept into the dynamic capabilities framework, we could perhaps better understand co-invention/co-innovation opportunities and strategic choices.
Costa et al.	2019 2021	The "VRIO" framework belongs to the category of dynamic theory.

Source: Stoyanova (2018), Bogers et al., (2019), Costa et al. (2019, 2021), and Wei et al. (2018).

The theories of RBV, DCP, and asymmetry provide theoretical support and reference for this thesis in terms of the definition and analysis of "quasi-internal resources" of state-owned enterprises, and the strategic adjustment, resource reallocation, and path selection in a rapid or LSE environment.

#### 2.4.4 Section summary

This section reviewed the relevant literature on RBV, including its rise, development and evolution, and the latest development trend. RBV theories clearly have a guiding significance for enterprises to identify VRIN resources and complementary resources and for enterprises' strategic choice and acquisition of competitive advantages. After years of development, the strategic view of RBV has become an important theoretical cornerstone in the academic circle of strategic management.

However, despite years of development, the strategic perspective of the RBV has not yet fully developed into a systematic theory. Many scholars have explored and expanded it from the perspective of different types of resources and theories, trying to focus on the internal enterprise. They believe that the difference in internal resources leads to the difference in efficiency, and such resource differences are relatively stable. Therefore, in terms of enterprise

strategy, they showed that only by obtaining specific resources could high operational efficiency and efficiency be achieved. However, scholars have different definitions of resources, and their views and conclusions also differ. Therefore, it is more accurate to say that the RBV is more like an exploration of how enterprises acquire, control, and use resources to achieve competitive advantages, rather than a strategic management theory.

Moreover, classic RBV overemphasizes the “inside view” of enterprises and ignores or dismisses the “outside view” that enterprises should have towards the external world. This may lead to poor adaptability of enterprises’ strategies to business environment changes. Secondly, RBV is not clear enough to recognize the resources that can hardly be imitated entirely, and its operability is poor. RBV alone can still hardly effectively guide enterprises to obtain and maintain long-term competitiveness and excess returns. Therefore, the emergence and development of DCP and the “asymmetry” view are beneficial supplements to RBV and will guide the strategic choice of enterprises in a better and more comprehensive way, providing theoretical support for them to obtain and maintain long-term competitiveness and high returns.

Thus, RBV emphasizes strategic choice and believes that the strategic task of enterprise management is to identify, develop, and allocate distinctive key resources, especially those that are difficult to replace and have strategic value, to achieve maximum benefits. This is at odds with MBV. MBV believes that the external environment and the changes are decisive factors in the formation of strategy. Since most organizations, including large enterprises, cannot actively affect their business environment, they can only passively adopt corresponding strategies according to the changes in the environment. Thus, the process of strategy formation is similar to the process of adaptation and survival of species in natural selection.

Helfat et al. (2023) also pointed out that the traditional SWOT analysis focused on the combination of opportunities and threats in an enterprise’s environment with its strengths, highlighting that competitive advantages come from the external environment. However, in Barney’s view (1995), the focus should be given to the internal aspects of the enterprise to dig for competitive advantages based on its strengths and weaknesses. Thus, RBV emphasizes the role of strategic choices, arguing that the strategic task of corporate management is to identify, develop, and allocate this distinctive set of key resources, especially those that are difficult to replace and strategic, to maximize benefits. That is totally different from the MBV, which believes that the external environment and its changes are the main determinants of strategies.

The internal and external debate about strategic analysis’s starting point has been ongoing. Neither MBV nor RBV has been able to win the debate completely. As one of the founders of the discipline of strategic management, Ansoff et al. (2018) pointed out that strategic

management is a kind of contingency theory, which holds that if an organization wants to achieve success, it should not simply rely on a single and immutable theory or method. It should holistically consider its current environmental conditions and potential changes and adopt appropriate measures on this premise. Besides, instead of blindly following the successful experience of the past, its strategic plans and operational guidelines should adapt to changes in the environment and conditions. Only by doing so can the organization achieve optimal business performance.

Therefore, Ansoff et al. stressed that an organization should proactively observe environmental changes and the magnitude of change, including the frequency and type of change. At the same time, it should carry out timely and appropriate analysis of the changes and develop and implement plans and procedures accordingly to adapt to the specific environment and its changes. Furthermore, the “adaptability” of these plans and processes to the environment is positively related to the probability of the organization’s success, coined by Ansoff et al. (2018) as “the prerequisite for strategic success”. they hold that a successful organization is a “dynamic” (instead of static) one whose internal structure adjusts to environmental changes.

Given the above review of MBV and RBV strategic views, we argue that each view has its advantages/disadvantages and focuses, and neither can perfectly analyze and diagnose strategies and prescribe perfect prescriptions for enterprises in the constantly changing environment and market. Rather than arbitrarily choose between them, it is better to absorb the essence from different theories and views to achieve the complementary and win-win effect.

## **2.5 Relevant studies on strategies in rapidly changing or turbulent circumstances and conditions**

Thompson and McEwen (1958) pointed out that the goal of an organization was sometimes regarded as a constant and sometimes as a non-static factor. When an organization faces a changing market, it must reformulate or interpret its objectives. For a large enterprise, reevaluating goals is a frequent task. In other words, effective businesses adapt to changing circumstances by constantly reassessing their goals. In a study of strategic objectives, perceived uncertainty, and economic performance in an unstable environment, Bourgeois (1985) pointed out that strategic management was the domain of the enterprise’s top management. Their perception of the company’s external environment and their way of action are critical to the company’s behavior and performance, and it is up to them to find or create a match between environmental conditions and organizational capabilities and resources.

Bourgeois inspected the consistency of top management's environmental perception. She measured their perception taking the external environment as an objective measure of the industry's attributes, proposed hypotheses to explore the empirical relationship between the environment, the strategic process, and performance, and deduced enterprise strategic performance model through empirical patterns presented by data.

Bourgeois hypothesized that 1) the more accurately the top management perceives the real environmental fluctuations, the higher the economic performance of the enterprise; 2) the more consistent the top management perceives the environmental uncertainty, the higher the economic performance of the enterprise; 3) the greater the consensus of the top management on the goals, the higher the economic performance of the enterprise; 4) The more prominent the positive relationship between environmental fluctuations and the number of strategic goals, the higher the economic performance of the enterprise.

Bourgeois measured variables through interviews, questionnaires, and secondary data, taking performance first as the dependent variable and then as the independent variable. The results showed that when the average value of the enterprise's top management's perceived environmental uncertainty was consistent with the volatility level of the goal, the diversity of the enterprise's internal perceptions could promote the enterprise performance; an enterprise with high performance was highly sensitive to its environment, and its internal perceptions of environmental uncertainty and goal were more diverse as well.

The research of Bourgeois also indicated that when the difference between uncertainty and volatility was under control, the interpretative capability of the top management about the diversity of internal perceptions decreased significantly. Enterprises should only reduce uncertainty under the condition of a stable environment. Uncertainty may play a role in an unstable environment, and reducing uncertainty is potentially dysfunctional at the strategic level. Therefore, when the degree of environmental fluctuation is controllable or within the acceptable range, enterprises should face up to environmental uncertainty rather than avoid it.

Whittington (2006) built a framework for strategy research based on the concepts of strategy praxis, strategy practices, and strategy practitioners. He put forward the framework's implications for research, in particular, the impact of strategy practices on strategy praxis and the impact of strategic practices' creation and transfer on the cultivation of strategy practitioners. He highlighted the importance of strategy practices, suggesting that enterprises must reflect on strategy formulation and adjustment based on specific strategy practices and business practices in the market and the environment.



This type of research attempts to explain how enterprises can better make strategic planning in a changing environment and how to adjust their original strategies to better adapt to the new environment to gain stable competitive advantages and achieve stable performance in the long run. To sum up, scholars have studied the strategic choice of enterprises in the context of a “rapidly changing” and “turbulent” environment, but few scholars have studied the strategic choice of enterprises in the context of “emergent” events, especially “LSEs”.

From the above literature review, we know that “rapidly changing” and “turbulent” environments are similar but different from “emergent” events. The main similarity lies in the “change” characteristic, while the main difference is the form of the change, mainly manifested in the time dimension. “Rapidly changing” emphasizes the speed of change, meaning that the environment is constantly changing rapidly; “turbulent” means things are constantly changing in a long period of time with strong uncertainty; while “emergent” emphasizes the suddenness of the change. The term of “large-scale” is mainly a description of event attributes from the perspective of the scope of the affected area.

## **2.6 Chapter summary**

We searched and selected a large number of literature but found very little literature directly addressing how SOEs balance their CSR response and business innovation in the face of LSEs. There is also very little literature in the field of LSEs. For this reason, we had to do a deeper exploration. Still, the literature reviewed in this thesis does provide clear and specific assistance to this study.

The first section of the literature review reveals that when SOEs conduct specific management behaviors in LSEs, attention should be paid to the diversification of participating parties. This guides SOEs to communicate and transact with different social subjects, including government, shareholders, and suppliers, in a more artistic way so that the effect of CSR behavior on CFP can be positive and more significant. It also reminds enterprises of the importance of the following items in the face of LSEs: timely adjustment of system and mechanism, change of organizational form according to needs, attention paid to changes of legal system and policy, and adjustment of their 4P strategy. The literature also indicates that enterprises’ current coping strategies or tactics for LSEs may change into regular routine behaviors, namely Model R, in the future.

CSR literature in the second section shows that enterprises’ CSR behavior may not have a positive effect on their CFP, so enterprises need to make trade-offs more carefully. In addition,

according to the viewpoints of scholars represented by Davis (1960), CSR simply serves for capital appreciation. In this thesis, we also posit that the implicit social responsibilities of SOEs include the responsibility for state-owned capital.

Literature in the third and fourth sections show that, in the context of LSEs, changes in the external policy environment, market environment, technology environment, and internal/external resources (especially core resources as the source of sustainable competitive advantage) have an impact on enterprises' strategic management and business trade-offs. Suggestions have been put forward on how enterprises should adjust strategy and choose products to regain competitive advantages in LSEs. In particular, the literature on the SCP paradigm is an essential reference for our research model's establishment in this thesis. The asymmetry theories have significant implications for this thesis in terms of how enterprises construct "asymmetric" and sustainable resource advantages that are difficult to obtain in the private economy through government and policy resources.

Literature in the fifth section on strategies in rapidly changing or turbulent circumstances and conditions, which echo the characteristics of LSEs, can guide enterprises' trade-off behaviors in the face of LSEs, such as reviewing and amending their goals. The literature points out that the consistency of top management's perceived environmental uncertainty is one of the important factors influencing the enterprise's performance. It has guiding significance to the top management's decision-making in a SOE, our research object.

In the context of our research, SOEs play the leading role in dealing with LSEs. However, in Western literature, the research object is mainly private commercial enterprises in capitalist society. Therefore, although the literature reviewed in this chapter has certain guidance or reference significance for this study, as stated in the summary of each section, the theories cannot be directly applied to our study, and appropriate selection or adjustment is required.

## Chapter 3: Research Model and Hypotheses

### 3.1 Effect of environmental variables on enterprise trade-off

For convenience, in this study, we refer to the impact of LSEs on the enterprise's business environment as "environmental variable" (S), the enterprise's trade-off between CSR response and business innovation under the effect of S as "enterprise trade-off" (C), the impact of LSEs on the enterprise's policy environment as "policy impact" (S<sub>1</sub>), the impact of LSEs on the enterprise's market environment as "market impact" (S<sub>2</sub>), the impact of LSEs on the enterprise's technological environment as "technological impact" (S<sub>3</sub>), and the impact of LSEs on the enterprise's resource environment as "resource impact" (S<sub>4</sub>). In addition, enterprises' strategy adjustment is referred to as C<sub>1</sub>, incentive mechanism as C<sub>2</sub>, decision-making process as C<sub>3</sub>, enterprise performance as P, economic performance as P<sub>1</sub>, and CSR performance as P<sub>2</sub>.

Under the background of economic globalization, enterprises are faced with more severe and uncertain environmental dynamics, including the acceleration of technological innovation, the expansion of industrial scale, and the intensification of competition (Bai & Chang, 2015; J. Zhao, 2021). While the dynamic environment creates difficulties for strategic decisions, rapid market changes and the unpredictability of future events also provide enterprises with plenty of opportunities. Environmental uncertainty is the decisive factor of enterprises in making the related decision is generally considered an unstable or dynamic factor (Child, 1972).

Duncan (1972) pointed out that environmental uncertainty mainly has the following three characteristics: the impact of the relevant environment on decision-making is unpredictable; the outcome of the decision is unknown; there is little information about environmental factors when making decisions. Miller (1983) made a significant contribution to the study of environmental dynamism, stating that the dynamics of the market environment referred to the frequency of change, the degree of change, and the unpredictability of change, including factors such as consumer preferences, industrial structure (i.e., industry competition patterns), and production and service technologies. According to their view, environmental dynamics have two essential characteristics: volatility (including the rate and amount of change) and unpredictability (i.e., uncertainty). The main factors that affect the environmental dynamics include the possible environmental impact, the change of industrial structure, and the instability

of market demand.

Dess and Robinson Jr. (1984) believe that the environment enterprises face is dynamic, characterized by a specific rate of uncertainty and instability. This dynamic nature is manifested as volatility in the development process of the enterprise and unpredictability in the final result. Environmental dynamics could be described through multiple dimensions, mainly indicating changes in the environment. Based on the above concepts, Schilke (2014) pointed out that environmental dynamism could be divided into three levels: low, medium, and high. Low-level environmental dynamics are characterized by the lack of dynamism in the external environment, a lack of frequent change, and the ability of the behavioral agents involved in the market to predict the changes that are about to occur with greater accuracy. High-level environmental dynamics are those common, discontinuous rapid changes. Medium-level environmental dynamics are those more predictable and regular changes that occur along roughly predictable linear paths.

Scholars show differences in defining the dimensions of environmental dynamics. Y. Peng et al. (2019) classified environmental dynamics into two categories. The first category includes the dynamics caused by customers, competitors, and suppliers, which directly interact with the enterprise in focus. The second category includes the dynamics caused by regulatory entities and the economy, which interact indirectly with the enterprise in focus. Yin and Shao (2018) pointed out that the environment enterprises face was dynamic, and the degree of unpredictability and instability was a key factor. The core of this dynamic nature lies in the dynamics of technology and the market, among which the dynamics of technology are mainly caused by rapid technological change. Therefore, business environment dynamics comprise technology dynamics and market dynamics, while market dynamics are triggered by rapid changes in competitive behavior and customers.

From the perspective of strategic management, the high uncertainty of the environment will bring a lot of unexpected things to the enterprise. It may even disrupt its regular operation, threatening its survival and development. In this situation, it is imperative to manipulate resources purposefully to obtain external support so as to restore enterprise value. According to the strategic choice theory, all strategic choices are to eliminate environmental constraints, and the choice is jointly made by enterprise decision-makers and the external environment.

Business decision-makers should rely on more than just the external environment to determine appropriate strategies. It is because the environment presents not only opportunities but also threats to the organization. These factors together determine the boundaries of strategic choices. Therefore, business decision-makers must consider internal and external factors and

formulate strategies based on their comprehensive judgment of opportunities and threats. In this way, enterprises can better adapt to the changing environment and achieve long-term success.

At the same time, the way enterprise decision-makers understand the current environment will affect their autonomy in strategic decision-making. The strategic choice theory emphasizes the interaction between decision-makers and the environment. In this theory, the environment imposes certain spatial constraints on decision-makers, limiting available options. The final development direction of the enterprise is determined by the strategic choice of decision makers. Decision-makers guide the growth and success of the business by making strategic decisions within the range of viable options. Therefore, in the process of strategic choice, decision-makers should fully understand the impact of the environment and make wise strategic choices to ensure the sustainable development of the enterprise (Child, 1997).

In a highly complex task environment, managers put more emphasis on standardized CSR strategies, and the uncertain environment drives them to pay more attention to the safety of CSR codes of practice (Skandera et al., 2022). In this study, we posit that when LSEs occur, the dynamic environment will stimulate enterprises to make trade-offs between business innovation and CSR behaviors. On the one hand, enterprises may choose business innovation to improve their operation efficiency and help to obtain good economic performance, including common financial performance and market performance, which is peculiarly pointed out in this research. On the other hand, enterprises may choose to actively undertake their social responsibility to help the society tide over difficulties and realize social value.

However, both business innovation and CSR behaviors are double-edged swords. Firstly, CSR behaviors can enhance brand awareness and brand reputation for enterprises that make business innovations, bringing about a better corporate reputation (Ji & Miao, 2020); however, CSR behaviors may also increase the risks of business innovation. Secondly, Successful business innovation can provide necessary economic support for enterprises to fulfill their social responsibilities. Successful business innovation can greatly improve enterprises' economic performance and provide the necessary prerequisite for enterprises to undertake charitable CSR. Driven by factors such as corporate reputation, enterprises that have achieved commercial success will eventually assume charitable social responsibilities (Carroll, 1991).

Finally, once a broader and higher-level business fails, the huge social responsibility disaster it brings to the enterprise cannot be underestimated. Business innovation is about disrupting existing interest patterns, establishing new industry or market structures, and creating extraordinary transaction structures and mechanisms (Amit & Zott, 2001). The more stakeholders involved in business innovation, the greater the CSR disaster if it collapses.

Therefore, enterprises will make trade-offs between business innovation and CSR behaviors to choose the most beneficial strategic direction for their development.

### **3.1.1 The effect of policy impact on enterprise trade-off**

From the perspective of the policy environment, the government not only advocates enterprises, especially state-owned enterprises, to actively undertake social responsibilities but also encourages enterprises to carry out business innovation. From the perspective of CSR, according to Garcia-Sanchez et al. (2016), in a legal society, governments tend to promote legislation on employee rights and stakeholder protection, inducing a wide range of stakeholders (e.g., customers, employees, and NGOs) based on their legitimate interests to encourage enterprises to take CSR activities. This makes stakeholders pay more attention to CSR behaviors and disclosure, thus having a greater impact on enterprises.

Current CSR is often not implemented in the form of normative national laws but through indirect pressure and private actors through the judicial form of enforcement (Lau et al., 2018). CSR can be stimulated by mixing enforcement requirements with social norms (Du et al., 2016; Matten & Moon, 2008). The policy may create fundamental uncertainty about the substance of CSR and institutional uncertainty associated with change (Lepoutre et al., 2007). From the perspective of business innovation, enterprises can realize value creation through business innovation (Amit & Zott, 2010). The more unstable the policy environment is, the higher the ability of enterprises needed to manage and control market risks will be. Enterprises may also adopt business innovations to eliminate environmental constraints (Child, 1997).

For enterprises, adapting corporate strategies and policies to fit social responsibility and business innovation may conflict with current institutional frameworks (such as traditions and codes of conduct) because its implementation requires the government to be willing to adopt new goals and guidelines and to use mechanisms other than the judiciary. Moreover, in some countries, the institutional environment requires a higher level of CSR. Through the business innovation and CSR synergies, enterprises can achieve the best possible products, processes, and outputs (Randrianasolo & Semenov, 2022).

Therefore, we hold that when LSEs occur, the uncertainty of the policy environment will prompt enterprises to make trade-offs between CSR behaviors and business innovation, and to develop strategies, incentive mechanisms, and decision-making procedures that are in line with the current organizational operation, so as to pool limited resources to maintain their core competitive advantages. In this study, environmental uncertainty includes policy environment uncertainty, market environment uncertainty, technological environment uncertainty, and

resource environment uncertainty.

The policy environment uncertainty refers to the uncertainty of government effectiveness and policy guarantee, such as policy support, financial support, decentralization, and approval efficiency, faced by enterprises under the impact of LSEs. Market environment uncertainty refers to the uncertainty of product market demand, raw material supply, and market price under the impact of LSEs. Technological environment uncertainty refers to the uncertainty of the maturity of production technology, the advanced degree of network technology, the advanced degree of material technology, and the consistency of international technological standards under the impact of LSEs. Resource environment uncertainty refers to the uncertainty of resource identification, resource acquisition, and resource integration under the impact of LSEs.

Environmental uncertainty means that the environment of the enterprise is changing, which can impact the enterprise (X. Fei, 2005). The environmental changes concerned in this study mainly include the changes in the policy environment, market environment, technological environment, and resource environment under LSEs. Accordingly, the impact of LSEs on the environment of enterprises includes the impact on enterprises' policy environment, market environment, technological environment, and resource environment. In this study, the following hypothesis is proposed from the policy impact dimension, which is one of the four dimensions of environmental variables:

H<sub>11</sub>: S<sub>1</sub> has a positive impact on C.

### **3.1.2 The effect of market impact on enterprise trade-off**

From a market perspective, market turbulence refers to the extent to which the industry environment is dynamic, multifaceted, and rapidly changing (Jaworski & Kohli, 1993). Market uncertainty reflects the volatility and uncertainty of market demand conditions. Frequent market changes increase the difficulty of predicting customer needs and preferences (Hoppmann & Vermeer, 2020). When governments, markets, and financial institutions change rapidly, it can lead to a highly volatile environment, making it difficult to accurately predict customer needs or response to marketing strategies (H. Park et al., 2019).

In such an environment, it is important to strengthen customer communication and create market responsiveness resulting from CSR practices. Market turmoil can accelerate customers' trust generated by CSR in building market competitiveness. However, determining how customers respond to an enterprise's CSR may be challenging if consumers do not observe direct value in highly volatile markets. In other words, while CSR may motivate employees, it

might also put enterprises in a disadvantageous position in a volatile market, making it difficult to predict current and potential needs.

The existing literature has recognized the impact of market uncertainty on enterprise innovation (Zahra & Bogner, 2000). In particular, high market uncertainty may make it more difficult for enterprises to acquire and integrate knowledge from institutionally distant customers (H. Wang & Li, 2008). Therefore, enterprises should know how to deal with dynamic changes in a competitive market environment (Sabherwal et al., 2019). For instance, a highly uncertain market environment may be considered dangerous because in such an environment, incorrect decisions can lead to serious trouble and put enterprises' survival at high risk (Baron & Tang, 2011).

In the face of fierce market competition, through R&D and innovation, enterprises pursue to meet the market demand quickly and timely while reducing production costs to gain competitive advantages (O'Sullivan et al., 2009). Given the difficulty of judging the market prospect reasonably and controlling the cost and effectiveness of market development, enterprises must balance the relationship between business innovation and social responsibility activities and allocate funds and resources reasonably to maximize the expected efficiency. Therefore, regarding the market impact dimension of environmental variables, we put forward the following hypothesis:

H<sub>12</sub>: S<sub>2</sub> has a positive impact on C.

### **3.1.3 The effect of technological impact on enterprise trade-off**

Scholars have paid extensive attention to the uncertainty of the technological environment. The uncertainty stems from the speed, unpredictability, and volatility of technology development, competition between old and new technologies, the number of technological trajectories, and the difference among the trajectories (Carbonell & Rodríguez-Escudero, 2009; H. Park et al., 2019). The uncertainty of the technological environment can cause changes in consumer demand, lead to the uncertainty of the technology effect, and increase the cost of new product development (Lin, 2019).

When the technological environment is highly uncertain, the rapid change of technology may lead to a change in consumer demand and prolong the time for consumers to purchase products, thereby directly affecting the sales and profit of enterprises' new products, especially in the high-tech field, where the product life cycle is short and the technology iteration is rapid. A high-tech product can be threatened by an updated one soon after it hits the market, making consumers prefer to wait a little longer and purchase the next generation of products with higher



performance (Sendstad et al., 2023). The uncertainty of the technological environment will lead to the uncertainty of the technology effect, which may then reduce the customer acceptance rate of the product or even cause obstacles to the product's full market release (Qing et al., 2022). This can be explained as follows:

First, new products might have potential risks and technical side effects that could not be fully detected during the development and testing phase but might surface once the product is released. As a result, consumers are concerned about the unpredictability of technology's outcomes and side effects. This concern may significantly reduce the market acceptance of new products, especially in today's era when consumers increasingly value green health and low-carbon environmental protection (X. Q. Li et al., 2021). Second, the product may fulfill the product requirements in the R&D stage, but in the sales stage, it may fail to pass the safety inspection due to the changes in national policies. In this case, the product needs to be redesigned or improved, increasing the R&D cost of the new product and decreasing its competitive advantages (Lin, 2019).

High technological uncertainty will increase enterprises' investment cost in new product R&D and the risk of new product R&D. However, when the newly developed product is a small improvement on the original product, it can be sold to familiar customers through established channels and brands once its development is completed. In this case, the technological and market uncertainty faced by enterprises is very low, and consequently, the probability of successful product development is higher (Meijer et al., 2007).

On the contrary, if the new product development involves the application of new technology and is for a new market segment, there will be some challenges. First of all, repeated trials and errors are needed in order to minimize technological uncertainty (Yigitcanlar et al., 2019). Second, establishing a new distribution network is necessary, and it will take some time for consumers to accept the new product. Therefore, the risk of failure is relatively greater. According to the contingency theory, an organization should consider its development status and external environment, and choose management principles and methods that are suitable for its development status differently (Drazin & Ven, 1985). In an environment with high technological dynamics, old knowledge resources are no longer sufficient to support business development. Therefore, enterprises must integrate internal knowledge and relevant external knowledge to reconstruct new capabilities (T. Kim & Rhee, 2009).

The uncertainty of the technological environment will pose a threat to both existing enterprises and would-be entrants. At the same time, it may also create opportunities. Uncertainty will force enterprises to evaluate whether business innovation can help achieve

their strategic and operational goals and which model is more appropriate. If the technological environment to be entered has low uncertainty, it is easier for enterprises to predict the future trend of technological development and identify valuable knowledge resources, thus reducing the risk of decision-making errors and increasing the benefits from future operations. Conversely, if the technological environment uncertainty is high, technological knowledge will be more diverse, dispersed, and complex, as well as more recessive and heterogeneous, which may impose more challenges for enterprises to identify valuable knowledge and opportunities (Meijer et al., 2007). In this case, it is difficult for enterprises to accurately and timely grasp the technological changes and development prospects, which can easily lead to decision-making errors and performance decline. Considering the long-term development and reputation, decision-makers tend to avoid aggressive risk-taking decisions (Alzamora-Ruiz et al., 2021).

A highly uncertain technological environment can create new opportunities for businesses. At the same time, the emergence of new technologies and market opportunities may also provide better opportunities for inter-organizational learning (C. Kim et al., 2012). In addition, rapid technological advancement greatly shortens the life cycle of existing products and erodes the “entrenched” competitive advantages of existing enterprises, which will provide first-mover opportunities for new entrants.

Moreover, in a highly uncertain technological environment, intellectual property rights are less clear, and knowledge spillovers and leaks in the R&D of technology and product are common, which can facilitate the knowledge acquisition of new entrants (J. Zhao, 2021). Therefore, in a technological environment with high uncertainty, enterprises can actively balance the opportunities and risks brought by technological turbulence, optimize resource allocation through business innovation and CSR activities, achieve technology breakthroughs, and enhance value acquisition (Vrande, 2013). Therefore, in view of the technological impact dimension of environmental variables, we propose the following hypothesis:

H<sub>13</sub>: S<sub>3</sub> has a positive impact on C.

### **3.1.4 The effect of resource impact on enterprise trade-off**

The resource dependence theory holds that enterprises cannot produce all the resources they need by themselves. Therefore, part of the resources needs to be obtained from the external, including resources required for resource exchange and alliances with other enterprises (Hillman et al., 2009). The resource dependence theory emphasizes that no organization can exist in isolation from the environment and that all organizations are closely connected with the surrounding environment.

Due to the organizations' differences in abilities, it is necessary to clarify the different degrees of dependence. At the same time, it is necessary to pay attention to the adverse effects caused by excessive dependence (Casciaro & Piskorski, 2005). Only in this way can both parties make reasonable decisions in case of resource shortage to minimize unnecessary losses caused by resources. Therefore, the potential risks of highly dependent relationships can be reduced by mergers and acquisitions or joint ventures of the organization, which will change the dependent relationship into a stable resource supply and sharing relationship. Besides, methods such as executive succession can also be adopted to stabilize the relationship (Hillman et al., 2009).

When the resources are insufficient, enterprises can realize value supplement through resource patchwork, confirming all kinds of resources owned by them, including human resources, skills, materials, customers, networks, systems, and other categories of resources (Senyard et al., 2010, August 6-10). For example, downstream consumers, upstream suppliers, and internal employees are within the scope of human resources (del-Castillo-Feito et al., 2022; Karatas-Ozkan et al., 2022). Skill patchwork belongs to the category of resource patchwork and refers to the integration of technological resources, such as professional and technological personnel. Material patchwork is also a type of resource patchwork. Besides the integration of intangible material resources such as knowledge, it also includes the integration of tangible material resources such as plants and equipment. Customer patchwork also belongs to the category of resource patchwork, meaning that entrepreneurs have the ability to communicate with partners in a timely manner and jointly launch products or services to meet customer needs in the market changes.

In this study, we hold that when LSEs lead to high resource uncertainty, enterprises will carry out trade-offs between CSR behaviors and business innovations to achieve optimal allocation of resources (X. Sun & Gunia, 2018) and optimize strategic adjustments, incentives, and decision-making processes in such trade-off. Furthermore, enterprises will continue to commit to ethical practices and contribute to the development of new products, technologies, and services to achieve sustainable development (Moir, 2001; Speckbacher et al., 2015). Therefore, in view of the resource impact dimension of environmental variables, the following hypothesis is proposed:

H<sub>14</sub>: S<sub>4</sub> has a positive impact on C.

## **3.2 The impact of trade-off between CSR behaviors and business innovations on enterprise performance**

### **3.2.1 The effect of enterprise trade-off on economic performance**

CSR has become the central concept of strategic management research beyond economic profit due to its legitimacy and importance among consumers, investors, governments, and other stakeholders (Koh et al., 2023; Siyahhan, 2023; Yuan et al., 2022). The trade-off between CSR behaviors and business innovation is an effective means of managing risk in an uncertain environment (S. Kim et al., 2021; Marhfor et al., 2022). However, both CSR response and business innovation behaviors are “double-edged swords” for enterprises.

On the one hand, CSR has advantages in reducing costs and risks, increasing competitive advantages, maintaining and improving corporate reputation and social legitimacy, and creating collaborative value (S. Kim et al., 2021). Therefore, socially responsible and well-managed enterprises are generally more likely to assess potential risks, reduce costs, and ultimately improve their financial performance (Marhfor et al., 2022).

Engaging in social responsibility activities simplifies the relationship between the enterprise and its stakeholders and makes it easier to establish a long-term and stable relationship with the stakeholders. Although investing in social responsibility increases enterprises' operating costs, the initial investment cost in social responsibility will eventually be offset by the benefits brought by the reduction of long-term costs and the improvement of corporate reputation (Jones, 1995).

On the other hand, investing in CSR may increase enterprises' costs and reduce economic profits. Diminishing marginal returns is a feature commonly observed in all resources, and CSR is no exception. Its positive effect on financial performance also shows a diminishing marginal trend (Flammer, 2015).

Enterprises might face trade-offs between social responsibility and financial performance in their daily decision-making (Ilyas & Mian, 2022). Especially when facing pressure from stakeholders or seeking social legitimacy, enterprises are likely to prioritize social responsibility over financial performance. However, enterprises that over-invest in CSR activities are prone to get into financial trouble. Compared with enterprises not engaged in CSR, they will bear higher costs and thus are more likely to be at a disadvantage in a competitive market.

Schumpeter and Swedberg (2021) defined innovation as the establishment of a new

production function that achieves the realignment of the factors of production . Innovation is a continuous process of discovering, learning, and applying new technologies. In 2005, the Organization for Economic Cooperation and Development (OECD) defined innovation as the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations. Innovation is often seen as the “engine of business growth”. The reason is that innovation is one of the critical strategic tools for enterprises to enter new markets and increase the market share (Cao et al., 2022).

At the same time, innovation is the internal driving force for enterprises to cope with the changing market demand and obtain better financial performance. The utilization and development of the innovation ability of enterprises is widely regarded as the key factor determining enterprise performance and competitive advantage (J. Peng et al., 2021). However, for enterprises, business innovation is a “double-edged sword”. On the one hand, the key reason enterprises implement innovation is that they hope to achieve higher business performance and greater competitive advantage (Ni, 2023). Innovation is the key strategy for enterprises to maintain unique advantages in the competitive market environment. By developing a formal and comprehensive innovation strategy, enterprises can effectively integrate product and technological innovation, thereby maximizing the return from innovation efforts and obtaining higher innovation efficiency (Zott & Amit, 2007).

Theoretically, innovation mainly provides strategic support for enterprises’ innovation and business activities from two aspects. First, innovation strategy links innovation activities with the company’s long-term goals and reduces the conflict between the two, thus reducing the uncertainty of innovation (N. Wang et al., 2021). Second, formulating and implementing innovation strategies for differentiated products can help enterprises maintain current market share or target new niche markets. Enterprises can achieve better financial performance by developing new products through innovation based on existing resources to respond to current and future market demands (Blind et al., 2017).

On the other hand, the risk of business innovation behavior determines the uncertainty of actual input and potential return (i.e., the potential input-output ratio). The potential value contained in innovation may not be realized in the future, and the return on innovation investment cannot be guaranteed. According to statistics, up to 33 to 60 percent of new products failed to bring economic benefits to the enterprises that had invested (Schilling & Hill, 1998). Therefore, the relationship between CSR and business innovation is widely questioned in the academic circle.

Some scholars believe that mutual promotion and interpenetration of social responsibility and business innovation can bring enterprises broader development prospects and competitive advantages (S. Borghesi et al., 2015; Padgett & Galan, 2010). By responding to the demands of society, the economy, and the environment, and through innovative work methods, innovative products, innovative services, and innovative markets, CSR initiatives provide enterprises with broader opportunities and avenues for innovation. Simultaneously, the implementation of CSR necessitates significant organizational changes, making enterprise innovation an effective tool to support the successful implementation of CSR initiatives.

A different perspective is that business innovation and CSR compete for limited resources, so the relationship is negative (Bimir, 2017; Hull & Rothenberg, 2008). In this view, since enterprises have limited resources, investing both in business innovation and CSR will be counterproductive as each ability can be used independently to gain a competitive advantage. Investment in business innovation and CSR creates an information asymmetry between managers and shareholders (R. Borghesi & Chang, 2020). Therefore, the integration of business innovation and CSR is not the best choice to form competitive advantages.

Under the background of LSEs, enterprises face many risks and crises and are more inclined to gather superior resources to ensure their continuous and orderly operation. Therefore, under LSEs, exploring the driving factors of the trade-off between CSR response and business innovation and its impact on enterprise performance is of great impetus to deepening the research on the relationship between business innovation and CSR (Ferauge, 2013).

Therefore, we posit that in the context of LSEs, enterprises will make trade-offs between CSR and business innovation. The trade-off between CSR and business innovation means enterprises will reasonably allocate limited resources between CSR activities and business innovation to achieve optimal resource allocation and realize sustainable development. The impact of the trade-off between CSR response and business innovation on economic performance is concentrated in the following aspects:

Firstly, under the background of LSEs, the trade-off between CSR response and business innovation is conducive to achieving resource patchwork and allocation that maximizes economic benefits. The RBV holds that as a bundle of unique and imitable resources and capabilities, enterprises must properly integrate these resources and capabilities to gain competitive advantages (S. Y. Chen & Ji, 2022). It has been found that business innovation and CSR are both critical enterprise capabilities (Choi & Park, 2022; Teece, 2017; Z. Q. Wang et al., 2016). Business innovation can be regarded as a dynamic ability that enables an enterprise to create new products and processes in response to changing market conditions (O'Reilly &

Tushman, 2007). Similarly, CSR is a value-enhancing capability that may lead to superior strengths and performance (Berens et al., 2007; Kuzey et al., 2021).

Secondly, CSR can strengthen social network relations and promote business innovation, thus forming core competitive advantages. The social network and the knowledge resource network of an enterprise's innovation personnel play an essential role in enterprise innovation. As a matter of fact, the internal knowledge resources of an enterprise can only provide limited support for innovation, so obtaining external knowledge resources is crucial for the construction of the enterprise's innovation ability, and its stakeholders play an important role in that (Z. Q. Wang et al., 2016).

Through social responsibility activities, the internal personnel of the enterprise can establish relationships with stakeholders such as customers, investors, and suppliers, who often possess professional knowledge and skills that complement the internal knowledge of the enterprise. In particular, the upstream suppliers and downstream customers can provide technological or knowledge support for the enterprise's technological innovation activities, including R&D decision-making, product testing, and final product (or service) innovation. CSR activities are an important way for stakeholders to establish a network and share and exchange knowledge. Therefore, social responsibility activities can promote enterprise innovation (Yi et al., 2022).

Finally, CSR activities can strengthen the enterprise's reputation formed by business innovation and improve its sales performance. Innovation is often considered the "engine of business growth". It is the internal driving force for enterprises to cope with the changing market demand and obtain better financial performance. The utilization and development of an enterprise's innovation ability is widely regarded as a key factor in determining enterprises' performance and competitive advantage (Z. Q. Wang et al., 2016).

Business innovation can help enterprises to form breakthrough products, technologies, and services and make trans-formative business model innovation. At the same time, CSR activities can increase the enterprise's online reputation among all walks of life and consumers and enhance potential consumers' willingness of purchasing new products, technologies, and services, thus improving enterprise performance (Teece, 2007; Zott & Amit, 2007). Based on the discussion above, we put forward the following hypothesis:

H<sub>21</sub>: C has a positive impact on P<sub>1</sub>.

### **3.2.2 The effect of enterprise trade-off on CSR performance**

The CSR performance (P<sub>2</sub>) not only is the outcome of an enterprise's fulfillment of its social

responsibilities but also reflects the enterprise's fulfillment of its obligations to internal and external stakeholders (Y. Chen et al., 2021). Scholars generally categorize CSR into internal CSR (ICSR) and external CSR (ECSR), targeting internal and external stakeholders, respectively (Siyahhan, 2023). ECSR encompasses a company's responsibilities and obligations towards customers, the environment, and society, whereas ICSR focuses on the management of relevant entities within the organization.

ECSR focuses on customer, environmental, and social practices, such as supporting volunteerism, charitable giving, investment in community development, consumer care programs, and environmental and wildlife conservation, to strengthen an organization's external image and reputation with a social audience (Bridoux et al., 2016). ICSR focuses on organizational practices that support employee physical and mental health, such as employee rights protection, healthcare, professional and personal development, equal opportunity, and diversity (B. Li et al., 2021).

The impact of the trade-off between CSR response and business innovation on  $P_2$  is reflected in the following. First, when LSEs occur, seeking a balance between CSR and business innovation can reduce costs and risks, strengthen competitive advantages, and enhance corporate reputation and social acceptance, thereby creating synergistic value. The stakeholder theory emphasizes that CSR is a powerful tool for managing stakeholder relationships. Engaging in social responsibility activities not only simplifies the relationships between companies and stakeholders but also facilitates the establishment of long-term and stable relationships with them (Fordham & Robinson, 2018).

Second, the trade-off between CSR and business innovation can increase organizational and social recognition and enhance corporate reputation. In a turbulent environment, enterprises invest the limited resources in stakeholders' key areas of concern, and their CSR focuses on improving the welfare and interests of multiple stakeholders (Bridoux et al., 2016). Enterprises actively undertake social responsibilities towards the community and the environment and provide new products, new technologies, new services, and new business models to meet the potential demands of consumers, which will enhance enterprises' external evaluation and reputation, helping them to win a positive image and obtain resources and information from stakeholders (Valackiene & Miceviciene, 2012). Based on the above analysis, we propose the following hypothesis:

H<sub>22</sub>: C has a positive impact on  $P_2$ .



### **3.3 The mediating role of trade-off between CSR response and business innovation**

#### **3.3.1 The effect of enterprise trade-off on economic performance**

Innovation is achieved by combining and recombining knowledge resources. Therefore, the social network and the network of knowledge resources of the innovators in an enterprise play an important role in enterprise innovation. When environmental uncertainty is low, enterprises is able to realize the synergy of business innovation and social responsibility activities (Randrianasolo & Semenov, 2022). Through social responsibility activities, enterprises can establish relationships with stakeholders such as customers, investors, and suppliers, who often possess professional knowledge and skills that complement the internal knowledge of the enterprise. In particular, upstream suppliers and downstream customers can provide technological or knowledge support for the enterprise's technological innovation activities, including R&D decision-making, product testing, and final product or service innovation (Randrianasolo & Semenov, 2022).

Randrianasolo and Semenov (2022) conducted empirical research and found that the extent of social responsibility activities undertaken by enterprises had a positive correlation with the enterprises' innovation capability. It also had a positive correlation with the variety of new product categories released to the market through R&D efforts. When LSEs occur, due to the scarcity of the enterprise's knowledge and resources, CSR does not promote the enterprise's innovation, but hinders it (Randrianasolo & Semenov, 2022). The limitation of enterprises' resources and managers' cognitive ability means that the more resources enterprises invest in social responsibility activities, the fewer resources they can invest in technological innovation. Since the expectations and demands of primary and secondary stakeholders are different, and the enterprise organizations that fail to fulfill their economic obligations cannot meet the expectations of any stakeholders, most stakeholders may be more inclined towards companies prioritizing investment in R&D innovation rather than social responsibility initiatives.

Especially when the complementarity of innovation and social responsibility strategies is weak and enterprises' resource constraints are high, enterprises are more likely to pay attention to the investment in R&D and innovation activities. On the contrary, if innovation and social responsibility strategy are highly complementary, and the enterprise can pay attention to social responsibility investment while making significant investment in R&D, it will positively impact

enterprise performance under the synergistic effect (Zasuwa, 2017). From the perspective of strategic management, enterprises' primary goal is to realize the creation and distribution of economic value (Marhfor et al., 2022).

The creation of economic value is related to enterprises' core business activities. As a key force in enhancing enterprises' core competitiveness, innovation plays a vital role in improving enterprises' profitability and exploiting new markets (Amit & Zott, 2001). At the same time, since the realization of economic value is essentially enterprises' commitment to the main stakeholders (e.g., shareholders), and the distribution of value is their commitment to some secondary stakeholders, if enterprises do not pay attention to the distribution of value, the organization will be unable to exist legally for long.

Therefore, maintaining the relationship with the secondary stakeholders is crucial to enterprises' long-term development. Therefore, in the case of intensified environmental uncertainty caused by LSEs, enterprises will reasonably weigh the advantages and disadvantages of undertaking CSR and business innovation in order to realize the optimal allocation of resources and improve the dynamic capability, thus improving their economic performance (Schilke, 2014). Based on the above discussion, we propose the following hypotheses:

H<sub>31</sub>: C plays a mediating role between S<sub>1</sub> and P<sub>1</sub>.

H<sub>32</sub>: C plays a mediating role between S<sub>2</sub> and P<sub>1</sub>.

H<sub>33</sub>: C plays a mediating role between S<sub>3</sub> and P<sub>1</sub>.

H<sub>34</sub>: C plays a mediating role between S<sub>4</sub> and P<sub>1</sub>.

### **3.3.2 The effect of enterprise trade-off on CSR performance**

With the emergence and rapid popularization of environmental management, the importance of CSR is gradually increasing. Society now expects businesses not only to produce goods and services, but also to play a more desirable role in society other than being confined to their traditional roles (Ozdemir et al., 2022). Firstly, enterprises are expected to fulfill economic responsibilities. In fact, the main purpose of enterprises is to create and maintain sustainable profits by producing and providing necessary products and services to society (Kuzey et al., 2021).

The second essential obligation of enterprises is the legal responsibility. As enterprises operate within legal boundaries and are protected by national borders, they must strictly comply with regulations set by their respective governments and be transparent to the public and relevant stakeholders. Finally, enterprises have moral responsibility, such as social support

events, including participating in charitable activities and providing financial assistance to vulnerable groups.

Enterprises use CSR as a channel to differentiate themselves from other enterprises. As sustainable management becomes more critical, they have begun to adopt CSR as an essential business strategy internally. Policy, market, technological, and resource uncertainty under LSEs encourage enterprises to balance CSR with business innovation to achieve sustainable management (Z. Wang et al., 2018). The trade-off between CSR and business innovation helps enterprises to achieve CSR performance. On the one hand, based on the win-win concept that both economic value and social value are important, strategic corporate social activities will ultimately benefit enterprises (J. Kim et al., 2019).

Efforts to ensure the health and safety of citizens, and the development of enterprise activities that meet the needs of all stakeholders, such as caring for social and environmental issues, human rights, and information disclosure, are the ultimate pursuit of the common interests of the enterprises and stakeholders. On the other hand, when an enterprise fulfills its social responsibilities, it can build a closer relationship with each stakeholder. From a broad perspective, an enterprise will receive good evaluation and reputation from society and consumers if it fulfills its social responsibilities. Consumers want to buy goods and services from reputable enterprises, and talents are attracted to enterprises with principles (Zoysa et al., 2021). Based on the above discussion, we propose the following hypotheses:

H<sub>41</sub>: C plays a mediating role between S<sub>1</sub> and P<sub>2</sub>.

H<sub>42</sub>: C plays a mediating role between S<sub>2</sub> and P<sub>2</sub>.

H<sub>43</sub>: C plays a mediating role between S<sub>3</sub> and P<sub>2</sub>.

H<sub>44</sub>: C plays a mediating role between S<sub>4</sub> and P<sub>2</sub>.

### **3.4 Research model proposal**

Based on the hypotheses discussed and proposed, in this study, we divide the environmental uncertainty caused by LSEs into four dimensions: policy environment uncertainty, market environment uncertainty, technological environment uncertainty, and resource environment uncertainty. In the rest of the thesis, the impacts of environmental uncertainty on enterprises in these four dimensions will be called policy impact (S<sub>1</sub>), market impact (S<sub>2</sub>), technological impact (S<sub>3</sub>), and resource impact (S<sub>4</sub>), respectively, and the impacts in these four dimensions are collectively referred to as environmental impact (S). Enterprise performance (P) is divided into two dimensions: economic performance (P<sub>1</sub>) and CSR performance (P<sub>2</sub>).

This study aims to explore whether the impact of environmental change (S) caused by environmental uncertainty on enterprises under LSEs will affect corporate behavior (C), namely, the trade-off between specific CSR activities and business innovation, thus affecting enterprise performance (P). Therefore, the research model in Figure 3.1 below is proposed. In order to understand the research model from shallow to deep, we divide the model into three layers. The first layer is the research model of the basic state, the second layer is the research model of an expanded state, and the third layer is the research model of a double-expanded state. The variables in the model and their relationships, which have been discussed above, as well as the hypotheses and other relevant contents and relationships are summarized in Table 3.1.

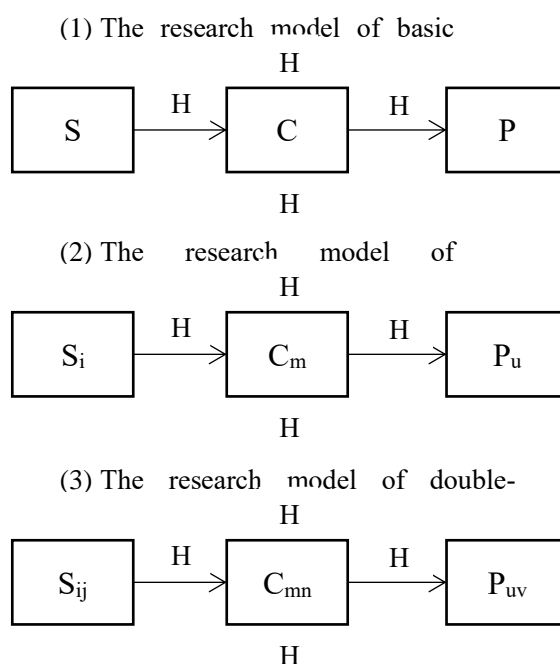


Figure 3.1: Research model and hypotheses

Table 3.1: Research objectives, questions, variables, and hypotheses

Item	Description
Research objectives	To explore how the <i>surroundings</i> will change, the trade-off (that is, the specific <i>conduct</i> ) between CSR response and business innovation of SOEs, and its influence on enterprise performance during LSEs through an empirical research of SMMG
Research questions	<ol style="list-style-type: none"> <li>1. What is the conceptual definition and theoretical underpinning of the trade-off between CSR response and business innovation?</li> <li>2. To what extent does environmental uncertainty drive the trade-off between CSR response and business innovation? Under the LSEs, what dimensions should we divide the environmental uncertainty into to fit the target enterprise's actual situation better?</li> <li>3. How does the trade-off between CSR response and business innovation impact enterprises' economic performance and CSR performance?</li> <li>4. To what extent does the trade-off between CSR response and business innovation mediate the relationship between environmental uncertainty and enterprise performance?</li> </ol>

$S_{ij}$	$S_i$ represents the environmental changes of enterprises in the respective dimension under LSEs, while $S_{ij}$ represents the specific test items for the environmental changes in dimension $i$ . Where: $i=1,2,3,4$ ; $j = 1, 2, 3 \dots 11$ .
$C_{mn}$	$C_m$ represents the specific trade-off behavior of the enterprise in dimension $m$ under the influence of environmental changes, and $C_{mn}$ represents the specific test item $n$ of the enterprise's trade-off behavior in dimension $m$ . Where: $m=1, 2, 3$ ; $n = 1, 2, 3 \dots 12$ .
$P_{uv}$	$P_u$ represents the enterprise performance of dimension $u$ , and $P_{uv}$ represents the specific test item $v$ of the enterprise performance on the dimension $u$ . Where: $u= 1, 2$ ; $v= 1,2,3 \dots 6$ .
Hypotheses	<p><math>H_1</math>: Environmental impact has a positive impact on corporate behavior (C).</p> <p><math>H_{1i}</math> represents the hypothesis that the environmental impact of dimension <math>i</math> (<math>S_i</math>) has a positive impact on corporate behavior (C). Where: <math>i=1, 2, 3, 4</math>.</p> <p><math>H_2</math>: Corporate behavior (C) has a positive impact on enterprise performance (P).</p> <p><math>H_{2u}</math> represents the hypothesis that corporate behavior (C) has a positive impact on enterprise performance (P) of dimension <math>u</math> (<math>P_u</math>). Where: <math>u=1, 2</math>.</p> <p><math>H_3</math> and <math>H_4</math> hypothesize that corporate behavior (C) plays a mediating role between environmental change (S) and enterprise performance (P).</p> <p><math>H_{3i}</math> and <math>H_{4i}</math> hypothesize that corporate behavior (C) plays a mediating role between the <math>i</math> dimension of environmental change S (<math>S_i</math>) and the <math>u</math> dimension of enterprise performance P (<math>P_u</math>), where: <math>i=1, 2, 3, 4</math>; <math>u=1, 2</math>.</p>
$H_{11}$	$S_1$ has a positive impact on C
$H_{12}$	$S_2$ has a positive impact on C
$H_{13}$	$S_3$ has a positive impact on C
$H_{14}$	$S_4$ has a positive impact on C
$H_{21}$	C has a positive impact on $P_1$
$H_{22}$	C has a positive impact on $P_2$
$H_{31}$	C plays a mediating role between $S_1$ and $P_1$
$H_{32}$	C plays a mediating role between $S_2$ and $P_1$
$H_{33}$	C plays a mediating role between $S_3$ and $P_1$
$H_{34}$	C plays a mediating role between $S_4$ and $P_1$
$H_{41}$	C plays a mediating role between $S_1$ and $P_2$
$H_{42}$	C plays a mediating role between $S_2$ and $P_2$
$H_{43}$	C plays a mediating role between $S_3$ and $P_2$
$H_{44}$	C plays a mediating role between $S_4$ and $P_2$

---

[This page is deliberately left blank.]

## **Chapter 4: Empirical Research Design and Methods**

### **4.1 Research idea**

Empirical research is one of the widely used research methods in management. Its purpose is to verify the universality and significance of research models or theories. After the research model is proposed based on hypothesis deduction, the validity of the model is further tested through empirical research. The ideas of our empirical study are as follows: We first conducted primary data collection and analysis through a questionnaire survey. After reviewing the existing literature on the trade-off between environmental uncertainty, CSR response, and business innovation and relevant studies on corporate performance, we organized the mature scales used in these studies and developed a preliminary survey questionnaire taking into account the specific focus of this research.

In the pre-survey stage, 65 questionnaires were collected, and SPSS25.0 was used to conduct exploratory factor analysis on the questionnaire samples to test the reliability and validity of the questionnaires. Based on the results of the exploratory factor analysis, the questionnaire was modified and adjusted, and the final questionnaire was formed. Then, through large-scale questionnaire collection, 397 valid questionnaires were collected to test the hypotheses. SPSS25.0, AMOS24.0, and SmartPLS3.0 were used to analyze and test the reliability and validity of the questionnaire, the measurement model, and the structural equation model. The Partial Least Square-Structural Equation Modelling (PLS-SEM) method was used to test the hypotheses, and the research conclusions and theoretical contributions were put forward.

### **4.2 Questionnaire design**

The variables selected in this study are all generalizations and descriptions of phenomena and are relatively abstract concepts. In order to make the variables concretized and measurable, we conducted a literature review on related variables, taking three steps: First of all, we read literature on related variables, including works where the concept was proposed and the frequently cited literature in this field to have a more in-depth understanding of such variables

and concepts. Secondly, as our research is in the context of China, it is essential to adapt the research content to China's national conditions and culture. Therefore, we studied and sorted out the high-frequency cited literature on relevant variables in China.

For the scale design, we went through the following process: First, through the "back translation method", the original English questionnaires and scales for reference were translated (Edunov et al., 2018). With the aim of enhancing the accuracy and rigor of the English translation, we divided the English translation team into two groups. One group was responsible for translating the English text into Chinese, while the other group was tasked with back-translating the Chinese translation produced by the first group back into English. Subsequently, we compared the two versions and made necessary modifications to ensure translation consistency and accuracy. Finally, the bilingual draft in both Chinese and English of the *Questionnaire on the Impact of COVID-19, SOEs' Social Responsibility Response, Business Innovation and its Impact on Performance* was formed.

The draft questionnaire consists of four parts. The first part is about the basic information. It includes the respondents' information, such as gender, age, marital status, highest education, residence, enterprise attributes, years of experience, department, and the relationship with SMMG. The second part is about the impact of major emergencies on the business environment, referred to as environmental impact (S). The third part is about the enterprise trade-off (C) under the impact of S, including strategic adjustment (C<sub>1</sub>), incentive mechanism (C<sub>2</sub>), and decision procedure (C<sub>3</sub>). The fourth part is about enterprise performance (P), including the enterprise's economic performance (P<sub>1</sub>) and CSR performance (P<sub>2</sub>).

The questionnaire involves seven latent variables. All of the structured items were measured using the seven-point Likert scale, where 1 represents "strongly disagree", 2 represents "disagree", 3 represents "slightly disagree", 4 represents "neither", 5 represents "slightly agree", 6 represents "agree", and 7 represents "strongly agree". The pre-survey aims to make the questionnaire design more scientific, and we conducted further tests on the questionnaire.

First of all, according to the opinions of experts and scholars in related fields, we reflected upon the rationality and logic of the related items and made appropriate fine-tuning. Then, focusing on the reliability and validity of the questionnaire, we consulted experts in this industry to identify whether these scale measurements are reasonable for this industry. We also consulted professors from the School of Management who are experts in first-hand data collection to improve the logic and rationality of the questionnaire on the level of method to avoid the questionnaire's endogenous problem as far as possible.



This study attaches great importance to the scientificity and validity of questionnaire design. During the scale design, considering the differences between different countries, industries, and research contexts, we focused on the characteristics of the target enterprise and the corresponding needs of the measurement scale. Moreover, the reliability and validity of the scale were considered with emphasis. We studied the rationality of the questions in the questionnaire and determined the scale needed for research. To ensure that items in the scale can cover various situations that may occur to the variables, we established a measurement item pool of related variables and then selected and filtered the items according to the research content. Items verified by previous studies and with high reliability and validity are the first choice. At the same time, we also considered the actual needs of this study to take consideration comprehensively. Furthermore, on the basis of literature study and scale screening, during the questionnaire design process, while ensuring that the questionnaire fully reflects the research theme, we paid attention to the endogenous problem of variables. Through the matching of research methods and measurement questionnaires, the endogenous problem between variables was solved from the source.

### **4.3 Variable measurement**

#### **4.3.1 Environmental variable**

For each independent individual enterprise, the “environment” it is in is a vibrant concept, with no clear definition, and cannot be measured in a simple and direct way. Adam Smith (2023) mentioned the concept of environment many times in *The Wealth of Nations*. It includes not only the social environment that can determine a country’s commercial and manufacturing development, but also the natural environment, legal environment, geographical environment, religious environment, working environment, living environment, and competitive environment. For convenience, the impact of LSEs on the business environment of enterprises is referred to as “environmental variables” in this thesis, and LSEs’ impact on policy environment, market environment, technology environment, and resource environment are referred to as “policy impact”, “market impact”, “technology impact” and “resource impact”, respectively.

##### **4.3.1.1 Policy impact**

Following the research of Cirera et al. (2021) on corporate policies under the impact of Covid-19, we adopted 5 items to measure the uncertainty of the policy environment under the impact

of COVID-19, including the intensity of policy support, financial support, decentralization, administrative approval efficiency, as shown in Table 4.1.

Table 4.1: Policy impact measurement scale

Index	Code	Item content	Reference
Policy impact	S <sub>11</sub>	After the outbreak of COVID-19, the central and local governments have increased their policy support for SMMG to switch to produce epidemic prevention products.	Cirera et al. (2021)
	S <sub>12</sub>	After the outbreak of COVID-19, the governments at all levels have increased their financial support for SMMG to switch to produce epidemic prevention products, including but not limited to tax rebates, tax incentives, various policy subsidies or cash input.	
	S <sub>13</sub>	After the outbreak of COVID-19, the governments have strengthened the devolution of power to managers of SMMG (such as giving them more operational autonomy and independence and allowing them to make trial and error in economic activities).	
	S <sub>14</sub>	After the outbreak of COVID-19, governments have improved their efficiency of various administrative examination and approval for SMMG (such as simplified procedures and shortened time).	
	S <sub>15</sub>	After the outbreak of COVID-19, the government has been more supportive of SMMG, a state-owned enterprise, than of similar private ones.	

#### 4.3.1.2 Market impact

Referring to the variable measurement method of Jaworski and Kohli (1993), Mao et al. (2019) and J. Peng et al. (2021), we divided market impact into demand uncertainty and competition intensity, measuring it through 11 test items, as shown in Table 4.2. Demand uncertainty includes market change frequency and market size (H. Park et al., 2019); competition intensity includes industry competition, promotion frequency, product similarity, and price competition (J. Peng et al., 2021).

#### 4.3.1.3 Technological impact

For the technological impact, this study used the scale of Kazancoglu et al. (2023), H. Park et al. (2019) and S. Wu et al. (2005) for reference and adopted 7 items for measurement, as shown in Table 4.3. The items include information about the maturity of production technology, the advanced degree of industrial chain, the matching degree of research and development with production, and technological standards.

Table 4.2: Market impact measurement scale

Index	Code	Item content	Reference
Market impact	S <sub>21</sub>	After the outbreak of COVID-19, the market demand for epidemic prevention products increased.	Jaworski and Kohli (1999); Peng et al. (2021); Mao et al. (2020)
	S <sub>22</sub>	After the outbreak of COVID-19, the increase in market demand for epidemic prevention products is huge.	
	S <sub>23</sub>	At the beginning of the COVID-19 outbreak, the number and scale of manufacturers of epidemic prevention products were insufficient.	
	S <sub>24</sub>	At the beginning of the COVID-19 outbreak, the market supply of epidemic prevention products was insufficient.	
	S <sub>25</sub>	At the beginning of the COVID-19 outbreak, the market supply of raw and auxiliary materials for epidemic prevention supplies was insufficient.	
	S <sub>26</sub>	With the increase of market demand and manufacturers, the market supply of raw and auxiliary materials for epidemic prevention materials increased.	
	S <sub>27</sub>	After the outbreak of COVID-19, market prices of raw and auxiliary materials for epidemic prevention materials rose sharply.	
	S <sub>28</sub>	After the outbreak of COVID-19, the number of suppliers of raw and auxiliary materials for epidemic prevention increased.	
	S <sub>29</sub>	With the development of COVID-19, the supply of raw and auxiliary materials for epidemic prevention materials on the market increased rapidly.	
	S <sub>210</sub>	After the outbreak of COVID-19, the market price of epidemic prevention products increased significantly.	
	S <sub>211</sub>	Compared to pre-epidemic, after the outbreak of COVID-19, producing epidemic prevention products and raw materials became more remunerative.	

Table 4.3: Technological impact measurement scale

Index	Code	Item content	Reference
Technological impact	S <sub>31</sub>	Before and after the COVID-19 outbreak, the production technology of epidemic prevention products was mature enough in China.	Kazancoglu et al. (2015); Park et al. (2019), Wu et al. (2005)
	S <sub>32</sub>	Before and after the COVID-19 outbreak, the network technology was sufficiently advanced for the supply chain of epidemic prevention products in China.	
	S <sub>33</sub>	Before and after the COVID-19 outbreak, the equipment manufacturing technology (refers to the manufacturing technology of machinery and equipment used in the manufacture of epidemic prevention materials and raw and auxiliary materials) is sufficiently advanced for manufacturers of epidemic prevention products and raw and auxiliary materials in China.	
	S <sub>34</sub>	Before and after the COVID-19 outbreak, the R&D of epidemic prevention products was adequate for production needs in China.	

S <sub>35</sub>	Before and after the COVID-19 outbreak, technological standards for epidemic prevention products existed and were in line with international standards in China.
S <sub>36</sub>	Before and after the COVID-19 outbreak, the basic scientific research was sufficient to support the R&D and production of epidemic prevention products in China.
S <sub>37</sub>	In China the production technology (such as sewing techniques) of some epidemic prevention products (such as medical protective clothing and masks) can be transferred from the production technology of other non-epidemic prevention products (such as clothing sewing techniques).

#### 4.3.1.4 Resource impact

For the resource environment, this study draws on the research conducted by S. Park et al. (2022), Speckbacher et al. (2015), and Z. Q. Wang et al. (2016) on internal resources, resource complementarity, and resource synergy in response to emergencies, using 10 items to measure the impact of COVID-19 on the enterprise’s resource environment, including internal resources, industrial resources, and human resources, as shown in Table 4.4.

Table 4.4: Resource impact measurement scale

Index	Code	Item content	Reference
Resource impact	S <sub>41</sub>	After the outbreak of COVID-19, quasi-internal resources appeared or were more easily identified.	Park et al. (2022), Speckbacher et al. (2015), Wang et al. (2016)
	S <sub>42</sub>	After the outbreak of COVID-19, quasi-internal resources seemed to be more.	
	S <sub>43</sub>	After the outbreak of COVID-19, quasi-internal resources played a greater role in state-owned enterprises than in private ones.	
	S <sub>44</sub>	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 products industry.	
	S <sub>45</sub>	After the outbreak of COVID-19, A large amount of capital was transferred from other industries to the epidemic prevention products industry (for example, enterprises that previously invested in the production of diaper bags for women and children began to increase investment in medical protective clothing and masks).	
	S <sub>46</sub>	After the outbreak of COVID-19, it became easier for manufacturers of epidemic prevention products to obtain capital.	
	S <sub>47</sub>	After the outbreak of COVID-19, more professionals were moving from other industries to epidemic prevention enterprises.	

S <sub>48</sub>	After the outbreak of COVID-19, it became easier for epidemic prevention manufacturers to integrate external resources (for example, epidemic prevention manufacturers integrate external enterprise resources originally used for clothing production to assist themselves in sewing medical protective suits and masks).
S <sub>49</sub>	After the outbreak of COVID-19, other enterprises were more willing to support epidemic prevention manufacturers in the field of resource integration.
S <sub>410</sub>	After the outbreak of COVID-19, it became easier for epidemic prevention manufacturers to get the support and cooperation of their employees.

### 4.3.2 Enterprise trade-off

Drawing on the research of S. Chen et al. (2017), Giachetti and Lampel (2010), Krishnamurti et al. (2021), and X. Y. Zhao et al. (2022), we measured SOEs’ trade-off between CSR response and business innovation under LSEs from three aspects: strategic adjustment, incentive mechanism, and decision-making process. Four test items were used to measure the strategic adjustment, as shown in Table 4.5.

Table 4.5: Strategic adjustment measurement scale

Index	Code	Item content	Reference
Strategic adjustment	C <sub>11</sub>	After the outbreak of COVID-19, SMMG’s business strategy was helpful to overcome the original strategic idea of regarding corporation social responsibility as a burden.	Chen et al., 2017; Giachetti and Lampel, 2010; Krishnamurti et al., 2021; Zhao et al., 2022
	C <sub>12</sub>	After the outbreak of COVID-19, SMMG’s business strategy focused more on the explanation and publicity of business innovation in corporation social responsibility.	
	C <sub>13</sub>	After the outbreak of COVID-19, SMMG’s business strategy focused more on capturing potential business innovation opportunities from corporation social responsibility activities.	
	C <sub>14</sub>	After the outbreak of COVID-19, SMMG’s business strategy put more emphasis on the balance between its business vision and social expectation.	

Referring to studies of Berens et al. (2007), Z. Wang et al. (2018), Xiong et al. (2022), and Yigitcanlar et al. (2019), we used four items to measure SOEs’ incentive mechanism, as shown in Table 4.6.

Table 4.6: Incentive mechanism measurement scale

Index	Code	Item content	Reference
Incentive mechanism	C <sub>21</sub>	After the outbreak of COVID-19, governments strengthened the coordination between the assessment indicators such as corporation social responsibility performance and business innovation performance for SMMG.	Berens et al.,2007, Wang et al., 2018, Xiong et al., 2022, Yigitcanlar et al., 2019;
	C <sub>22</sub>	After the outbreak of COVID-19, SMMG emphasized the basic requirements of corporation social responsibility behavior in salary design and employment contract.	
	C <sub>23</sub>	After the outbreak of COVID-19, SMMG strengthened incentive mechanisms (material or moral) for internal departments and employees to encourage their corporation social responsibility contribution in business innovation behaviors.	
	C <sub>24</sub>	After the outbreak of COVID-19, SMMG increased penalties for internal departments and employees who exhibit socially irresponsible behavior (such as doing not obeying the work arrangement of the production of epidemic prevention materials, discharging substandard industrial waste, wasting resources, violation of community interests) in business innovation for corporation social responsibilities.	

With studies of Flores-Garcia et al. (2021), Oliveira et al. (2015), and Randrianasolo and Semenov (2022) as reference, we used 12 items to measure the SOEs’ decision-making process, from dimensions such as examination and approval procedures, resource allocation, and organizational structure adjustment, as shown in Table 4.7.

Table 4.7: Decision-making process measurement scale

Index	Code	Item content	Reference
Decision-making process	C <sub>31</sub>	After the outbreak of COVID-19, shareholders’ approval of SMMG’s corporation social responsibility business became easier.	Flores-Garcia et al., 2021, Oliveira et al., 2015, Randrianasolo and Semenov, 2022
	C <sub>32</sub>	After the outbreak of COVID-19, external government departments became easier in their administrative approval of corporation social responsibility business for state-owned enterprises (such as SMMG).	
	C <sub>33</sub>	After the outbreak of COVID-19, external government departments became more efficient in the administrative approval of corporation social responsibility business of state-owned enterprises (such as SMMG), which was helpful for the enterprise performance.	
	C <sub>34</sub>	After the outbreak of COVID-19, SMMG’s internal decision-making and approval procedures for corporation social responsibility activities became simpler and more efficient, which was helpful for the enterprise performance.	

- C<sub>35</sub> After the outbreak of COVID-19, SMMG's approval procedures from higher-up for corporation social responsibility business became more efficient, which was helpful for the improvement of the company's performance.
- C<sub>36</sub> After the outbreak of COVID-19, it became easier for SMMG to allocate resources to carry out corporation social responsibility activities, which was helpful for the enterprise performance.
- C<sub>37</sub> After the outbreak of COVID-19, it became easier for SMMG to deploy employees for corporation social responsibility activities (such as arranging employees to work overtime outside of working hours, temporarily transferring or supporting other positions), and employees showed more cooperation with such deployment, which was helpful for the enterprise performance.
- C<sub>38</sub> After the outbreak of COVID-19, SMMG's internal organizational changes became easier, which was helpful for the enterprise performance.
- C<sub>39</sub> After the outbreak of COVID-19, it became easier for SMMG to develop and implement internal systems and policies, which was helpful for the enterprise performance.
- C<sub>310</sub> After the outbreak of COVID-19, it became easier for shareholders to authorize SMMG in the field of corporation social responsibility, which was helpful for the enterprise performance.
- C<sub>311</sub> After the outbreak of COVID-19, it became easier for SMMG to authorize downward in the field of corporation social responsibility, which was helpful for the enterprise performance.
- C<sub>312</sub> After the outbreak of COVID-19, SMMG's corporation social responsibilities tended to support the government's epidemic prevention and control (compared with other corporation social responsibility behaviors such as poverty alleviation), which was helpful for the enterprise performance.
- 

### 4.3.3 Enterprise performance (P)

In this study, we divide enterprise performance into two dimensions: economic performance (P<sub>1</sub>) and CSR performance (P<sub>2</sub>). Referring to research of Berguiga et al. (2020), Cannon (2008), Grewal et al. (2009), Memon et al. (2020), O'Sullivan et al. (2009), and Qing et al. (2022) on financial and market performance, we used six items to measure economic performance, as shown in Table 4.8. In terms of social performance, based on studies of S. Cho and Kim (2017), Gras and Krause (2020), and McGuire et al. (2012), we used two items for its measurement, as shown in Table 4.9.

Table 4.8: Economic performance measurement scale

Index	Code	Item content	Reference
Economic performance	P <sub>11</sub>	SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in face of the epidemic were helpful to increase its business revenue.	Berguiga et al., 2020; Cannon, 2008; Grewal et al., 2009; Memon et al., 2020;
	P <sub>12</sub>	SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in face of the epidemic were helpful to increase its total profit.	O'Sullivan et al., 2009;
	P <sub>13</sub>	SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful to increase its retained profits.	Qing et al., 2022
	P <sub>14</sub>	SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful to increase its brand value.	
	P <sub>15</sub>	SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful to exploit new markets (market of epidemic prevention products).	Cho and Kim, 2017; Grewal et al., 2009; Martin, 2012; O'Sullivan et al., 2009
	P <sub>16</sub>	SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful to promote the market performance of its original business segment (non-epidemic products market).	

Table 4.9: Social performance measurement scale

Index	Code	Item content	Reference
Social performance	P <sub>21</sub>	SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful for the government and the public to enhance their sense of identity to SMMG.	Mcguire et al., 2012; Cho and Kim, 2017; Gras and Krause, 2020
	P <sub>22</sub>	SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful for the governments' evaluation of SMMG.	

## 4.4 Pre-survey and questionnaire refinement

### 4.4.1 Pre-survey data collection

Before collecting large amounts of questionnaire data, it is a great necessity to conduct a pre-survey using the questionnaire to further improve it from the respondent's perspective, enhancing its rationality, reliability, and validity. In order to improve the quality and readability



of the questionnaire and avoid non-professionals and non-industrial individuals' misunderstanding of the text and technical terms in the questionnaire, we used WeChat (a smartphone APP widely used in mainland China, similar to Twitter or WhatsApp for Europeans and Americans) for the online questionnaire survey. Eighty-five people willing to provide research support were sought. They were mainly non-industry insiders and were not involved in SMMG or its upstream and downstream stakeholders in the industrial chain.

At the beginning of the pre-survey, I explained to the invitees the purpose, expectation, background, and primary content of this questionnaire survey and stated the academic nature, anonymity, and confidentiality. Only after they expressed their willingness to participate and put forward suggestions for refinement can they become volunteers for this pre-survey and receive the electronic questionnaire through WeChat. The participants were then asked to complete a questionnaire designed to test the plausibility of the research model, the wording of the questionnaire text, and its understandability.

To maximize the number of invitees who are willing to be volunteers in the pre-survey, I tentatively selected the non-professionals and non-industrial individuals who had established good relationships with me in daily study, work, and life and were not involved in the target enterprise. I patiently and carefully explained to them the purpose, significance, and other details of the pre-survey, hoping they could provide as much help and support to the research as possible.

The pre-survey lasted for about two weeks. I received a lot of reasonable suggestions, which played an important role in further improving the content, text, and incentive mechanism of the questionnaire. A total of 85 electronic questionnaires were distributed, and 65 valid questionnaires were collected. Of the volunteers, 57.81% came from Sichuan province, 26.56% from Heilongjiang province, 4.69% from Beijing City, and 3.13% from Zhejiang Province. There were 1.56% coming from each of the five provincial areas: Guizhou, Jiangsu, Yunnan, Shanghai, and Chongqing.

Males accounted for 87.5%, and females accounted for 12.5%. Regarding their age, 9.38% were between 25 and 34 years old, 48.44% were between 35 and 44 years old, 32.81% were between 45 and 54 years old, and 9.38% were over 55 years old. Married people accounted for 85.94%, unmarried people accounted for 10.94%, and other marital status accounted for 3.13%. With respect to education background, 1.56% were with high school/vocational secondary school diploma or below, 6.25% with a junior college degree, 57.81% with a bachelor degree, and 34.38% with master degree or above. Those from urban areas accounted for 98.44%, and those from rural areas accounted for 1.56%. Government employees accounted for 17.19%,

corporate employees accounted for 75%, and other employees accounted for 7.81%. In terms of work experience, 84.38% had worked for more than 10 years, Moreover, only 28.13% of the participants knew that SMMG is a SOE, and 64.06% said they were consumers.

The results showed that the validity and reliability of the questionnaire content met the requirements, and the questionnaire also showed good understandability on the whole. The respondents expressed that they could understand the questionnaire item as long as they read it carefully. At the same time, we also received feedback on questionnaire refinement, mainly including the following:

- 1) Some were unfamiliar with SMMG and suggested adding a brief introduction of SMMG.
- 2) Some could not understand “corporation social responsibility” accurately. They suggested not using the abbreviation “CSR” in the questionnaire and explaining “corporation social responsibility” in easy-to-understand language.
- 3) Some expressed that they did not know what to choose when they had little/no knowledge of certain items and suggested adding instructions to the questionnaire.
- 4) Some suggested bolding or underlining the key and core contents of the questionnaire items.
- 5) Some suggested that the contact telephone number should be prominently displayed in the questionnaire instructions for the participants to consult.
- 6) Some suggested placing the degree-related options in a horizontal row or a vertical column to give a clearer picture of strength.
- 7) Some with research experience suggested setting reward or incentive mechanisms according to the questionnaire filling quality of the participants to minimize the proportion of invalid questionnaires.
- 8) Some suggested simplifying the questionnaire instructions.
- 9) Some pointed out typographical errors.

Based on the feedback received, I further refined and improved the questionnaire, adding the introduction of SMMG and explanation of corporate social responsibility and other technical terms in easy-to-understand language, replacing the English abbreviation CSR with its full name, providing instruction on what to choose for the items that the respondents did not know about. Besides, the key and core contents of the questionnaire were highlighted, the contact phone number of the researcher was provided, and the degree-related options were arranged vertically in one column, the questionnaire introduction was simplified, and the typographical errors were corrected.

To minimize the proportion of invalid questionnaires and increase the attention and

seriousness of the respondents, we set up a thank-you cash gift for the participants who participated in the formal survey, ranging from 5 to 50 yuan according to the length of their answering time and the quality of answers. The data collection lasted for nearly two months, from December 2022 to early February 2023.

#### **4.4.2 Data analysis methods**

The purpose of the pre-survey is to test the reliability and validity of the questionnaire to ensure the scientificity and accuracy of the research. Therefore, we mainly adopted reliability and validity analyses and used SPSS25.0 for data analysis.

**Reliability analysis:** This analysis aims to assess the internal consistency and stability of the initial questionnaire. Cronbach's alpha coefficient (Cronbach's  $\alpha$ ) is commonly used to evaluate the internal consistency among the items in a questionnaire (Guan, 2009). In the reliability analysis of this study, we primarily utilized Cronbach's alpha coefficient and corrected item-total correlation (CITC) to evaluate the internal consistency among the items in the questionnaire.

When  $\alpha$  is greater than 0.8, the internal consistency of the questionnaire items is considered relatively high; when  $\alpha$  is greater than 0.7, the structure of the questionnaire is considered good. When CITC is less than 0.5, this item is considered to have some problems; when CITC is less than 0.3, this item can be deleted. By deleting the problematic items, when CITC is greater than or equal to 0.5, the questionnaire is considered to have good consistency, its reliability is considered acceptable, and thus the measurement scale meets the reliability requirements (Ma, 2005).

**Validity analysis:** A questionnaire's validity is generally assessed using factor analysis. The validity analysis primarily involves a KMO test (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) on the questionnaire items to examine the inter-relatedness of the variables in the questionnaire. If the KMO value is high, the correlation between the items is high; if the corresponding Bartlett sphere-type test also shows significant results, it indicates that the variables are suitable for factor analysis. In general, when the KMO value is above 0.7 and Bartlett spherical test result is significant, it is deemed that the items are suitable for exploratory factor analysis (M. Wu, 2010).

### 4.4.3 Pre-survey sample data analysis

#### 4.4.3.1 Environmental impact

This study divides the impact of major emergencies on the business environment, namely “environmental variables” (S), into four dimensions: policy impact (S<sub>1</sub>), market impact (S<sub>2</sub>), technological impact (S<sub>3</sub>), and resource impact (S<sub>4</sub>). We first conducted reliability and validity analyses of the S dimensions, and the results are shown in Table 4.10 and Table 4.11. The CITC value of S<sub>37</sub> of S<sub>3</sub> was 0.277 (less than 0.3); after deleting the item, the  $\alpha$  coefficient was greater than the overall  $\alpha$  value. Therefore, item S<sub>37</sub> was deleted. In addition, for S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>, and S<sub>4</sub>, the KMO values were all greater than 0.7, the  $\alpha$  values were all greater than 0.7, and the CITC values were all less than 0.7, indicating that the content of the factor had a high consistency, ensuring the reliability and validity of the questionnaire.

Table 4.10: Validity and exploratory factor analysis of S (N=65)

Variable	Code	Mean value	Standard deviation	Factor loading	Eigenvalue	Explained variance
S <sub>1</sub>	S <sub>11</sub>	4.05	1.634	0.881	3.217	64.331%
	S <sub>12</sub>	5.58	1.391	0.801		
	S <sub>13</sub>	5.4	1.466	0.768		
	S <sub>14</sub>	5.26	1.492	0.773		
	S <sub>15</sub>	5.35	1.535	0.793		
KMO=0.816 Bartlett's sphericity test=178.558 Sig.=0.000						
S <sub>2</sub>	S <sub>21</sub>	5.15	1.502	0.625	5.142	46.746%
	S <sub>22</sub>	6.12	1.206	0.909		
	S <sub>23</sub>	6.02	1.192	0.836		
	S <sub>24</sub>	5.83	1.398	0.742		
	S <sub>25</sub>	3.48	1.697	0.914		
	S <sub>26</sub>	3.82	1.619	0.86		
	S <sub>27</sub>	5.6	1.043	0.614		
	S <sub>28</sub>	5.23	1.32	0.736		
	S <sub>29</sub>	5.35	1.11	0.836		
	S <sub>210</sub>	5.29	1.284	0.766		
	S <sub>211</sub>	5.12	1.364	0.593		
KMO=0.714 Bartlett's sphericity test=516.369 Sig.=0.000						
S <sub>3</sub>	S <sub>31</sub>	5.06	1.413	0.648	4.250	60.713%
	S <sub>32</sub>	4.92	1.395	0.642		
	S <sub>33</sub>	4.92	1.279	0.782		
	S <sub>34</sub>	4.78	1.205	0.724		
	S <sub>35</sub>	4.91	1.208	0.597		
	S <sub>36</sub>	5.2	1.064	0.524		
	S <sub>37</sub>	5.31	1.424	0.333		
KMO=0.774 Bartlett's sphericity test=257.192 Sig.=0.000						
S <sub>4</sub>	S <sub>41</sub>	5.23	1.222	0.44	4.919	49.188%
	S <sub>42</sub>	4.92	1.229	0.671		
	S <sub>43</sub>	4.78	1.256	0.786		
	S <sub>44</sub>	5.12	1.111	0.633		
	S <sub>45</sub>	5.48	0.954	0.62		
	S <sub>46</sub>	5.22	1.111	0.783		

S <sub>47</sub>	5.29	1.114	0.537
S <sub>48</sub>	4.71	1.128	0.524
S <sub>49</sub>	5.25	1.031	0.705
S <sub>410</sub>	5.14	1.074	0.73

KMO=0.806 Bartlett's sphericity test=333.858 Sig.=0.000

Table 4.11: Reliability test results of S measurement scale (N=65)

Variable	Code	CITC	Cronbach's $\alpha$ coefficient after deleting items	Evaluation	Cronbach's $\alpha$ coefficient
S <sub>1</sub>	S <sub>11</sub>	0.576	0.673	unreasonable	0.716
	S <sub>12</sub>	0.778	0.548	reasonable	
	S <sub>13</sub>	0.746	0.554	reasonable	
	S <sub>14</sub>	0.681	0.581	reasonable	
	S <sub>15</sub>	0.687	0.576	reasonable	
	S <sub>21</sub>	0.626	0.847	reasonable	
	S <sub>22</sub>	0.646	0.847	reasonable	
	S <sub>23</sub>	0.621	0.849	reasonable	
	S <sub>24</sub>	0.493	0.857	reasonable	
	S <sub>25</sub>	0.42	0.865	reasonable	
S <sub>2</sub>	S <sub>26</sub>	0.528	0.855	reasonable	0.864
	S <sub>27</sub>	0.699	0.842	reasonable	
	S <sub>28</sub>	0.749	0.841	reasonable	
	S <sub>29</sub>	0.694	0.843	reasonable	
	S <sub>210</sub>	0.589	0.85	reasonable	
	S <sub>211</sub>	0.398	0.877	reasonable	
	S <sub>31</sub>	0.729	0.862	reasonable	
	S <sub>32</sub>	0.695	0.867	reasonable	
	S <sub>33</sub>	0.823	0.85	reasonable	
	S <sub>34</sub>	0.765	0.859	reasonable	
S <sub>3</sub>	S <sub>35</sub>	0.684	0.868	reasonable	0.886
	S <sub>36</sub>	0.606	0.878	reasonable	
	S <sub>37</sub>	0.277	0.896	unreasonable	
	S <sub>41</sub>	0.53	0.872	reasonable	
	S <sub>42</sub>	0.602	0.866	reasonable	
	S <sub>43</sub>	0.417	0.881	reasonable	
	S <sub>44</sub>	0.622	0.864	reasonable	
	S <sub>45</sub>	0.706	0.86	reasonable	
	S <sub>46</sub>	0.642	0.863	reasonable	
	S <sub>47</sub>	0.629	0.864	reasonable	
S <sub>4</sub>	S <sub>48</sub>	0.592	0.867	reasonable	0.878
	S <sub>49</sub>	0.664	0.862	reasonable	
	S <sub>410</sub>	0.689	0.86	reasonable	

#### 4.4.3.2 Enterprise trade-off (C)

This study divides the trade-off between SOEs' CSR response and business innovation under the impact of S, namely, "enterprise trade-off" (C), into three dimensions: strategic adjustment (C1), incentive mechanism (C2), and decision-making process (C3). The reliability and validity of each dimension of the trade-off were analyzed. The results are shown in Table 4.12 and Table 4.13. The KMO value and  $\alpha$  value of each variable were all greater than 0.7, showing good reliability and validity of the questionnaire.

Table 4.12: Reliability test results of C measurement scale (N=65)

Variable	Code	Mean value	Standard deviation	Factor loading	Eigenvalue	Explained variance
C <sub>1</sub>	C <sub>11</sub>	5.23	1.115	0.384	2.784	69.602%
	C <sub>12</sub>	4.95	1.178	0.856		
	C <sub>13</sub>	5.14	1.223	0.75		
	C <sub>14</sub>	5.05	1.28	0.795		
KMO=0.718 Bartlett's sphericity test=144.343 Sig.=0.000						
C <sub>2</sub>	C <sub>21</sub>	5.09	1.366	0.662	2.901	72.523%
	C <sub>22</sub>	4.8	1.313	0.677		
	C <sub>23</sub>	4.85	1.24	0.78		
	C <sub>24</sub>	4.86	1.261	0.782		
KMO=0.766 Bartlett's sphericity test=132.489 Sig.=0.000						
C <sub>3</sub>	C <sub>31</sub>	4.82	1.286	0.391	8.484	70.702%
	C <sub>32</sub>	4.74	1.228	0.589		
	C <sub>33</sub>	4.72	1.206	0.592		
	C <sub>34</sub>	4.85	1.314	0.72		
	C <sub>35</sub>	5.05	1.217	0.816		
	C <sub>36</sub>	4.98	1.317	0.787		
	C <sub>37</sub>	5.12	1.193	0.858		
	C <sub>38</sub>	4.97	1.237	0.834		
	C <sub>39</sub>	5.03	1.212	0.687		
	C <sub>310</sub>	5.05	1.255	0.779		
	C <sub>311</sub>	4.94	1.285	0.678		
KMO=0.881 Bartlett's sphericity test=867.629 Sig.=0.000						

Table 4.13: Reliability test results of C measurement scale (N=65)

Variable	Code	CITC	Cronbach's $\alpha$ coefficient after deleting test items	Evaluation	Cronbach's $\alpha$ coefficient
C <sub>1</sub>	C <sub>11</sub>	0.45	0.898	reasonable	0.850
	C <sub>12</sub>	0.832	0.747	reasonable	
	C <sub>13</sub>	0.715	0.798	reasonable	
	C <sub>14</sub>	0.782	0.767	reasonable	
C <sub>2</sub>	C <sub>21</sub>	0.676	0.857	reasonable	0.871
	C <sub>22</sub>	0.688	0.851	reasonable	
	C <sub>23</sub>	0.77	0.819	reasonable	
	C <sub>24</sub>	0.774	0.817	reasonable	
C <sub>3</sub>	C <sub>31</sub>	0.577	0.964	reasonable	0.961
	C <sub>32</sub>	0.726	0.96	reasonable	
	C <sub>33</sub>	0.731	0.96	reasonable	
	C <sub>34</sub>	0.819	0.957	reasonable	
	C <sub>35</sub>	0.879	0.955	reasonable	
	C <sub>36</sub>	0.859	0.956	reasonable	
	C <sub>37</sub>	0.905	0.955	reasonable	
	C <sub>38</sub>	0.887	0.955	reasonable	
	C <sub>39</sub>	0.791	0.958	reasonable	
	C <sub>310</sub>	0.848	0.956	reasonable	
	C <sub>311</sub>	0.785	0.958	reasonable	

#### 4.4.3.3 Enterprise performance (P)

This study divides business performance (P) into two dimensions: economic performance (P<sub>1</sub>)

and CSR performance (P<sub>2</sub>). The reliability and validity of economic performance (P<sub>1</sub>) and CSR performance (P<sub>2</sub>) were analyzed, and the results are shown in Table 4.14 and Table 4.15. The  $\alpha$  values of the variables were all greater than 0.7, and the factor loading, KMO value, and CITC value all met the criteria of exploratory factors, indicating that the factor content had a high consistency, and the questionnaire had good reliability and validity.

Table 4.14: Validity and exploratory factor analysis results of P (N=65)

Variable	Code	Mean value	Standard deviation	Factor loading	Eigenvalue	Explained variance
P <sub>1</sub>	P <sub>11</sub>	5.98	1.017	0.807	4.651	77.523%
	P <sub>12</sub>	5.96	1.033	0.772		
	P <sub>13</sub>	5.89	1.091	0.773		
	P <sub>14</sub>	6.06	0.963	0.784		
	P <sub>15</sub>	6.09	0.918	0.744		
	P <sub>16</sub>	6.03	0.985	0.772		
KMO=0.862 Bartlett's sphericity test=2345.679 Sig.=0.000						
P <sub>2</sub>	P <sub>21</sub>	4.98	1.329	0.782	1.564	78.183
	P <sub>22</sub>	5.35	1.28	0.782		
KMO=0.500 Bartlett's sphericity test=23.895 Sig.=0.000						

Table 4.15: Reliability test results of P measurement scale (N=65)

Variable	Code	CITC	Cronbach's coefficient after deleting test items	$\alpha$ after Evaluation	Cronbach's $\alpha$ coefficient
P <sub>1</sub>	P <sub>11</sub>	0.711	0.8	reasonable	0.848
	P <sub>12</sub>	0.799	0.711	reasonable	
	P <sub>13</sub>	0.652	0.847	reasonable	
	P <sub>14</sub>	0.634	0.863	reasonable	
	P <sub>15</sub>	0.781	0.724	reasonable	
	P <sub>16</sub>	0.747	0.761	reasonable	
P <sub>2</sub>	P <sub>21</sub>	0.564		reasonable	0.721
	P <sub>22</sub>	0.564		reasonable	

#### 4.4.4 Formation of the formal questionnaire

Based on the data analysis of the pre-survey, we removed item S<sub>37</sub> from the questionnaire in this study to form the final formal questionnaire. In the final questionnaire, five items were used to measure S<sub>1</sub>, 11 items to measure S<sub>2</sub>, six items to measure S<sub>3</sub>, and 10 items to measure S<sub>4</sub>. The three dimensions of C were measured by four, four, and 12 items, respectively. P<sub>1</sub> and P<sub>2</sub> were measured by six and two items, respectively.

[This page is deliberately left blank.]



## **Chapter 5: Empirical Analysis and Results Discussion**

### **5.1 Data collection and descriptive statistics**

#### **5.1.1 Data collection**

The target respondents of this study are the stakeholders of SMMG. The respondents were required to fill in the questionnaire according to the actual situation of SMMG with a serious, objective, and fair attitude. We explained to them clearly that there were no “right” or “wrong” answers, and the answers were collected anonymously to ensure the confidentiality of the information and data of the respondents. SMMG is a wholly owned subsidiary of Wuliangye Group, a famous state-owned enterprise. Before the outbreak of COVID-19, SMMG’s main business was the production and sales of alcoholic packaging bags (mainly non-woven products), the production and sales of clothing, and the trade of goods. The enterprise was not involved in medical protective clothing and masks.

In this study, the questionnaire was distributed through WeChat in the form of an online questionnaire using the WeChat mini program Sojump (its Chinese name means “questionnaire star”; it’s a platform that provides online questionnaire survey services). The distribution channels include the following: 1) Through SMMG’s internal SMS with the hyperlink of the WeChat questionnaire. We contacted the person in charge of relevant departments and asked them to call on all employees to participate in the questionnaire survey within their units. 2) Through the functionary in charge of relevant government agencies and the senior management of the upstream and downstream cooperative enterprises of SMMG. We contacted them by phone, Wechat, or other means, provided them with the hyperlink of the online questionnaire, and asked them for help to call on the heads of core departments within their agencies or enterprises to participate in the questionnaire survey. A total of 850 questionnaires were sent out and 602 were collected, with a recovery rate of 70.82%.

After the questionnaires were collected, we took the following steps to eliminate invalid questionnaires: 1) We determined whether the respondents were serious in responding to the questionnaire according to their answers to the last question, “Are you confident about your answers to this questionnaire?” and eliminated the questionnaires of the respondents who were self-identified as not confident enough. 2) Questionnaires with the same option chosen for most

items were regarded as invalid questionnaires and were removed; 3) Considering the number and the difficulty of the items, we excluded the questionnaires with response time of less than 200 seconds. Finally, 397 valid questionnaires were obtained, accounting for 46.71% of the questionnaires sent out and 65.51% of the questionnaires returned.

### 5.1.2 Descriptive statistical analysis

In this study, descriptive statistics were carried out on the respondents of the 602 questionnaires which were collected, as shown in Table 5.1. According to the results, males accounted for 39.8% and females 60.2%. The respondents were mainly aged 35-44 (30.98%), followed by 45-54 (21.16%), over 55 (20.15%), 25-34 (19.4%), and 18-24 (8.31%). 81.11% of them held bachelor's degree or above, and 77.83% were living in cities or towns. Regarding years of experience, the majority had worked for 4-6 years (30.98%) or 7-9 years (26.70%). The respondents were mostly working at enterprises (70.03%).

Table 5.1: Descriptive statistical analysis of respondent information (N=602)

Demographic characteristics	Categories	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%
Education level	High school/vocational secondary school or below	16	4.03%
	Junior college degree	59	14.86%
	Bachelor's degree	204	51.39%
Permanent residence	Master degree or above	118	29.72%
	City or town	309	77.83%
	Countryside	88	22.17%
Years of experience	Within a year	45	11.34%
	1-3 years	79	19.90%
	4-6 years	123	30.98%
	7-9 years	106	26.70%
Organizational attribute	10 years above	44	11.08%
	Government agency	10	2.52%
	Industrial association	23	5.79%
	Enterprise	278	70.03%
	Other	86	21.66%

## 5.2 Common method bias

In this study, we controlled common method bias (CMB) from process control and measurement control. For process control, we adopted the method of anonymous filling and

item randomization, hoping to improve the data reliability as much as possible (Palacios-Manzano et al., 2021). For measurement control, we first performed Harman’s Single factor test. The results showed that the initial eigenvalues of 8 items were greater than 1, the explanatory variance of 8 items reached 72.800%, and the overall KMO value of the questionnaire was 0.954. The explanatory variance of the first factor was 33.222%, less than the critical value of 50%, indicating that the endogeneity problem in this model can be ignored (Hair et al., 2012).

In addition, we used confirmatory factor analysis (CFA) and ULCMF (an unmeasured latent common method factor) to measure CMB. According to the results of CFA, the fitting degree of the seven-factor model ( $\chi^2/df=2.718$ , CFI=0.890, TLI=0.878, RMSEA=0.047) was significantly higher than that of the single-factor model ( $\Delta\chi^2=8130.482$ ,  $\Delta df=37$ ,  $p<0.001$ ). In addition, we compared the fitting index of the seven-factor model with the ULCMF model ( $\Delta\chi^2/df=0.120$ ,  $\Delta CFI=0.038$ ,  $\Delta TLI=0.027$ ,  $\Delta RMSEA=0.011$ ) and observed a slight difference. Overall, CMB only slightly affected this research (Bagozzi & Yi, 1990; Podsakoff et al., 2003), as shown in Table 5.2.

Table 5.2: Common method bias

Model	$\chi^2$	df	$\chi^2/df$	CFI	TLI	RMSEA
Single-factor model	12721.184	1652	7.700	0.533	0.516	0.130
Seven-factor model	4590.702	1689	2.718	0.890	0.878	0.047
ULCMF	4232.142	1629	2.598	0.928	0.905	0.036

## 5.3 Empirical test

### 5.3.1 Partial least square-structural equation modelling

PLS-SEM has been widely used in the research of strategic management and innovation management. In this study, we adopted PLS-SEM for data analysis, which is very suitable for analyzing our measurement model. First of all, the statistical model of this study includes seven compound variables, and PLS-SEM is very suitable for the analysis of such model. Secondly, PLS-SEM is a suitable technique for theoretical development, including mediating and moderating variables. Thirdly, PLS-SEM does not require specific distribution and is effective for both large and small samples. In the process of hypothesis testing, we applied the method based on 5000 sub-samples to ensure the stability of the results.

### 5.3.2 Measurement model

We tested the model structure through reliability and validity analyses, and the results are presented in Table 5.3. First, the factor loading of all items was greater than 0.7, confirming the reliability of the indicators. Second, Cronbach's  $\alpha$  of all variables was greater than 0.8, meeting the criteria of Cronbach's  $\alpha$  being greater than 0.7, and the CR (composite reliability) values were all greater than 0.9, meeting the criteria of CR value being greater than 0.6, indicating good reliability of the model construction (Hair & Sarstedt, 2019). Third, the AVE (average variance extracted) was all greater than 0.5, sufficient to confirm the convergence validity of the measurement model (A. Ali et al., 2023).

Table 5.3: Measurement model result

Index	Code	Factor loading	t-value (t)	$\alpha$	CR	AVE
S <sub>1</sub>	S <sub>12</sub>	0.853	27.266	0.887	0.922	0.747
	S <sub>13</sub>	0.857	26.961			
	S <sub>14</sub>	0.89	50.871			
	S <sub>15</sub>	0.857	32.825			
	S <sub>21</sub>	0.734	19.811			
	S <sub>22</sub>	0.734	20.539			
	S <sub>23</sub>	0.757	22.377			
S <sub>2</sub>	S <sub>24</sub>	0.798	25.486	0.915	0.929	0.594
	S <sub>26</sub>	0.779	24.106			
	S <sub>27</sub>	0.772	23.17			
	S <sub>28</sub>	0.701	19.093			
	S <sub>29</sub>	0.823	34.048			
	S <sub>210</sub>	0.831	39.223			
	S <sub>211</sub>	0.822	33.127			
S <sub>3</sub>	S <sub>31</sub>	0.809	27.045	0.941	0.954	0.775
	S <sub>32</sub>	0.898	60.086			
	S <sub>33</sub>	0.912	67.241			
	S <sub>34</sub>	0.923	75.24			
	S <sub>35</sub>	0.898	62.422			
	S <sub>36</sub>	0.836	30.582			
	S <sub>41</sub>	0.766	22.821			
S <sub>4</sub>	S <sub>42</sub>	0.731	20.386	0.934	0.944	0.629
	S <sub>43</sub>	0.798	25.979			
	S <sub>44</sub>	0.722	17.585			
	S <sub>45</sub>	0.807	30.768			
	S <sub>46</sub>	0.821	36.666			
	S <sub>47</sub>	0.826	36.733			
	S <sub>48</sub>	0.831	35.521			
C	S <sub>49</sub>	0.83	35.082	0.962	0.965	0.583
	S <sub>410</sub>	0.788	24.654			
	C <sub>11</sub>	0.869	31.112			
	C <sub>12</sub>	0.909	37.585			
	C <sub>13</sub>	0.924	64.807			
	C <sub>14</sub>	0.903	45.569			
	C <sub>21</sub>	0.86	29.644			

	C <sub>22</sub>	0.875	41.074			
	C <sub>23</sub>	0.854	34.999			
	C <sub>24</sub>	0.738	14.899			
	C <sub>33</sub>	0.851	36.766			
	C <sub>34</sub>	0.845	38.809			
	C <sub>35</sub>	0.839	41.9			
	C <sub>36</sub>	0.809	27.379			
	C <sub>37</sub>	0.83	30.243			
	C <sub>38</sub>	0.867	41.169			
	C <sub>39</sub>	0.856	38.944			
	C <sub>310</sub>	0.85	39.253			
	C <sub>311</sub>	0.905	73.175			
	C <sub>312</sub>	0.888	42.623			
	P <sub>11</sub>	0.914	61.021			
	P <sub>12</sub>	0.95	99.78			
P <sub>1</sub>	P <sub>13</sub>	0.937	76.285	0.942	0.954	0.775
	P <sub>14</sub>	0.936	85.061			
	P <sub>15</sub>	0.941	78.144			
	P <sub>16</sub>	0.898	35.709			
P <sub>2</sub>	P <sub>21</sub>	0.943	75.398	0.871	0.939	0.886
	P <sub>22</sub>	0.94	50.881			

Finally, we tested the discriminant validity of variables, and the results are shown in Table 5.4. The discriminant validity was verified by comparing square root of AVE and correlation. The shared variance of all model constructs was not greater than their AVE (Hair & Sarstedt, 2019). The hetero-single trait (HTMT) ratio of correlation was all lower than the threshold value of 0.90 (Voorhees et al., 2016). Therefore, the results confirmed the model’s discriminant validity.

Table 5.4: Discriminant validity test

	P <sub>1</sub>	S <sub>2</sub>	S <sub>1</sub>	S <sub>4</sub>	P <sub>2</sub>	C	S <sub>3</sub>
P <sub>1</sub>	<b>0.88</b>	0.536	0.465	0.694	0.892	0.879	0.533
S <sub>2</sub>	0.508	<b>0.759</b>	0.674	0.761	0.512	0.605	0.496
S <sub>1</sub>	0.435	0.63	<b>0.848</b>	0.578	0.46	0.574	0.468
S <sub>4</sub>	0.653	0.715	0.54	<b>0.793</b>	0.65	0.819	0.653
P <sub>2</sub>	0.809	0.47	0.411	0.591	<b>0.941</b>	0.805	0.49
C	0.842	0.58	0.543	0.775	0.742	<b>0.763</b>	0.616
S <sub>3</sub>	0.502	0.477	0.441	0.612	0.444	0.588	<b>0.88</b>

HTMT is above the diagonal (in bold). The Fornell-Larcker criterion is below the diagonal (in bold): the diagonal (in bold) represents the square root of AVE, and below the diagonal shows the correlations between variables.

### 5.3.3 Structural model

The endogeneity problem was tested by variance inflation factor (VIF) and Harman’s single factor method. VIF greater than 5 indicates that the results may have collinearity problems (Hair et al., 2012). The results showed that the VIF values of the variables in this study were all less than 3. In this study, R<sup>2</sup> values and f<sup>2</sup> values of endogenous structures were measured (Rigdon, 2012). As in-sample predictive abilities, R<sup>2</sup> values of 0.75, 0.50, and 0.25 can be considered

substantial, moderate, and weak (Henseler et al., 2016), and the effect sizes of  $f^2$  values greater than 0.02, 0.15, and 0.35 can be considered small, medium, and large, respectively (Cohen, 1988).

The results showed that  $R^2_{P1}=0.709$ ,  $R^2_{P2}=0.551$ , and  $R^2_C=0.637$ , indicating that the model has high explanatory power (Shmueli & Koppius, 2011). At the same time, as an index that combines out-of-sample prediction and in-sample interpretation abilities, the value of  $Q^2$  generated by the blindfolded result with the missing distance of 7 was much higher than 0 ( $Q^2_{P1}=0.421$ ,  $Q^2_{P2}=0.343$ ,  $Q^2_C=0.608$ ), indicating that the prediction accuracy of the constructed structural model is high (Hair et al., 2012).

### 5.4 Hypothesis testing result

We used Smart PLS3.0 for data analysis of the empirical tests, and the results are shown in Table 5.5. The path coefficient of  $S_1$  to  $C$  was 0.165, and the  $t$  value was 2.939, indicating that  $S_1$  had a positive effect on  $C$ , supporting  $H_{11}$ . The effect of  $S_2$  on  $C$  was not significant ( $\beta=-0.041$ ,  $t=0.533$ ), and thus  $H_{12}$  is not supported.  $S_3$  positively affected  $C$  ( $\beta=0.155$ ,  $t=2.726$ ,  $p<0.01$ ), supporting  $H_{13}$ . The path coefficient of  $S_4$  to  $C$  was 0.62, and the  $t$  value was 8.966, indicating that  $S_4$  had a positive effect on  $C$ , and thus  $H_{14}$  is supported.  $C$  positively affected  $P_1$  ( $\beta=0.842$ ,  $t=31.082$ ,  $p<0.001$ ) and  $P_2$  ( $\beta=0.742$ ,  $t=18.716$ ,  $p<0.001$ ), supporting  $H_{21}$  and  $H_{22}$ .

The method of Bootstrap 5000 sub-samples was used to test the mediating effect of  $C$ . The results showed that  $C$  had a significant mediating effect in the relationship of  $S_1$  ( $\beta=0.139$ ,  $t=2.928$ ,  $p<0.01$ ),  $S_3$  ( $\beta=0.13$ ,  $t=2.714$ ,  $p<0.01$ ), and  $S_4$  ( $\beta=0.522$ ,  $t=8.492$ ,  $p<0.001$ ) with  $P_1$ , indicating that  $H_{31}$ ,  $H_{33}$ , and  $H_{34}$  are supported. However, the mediating effect of  $C$  between  $S_2$  and  $P_1$  was not significant ( $\beta=-0.035$ ,  $t=0.531$ ), indicating that  $H_{32}$  is not supported. Meanwhile,  $C$  had a significant mediating effect in the relationship of  $S_1$  ( $\beta=0.123$ ,  $t=2.902$ ,  $p<0.01$ ),  $S_3$  ( $\beta=0.115$ ,  $t=2.705$ ,  $p<0.01$ ), and  $S_4$  ( $\beta=0.46$ ,  $t=7.941$ ,  $p<0.001$ ) with  $P_2$ , supporting  $H_{41}$ ,  $H_{43}$ , and  $H_{44}$ . However, the mediating effect of  $C$  between  $S_2$  and  $P_2$  was not significant ( $\beta=-0.031$ ,  $t=0.53$ ), indicating that  $H_{42}$  is not supported.

Table 5.5: Structural model and hypothesis test

	path ( $\beta$ )	t-value (t)	$f^2$	95CI	VIF	H	Supported or not
Direct effects							
$S_1 \rightarrow C$	0.165	2.939**	0.043	[0.060, 0.278]	1.743	$H_{11}$	YES
$S_2 \rightarrow C$	-0.041	0.533	0.002	[-0.191, 0.109]	2.470	$H_{12}$	NO
$S_3 \rightarrow C$	0.155	2.726**	0.040	[0.043, 0.267]	1.645	$H_{13}$	YES
$S_4 \rightarrow C$	0.62	8.966***	0.414	[0.486, 0.753]	2.563	$H_{14}$	YES
$C \rightarrow P_1$	0.842	31.082***	2.435	[0.785, 0.891]	1.000	$H_{21}$	YES

C→P <sub>2</sub>	0.742	18.716***	1.225	[0.660, 0.814]	1.000	H <sub>22</sub>	YES
Indirect effects							
S <sub>1</sub> →C→P <sub>1</sub>	0.139	2.928**		[0.050, 0.236]		H <sub>31</sub>	YES
S <sub>2</sub> →C→P <sub>1</sub>	-0.035	0.531		[-0.160, 0.093]		H <sub>32</sub>	NO
S <sub>3</sub> →C→P <sub>1</sub>	0.13	2.714**		[0.037, 0.224]		H <sub>33</sub>	YES
S <sub>4</sub> →C→P <sub>1</sub>	0.522	8.492***		[0.406, 0.644]		H <sub>34</sub>	YES
S <sub>1</sub> →C→P <sub>2</sub>	0.123	2.902**		[0.045, 0.209]		H <sub>41</sub>	YES
S <sub>2</sub> →C→P <sub>2</sub>	-0.031	0.53		[-0.140, 0.083]		H <sub>42</sub>	NO
S <sub>3</sub> →C→P <sub>2</sub>	0.115	2.705**		[0.032, 0.199]		H <sub>43</sub>	YES
S <sub>4</sub> →C→P <sub>2</sub>	0.46	7.941***		[0.352, 0.579]		H <sub>44</sub>	YES

## 5.5 Discussion of empirical results

As societal expectations regarding corporate social responsibility (CSR) continue to increase, enterprises are no longer regarded solely as profit-seeking entities but are being called upon to assume greater responsibility for social and environmental aspects (Wasiuzzaman et al., 2022). Nevertheless, in the face of competition and market dynamics, companies must pursue constant business innovation to maintain a competitive edge. Simultaneously, CSR activities often necessitate additional resource investment, potentially impacting the enterprise's profitability and efficiency (S. Y. Chen & Ji, 2022). Hence, it is crucial for enterprises to strike a balance between social responsibility and business innovation in order to meet societal expectations while concurrently upholding business competitiveness and achieving sustainable growth (X. Y. Zhao et al., 2022).

Investigating the trade-off between CSR response and business innovation is of practical urgency. Firstly, escalating environmental uncertainty necessitates that enterprises reconcile CSR and innovation to alleviate environmental constraints (Child, 1997). Presently, the world confronts increasingly intricate and uncertain environmental challenges, encompassing policy alterations, technological advancements, market competition, and resource scarcity (H. Park et al., 2019). The uncertainty stemming from these environmental factors intensifies the complexity associated with balancing CSR response and business innovation. Consequently, enterprises must confront diverse and dynamically evolving environmental requirements and develop strategies accordingly to adapt to changes while simultaneously upholding social responsibility and innovation capabilities (Teece, 2018).

Secondly, enterprises must strike a balance between CSR and innovation to achieve sustainable growth. With mounting societal and stakeholder concerns regarding sustainable development, enterprises recognize the significance of integrating social responsibility into their operations. It is acknowledged that prioritizing short-term profits while disregarding social

and environmental issues is unsustainable in the long run, compelling enterprises to embed social responsibility into their business innovations to realize sustainable business and social value (S. Y. Chen & Ji, 2022).

Furthermore, stakeholders, including consumers, investors, and employees, have heightened their expectations regarding socially responsible corporate behavior (Koh et al., 2023). Consumers display increasing concerns regarding enterprises' ethical and social performance, while investors focus on the sustainability strategies implemented by these enterprises (Huang et al., 2022). Employees, too, demonstrate greater concerns about the values and social impact of the organizations they work for. In light of this context, enterprises must effectively manage stakeholder expectations while balancing CSR response and business innovation to cultivate enduring and trustworthy stakeholder relationships.

While the trade-off between CSR response and business innovation is a critical and intricate topic, it is important to note that this subject has not yet received extensive attention and in-depth research within the academic realm (X. Y. Zhao et al., 2022). Current research has predominantly concentrated on the individual realms of CSR and business innovation, with relatively limited investigation into their trade-offs (S. Y. Chen & Ji, 2022; Randrianasolo & Semenov, 2022). Sufficient theoretical frameworks and empirical studies elucidating the mechanisms underlying the trade-off between CSR and business innovation in the face of environmental uncertainty and the impact of this trade-off on economic and social performance remain lacking.

Therefore, we posit that the trade-off between CSR and business innovation entails enterprises rationally allocating their limited resources between socially responsible activities and business innovation to achieve the most optimal allocation for sustainable corporate development (Randrianasolo & Semenov, 2022). Consequently, this study endeavors to conduct an empirical investigation to unravel the theoretical connotations, drivers, and mechanisms underlying the trade-off between CSR response and business innovation from the vantage point of environmental dynamics.

This study relied on more than 600 questionnaires (including 397 valid) and used the PLS-SEM method (Hair & Sarstedt, 2019) to explore the relationship between environmental dynamism, the trade-off between CSR response and business innovation, and enterprise performance. The results showed that policy impact (S1), technological impact (S3), and resource impact (S4) had significant effects on enterprise trade-off (C). First of all, enterprises usually have to comply with policy regulations and regulatory requirements, and the impact of policy environment changes on enterprises (S<sub>1</sub>) will affect enterprises' decisions and actions on



CSR and business innovation. In an uncertain policy environment, social enterprises may pay more attention to social corporate responsibility response that meet policy requirements, driving them to seek new business opportunities to cope with policy risks and thus promoting business innovation (Bhattacharya et al., 2017; Su et al., 2022).

Secondly, in an uncertain technological environment, enterprises may pay more attention to business innovation to meet social needs and market competition requirements (Banerjee & Chatterjee, 2010; Sainio et al., 2012). However, excessive technological innovation may also lead to a weakening of CSR response. On the contrary, the stability and maturity of the technological environment can provide a more stable innovation environment for enterprises, driving business innovation and CSR response.

Thirdly, enterprises' resource acquisition and allocation are important factors affecting their business innovation and CSR response. In the case of uncertain resource environment, enterprises may pay more attention to the efficiency and economy of resource utilization to ensure sufficient funds and material for business innovation (Z. Zhang et al., 2021). However, it may also lead to less investment in CSR response, as competition and lack of resources may limit enterprises' investment in CSR response (Skandera et al., 2022).

In contrast, the impact of the market environment on enterprise trade-off is not significant, possibly because enterprises' social mission and business objectives are inextricably linked. In an uncertain market environment, enterprises may develop new market opportunities to achieve win-win results for their social mission and business objectives, thus promoting the synergistic development of CSR response and business innovation. Therefore, market uncertainty may not affect the trade-off between CSR response and business innovation.

The trade-off between CSR response and business innovation positively affects enterprises' economic performance and CSR performance. CSR and business innovation are two key factors for enterprises to achieve sustainable development. On the one hand, CSR implementation and business innovation can have a positive impact on economic performance. By implementing CSR, enterprises can increase the trust and recognition from consumers and stakeholders, thereby increasing market share and profitability (Carroll, 1991). At the same time, the implementation of CSR can also reduce enterprises' environmental and social risks, thus reducing their economic losses. Through business innovation, enterprises can continuously meet the market demand, increase the added value of products and services, and improve their competitiveness and profitability (Denlertchaikul et al., 2022).

On the other hand, through the implementation of CSR, enterprises can improve the trust and recognition from consumers and stakeholders, thus increasing the CSR performance. In

addition, the implementation of CSR can also reduce enterprises' environmental and social risks of, thereby improving the CSR performance. Similarly, through business innovation, enterprises can introduce more environmentally friendly and socially responsible products and services, further improving their CSR performance (Uyar et al., 2020).

In addition, the results of the mediating effect test showed that the enterprise trade-off between CSR response and business innovation had a significant mediating effect between three of the four dimensions of environmental impact (policy impact, technological impact, and resource impact) and economic performance, while the mediating effect between market impact and economic performance was not significant. The enterprise trade-off had a significant mediating effect between three of the four dimensions of environmental impact (policy impact, technological impact, and resource impact) and CSR performance but had no significant mediating effect between market impact and CSR performance.

This research helps enterprises and managers better understand how to balance social responsibility and business innovation in practice to achieve sustainable development and long-term competitive advantage. It presents the following innovative highlights:

First, this study creatively proposed the concept of trade-off between CSR response and business innovation, regarding CSR and business innovation as a dynamic and balanced relationship with mutual correlation and influence. It raised the question of how to actively fulfill social responsibility to achieve long-term sustainable development while pursuing business interests, providing a new perspective for relevant research on CSR and business innovation (Randrianasolo & Semenov, 2022; X. Y. Zhao et al., 2022).

Secondly, this study delves into the driving factors of the trade-off between CSR response and business innovation, that is, how environmental uncertainty drives the balance between CSR response and business innovation, or how environmental changes affect the balance between CSR response and business innovation under the conditions of environmental uncertainty. This study divides the impact of environmental uncertainty (or environmental changes) into four dimensions, namely, policy dimension, technological dimension, market dimension, and resource dimension, and provides a comprehensive analysis of the factors driving the trade-off between CSR response and business innovation (Skandera et al., 2022). It provides valuable insights into how environmental uncertainty (or environmental changes) affects the mechanisms of strategic decision-making and provides references for how enterprises can overcome environmental constraints to achieve a balance between CSR and business innovation (Cao et al., 2022; Kyaw, 2022).

Finally, this study highlights the impact of the trade-off between CSR response and business

innovation on enterprises' economic performance and CSR performance. The trade-off between CSR response and business innovation helps enterprises strike a balance when facing the increasing pressure of social responsibility and competitive challenges, thus realizing the synergistic integration of sustainability, business growth, and social benefits (A. Ali et al., 2023). On the one hand, balancing the relationship between CSR and business innovation helps enterprises optimize resource allocation, thus achieving sustainable resource utilization and economic benefits.

On the other hand, it helps enterprises identify opportunities for innovation, such as developing environmentally friendly products and adopting sustainable production methods, while meeting social expectations, thus simultaneously attaining the dual objectives of business growth and social value (Hao et al., 2022). Ultimately, it establishes the enterprise as a responsible organization in the eyes of society and stakeholders, enhancing trust and loyalty among consumers, investors, and employees. By examining the performance outcomes resulting from such trade-off, this study underscores the significance of CSR response and business innovation in achieving sustainable development (Siyahhan, 2023).

[This page is deliberately left blank.]

## Chapter 6: Conclusion and Discussion

### 6.1 Research conclusion

The trade-off between corporate social responsibility (CSR) response and business innovation highlights the decisions and choices that enterprises face in the innovation process that conflict with or interact with social responsibility (X. Y. Zhao et al., 2022). On the one hand, some scholars believe that the mutual promotion and penetration between social responsibility and enterprise innovation can bring enterprises greater development space and competitive advantage (S. Borghesi et al., 2015; Padgett & Galan, 2010). On the other hand, business innovation and CSR compete for limited resources, and therefore, other scholars consider the relationship negative (Bimir, 2017; Hull & Rothenberg, 2008).

We believe that in the context of large-scale emergencies (LSEs), state-owned enterprises (SOEs) will balance the relationship between CSR behaviors and business innovation, allocating limited resources reasonably between social responsibility activities and business innovation to seek the best resource allocation and achieve sustainable development. This “trade-off” behavior emphasizes balancing and integrating the needs and expectations of social responsibility fulfillment while pursuing business innovation (Ji & Miao, 2020). We find that corporate trade-off means that LSEs do cause rapid and significant changes in the environment of enterprises, and these changes lead to multiple dimensions of trade-offs and adjustments between SOEs' social responsibility behavior and business innovation, such as strategic adjustment, incentive mechanism adjustment and decision-making process adjustment, in order to achieve the goal of sustainable development. So far, we have successfully answered the first research question.

However, the existing research on the trade-off between CSR response and business innovation is still relatively lacking, although it plays an important role in strategic decision-making, core competitiveness, stakeholder relationship management, and risk management (Skandera et al., 2022; Zou et al., 2019). The results of this study may help enterprises gain a competitive edge in innovation and social responsibility fulfillment and achieve long-term sustainable success in the market.

Through in-depth interviews, we classified environmental uncertainty into four dimensions.

Based on the strategic choice theory and RBV theory, using 602 questionnaire samples (including 397 valid ones) collected in the formal questionnaire survey and the PLS-SEM method, this study explored the following in response to the rest research questions: 1) the driving factors of the trade-off between CSR response and business innovation from the perspective of the impact of environmental changes caused by LSEs on SOEs; 2) the impact mechanism of the trade-off between CSR response and business innovation on enterprise performance; 3) the mediating role of the trade-off between CSR response and business innovation in the relationship of environmental uncertainty with enterprise performance. The results show that from the perspective of policy environment, market environment, technology environment, and resource environment, the environmental changes caused by LSEs have different impact mechanisms on the trade-off (between CSR response and business innovation) and enterprise performance.

Firstly, our findings demonstrate that policy, technological, and resource environment uncertainty significantly influence the trade-off between CSR response and business innovation within organizations. However, it is important to note that market environment uncertainty does not exhibit a similar effect on this trade-off.

From the policy environment perspective, environmental changes have a significant impact on the trade-off between CSR response and business innovation because regulations and policy requirements in the policy environment may have compliance requirements for SOEs' CSR actions and business innovation. SOEs need to pay attention to the requirements of relevant regulations to ensure that their CSR behaviors and innovation projects comply with the provisions of laws and regulations. The policy environment can provide clear guidance and requirements for enterprises to help them determine the appropriate trade-off direction. Governments may encourage CSR and innovation through tax incentives, subsidies, or incentives (Y. Zhang et al., 2022).

Secondly, from the market environment perspective, environmental changes do not facilitate the trade-off between CSR activities and business innovation, perhaps because an enterprise's social mission and business goals are inextricably linked. In an uncertain market environment, social enterprises are likely to achieve a win-win for their social mission and business objectives by developing new market opportunities (J. Peng et al., 2021), thus facilitating the synergistic development of CSR response and business innovation. Therefore, changes in the market environment may not have a clear impact on the trade-off between CSR response and business innovation, and the mechanism of this impact needs to be explored more deeply.

Thirdly, environmental changes in the technological domain significantly impact the trade-off between CSR response and business innovation. Firstly, new technology introductions bring uncertainties like high costs and market acceptance (Krishnamurti et al., 2021). Enterprises must manage risks and allocate resources wisely, balancing innovation and CSR (Berens et al., 2007). Secondly, an uncertain technological environment demands enterprises' flexibility to adapt to changing trends and market demands in order to maintain a competitive edge and fulfill social responsibility (X. Y. Zhao et al., 2022). Thirdly, collaborating with technological partners allows enterprises to share risks and resources and jointly address technical challenges, thus promoting innovation and effective CSR (Randrianasolo & Semenov, 2022).

Resource environment uncertainty significantly influences the trade-off between CSR response and business innovation. It leads to resource supply instability, prompting enterprises to carefully manage resources to balance CSR and business innovation (Wasiuzzaman et al., 2022). Moreover, uncertain resource supply exposes enterprises to risks like increased costs and supply chain disruptions (Geenen, 2018). Enterprises must make effective risk management and adaptation while maintaining CSR and innovation focus. Additionally, resource uncertainty fosters closer partnerships to share risks and improve supply chain reliability. Collaborative efforts enable enterprises to manage resource uncertainty and achieve a balance between CSR and business innovation.

Secondly, the empirical findings of this study underscore the effectiveness of the trade-off between CSR response and business innovation in enhancing both the economic performance and CSR performance of enterprises. This simultaneous pursuit engenders synergies that contribute to overall organizational improvement (Zasuwa, 2017). Notably, innovative CSR initiatives wield a positive influence on brand reputation and consumer perception, engendering heightened customer loyalty and increased sales, thereby yielding tangible benefits to financial performance. Moreover, the strategic integration of CSR practices into enterprises' business strategies serves to mitigate risks associated with environmental, social, and governance issues. Such proactive risk management further bolsters financial performance while exemplifying a steadfast commitment to societal well-being (Uyar et al., 2020).

Thirdly, the results of this study highlight the substantial significance of the trade-off between CSR response and business innovation, particularly concerning the mediating effects of policy environment uncertainty, technological environment uncertainty, and resource environment uncertainty on enterprise performance (economic performance and CSR performance).

The policy environment may have a positive impact on CSR behaviors and business

innovation through incentive mechanisms. By understanding the incentives in the policy environment, enterprises may better strategize to balance and integrate the goals of CSR and innovation (Cao et al., 2022; W. Zhou et al., 2022). The technological environment uncertainty can prompt enterprises to explore new ways and opportunities in the trade-off, so as to achieve the dual goals of business growth and social responsibility. The resource environment uncertainty may also motivate enterprises to explore new innovative and alternative resources in CSR response and business innovation. When existing resources face uncertainty and supply problems, enterprises can find alternative resources or develop new ways of resource management and utilization to achieve sustainable use of resources and CSR goals (Fordham & Robinson, 2018).

However, it is important to highlight that the mediating relationship between market environment uncertainty and enterprise performance does not demonstrate uniform significance. Under LSEs, enterprise trade-off (C) acts as an intermediary variable on enterprise performance (P) and has a significant mediating effect on three of the four dimensions of environmental uncertainty (S) (S1, S3, and S4) and enterprise performance (P). However, it does not have a significant mediating effect on the market dimension (S2). The variations in market environments across industries and regions contribute to diverse levels of uncertainty. As a consequence, the absence of a significant mediating relationship could be attributed to the idiosyncratic market dynamics that impact enterprises distinctively. Hereto, the remaining three research questions have been answered.

## **6.2 Theoretical contribution**

From the perspective of environmental uncertainty, this study explored the driving factors of the trade-off between CSR response and business innovation caused by changes in policy environment, market environment, technological environment, and resource environment under the background of LSEs, and analyzed the impact of the trade-off between CSR response and business innovation on enterprise performance. The theoretical contributions of this study generally fall into the following three aspects:

First of all, this study innovatively proposed the concept and connotation of trade-off between CSR response and business innovation, providing new research angles and areas for academia and practitioners. In academia, CSR and business innovation are often regarded as separate fields (Berens et al., 2007; X. Y. Zhao et al., 2022). This study linked the two separate areas by proposing the concept of trade-off between CSR response and business innovation and



explored their relationship and interaction. It provides the academic community with a new area of research and a deeper understanding of the mechanisms and effects of such trade-off by building corresponding models and theoretical frameworks.

Secondly, from the perspective of strategic choice, this study revealed the impact of environmental changes caused by LSEs on the trade-off between CSR response and business innovation. It found that the uncertainty of policy environment, technological environment, and resource environment significantly affected the trade-off between CSR response and business innovation. In other words, when the environmental uncertainty increases, the difficulty faced by enterprises in implementing CSR response and business innovation will also increase (Dahms et al., 2022). This finding may help enterprises better understand the impact of uncertain environment on corporate behavior and provide guidance for enterprises to formulate reasonable CSR and innovation strategies (Child, 1972, 1997).

Thirdly, from the strategic decision-making perspective of CSR and business innovation, this study explored the influencing mechanism between the impact of uncertain environment, the CSR response and business innovation trade-off, and enterprise performance. It examined the impact of the changes in the policy environment, market environment, technological environment, and resource environment on SOEs in the context of LSEs, and the mediating role of enterprises' trade-off between CSR and business innovation in the relationship of environmental impact with enterprise performance (including economic performance and CSR performance). The findings may help SOEs better understand the influencing mechanism of CSR response and business innovation on enterprise performance and provide guidance for enterprises to formulate appropriate strategies and policies.

Fourthly, this study developed the SCP paradigm. In the classic SCP model, the "S" refers to market structure, and the "C" refers to generalized corporate behavior. This study first replaced "S" with "Surroundings" (environment), extending the market structure, a concrete "environment", to a broader "environment". The generalized "C" was replaced with a more specific corporate behavior: the "trade-off" between business innovation and CSR response. However, the "P" was not changed and still refers to the enterprise performance. This theoretical development and innovation provided a broader vision for the application and research of the SCP paradigm in academic circles in the future.

Fifthly, this study innovatively put forward the concept and connotation of "quasi-internal resource", blurring the boundary between internal resources and the external environment (David, 1998; Griffin, 2019), which not only provided a new perspective and new research field for the academic circle and practitioners to study the resource endowment of SOEs but also

provided reverse ideas for the study of the resource endowment of non-SOEs.

Finally, it deepened the research of the strategic choice theory and RBV theory:

1) The strategic choice theory emphasizes that enterprises should choose strategies based on the matching of environmental factors and internal resources, and maintain competitive advantages through innovation. This study further deepened the application of the strategic choice theory in uncertain environments by exploring the impact of environment changes in policy, market, technology, and resource aspects triggered by LSEs on the trade-off between CSR response and business innovation.

2) The RBV theory holds that an enterprise's resources are the key to determining whether it can gain competitive advantages. This study has found that in different environments, enterprises must adjust their investment in CSR and business innovation to achieve the goal of sustainable development with limited resources. This conclusion highlights that enterprises should make strategic choices considering resource scarcity and environmental uncertainty, give full play to existing resource advantages, and achieve a virtuous cycle of CSR and business innovation through continuous innovation.

### **6.3 Practical implications**

Making a sound CSR and innovation strategy is critical in a dynamic environment. Enterprises need to pay attention to all kinds of changes, including changes in the policy environment, customer needs, and market, and actively respond to them. At the same time, enterprises also need to continue to carry out technological innovation and exploit new markets to maintain a competitive advantage. This study has the following implications for SOEs' business innovation and CSR management.

#### **6.3.1 Develop CSR and innovation strategies in a dynamic environment**

Firstly, all enterprises face a dynamic and uncertain environment and need to develop reasonable CSR and innovation strategies to meet these challenges. Indeed, it is crucial for enterprises to pay attention to social changes and trends in order to stay competitive and meet evolving customer demands. One prominent example is the rise of electric vehicles (EVs), which has prompted many automakers to adapt their product lines to offer more environmentally friendly solutions. As an enterprise primarily focused on electric vehicles, BYD has recognized the importance of environmental protection and sustainability in its CSR strategy. This strategic alignment is reflected in BYD's corporate vision, highlighting

technological innovation, low-carbon environmental protection, and serving society.

To support its CSR strategy, BYD has made continuous investments in technological innovation. This commitment enables it to develop and improve electric vehicle technologies, enhancing their efficiency, reliability, and accessibility. By investing in R&D activities, BYD aims to drive the adoption and development of electric vehicles, thereby contributing to the transition towards a more sustainable mobility sector. Furthermore, BYD actively collaborates with other enterprises and institutions to further advance EV technology and promote its widespread adoption.

Through partnerships, joint ventures, and collaborative research efforts, BYD leverages collective expertise and resources to accelerate the development and market penetration of electric vehicles. By aligning its CSR strategy with the societal shift towards environmental consciousness and sustainable mobility, BYD demonstrates a commitment to both business success and social responsibility. Through its focus on technological innovation, environmental protection, and serving society, BYD positions itself as a leading player in the electric vehicle industry, contributing to a greener and more sustainable future.

Secondly, enterprises must pay attention to changes in the policy environment, particularly those related to climate change and sustainability. These policy changes often lead to increased scrutiny of an enterprise's carbon footprint and environmental impact. Wuliangye Group is an example that actively responds to policy changes and adapts its CSR strategy accordingly. Recognizing the importance of reducing environmental impact, Wuliangye Group has gradually shifted its focus to addressing wastes and carbon emissions.

To achieve this, Wuliangye Group has made significant investments in ecological projects. For instance, the establishment of an ecological wetland within its industrial park and the implementation of an industrial wastewater purification project are measures they have taken to continuously reduce wastes and carbon emissions. These initiatives align with the enterprise's commitment to environmental sustainability. Moreover, Wuliangye Group has implemented various measures throughout its production and logistics processes to reduce its carbon footprint and enhance sustainability, including initiatives such as energy-efficient technologies, waste management practices, and optimizing transportation and distribution systems to minimize environmental impact.

By actively embracing these measures and integrating them into its operations, Wuliangye Group showcases its dedication to environmental responsibility and demonstrates its commitment to aligning with evolving policy requirements. This enterprise's efforts to reduce wastes and carbon emissions, along with its focus on ecological projects and sustainable

practices, contribute to its overall sustainability goals and reinforce its position as a socially responsible organization.

Finally, enterprises must pay attention to customer needs and market changes to remain competitive and meet evolving demands. As consumers' concerns for health and environmental protection continue to grow, many enterprises have shifted their focus towards sustainability and the health attributes of their products. Coca-Cola is a notable example that has responded to market demands by incorporating environmental protection and health considerations into its CSR strategy. Water management and sustainability have become key priorities of Coca-Cola's CSR efforts. To address water-related challenges, Coca-Cola has implemented various measures to reduce water usage and improve the sustainability of water resources. These initiatives aim to minimize the enterprise's impact on local water sources and ensure responsible water stewardship throughout its operations.

In addition to environmental considerations, Coca-Cola has also responded to consumers' demand for healthier products. It has launched a range of health-focused drinks, such as diet Coke, to provide consumers with healthier options and address their concerns for health and well-being. These products cater to changing consumer preferences and align with market trends toward healthier beverage choices. By integrating water management and sustainability practices and introducing health-focused products, Coca-Cola demonstrates its commitment to meeting customer needs and adapting to market changes. This strategic response allows the enterprise to maintain relevance, drive growth, and align its business operations with consumers' evolving expectations. Overall, paying attention to customer needs and market changes enables enterprises to stay competitive, foster customer loyalty, and contribute to long-term sustainability and success.

### **6.3.2 Trade-off between CSR and business innovation in a context with limited resources**

With limited resources, enterprises need to find a balance between CSR and business innovation and formulate reasonable strategies and implementation plans to achieve sustainable development. By focusing on innovation, efficiency, and stakeholder engagement, enterprises can achieve synergies between CSR activities and business innovation to obtain better economic, social, and environmental benefits, thus driving sustainable development.

Firstly, setting clear CSR goals and aligning them with business tactics is crucial for enterprises. CSR should be integrated as a fundamental part of the business strategy rather than seen as an additional burden. By aligning CSR goals with business tactics, enterprises can ensure efficient resource allocation, enhance their reputation in society and the marketplace,

and drive positive impact. As a sustainable feed and food company, Wanda Group provides an excellent example of how aligning CSR goals with business tactics can drive innovation and enhance sustainability. By committing to providing healthy and sustainable feed and food, Wanda Group has embedded CSR principles into its core business operations.

Through innovative technologies and partnerships, Wanda Group strives to achieve its CSR goals while driving business innovation. By adopting sustainable practices and utilizing innovative technologies, such as advanced farming techniques, environmentally friendly production processes, and responsible sourcing, Wanda Group can deliver on its commitment to providing healthy and sustainable feed and food products. The alignment of CSR goals with business tactics allows Wanda Group to leverage its core competencies and expertise to drive positive social and environmental impacts. This strategic approach enhances the enterprise's sustainability and fosters its long-term competitiveness and resilience in the marketplace.

Furthermore, by integrating CSR into its business strategy, Wanda Group can enhance its reputation among stakeholders, including customers, investors, and the wider community. This alignment demonstrates the enterprise's commitment to responsible and sustainable business practices, which can positively influence brand perception and strengthen stakeholders' trust. Overall, to effectively integrate CSR into an enterprise's core operations, it is essential to set clear CSR goals and align them with business tactics. It enables enterprises to drive innovation, enhance sustainability, and contribute to the well-being of society while creating long-term value for their stakeholders.

Secondly, considering sustainability factors in enterprises' decision-making is crucial for achieving long-term success and positively contributing to the environment and society. By incorporating sustainability into business decisions, enterprises can reduce their environmental impact, enhance customer trust, and improve their overall performance. CATL (Contemporary Amperex Technology Co., Ltd.), a power battery manufacturer, exemplifies the practice of considering sustainability in its business operations. It has taken proactive measures to prioritize sustainability throughout its value chain, such as utilizing environmentally friendly materials in its battery production, actively recycling used power batteries, and extending battery life, thus achieving its sustainability goals.

By using environmentally friendly materials in battery production, CATL has reduced the ecological footprint associated with its products. Actively recycling used power batteries helps minimize waste and increases resource efficiency. Furthermore, extending battery life contributes to a more sustainable product life-cycle and reduces the need for frequent replacements. CATL's commitment to sustainability not only contributes to environmental

preservation but also enhances trust and loyalty among purchasers. Customers increasingly value sustainability and are more likely to support enterprises that align with their values and prioritize responsible practices. By considering sustainability factors in decision-making, CATL demonstrates its commitment to addressing environmental concerns and meeting customer expectations.

The publicly disclosed annual report of CATL for 2022 further demonstrates this enterprise's dedication to sustainability. The report highlights its diversified business segments, including power battery systems, energy storage battery systems, battery materials and recycling, and battery mineral resources. Its total revenue in 2022 was 328.594 billion yuan, of which the operating income of battery materials and recycling was 26.03 billion yuan, accounting for 7.92%. Having battery materials and recycling being a significant part of CATL's operating income highlights the enterprise's commitment to sustainable practices and resource circularity. By considering sustainability in corporate decision-making, enterprises like CATL not only contribute to environmental protection but also enhance their reputation, customer loyalty, and long-term business performance. Such practices showcase the integration of sustainability as a core principle and pave the way for a more sustainable future.

Thirdly, fostering a culture of innovation is essential for enterprises' sustainable development of. By encouraging employees to generate new ideas, explore innovative solutions, and continuously improve processes, enterprises can drive growth, adapt to changing environments, and remain competitive. As a manufacturer of communication equipment and intelligent terminal devices, Huawei exemplifies the importance of fostering an innovative culture. The company emphasizes leveraging innovative technologies and partnerships to develop and manufacture products that promote sustainability.

One example of Huawei's innovation efforts is its product design approach. Huawei strives to develop universal interfaces, reduce redundant components, and simplify product packaging. These practices contribute to resource efficiency, waste reduction, and a lower environmental footprint. Furthermore, Huawei recognizes the significance of employee innovation and actively establishes mechanisms to incentivize and support innovative thinking. By establishing innovation incentive mechanisms, the company encourages employees to contribute their creative ideas and rewards their efforts. This fosters a culture where employees feel empowered and motivated to innovate.

The culture of innovation within Huawei provides a strong foundation for its continuous growth and sustainable development. By embracing new technologies, collaborating with partners, and nurturing a supportive environment for innovation, Huawei remains at the

forefront of the industry, driving advancements and addressing evolving market demands. By fostering a culture of innovation, enterprises can unlock the potential of their employees, foster creativity, and adapt to changing circumstances. This culture supports the development of sustainable practices, fuels business growth, and contributes to long-term success. It also positions enterprises to tackle complex challenges and seize opportunities in an ever-evolving business landscape.

Finally, seeking cooperation and support from stakeholders is essential for enterprises' sustainable development. Collaborating with stakeholders, including customers, suppliers, employees, communities, and governments, can significantly enhance an enterprise's impact on society and the marketplace. By building partnerships and engaging stakeholders, enterprises can address sustainability issues more effectively and drive positive changes. IKEA, as a home retailer, exemplifies the importance of stakeholder cooperation in promoting sustainability. The company is committed to improving the sustainability and quality of its products by working closely with suppliers and communities. One way IKEA fosters sustainability is through collaboration with suppliers.

By working together, IKEA and its suppliers can ensure the use of sustainable raw materials and production methods throughout the supply chain. This collaboration helps reduce environmental impact, enhance resource efficiency, and promote responsible sourcing practices. Furthermore, IKEA recognizes the significance of engaging with communities. By partnering with local communities, IKEA can better understand their needs and involve them in sustainable initiatives.

This involvement includes initiatives such as supporting local employment, promoting eco-friendly practices, and contributing to community development. By working together with communities, IKEA not only strengthens its social impact but also builds trust and enhances its reputation. Engaging stakeholders, including customers, is another crucial aspect of IKEA's sustainability efforts. By listening to customers' feedback, IKEA can better understand their expectations and preferences. The insights enables the company to develop sustainable products and services that meet customer needs while reducing environmental impact.

In addition, collaborating with governments allows IKEA to align its sustainability initiatives with regulatory frameworks and policy goals. By actively participating in discussions and partnerships with governments, IKEA can contribute to the development of sustainable policies and practices on a broader scale. By seeking cooperation and support from stakeholders, enterprises like IKEA can leverage collective knowledge, resources, and expertise to drive sustainable practices and make a positive impact. Through these partnerships, they can enhance

their social relevance, strengthen their competitive position, and contribute to the long-term well-being of society and the environment.

### **6.3.3 Focus on stakeholder relationship management of CSR and business innovation management**

Enterprises should focus on stakeholder relationship management to achieve sustainable development of CSR and business innovation. Stakeholders include employees, customers, suppliers, investors, government agencies, and community residents, who have a direct or indirect impact on the operation and development of the enterprise. By effectively managing stakeholder relationships, enterprises can build a solid foundation for cooperation and drive sustainable development. In implementing CSR and business innovation, enterprises should also pay attention to the engagement and feedback of stakeholders.

First of all, conducting a comprehensive stakeholder identification is a crucial step for enterprises to effectively address their CSR and drive business innovation. Identifying key stakeholders allows enterprises to understand the diverse interests, expectations, and concerns of different groups that have an impact on their operations. Stakeholders can include shareholders, employees, customers, suppliers, communities, and governments, among others. Each stakeholder group has specific perspectives and requirements that enterprises should be taken into account when formulating CSR strategies and promoting business innovation.

Active engagement and dialogue with stakeholders are essential for building strong relationships and fostering collaboration. By proactively seeking input from stakeholders, enterprises can gain valuable insights into their expectations, concerns, and priorities. This engagement helps enterprises understand stakeholder needs so as to incorporate them into their decision-making. Furthermore, involving stakeholders in the decision-making process can create a sense of ownership and inclusivity. It demonstrates that the enterprise values their input and respects their interests. This collaborative approach allows stakeholders to contribute their expertise and perspectives, resulting in more informed and balanced decisions.

By engaging stakeholders, enterprises can align their CSR initiatives and business innovation efforts with the interests and expectations of key stakeholders. This alignment fosters trust, enhances reputation, and strengthens stakeholder relationships, creating a mutually beneficial environment for all parties involved. It is important to note that stakeholder engagement should be an ongoing and iterative process. As business and societal contexts evolve, stakeholders' expectations may change. Enterprises should maintain open communication channels, regularly update their stakeholder assessments, and adapt their



strategies accordingly. By conducting comprehensive stakeholder identification and actively engaging stakeholders, enterprises can enhance their CSR practices, drive business innovation, and create shared value for all stakeholders.

Secondly, transparent communication with stakeholders is vital for enterprises to build trust, foster good relationships, and enhance stakeholder engagement and support. Transparent communication encompasses several key elements, including timely and legally compliant disclosure of information, openness about CSR and innovation goals, policies, and progress, and proactive response to stakeholder concerns and feedback. Timely and legally compliant disclosure of information is essential to ensure that stakeholders have access to relevant and accurate information about the enterprise's operations, performance, and impact. This includes financial disclosures, sustainability reports, and other relevant disclosures required by regulations or industry standards. By providing transparent information, enterprises demonstrate their commitment to accountability and enable stakeholders to make informed decisions and assessments.

Openness about CSR and innovation goals, policies, and progress is crucial to foster transparency. Enterprises should clearly communicate their objectives and strategies regarding CSR and innovation, as well as their progress and achievements. This transparency enables stakeholders to understand the enterprise's commitments and track its performance, fostering trust and confidence. Additionally, enterprises should actively listen to stakeholders' concerns and feedback and respond proactively. This means being accessible to stakeholders and providing channels for them to voice their opinions and raise concerns. Enterprises should acknowledge and address stakeholders' concerns in a timely and respectful manner, demonstrating their commitment to addressing social and environmental issues. By actively engaging with stakeholders and incorporating their input into decision-making processes, enterprises can build stronger relationships and enhance stakeholder satisfaction and support.

Transparent communication helps create an environment of openness and trust between enterprises and their stakeholders. It enables stakeholders to understand the enterprise's values, actions, and impacts, encouraging their active engagement and support. By fostering transparent communication, enterprises demonstrate their commitment to responsible and ethical practices, strengthening their reputation and long-term sustainability. It is important for enterprises to establish clear communication channels, such as public reports, websites, social media platforms, and stakeholder engagement programs, to facilitate transparent and open dialogue with stakeholders. Regular and meaningful communication builds stronger relationships, enhances credibility, and contributes to the overall success of the enterprise.

Thirdly, pursuing mutual benefit sharing is crucial to responsible corporate practices. Enterprises should not only benefit from their stakeholders but also focus on giving back and sharing the benefits generated through their CSR and business innovation efforts. By sharing the results of trade-offs between CSR and business innovation, enterprises can enhance mutual benefits and build long-term partnerships with stakeholders. Collaborative projects offer a platform for enterprises to collaborate with stakeholders, such as NGOs, local communities, or other businesses, to address social and environmental challenges collectively. These projects can involve initiatives like joint research and development, community development programs, or sustainability initiatives. By working together, enterprises can leverage the expertise, resources, and networks of their stakeholders to achieve shared goals and maximize the positive impact on society.

Community investments are another way for enterprises to share the benefits generated by their CSR and business innovation activities. Through investment, enterprises can contribute to local communities' development and well-being. This can include supporting education and skill development programs, developing infrastructure, or funding social initiatives that address local needs. Such investments help create shared value, enhance community resilience, and foster long-term relationships with stakeholders. Providing employee benefits is also an important aspect of mutual benefit sharing. Enterprises can offer competitive compensation packages, training and development opportunities, and a supportive work environment that prioritizes employee well-being and growth. By valuing and investing in their employees, enterprises foster a sense of shared success, loyalty, and long-term commitment.

Additionally, enterprises can engage in social assistance response during times of crisis or disaster. By extending support to affected communities, employees, or other stakeholders, enterprises demonstrate their commitment to social responsibility and contribute to the well-being of those in need. This assistance can take the form of financial aid, resource donations, volunteer work, or other forms of support, depending on the specific circumstances. By pursuing mutual benefit sharing, enterprises establish a foundation for sustainable and collaborative relationships with stakeholders. This approach goes beyond solely maximizing profits and recognizes the importance of shared value creation and long-term partnerships. Through collaborative projects, community investments, employee benefits, and social assistance response, enterprises can generate positive social impact, enhance stakeholder trust, and contribute to the well-being of the broader society.

In short, enterprises should take the initiative to communicate and cooperate with stakeholders, understand their needs and concerns, and formulate appropriate CSR and business

innovation strategies to meet their expectations and interests, so as to achieve a win-win situation between enterprises and stakeholders.

#### **6.3.4 Enhance enterprises' dynamic adaptability in uncertain environments**

Enhancing dynamic adaptability in an uncertain environment requires fostering agility and rapid decision-making, encouraging innovation and exploratory learning, building collaborations and partnerships, enhancing information acquisition and analysis capabilities, and implementing resilient supply chain management. These measures can help enterprises better adapt to changes and challenges in an uncertain environment and enhance their adaptability and competitiveness. In an uncertain environment, enterprises can enhance their dynamic adaptability in the following ways:

Firstly, developing agility and rapid decision-making capabilities is crucial for enterprises to effectively navigate and respond to changes and challenges in an uncertain environment. This requires establishing flexible organizational structures, processes, and decision-making mechanisms that enable prompt and effective decision-making. One key aspect is to encourage active employee participation in the decision-making process. By involving employees at various levels and departments, enterprises can tap into a diverse range of perspectives and expertise. This not only enhances the quality of decision-making but also fosters a sense of ownership and commitment among employees.

Promoting information sharing and creating a culture of transparency is essential for agile decision-making. Enterprises should establish efficient communication channels and platforms that facilitate the rapid flow of information across the organization. This ensures that decision-makers have access to the necessary data and insights in a timely manner, enabling them to make informed decisions quickly. Reducing decision-making layers and streamlining processes is another important step in enhancing decision-making efficiency. Enterprises should review their organizational structures and processes to eliminate unnecessary bureaucracy and reduce decision-making bottlenecks. This allows for more agile and responsive decision-making, enabling enterprises to seize opportunities and address challenges promptly.

Establishing clear delegation of authority and empowering employees to make decisions within their areas of expertise can also contribute to rapid decision-making. By giving employees the necessary autonomy and authority, enterprises can accelerate decision-making and foster a culture of agility and responsiveness. Furthermore, leveraging technology and digital tools can enhance decision-making speed and accuracy. Utilizing real-time data analysis, predictive modeling, and automation can provide decision-makers with timely and accurate

information, enabling them to make informed decisions swiftly. By developing agility and rapid decision-making capabilities, enterprises can proactively respond to changes, seize emerging opportunities, and effectively address challenges in an uncertain environment. This enhances the enterprise's ability to adapt and thrive, ensuring its long-term success and competitiveness.

Secondly, encouraging and supporting innovation and exploratory learning is crucial for enterprises to discover new business opportunities and solutions in an uncertain environment. Innovation enables enterprises to adapt, evolve, and stay competitive, while exploratory learning allows for the continuous exploration of new knowledge and skills. To foster innovation, enterprises can establish dedicated innovation teams or departments. These teams are responsible for generating and implementing new ideas, technologies, and processes. By creating a dedicated space for innovation, enterprises provide a supportive environment for employees to explore and experiment with new concepts and solutions.

In addition to innovation teams, enterprises can set up innovation labs or dedicated spaces for experimentation and collaboration. These labs provide a physical or virtual environment where employees can work on innovation projects, test new ideas, and collaborate with cross-functional teams. These spaces foster creativity, interdisciplinary collaboration, and the sharing of ideas and insights. Open innovation platforms are another effective way to foster innovation. By opening up the innovation process to external partners, such as customers, suppliers, research institutions, and startups, enterprises can tap into a broader pool of knowledge and expertise. Open innovation platforms facilitate collaboration, idea exchange, and co-creation, leading to the development of new products, services, and business models.

To promote exploratory learning, enterprises should create a culture that encourages curiosity, experimentation, and continuous learning. This can be achieved by providing learning opportunities, such as training programs, workshops, and seminars, which allow employees to develop new skills and knowledge. Encouraging employees to explore new ideas, challenge assumptions, and learn from failures fosters a growth mindset and a culture of continuous improvement. Furthermore, enterprises can encourage knowledge sharing and collaboration across departments and teams. Establishing platforms, such as internal knowledge-sharing portals or communities of practice, facilitates the exchange of ideas, experiences, and best practices. This promotes cross-pollination of knowledge and enables employees to learn from one another. By fostering innovation and exploratory learning through innovation teams, labs, open innovation platforms, and a supportive culture, enterprises can unlock new business opportunities, stay agile in an uncertain environment, and foster a culture of continuous improvement and growth.

Thirdly, strengthening the ability of information acquisition and analysis is crucial for enterprises to navigate an uncertain environment successfully. In such dynamic conditions, accurate information and effective data analysis provide valuable insights that can drive informed decision-making and strategic adjustments. To enhance information acquisition, enterprises should establish a sound system for collecting and monitoring relevant information. This includes actively tracking market dynamics, competitor behavior, consumer trends, technological advancements, regulatory changes, and other factors that impact the business environment.

By leveraging various sources, such as market research, customer feedback, industry reports, and social media monitoring, enterprises can gather comprehensive and up-to-date information. In addition to information acquisition, effective data analysis is essential for turning raw data into actionable insights. Enterprises should invest in data analytics tools and capabilities that allow for robust analysis of the collected information. Data analysis techniques such as statistical analysis, trend analysis, predictive modeling, and data visualization can help identify patterns, trends, and emerging opportunities or threats.

Furthermore, enterprises can leverage technology and automation to streamline information acquisition and analysis processes. Advanced analytic tools, artificial intelligence, and machine learning algorithms can facilitate faster and more accurate data processing and analysis. Automation of data collection and analysis tasks can free up resources and enable real-time decision-making.

It is crucial for enterprises to establish clear channels and processes for sharing and disseminating analyzed information to relevant stakeholders within the organization. This ensures that decision-makers have access to the insights they need to make informed decisions and adjust strategies promptly. By strengthening the ability of information acquisition and analysis, enterprises can gain a better understanding of the changing business environment, identify emerging trends and opportunities, and proactively respond to challenges. This enables enterprises to make timely and informed decisions, optimize resource allocation, and adjust strategies in a dynamic and uncertain market landscape.

## **6.4 Research limitations and prospects**

Although this study has made some progress in examining the trade-off between CSR response and business innovation and its impact on enterprises' economic performance and CSR performance, there are still many limitations, which provide ideas for future studies.

First, this study did not take into account the influence of other important factors, such as organizational culture, leadership style, and knowledge management. These factors may have an impact on enterprises' CSR response and innovation behavior. Future studies can take them into account to explain enterprises' CSR response and innovation behavior in a more comprehensive manner.

Second, the target of this study is a specific Chinese SOE. It did not consider other countries or other types of enterprises, such as non-state-owned enterprises or non-profit organizations in other developed or developing countries. Future research can consider studying other types of enterprises or organizations to gain a more comprehensive understanding of CSR response and innovation behavior, as well as their effects.

Third, this study used cross-sectional data and did not consider much the dynamic influence of time factors.

Future research can be carried out from the following aspects. First, longitudinal data and panel data can be used to better capture the dynamic changes in CSR response and innovation behaviors and further explore their impact on enterprises' economic performance and CSR performance. Second, future research can explore how to realize CSR response and innovation behaviors in different contexts, such as in different countries and regions or different industrial and market environments. Third, future research could also explore how to balance enterprises' economic and social responsibility goals to achieve sustainable development.

## Bibliography

- Abalkhail, T. S. (2019). Entry and expansion strategies for Burberry in Oman by applying Porter's Five Forces model. *Indian Journal of Marketing*, 49(1), 25-35.
- Aboudzadeh, N., Shoshtari, A. H., & Hashemnia, S. (2014). Crisis management: Planning for the inevitable. *Management Science Letters*, 4(6), 1191-1196.
- Acquier, A., Carbone, V., & Massé, D. (2019). How to create value (s) in the sharing economy: Business models, scalability, and sustainability. *Technology Innovation Management Review*, 9(2), 5-24.
- Ali, A., Jiang, X., & Ali, A. (2023). Enhancing corporate sustainable development: Organizational learning, social ties, and environmental strategies. *Business Strategy and the Environment*, 32(4), 1232-1247.
- Ali, H. Y., Danish, R. Q., & Asrar-ul-Haq, M. (2018). How corporate social responsibility can be integrated into corporate sustainability: A theoretical review of their relationships. *International Journal of Sustainable Development & World Ecology*, 25(8), 672-682.
- Ali, H. Y., Danish, R. Q., & Asrar-ul-Haq, M. (2020). How corporate social responsibility boosts firm financial performance: The mediating role of corporate image and customer satisfaction. *Corporate Social Responsibility and Environmental Management*, 27(1), 166-177.
- Alzamora-Ruiz, J., Fuentes-Fuentes, M. d. M., & Martinez-Fiestas, M. (2021). Effectuation or causation to promote innovation in technology-based SMEs? The effects of strategic decision-making logics. *Technology Analysis & Strategic Management*, 33(7), 797-812.
- Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic Management Journal*, 22(6-7), 493-520.
- Amit, R., & Zott, C. (2010). Business model innovation: Creating value in times of change. *Universia Business Review*, 87, 108-121.
- Anikina, Y. A., Fefelov, A. A., & Malanina, Y. N. (2019, May 26-30). *Research of adaptive features of industrial enterprise crisis management system* IOP Conference Series: Materials Science and Engineering, San Francisco, CA, USA.
- Ansoff, H. I., Kipley, D., Lewis, A. O., Helm-Stevens, R., & Ansoff, R. (2018). *Implanting strategic management* (3rd, Ed.). Palgrave MacMillan.
- Assensoh-Kodua, A. (2019). The resource-based view: A tool of key competency for competitive advantage. *Problems and Perspectives in Management*, 17(3), 143-152.
- Avison, D., Lau, F., Myers, M., & Nielsen, P. A. (1999). Action research. *Communications of the ACM*, 42(1), 94-97.
- Alwaysheh, A., Heron, R. A., Perry, T., & Wilson, J. I. (2020). On the relation between corporate social responsibility and financial performance. *Strategic Management Journal*, 41(6), 965-987.
- Azeem, M., Ahmed, M., Haider, S., & Sajjad, M. (2021). Expanding competitive advantage through organizational culture, knowledge sharing and organizational innovation. *Technology in Society*, 66, 101635.
- Bagozzi, R., & Yi, Y. (1990). Assessing method variance in multirait-multimethod matrices: The case of self-reported affect and perceptions at work. *Journal of applied psychology*, 75(5), 547-560.
- Bai, X., & Chang, J. (2015). Corporate Social Responsibility and Firm Performance: The Mediating Role of Marketing Competence and The Moderating Role of Market

- Environment. *Asia Pacific Journal of Management*, 32(2), 505-530.
- Banerjee, D., & Chatterjee, I. (2010). The impact of piracy on innovation in the presence of technological and market uncertainty. *Information Economics and Policy*, 22(4), 391-397.
- Barauskaite, G., & Streimikiene, D. (2021). Corporate social responsibility and financial performance of companies: The puzzle of concepts, definitions and assessment methods. *Corporate Social Responsibility and Environmental Management*, 28(1), 278-287.
- Barney, J. B. (1995). Looking inside for competitive advantage. *Academy of Management Perspectives*, 9(4), 49-61.
- Barney, J. B., Jr, D. J. K., & Wright, M. (2021). Resource-based theory and the value creation framework. *Journal of Management*, 47(7).
- Baron, R. A., & Tang, J. (2011). The role of entrepreneurs in firm-level innovation: Joint effects of positive affect, creativity, and environmental dynamism. *Journal of Business Venturing*, 26(1), 49-60.
- Benzaghta, M. A., Elwalda, A., & Mousa, M. M. (2021). SWOT analysis applications: An integrative literature review. *Journal of Global Business Insights*, 6(1), 55-73.
- Berens, G., Riel, C. B. M. v., & Rekom, J. v. (2007). The CSR-quality trade-off: When can corporate social responsibility and corporate ability compensate each other? *Journal of Business Ethics*, 74, 233-252.
- Berguiga, I., Said, Y. B., & Adair, P. (2020). The social and financial performance of microfinance institutions in the Middle East and North Africa region: Do Islamic institutions outperform conventional institutions? *Journal of International Development*, 32(7), 1075-1100.
- Bhattacharya, U., Hsu, P.-H., Tian, X., & Xu, Y. (2017). What affects innovation more: Policy or policy uncertainty? *Journal of Financial & Quantitative Analysis*, 52(5), 1869-1901.
- Bimir, M. N. (2017). Corporate social responsibility (CSR) in the Ethiopian banking sector: A case study on commercial bank of Ethiopia (CBE). *Nile Journal of Business and Economics*, 2(4), 3-15.
- Blind, K., Petersen, S. S., & Riillo, C. A. F. (2017). The impact of standards and regulation on innovation in uncertain markets. *Research Policy*, 46(1), 249-264.
- Bo, P., & Biao, K. (2021). Cholera control and prevention in the seventh pandemic in China. *Jibing Jiance*, 36(9), 869-872.
- Bogers, M., Chesbrough, H., Heaton, S., & Teece, D. J. (2019). Strategic management of open innovation: A dynamic capabilities perspective. *California Management Review*, 62(1), 77-94.
- Borghesi, R., & Chang, K. (2020). Economic policy uncertainty and firm value: The mediating role of intangible assets and R&D. *Applied Economics Letters*, 27(13), 1087-1090.
- Borghesi, S., Cainelli, G., & Mazzanti, M. (2015). Linking emission trading to environmental innovation: evidence from the Italian manufacturing industry. *Research Policy*, 44(3), 669-683.
- Bourgeois, L. J. (1985). Strategic goals, perceived uncertainty, and economic performance in volatile environments. *The Academy of Management Journal*, 28(3), 548-573.
- Bown, C. P. (2022). How COVID-19 medical supply shortages led to extraordinary trade and industrial policy. *Asian Economic Policy Review*, 17(1), 114-135.
- Bridoux, F., Stofberg, N., & Hartog, D. D. (2016). Stakeholders' responses to CSR tradeoffs: When other-orientation and trust trump material self-interest. *Frontiers in Psychology*, 6, 1992.
- Brunk, K. H., & Boer, C. d. (2020). How do consumers reconcile positive and negative CSR-related information to form an ethical brand perception? A mixed method inquiry. *Journal of Business Ethics*, 161, 443-458.
- Butt, A. A., Shahzad, A., & Ahmad, J. (2020). Impact of CSR on Firm Value: The Moderating



- Role of Corporate Governance. *Indonesian Journal of Sustainability Accounting and Management*, 4(2), 145-163.
- Cai, E. (2003). 祸福相依——非典催生行业新思维[The combination of good and bad: SARS gave rise to new thinking in the industry]. *Market Observer*, 6(3), 59-61.
- Cannon, A. R. (2008). Inventory improvement and financial performance. *International Journal of Production Economics*, 115(2), 581-593.
- Cao, Y., Chen, Y., & Zhang, Y. (2022). Political uncertainty, innovation-driven strategy, and corporate R&D. *Research in International Business and Finance*, 60, 101612.
- Carbonell, P., & Rodríguez-Escudero, A. I. (2009). Relationships among team's organizational context, innovation speed, and technological uncertainty: An empirical analysis. *Journal of Engineering and Technology Management*, 26(1/2), 28-45.
- Carlson, M., Jakli, L., & Linos, K. (2018). Rumors and refugees: how government-created information vacuums undermine effective crisis management. *International Studies Quarterly*, 62(3), 671-685.
- Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Journal of Management*, 34(4), 39-48.
- Casciaro, T., & Piskorski, M. J. (2005). Power imbalance, mutual dependence, and constraint absorption: A closer look at resource dependence theory. *Administrative Science Quarterly*, 50(2), 167-199.
- Caves, R. E., & Porter, M. E. (1977). From entry barriers to mobility barriers: conjectural decisions and contrived deterrence to new competition. *The Quarterly Journal of Economics*, 91(2), 241-262.
- Chen, L., & Wang, H. (2010). 大规模突发事件中基于满意度的应急物资优化调度模型 [Satisfaction based optimal scheduling model for emergency supplies in large-scale emergencies]. *China Safety Science Journal*, 20(5), 46-52.
- Chen, S., Wu, S., Mao, C., & Li, B. (2017). Strategic adjustment capacity, sustained competitive advantage, and firm performance: an evolutionary perspective on bird flocking and firm competition. *Mathematical Problems in Engineering*, 1-14.
- Chen, S. Y., & Ji, Y. (2022). Do corporate social responsibility categories distinctly influence innovation? A resource-based theory perspective. *Sustainability*, 14(6), 1-25.
- Chen, X. (2018). 基于双重身份的国有企业高管激励效应研究[Research on incentive effect of senior executives in state-owned enterprises based on dual status] [Master's thesis, Southeast University.
- Chen, Y., Gu, X., Gao, Y., & Lan, T. (2021). Sustainability with high-speed rails: The effects of transportation infrastructure development on firms' CSR performance. *Journal of Contemporary Accounting and Economics*, 17(2), 100261.
- Chhetri, R., & Sharma, D. (2022). A Study on the Level of Awareness and Perception of Investors Regarding Socially Responsible Investing in Sikkim. *East Asian Journal of Multidisciplinary Research*, 1(10), 2041-2052.
- Child, J. (1972). Organizational structure, environment and performance: The role of strategic choice. *sociology*, 6(1), 1-22.
- Child, J. (1997). Strategic choice in the analysis of action, structure, organizations and environment: retrospect and prospect. *Organization Studies*, 18(1), 43-76.
- Cho, S., & Kim, A. (2017). Relationships between entrepreneurship, community networking, and economic and social performance in social enterprises: Evidence from South Korea. *Human Service Organizations: Management, Leadership & Governance*, 41(4), 376-388.
- Cho, S. J., Chung, C. Y., & Young, J. (2019). Study on the relationship between CSR and financial performance. *Sustainability*, 11(2), 1-26.
- Choi, H.-Y., & Park, J. (2022). Do data-driven CSR initiatives improve CSR performance? The importance of big data analytics capability. *Technological Forecasting & Social Change*,

182, 121802.

- Christensen, H. B., Hail, L., & Leuz, C. (2021). Mandatory CSR and sustainability reporting: Economic analysis and literature review. *Review of Accounting Studies*, 26(3), 1176-1248.
- Cirera, X., Cruz, M., Davies, E., Grover, A., Iacovone, L., Cordova, J. E. L., . . . Torres, J. (2021). Policies to support businesses through the COVID-19 shock: A firm level perspective. *The World Bank Research Observer*, 36(1), 41-66.
- Cohen, J. (1988). *Statistical power analysis: A computer program*. L. Erlbaum Associates.
- Coombs, W. T., & Laufer, D. (2018). Global crisis management—current research and future directions. *Journal of International Management*, 24(3), 199-203.
- Costa, R. L. d., Geraldes, R., & Geraldes, J. (2019). *VRIO: Static or Dynamic?* European Academy of Management, EURAM 2019 Annual Conference, Lisbon, Portugal.
- Costa, R. L. d., Geraldes, R., Pereira, L., Dias, Á., Gonçalves, R., & Geraldes, J. (2021). Creating sustainable competitive advantages through dynamic capabilities. *International Journal of Business Excellence*, 1, 1-22.
- Currás-Pérez, R., Dolz-Dolz, C., Miquel-Romero, M. J., & Sánchez-García, I. (2018). How social, environmental, and economic CSR affects consumer-perceived value: Does perceived consumer effectiveness make a difference? *Corporate Social Responsibility and Environmental Management*, 25(5), 733-747.
- Cwalina, W., & Falkowski, A. (2018). Crisis management: government strategy in framing reform proposals and communications. *Journal of Political Marketing*, 17(2), 122-136.
- Dahms, S., Kingkaew, S., & Ng, E. S. (2022). The effects of top management team national diversity and institutional uncertainty on subsidiary CSR focus. *Journal of Business Ethics*, 177(3), 699-715.
- David, F. R. (1998). *Strategic management: Concepts and cases*. Prentice-Hall.
- Davis, K. (1960). Can business afford to ignore social responsibilities? *California Management Review*, 2(3), 70-76.
- Del-Castillo-Feito, C., Blanco-Gonzalez, A., & Hernandez-Perlines, F. (2022). The impacts of socially responsible human resources management on organizational legitimacy. *Technological Forecasting and Social Change*, 174, 121274.
- Denlertchaikul, N., Chatjuthamard, P., Jiraporn, P., & Phiromswad, P. (2022). The interaction effect of text-based corporate innovation and economic policy uncertainty on firm performance. *SAGE Open*, 12(4), 1-17.
- Dess, G. G., & Robinson Jr., R. B. (1984). Measuring organizational performance in the absence of objective measures: the case of the privately-held firm and conglomerate business unit. *Strategic Management Journal*, 5(3), 265-273.
- Diez-Cañamero, B., Bishara, T., Otegi-Olaso, J. R., Minguez, R., & Fernández, J. M. (2020). Measurement of corporate social responsibility: A review of corporate sustainability indexes, rankings and ratings. *Sustainability*, 12(5), 1-36.
- Dimitkova, A. (2022). The Application of Porter's Five Forces Model on Organization Performance: A Case of Universities in Republic of Macedonia. *Journal of Economics*, 7(2), 78-86.
- Drazin, R., & Ven, A. H. V. d. (1985). Alternative forms of fit in contingency theory. *Administrative Science Quarterly*, 30(4), 514-539.
- Du, X., Du, Y., Zeng, Q., Pei, H., & Chang, Y. (2016). Religious atmosphere, law enforcement, and corporate social responsibility: Evidence from China. *Asia Pacific Journal of Management*, 33, 229-265.
- Duncan, R. B. (1972). The characteristics of organizational environments and perceived environmental uncertainty. *Administrative Science Quarterly*, 17(3), 313-327.
- Edunov, S., Ott, M., Auli, M., & Grangier, D. (2018). Understanding back-translation at scale. *Journal of International Marketing*, 15(1), 30-43.

- Fei, S., Ni, J., & Santini, G. (2020). Local food systems and COVID-19: An insight from China. *Resources, Conservation and Recycling*, 162, 105022.
- Fei, X. (2005). *企业与环境互动关系研究* [The interaction between enterprises and environment] [Doctoral dissertation]. Wuhan University.
- Ferauge, P. (2013). The complementarity of corporate social responsibility and innovation: Evidence from Belgian firms. *Global Journal of Business Research*, 7(5), 99-113.
- Ferrelle, O. C., Harrisonb, D. E., Ferrelle, L., & Hair, J. F. (2019). Business ethics, corporate social responsibility, and brand attitudes: An exploratory study. *Journal of Business Research*, 95, 491-501.
- Flammer, C. (2015). Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach. *Management science*, 61(11), 2549-2568.
- Flores-Garcia, E., Bruch, J., Wiktorsson, M., & Jackson, M. (2021). Decision-making approaches in process innovations: An explorative case study. *Journal of Manufacturing Technology Management*, 32(9), 1-25.
- Fordham, A. E., & Robinson, G. M. (2018). Mechanisms of change: Stakeholder engagement in the Australian resource sector through CSR. *Corporate Social Responsibility and Environmental Management*, 25(4), 674-689.
- Freeman, R. E., Dmytriyev, S. D., & Phillips, R. A. (2021). Stakeholder theory and the resource-based view of the firm. *Journal of Management*, 47(7), 1757-1770.
- Garcia-Sanchez, I. M., Cuadrado-Ballesteros, B., & Frias-Aceituno, J. V. (2016). Impact of the institutional macro context on the voluntary disclosure of CSR information. *Long Range Planning*, 49(1), 15-35.
- Geenen, S. (2018). *Underground dreams. Uncertainty, risk and anticipation in the gold production network* Geoforum, London, UK.
- Ghoul, S. E., & Karoui, A. (2022). Fund performance and social responsibility: New evidence using social active share and social tracking error. *Journal of Banking & Finance*, 143, 106598.
- Giachetti, C., & Lampel, J. (2010). Keeping both eyes on the competition: Strategic adjustment to multiple targets in the UK mobile phone industry. *Strategic Organization*, 8(4), 347-376.
- Gillan, S. L., & Koch, A. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, 66, 101889.
- Giosi, A., & Caiffa, M. (2021). Political connections, media impact and state-owned enterprises: an empirical analysis on corporate financial performance. *Journal of Public Budgeting, Accounting & Financial Management*, 33(3), 261-288.
- Gölgeci, I., Arslan, A., Dikova, D., & Gligor, D. M. (2020). Resilient agility in volatile economies: institutional and organizational antecedents. *Journal of Organizational Change Management*, 33(1), 100-113.
- Gonçalves, T., Gaio, C., & Costa, E. (2020). Committed vs opportunistic corporate and social responsibility reporting. *Journal of Business Research*, 115, 417-427.
- Gong, Y. (2010). 重大突发事件中心理干预的策略研究 [Study on strategies of psychological intervention in serious emergencies]. *Journal of HuBei Adult Education Institute*, 16(3), 22-23.
- Gorb, O., Dorohan-Pysarenko, L., Yehorova, O., Yasnolob, I., & Doroshenko, A. (2022). Boston consulting group matrix: Opportunities for use in economic analysis. *Scientific Horizons*, 25(7), 20-30.
- Graham, D. B., & Johns, T. D. (2012). The corporate emergency response plan: A smart strategy. *Nat. Resources & Env't*, 27(3), 3-7.
- Gras, D., & Krause, R. (2020). When does it pay to stand out as stand-up? Competitive contingencies in the corporate social performance–corporate financial performance relationship. *Strategic Organization*, 18(3), 448-471.

- Grewal, D., Iyer, G. R., Kamakura, W. A., Mehrotra, A., & Sharma, A. (2009). Evaluation of subsidiary marketing performance: combining process and outcome performance metrics. *Journal of the Academy of Marketing Science*, 37, 117-129.
- Griffin, R. (2019). *Management*. Cengage Learning.
- Guan, S. (2009). 克龙巴赫  $\alpha$  系数研究述评[A review of Cronbach's  $\alpha$  coefficient research]. *Journal of Psychological Science*(3), 685-687.
- Guo, G., Chen, F., & Gu, L. (2018). 慈善捐赠, 品牌资产与企业绩效的关系——来自中国上市公司的数据[The relationship among charitable donation, brand equity and corporate performance: Data from public companies in China]. *China Science and Technology Forum*(3), 100-106.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2012). Partial least squares: The better approach to structural equation modeling? *Long Range Planning*, 45(5), 312-319.
- Hair, J. F., & Sarstedt, M. (2019). Factors versus composites: Guidelines for choosing the right structural equation modeling method. *Project Management Journal*, 50(6), 619-624.
- Hamel, G., & Prahalad, C. K. (2019). *Competing for the future*. Harvard.
- Hao, Z., Zhang, X., & Wei, J. (2022). *Journal of Innovation & Knowledge*. 7(2), 100184.
- Hasanudin, A. I., Yuliansyah, Y., Said, J., Susilowati, C., & Muafi. (2019). Management control system, corporate social responsibility, and firm performance. *Entrepreneurship and Sustainability Issues*, 6(3), 1354.
- Helfat, C. E., Kaul, A., Jr., D. J. K., Barney, J. B., Chatain, O., & Singh, H. (2023). Renewing the resource-based view: New contexts, new concepts, and new methods. *Strategic Management Journal*, 44(6), 1357-1390.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2016). Testing measurement invariance of composites using partial least squares. *International marketing review*, 33(3), 405-431.
- Hillman, A. J., Withers, M. C., & Collins, B. J. (2009). Resource dependence theory: A review. *Journal of Management*, 35(6), 1404-1427.
- Hopkins, M. (2005). Measurement of corporate social responsibility. *International Journal of Management and Decision Making*, 6(3/4), 213-231.
- Hoppmann, J., & Vermeer, B. (2020). The double impact of institutions: Institutional spillovers and entrepreneurial activity in the solar photovoltaic industry. *Journal of Business Venturing*, 35(3), 105960.
- Howitt, A. M., Leonard, H. B., & Giles, D. (Eds.). (2009). *Managing crises: Responses to large-scale emergencies*. CQ Press.
- Huang, J., Duan, Z., Hu, M., & Li, Y. (2022). More stable, more sustainable: Does TMT stability affect sustainable corporate social responsibility? *Emerging Markets Finance and Trade*, 58(4), 921-938.
- Hull, C. E., & Rothenberg, S. (2008). Firm performance: The interactions of corporate social performance with innovation and industry differentiation. *Strategic Management Journal*, 29(7), 781-789.
- Iijima, S. (2019). *Plague and health institutionalization and social change in modern China* (Y. Piao, X. Z. Yu, & B. Jiang, Trans.). Social Sciences Academic Press.
- Ilyas, M., & Mian, R. U. (2022). Economic policy uncertainty and firm propensity to invest in corporate social responsibility. *Management Decision*, 60(12), 3232-3254.
- Jang, S., & Ardichvili, A. (2019). The role of HRD in CSR and sustainability: a content analysis of corporate responsibility reports. *Journal of Training and Development*, 44(6/7), 549-573.
- Jarkovská, P. (2020). Corporate Social Responsibility as a Source of Employees' Job Satisfaction in the Hospitality Industry. *Acta Universitatis Bohemiae Meridionalis*, 23(1), 1-12.
- Jatmiko, B., Handayani, S. D., Udin, U., Suryandani, E., Kusumawati, R., Laras, T., & Raharti, R. (2022). Key-Factor Strategy of Creative Industry in Distribution Channel: A SWOT

- Analysis Method. *International Journal of Sustainable Development & Planning*, 17(6), 1895-1904.
- Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: antecedents and consequences. *Journal of marketing*, 57(3), 53-70.
- Ji, H., & Miao, Z. (2020). Corporate social responsibility and collaborative innovation: The role of government support. *Journal of Cleaner Production*, 260, 121028.
- Jones, C. I. (1995). R&D-based models of economic growth. *Journal of political Economy*, 103(4), 759-784.
- Juliana, J. P. E., & Nyoman, Y. N. (2019). Factors influencing competitiveness of small and medium industry of Bali: Porter's five forces analysis. *Russian Journal of Agricultural and Socio-Economic Sciences*, 89(5), 45-54.
- Junior, A. d. S., Martins-Silva, P. d. O., Coelho, V. D., & Sousa, A. F. d. (2023). The corporate social responsibility pyramid: Its evolution and the proposal of the spinner, a theoretical refinement. *Social Responsibility Journal*, 19(2), 358-376.
- Kao, E. H., Yeha, C.-C., Wang, L.-H., & Fung, H.-G. (2018). The relationship between CSR and performance: Evidence in China. *Pacific-Basin Finance Journal*, 51, 155-170.
- Karatas-Ozkan, M., Özgören, Ç., Yamak, S., Ibrahim, S., & Tunalioglu, M. N. (2022). Dual nature of the relationship between corporate social responsibility and human resource management: A blessing or a curse. *Corporate Social Responsibility and Environmental Management*, 29(5), 1578-1594.
- Kazancoglu, I., Ozbiltekin-Pala, M., Mangla, S. K., Kumar, A., & Kazancoglu, Y. (2023). Using emerging technologies to improve the sustainability and resilience of supply chains in a fuzzy environment in the context of COVID-19. *Annals of Operations Research*, 322(1), 217-240.
- Kennedy, B. R., Jamison, E., & Simpson, J. (2020). *Strategic Management*. Virginia Tech Publishing.
- Kim, C., Song, J., & Nerkar, A. (2012). Learning and innovation: Exploitation and exploration trade-offs. *Journal of Business Research*, 65(8), 1189-1194.
- Kim, J., Cho, K., & Park, C. K. (2019). Does CSR assurance affect the relationship between CSR performance and financial performance? *Sustainability*, 11(20), 5682.
- Kim, K.-H., Kim, M., & Qian, C. (2018). Effects of corporate social responsibility on corporate financial performance: A competitive-action perspective. *Journal of Management*, 44(3), 1097-1118.
- Kim, S., Lee, G., & Kang, H.-G. (2021). Risk management and corporate social responsibility. *Strategic Management Journal*, 42(1), 202-230.
- Kim, T., & Rhee, M. (2009). Exploration and exploitation: internal variety and environmental dynamism. *Strategic Organization*, 7(1), 11-41.
- Klausen, J. E., & Winsvold, M. (2021). Corporate governance and democratic accountability: local state-owned enterprises in Norway. *Journal of Public Policy*, 41(1), 161-184.
- Koh, K., Li, H., & Tong, Y. H. (2023). Corporate social responsibility (CSR) performance and stakeholder engagement: Evidence from the quantity and quality of CSR disclosures. *Corporate Social Responsibility and Environmental Management*, 30(2), 504-517.
- Krishnamurti, C., Shams, S., & Chowdhury, H. (2021). Evidence on the trade-off between corporate social responsibility and mergers and acquisitions investment. *Australian Journal of Management*, 46(3), 466-498.
- Kuzey, C., Uyar, A., Nizaeva, M., & Karaman, A. S. (2021). CSR performance and firm performance in the tourism, healthcare, and financial sectors: Do metrics and CSR committees matter? *Journal of Cleaner Production*, 319, 128802.
- Kyaw, K. (2022). Effect of policy uncertainty on environmental innovation. *Journal of Cleaner Production*, 363, 132645.

- Lau, A. K. W., Lee, S. H. N., & Jung, S. (2018). The role of the institutional environment in the relationship between CSR and operational performance: An empirical study in Korean manufacturing industries. *Sustainability*, *10*(3), 834.
- Lepoutre, J., Dentchev, N. A., & Heene, A. (2007). Dealing with uncertainties when governing CSR policies. *Journal of Business Ethics*, *73*, 391–408.
- Li, B., Fan, X., Álvarez-Otero, S., Sial, M. S., Comite, U., Cherian, J., & Vasa, L. (2021). CSR and workplace autonomy as enablers of workplace innovation in SMEs through employees: Extending the boundary conditions of self-determination theory. *Sustainability*, *13*(11), 6104.
- Li, H. (2018). 改革开放四十年来中国自然灾害与社会救助述论——基于历年灾害与救灾数据的统计分析[Natural disasters and social assistance in China in the past 40 years of reform and opening up: A statistical analysis of disaster and rescue data]. *Hunan Social Sciences*, *5*(7), 51-57.
- Li, X. F. (2018). 试论突发事件的基本特征及其实践意涵[On the features of emergencies and their practical implications]. *Journal of Beijing Electronic Science and Technology Institute*, *26*(1), 1-6.
- Li, X. Q., Hu, Z., & Zhang, Q. (2021). Environmental regulation, economic policy uncertainty, and green technology innovation. *Clean Technologies and Environmental Policy*, *23*(10), 2975-2988.
- Lin, L.-H. (2019). Technology interdependence and entry modes of the Taiwanese technological multinational companies: Moderating effects of political instability, technological uncertainty, and Confucian dynamism. *Technology Analysis & Strategic Management*, *31*(6), 707-719.
- Lozano, R. (2020). Analysing the use of tools, initiatives, and approaches to promote sustainability in corporations. *Corporate Social Responsibility and Environmental Management*, *27*(2), 982 - 998.
- Lubis, H., Pratama, K., Pratama, I., & Pratami, A. (2019). A systematic review of corporate social responsibility disclosure. *International Journal of Innovation, Creativity and Change*, *6*(9), 415-428.
- Lv, D., Ran, Q., & Lan, H. (2019). 认知学派与战略管理思想演进, 发展与争鸣[Cognitive school and strategic management thought evolution, development and contention]. *Nankai Business Review*, *3*, 214-224.
- Ma, X. (2005). 对因子分析方法及其过程中几个问题的探讨[Exploration of the factor analysis method and several issues in the analytical process]. *Statistical Education*(8), 61-64.
- Macintyre, A. (2020). Adaption to data-driven practices in civil society organizations: A case study of Amnesty International. *Journal of Information Technology & Politics*, *17*(2), 161-173.
- Macuda, M., Matuszak, L., & Róañska, E. (2015). The concept of CSR in accounting theory and practice in poland : An empirical study. *Zeszyty Teoretyczne Rachunkowosci*, *84*(140), 115-137.
- Mao, L., Li, J., & Guo, C. (2019). Integrator's coordination on technological innovation performance in China: The dual moderating role of environmental dynamism. *Sustainability*, *12*(1), 308-331.
- Marhfor, A., Bouslah, K., & Hmaitane, A. (2022). Does firm political risk affect the relationship between corporate social responsibility and firm value? *Sustainability*, *14*(18), 11217.
- Martini, A. (2021). Socially responsible investing: from the ethical origins to the sustainable development framework of the European Union. *Environment, development and sustainability*, *23*(11), 16874-16890.

- Matten, D., & Moon, J. (2008). “Implicit” and “explicit” CSR: A conceptual framework for a comparative understanding of corporate social responsibility. *Academy of management Review*, 33(2), 404-424.
- McGuire, J., Dow, S., & Ibrahim, B. (2012). All in the family? Social performance and corporate governance in the family firm. *Journal of Business Research*, 65(11), 1643-1650.
- McPhillips, L. E., Chang, H., Chester, M. V., Depietri, Y., Friedman, E., Grimm, N. B., . . . Shiva, J. S. (2018). Defining extreme events: A cross-disciplinary review. *Earth's Future*, 6(3), 441-455.
- McWilliams, A., & Smart, D. L. (1993). Efficiency v. structure-conduct-performance: Implications for strategy research and practice. *Journal of Management*, 19(1), 63-78.
- Meijer, I. S. M., Hekkert, M. P., & Koppenjan, J. F. M. (2007). The influence of perceived uncertainty on entrepreneurial action in emerging renewable energy technology; biomass gasification projects in the Netherlands. *Energy policy*, 35(11), 5836–5854.
- Memon, A., Zhang, Y., & Memon, M. Q. (2020). Does financial availability sustain financial, innovative, and environmental performance? Relation via opportunity recognition. *Corporate Social Responsibility and Environmental Management*, 27(2), 562-575.
- Meng, B., Niu, E., Kuang, H., & Luo, J. (2018). 基于云模型的企业社会责任评价模型及应用[An evaluation model and empirical research on CSR based on cloud model]. *Science Research Management*, 39(7), 139-150.
- Meseguer-Sánchez, V., Gálvez-Sánchez, F. J., López-Martínez, G., & Molina-Moreno, V. (2021). Corporate social responsibility and sustainability. A bibliometric analysis of their interrelations. *Sustainability*, 13(4), 1636.
- Meyer, H., Ehmann, R., & Smith, G. L. (2020). Smallpox in the post-eradication era. *Viruses*, 12(2), 138.
- Meynhardt, T., & Gomez, P. (2019). Building blocks for alternative four-dimensional pyramids of corporate social responsibilities. *Business & Society*, 58(2), 404-438.
- Miethlich, B., & Oldenburg, A. G. (2019). The employment of persons with disabilities as a strategic asset: A resource-based-view using the value-rarity-imitability-organization (VRIO) framework. *Journal of Eastern Europe Research in Business and Economics*, 1, 1-13.
- Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management science*, 29(7), 770-791.
- Mohajan, H. K. (2018). An analysis on BCG growth sharing matrix. *Noble International Journal of Business and Management Research*, 2(1), 1-6.
- Moir, L. (2001). What do we mean by corporate social responsibility? *Corporate Governance*, 1(2), 16-22.
- Montoya-Cruz, E., Ramos-Requena, J. P., Trinidad-Segovia, J. E., & Sánchez-Granero, M. Á. (2020). Exploring arbitrage strategies in corporate social responsibility companies. *Sustainability*, 12(16), 1-17.
- Muchlinski, P. (2021). The impact of the UN Guiding Principles on business attitudes to observing human rights. *Business and Human Rights Journal*, 6(2), 212-226.
- Musa, D., Ghani, A. A., & Ahmad, S. (2022). Resource based-view theory on business performance and firm strategic orientation. *International Journal of Social Science and Education Research*, 7(1), 89-97.
- Ni, X. (2023). How can local policy uncertainty encourage firm innovation: A competitive advantage channel. *Asia-Pacific Journal of Financial Studies*, 52(1), 35-62.
- Nogalski, B., Hiep, P. M., Dao, M. T. H., & Minh, D. T. (2022). Analysis of business strategy of real estate developers in Vietnam using BCG matrix: A case of Hung Thinh and Novaland groups. *International Journal of Multidisciplinary Research and Growth Evaluation*, 3(1), 169-174.

- O'Reilly, C., & Tushman, M. (2007). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in organizational behavior*, 28, 185-206.
- O'Sullivan, D., Abela, A. V., & Hutchinson, M. (2009). Marketing performance measurement and firm performance: evidence from the European high-technology sector. *European Journal of Marketing*, 43(5/6), 843-862.
- Oliveira, M. G. d., Rozenfeld, H., Phaal, R., & Probert, D. (2015). Decision making at the front end of innovation: The hidden influence of knowledge and decision criteria. *R&D Management*, 45(2), 161-180.
- Özbay, D., & Adıgüzel, H. (2019). Corporate Social Responsibility and Classification Shifting Between Operating and Non-operating Expenses: Evidence from Turkey. *Ethics and Sustainability in Accounting and Finance*, 11, 111-131.
- Ozdemir, O., Fatemeh Binesh, & Ezgi Erkmen. (2022). The effect of target's CSR performance on M&A deal premiums: A case for service firms. *Review of Managerial Science*, 16(4), 1001-1034.
- Padgett, R. C., & Galan, J. I. (2010). The effect of R&D intensity on corporate social responsibility. *Journal of Business Ethics*, 93, 407-418.
- Palacios-Manzano, M., León-Gomez, A., & Santos-Jaén, J. M. (2021). Corporate social responsibility as a vehicle for ensuring the survival of construction SMEs. The mediating role of job satisfaction and innovation. *IEEE Transactions on Engineering Management*, 27, 562-575.
- Park, H., Yoo, J.-Y., Moon, S.-H., Yoo, H.-S., Lee, H.-S., Kwon, T.-H., & Hahn, H. (2019). Effect of technology and market dynamism on the business performances of SMEs by supporting services. *Technology and Society*, 24(1), 144-160.
- Park, S., Graham, M., & Foster, E. A. (2022). Improving local government resilience: Highlighting the role of internal resources in crisis management. *Sustainability*, 14(6), 3214.
- Parvin, R., Rana, M. S., & Shams, S. (2020). Literature review on the association between earnings management and corporate social responsibility. *International Journal of Accounting & Finance Review*, 5(1), 22-31.
- Patrício, V., Costa, R. L. d., Carvalho, H., Pereira, L., Dias, Á., & Gonçalves, R. (2022). Investigation model of sensing, seizing and reconfiguring capabilities. *International Journal of Value Chain Management*, 13(4), 395-421.
- Patrício, V., Costa, R. L. d., Pereira, L., & António, N. (2021). Project management in the development of dynamic capabilities for an open innovation era. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(3), 164.
- Peng, J., Qin, Q., & Tang, T. Y. (2021). The influence of marketing innovations on firm performance under different market environments: Evidence from China. *Sustainability*, 13(18), 10049.
- Peng, Y., Xue, J., & Meng, X. (2019). 创业导向对创新绩效的影响——环境动态性的调节作用[Influence of Entrepreneurial Orientation on Innovation Performance: Environment Dynamism as Moderator]. *Journal of Systems & Management*, 28(6), 1014-1020.
- Peng, Z., Liu, K., & Wang, L. (2003). 企业应对外部突发事件的营销策略调整.彭志方[The adjustment of marketing strategy for enterprises to cope with external emergencies]. *Modern Economic Science*, 25(5), 55-58.
- Pereira, L., Costa, R. L. d., & Dias, Á. (2022). The Main Challenges to Implement a Strategic Plan through Dynamic Capabilities. *International Journal of Process Management and Benchmarking*, 12(5), 616-630.
- Pereira, L., Pinto, M., Costa, R. L. d., Dias, Á., & Gonçalves, R. (2021). The new SWOT for a sustainable world. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 18.
- Podsakoff, P. M., MacKenzie, S. B., & Lee, J.-Y. (2003). Common method biases in behavioral



- research: A critical review of the literature and recommended remedies. *Journal of applied psychology*, 88(5), 879.
- Porter, M. E. (1997). *Competitive Advantage: Creating and sustaining superior performance*. Huaxia Publishing House.
- Qi, X. (2020). 支持国家战略物资储备体系建设[Supporting the development of national strategic material reserve system]. *Agricultural Development and Finance*(5), 35-36.
- Qing, L., Chun, D., Dagestani, A. A., & Li, P. (2022). Does proactive green technology innovation improve financial performance? Evidence from listed companies with semiconductor concepts stock in China. *Sustainability*, 14(8), 4600.
- Randrianasolo, A. A., & Semenov, A. V. (2022). Synergy versus trade-off: The influence of national philanthropic environment and industry on the relationship between research and development and corporate social responsibility. *Journal of International Marketing*, 30(1), 75-92.
- Rigdon, E. E. (2012). Rethinking partial least squares path modeling: In praise of simple methods. *Long Range Planning*, 45(5-6), 341-358.
- Rodríguez, H., Donner, W., & Trainor, J. E. (Eds.). (2018). *Handbook of Disaster Research*. Springer International Publishing AG.
- Sabherwal, R., Sabherwal, S., Havakhor, T., & Steelman, Z. (2019). How does strategic alignment affect firm performance? The roles of information technology investment and environmental uncertainty. *MIS quarterly*, 43(2), 453-474.
- Sainio, L.-M., Ritala, P., & Hurmelinna-Laukkanen, P. (2012). Constituents of radical innovation-exploring the role of strategic orientations and market uncertainty. *Technovation*, 32(11), 591-599.
- Samuelson, W. F., Marks, S. G., & Zagorsky, J. L. (2021). *Managerial Economics* (9th ed.). John Wiley & Sons Inc.
- Saputra, A. D. W., Danial, R. D. M., & Samsudin, A. (2020). Analisis Strategi Pemasaran Industri Makanan Ringan Menggunakan Boston Consulting Group Matrix. *Jurnal Ilmiah Mahasiswa Ekonomi*, 3(1), 3(1), 1-11.
- Scherer, F. M. (2018). *Monopolies, Mergers and Competition Policy*. Edward Elgar Publishing.
- Schilke, O. (2014). On the contingent value of dynamic capabilities for competitive advantage: the nonlinear moderating effect of environmental dynamism. *Strategic Management Journal*, 35(2), 179-203.
- Schilling, M. A., & Hill, C. W. L. (1998). Managing the new product development process: Strategic imperatives. *Academy of Management Perspectives*, 12(3), 67-81.
- Schmutz, B., Tehrani, M., Fulton, L., & Rathgeber, A. W. (2020). Dow Jones sustainability indices, do they make a difference? The US and the European Union companies. *Sustainability*, 12(17), 6785.
- Schumpeter, J. A., & Swedberg, R. (2021). *The theory of economic development*. Routledge.
- Sendstad, L. H., Chronopoulos, M., & Hagspiel, V. (2023). Optimal risk adoption and capacity investment in technological innovations. *IEEE Transactions on Engineering Management*, 70(2), 576-589.
- Senyard, J. M., Baker, T., & Steffens, P. R. (2010, August 6-10). *Entrepreneurial bricolage and firm performance: Moderating effects of firm change and innovativeness*. Annual meeting of the academy of management, Montreal, Quebec, Canada.
- Shi, H. (2009). 大规模突发事件下救援物资保障研究[Research on materials guarantee in large-scale emergencies]. *Logistics Sci-Tech*(11), 91-93.
- Shmueli, G., & Koppius, O. R. (2011). Predictive analytics in information systems research. *MIS quarterly*, 35(3), 553-572.
- Sinaga, B. R. (2022). Considering Boston consulting group's matrix of strengthening competitiveness and good governance in Indonesia. *Journal of Governance and*

- Administrative Issues*, 1(1), 19-25.
- Siyahhan, B. (2023). Stakeholders and corporate social responsibility: What makes firms tip over to CSR investments? *Managerial and Decision Economics*, 44(3), 1436-1453.
- Skandera, D. J., McKenny, A. F., & Combs, J. G. (2022). The influence of task environmental uncertainty on the balance between normative and strategic corporate social responsibility. *Journal of Management*, 49(3), 1037-1069.
- Smith, A. (2023). *An inquiry into the nature and causes of the wealth of nations* (C. Hu, Ed. 2023 ed.). Chongqing Press.
- Sousa, P. H. R. d., Junior, E. R., Costa, C. C. B. d., & Reis, A. L. N. (2021). A model of innovation process in light of the Theory of The Growth of the Firm, by Edith Penrose, and of Resource-Based View. *Revista Ibero-Americana de Estratégia*, 20(1), 19041.
- Speckbacher, G., Neumann, K., & Hoffmann, W. (2015). Resource relatedness and the mode of entry into new businesses: Internal resource accumulation vs. access by collaborative arrangement. *Strategic Management Journal*, 36(11), 1675–1687.
- Stasavage, D. (2020). David Stasavage. *International Organization*, 74(S1), E1-E17.
- Stoyanova, V. (2018). *An analysis of David J. Teece's dynamic capabilities and strategic management: Organizing for innovation and growth*. Macat Library.
- Su, F., Song, N., Shang, H., & Fahad, S. (2022). The impact of economic policy uncertainty on corporate social responsibility: A new evidence from food industry in China. *Plos one*, 17(6), e0269165.
- Sun, H., Li, Y., & Zhang, J. (2021). Collaboration-based reliable optimal casualty evacuation network design for large-scale emergency preparedness. *Socio-Economic Planning Sciences*, 81, 101192.
- Sun, X., & Gunia, B. C. (2018). Economic resources and corporate social responsibility. *Journal of Corporate Finance*, 51, 332-351.
- Tang, W. (2009). *大规模突发事件应急物资调度基本模型研究[Study on the basic model of dispatching commodities of large-scale emergency]* [Doctoral dissertation]. Huazhong University of Science & Technology.
- Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319-1350.
- Teece, D. J. (2017). Towards a capability theory of (innovating) firms: Implications for management and policy. *Cambridge journal of economics*, 41(3), 693-720.
- Teece, D. J. (2018). Business models and dynamic capabilities. *Long Range Planning*, 51(1), 40-49.
- Thompson, J. D., & Mcewen, W. J. (1958). Organizational goals and environment: Goal-setting as an interaction process. *American Sociological Review*, 23(1), 23-31.
- Tirole, J. (2018). *The theory of industrial organization*. China Renmin University Press.
- Torelli, R., Balluchi, F., & Furlotti, K. (2020). The materiality assessment and stakeholder engagement: A content analysis of sustainability reports. *Corporate Social Responsibility and Environmental Management*, 27(2), 470-484.
- Uyar, A., Kilic, M., Koseoglu, M. A., & Kuzey, C. (2020). The link among board characteristics, corporate social responsibility performance, and financial performance: Evidence from the hospitality and tourism industry. *Tourism Management Perspectives*, 35, 100714.
- Valackiene, A., & Micevicienė, D. (2012). Benchmarking of corporate social responsibility: From the perspective of stakeholders to the interests of an enterprise. *Transformations in Business & Economics*, 11(2), 42-57.
- Voorhees, C. M., Brady, M. K., Calantone, R., & Ramirez, E. (2016). Discriminant validity testing in marketing: An analysis, causes for concern, and proposed remedies. *Journal of the Academy of Marketing Science*, 44(1), 119-134.
- Vrande, V. V. D. (2013). Balancing your technology-sourcing portfolio: How sourcing mode

- diversity enhances innovative performance. *Strategic Management Journal*, 34(5), 610–621.
- Walker, K., Zhang, Z., & Ni, N. (2019). The mirror effect: corporate social responsibility, corporate social irresponsibility and firm performance in coordinated market economies and liberal market economies. *British Journal of Management*, 30(1), 151-168.
- Wang, H., & Li, J. (2008). Untangling the effects of overexploration and overexploitation on organizational performance: The moderating role of environmental dynamism. *Journal of Management*, 34(5), 925-951.
- Wang, J., & Wang, Z. (2020). Strengths, weaknesses, opportunities and threats (SWOT) analysis of China's prevention and control strategy for the COVID-19 epidemic. *International journal of environmental research and public health*, 17(7), 1-17.
- Wang, N., Mingdi Xiao, & Savin, I. (2021). Complementarity effect in the innovation strategy: Internal R&D and acquisition of capital with embodied technology. *The Journal of Technology Transfer*, 46, 459-482.
- Wang, Z., Reimsbach, D., & Braam, G. (2018). Political embeddedness and the diffusion of corporate social responsibility practices in China: A trade-off between financial and CSR performance? *Journal of Cleaner Production*, 198, 1185-1197.
- Wang, Z. Q., Wang, Q., Zhao, X., Lyles, M. A., & Zhu, G. (2016). Interactive effects of external knowledge sources and internal resources on the innovation capability of Chinese manufacturers. *Industrial Management & Data Systems*, 116(8), 1617-1635.
- Wasiuzzaman, S., Uyar, A., Kuzey, C., & Karama, A. S. (2022). Corporate social responsibility: Is it a matter of slack financial resources or strategy or both? *Managerial and Decision Economics*, 43(6), 2444-2466.
- Way, S., & Yuan, Y. (2014). Transitioning from dynamic decision support to context-aware multi-party coordination: a case for emergency response. *Group Decision & Negotiation*, 23(4), 649-672.
- Weber, J., & Wasieleski, D. M. (2018). *Corporate social responsibility*. Emerald Publishing Limited.
- Wei, J., Wang, D., & Liu, Y. (2018). Towards an asymmetry-based view of Chinese firms' technological catch-up. *Frontiers of Business Research in China*, 12(1), 1-13.
- Whittington, R. (2006). Completing the practice turn in strategy research. *Organization Studies*, 27(5), 613-634.
- Wołowiec, T., Szybowski, D., & Bogacki, S. (2019). The concept of CSR as elements of building economic and social relations with the external environment of the organization (outline of the problem). *International Journal of New Economics and Social Sciences*, 10(2), 95-114.
- Wu, M. (2010). *问卷统计分析实务: SPSS 操作与应用*[*Practical statistical analysis of questionnaires: SPSS operations and applications*]. Chongqing University Press.
- Wu, S., Levitas, E., & Priem, R. L. (2005). CEO tenure and company invention under differing levels of technological dynamism. *Academy of Management Journal*, 48(5), 859-873.
- Xiang, S., Sun, x., & Wu, Z. (2020). 中国鼠疫的疫情及防治进展[Progress in plague prevention and control in China]. *China Tropical Medicine*, 20(5), 486-490.
- Xiao, H., Han, M., Wang, R., & He, W. (2018). 基于轴辐式大规模突发事件应急物资筹措网络研究[Research on large-scale emergency supply raising network based on hub-and-spoke model]. *Logistics Sci-Tech*(02), 74-78.
- Xiong, Z., Pengju Wang, & Chengxia Wu. (2022). How to encourage innovation failure knowledge sharing in virtual research organization: An incentive mechanism based on game theory. *Computational and Mathematical Organization Theory*, 28(3), 1-21.
- Yevdokimova, M., Zamlynskiy, V., Minakova, S., Biriuk, O., & Ilina, O. (2019). Evolution of corporate social responsibility applied to the concept of sustainable development. *Journal*

- of Security & Sustainability Issues*, 8(3), 473-480.
- Yi, Y., Chen, Y., & Li, D. (2022). Stakeholder ties, organizational learning, and business model innovation: A business ecosystem perspective. *Technovation*, 114, 102445.
- Yigitcanlar, T., Sabatini-Marques, J., da-Costa, E. M., Kamruzzaman, M., & Ioppolo, G. (2019). Stimulating technological innovation through incentives: Perceptions of Australian and Brazilian firms. *Technological Forecasting and Social Change*, 146, 403-412.
- Yin, J., & Shao, Y. (2018). A research on how alliance portfolio management capability impacts on the focal firm's cooperative innovation performance. *Chinese Journal of Management*, 15(6), 865-873.
- Yoon, B., & Chung, Y. (2018). The effects of corporate social responsibility on firm performance: A stakeholder approach. *Journal of hospitality and tourism management*, 37, 89-96.
- Yuan, T., Wu, J. G., Qin, N., & Xu, J. (2022). Being nice to stakeholders: The effect of economic policy uncertainty on corporate social responsibility. *Economic Modelling*, 108, 105737.
- Zahra, S. A., & Bogner, W. C. (2000). Technology strategy and software new ventures' performance: Exploring the moderating effect of the competitive environment. *Journal of Business Venturing*, 15(2), 135-173.
- Zasuwa, G. (2017). The role of company-cause fit and company involvement in consumer responses to CSR initiatives: A meta-analytic review. *Sustainability*, 9(6), 1016.
- Zavyalova, E. B., & Popkova, E. G. (Eds.). (2022). *Industry 4.0: Fighting Climate Change in the Economy of the Future*. Springer International Publishing.
- Zhan, Y., & Chen, K. Z. (2021). Building resilient food system amidst COVID-19: Responses and lessons from China. *Agricultural Systems*, 190, 103102.
- Zhang, L. (2023). The driving forces of charitable Donation: A Case study of ERKE company. *Thailand and The World Economy*, 41(2), 85-102.
- Zhang, X., Wang, X., & Wang, M. (2019). 应用波士顿矩阵进行企业人员管理的策略与方法探讨[Discussion on the Method of Applying Boston Matrix to Analyze the Personnel Management Strategies of Central and Provincial Companies]. *Chinese Personnel Science*, 2, 72-77.
- Zhang, Y., Zhuo, C., & Deng, F. (2022). Policy uncertainty, financialization and enterprise technological innovation: a way forward towards economic development. *Frontiers in Environmental Science*, 10, 505.
- Zhang, Z., Hu, D., & Liang, L. (2021). The impact of supplier dependence on suppliers' CSR: The moderating role of industrial dynamism and corporate transparency. *Journal of Purchasing and Supply Management*, 27(5), 100702.
- Zhao, J. (2021). Knowledge management capability and technology uncertainty: Driving factors of dual innovation. *Technology Analysis & Strategic Management*, 33(7), 783-796.
- Zhao, X. Q., & Wan, D. (2021). 影响中国企业慈善捐赠行为的因素:省域空间相关的角度——基于"5·12"地震内地企业捐款的空间计量分析[The influencing factor of donation in China's corporations from the perspective of provincial space: A spatial analysis of the corporations donated after "5·12" Wenchuan earthquake]. *Soft Science*, 25(05), 120-123.
- Zhao, X. Y., Tan, J., & Zhong, S. (2022). The trade-off between corporate social responsibility and competitive advantage: A biform game model. *Technological and Economic Development of Economy*, 28(2), 463-482.
- Zhou, W., Huang, X., Dai, H., Xi, Y., Wang, Z., & Chen, L. (2022). Research on the impact of economic policy uncertainty on enterprises' green innovation-based on the perspective of corporate investment and financing decisions. *Sustainability*, 14(5), 2627.
- Zhou, X. (2012). 跨国公司生产守则运动中的行动者及其权力结构[Action takers and power structures in the the campaign of code of practice for transnational corporations]. *Tan Qiu*, 6, 66-71.

- Zhu, J., & Yang, P. (2009). 企业社会责任与财务绩效关系的实证检验[An empirical test of the relationship between CSR and CFP]. *Statistics and Decision*(07), 135-137.
- Zott, C., & Amit, R. (2007). Business model design and the performance of entrepreneurial firms. *Organization science*, 18(2), 181-199.
- Zou, H., Xie, X., Meng, X., & Yang, M. (2019). The diffusion of corporate social responsibility through social network ties: From the perspective of strategic imitation. *Corporate Social Responsibility and Environmental Management*, 26 (1), 186-198.
- Zoysa, A. D., Takaoka, N., & Zhang, Y. (2021). Impact of corporate social responsibility (CSR) awareness, affordability and management system sophistication on CSR performance. *Industrial Management & Data Systems*, 121(7), 1704-1722.

[This page is deliberately left blank.]

## Webliography

- Li, Q., & Dan, K. (2020, February 14). 12 天达到转产条件 “宜宾造” 医用防护服今正式生产 [With the production requirements met in 12 days, the medical protective clothing “made in Yibin” officially goes into production today]. YibinNews Inc. Retrieved September 7, 2020, from <http://www.ybxww.com/news/html/202002/397426.shtml>

[This page is deliberately left blank.]



## Other References

COM. (2001). *Green paper: promoting a European framework for corporate social responsibility*. (COM(2001) 366 final). Brussels, Belgium

[This page is deliberately left blank.]

## Annex A: Glossary of abbreviations

Table a1: Glossary of abbreviations

Index	Abbreviations	Full name (Full text)
1	CAMPCS	Context-aware Multi-party Coordination System
2	CATL	Contemporary Amperex Technology Co., Ltd.
3	CFP (FP)	Corporate financial performance (Financial performance)
4	CITC	Corrected item-total correlation
5	CNKI	China National Knowledge Infrastructure
6	COVID-19	Corona Virus Disease 2019
7	CPM	Competitive Profile Matrix
8	CSR	Corporate Social Responsibility
9	DoM	Doctor of Management
10	ECSR	External corporation social responsibility
11	EFE	External Factor Evaluation
12	ICSR	Internal corporation social responsibility
13	IFE	Internal Factor Evaluation
14	KMO	Kaiser-Meyer-Olkin Measure of Sampling Adequacy
15	LSE	Large-scale emergency
16	MBV	Market-based View
17	PRC	The People's Republic of China
18	RBV	Resource-based View
19	SARS	Severe Acute Respiratory Syndrome
20	SASAC	The State-owned Assets Supervision and Administration Commission
21	SCP	Structure, Conduct, and Performance
22	SETS	Social-ecological-technological system
23	SMMG	The Sacred Mountain Molin Group Co., Ltd., Sichuan
24	SOE	State-owned enterprise
25	SWOT	strengths, weaknesses, opportunities and threats

[This page is deliberately left blank.]

## **Annex B: In-depth Interview**

### **1. Objectives of the in-depth interview**

The main objectives of the in-depth interview are as follows: 1) To extract the dimensions of environment that have the key impact on the trade-off between SOEs' social responsibility and business innovation in the context of LSEs. 2) To extract what are the key dimensions of business innovation in the above context. 3) To extract the dimensions of performance changes under the above background and trade-off behavior conditions. 4) To inquire the subjective understanding of the relationship among environmental variables, enterprise behavior and performance from the senior management, the upstream and downstream supply chain partners, government officials and other stakeholders of the SMMG, so as to provide references for the establishment of research models, and lays a foundation for the design of question items in questionnaire.

### **2. Method of the in-depth interview**

To achieve the objective, a set of open-ended questions are used to guide the conversation and gather the interviewees' personal opinions. Then, according to the obtained information, classification and statistical analysis are carried out to obtain the list of key factors and their degree of importance. During the interview, in addition to the preset questions, appropriate questions may also be added inspired by the enlightenment of unexpected answers of the interviewees.

### **3. Interviewee selection**

About 20 experts or persons in charge will be selected as interviewees from relevant stakeholders such as SMMG, shareholders, upstream and downstream partners in the supply chain, and government agencies. They are the people involved in the decision-making, approval, operation, cooperation and implementation of SMMG's trade-off between social responsibility and business innovation in the background of the COVID-19 pandemic.

### **4. In-depth interview questions**

Thank you very much for taking time out of your busy schedule to accept this in-depth interview. It will take about 20 to 60 minutes. This is an anonymous interview, your personal details and all information you provide will be kept strictly confidential for the purpose of this study only. The interviews will be recorded with a recording device and subsequently be organized into

text. But after the study, all recordings will be permanently and completely deleted.

(1) Should SOEs fulfill their social responsibilities in the context of the massive outbreak of COVID-19?

(2) Has the COVID-19 outbreak had a significant impact on the operating environment of SOEs?

If so, then:

(3) What are the main environmental dimensions of the impact of the COVID-19 pandemic on the operating environment of SOEs?

(4) Under this background, do SOEs need to innovate their business or adhere to stereotypes if they are to deeply fulfill their corresponding CSR?

(5) Under this background, what are the main dimensions of business innovation to balance its response to CSR?

(6) Under this background, will the trade-off between CSR response and business innovation be beneficial for SOEs to improve their performance?

(7) Under this background, what are the main dimensions of the impact of SOEs' trade-off behavior on corporate performance?

(8) Under this background, what are the possible relationship among changes of environment, enterprise trade-off behavior and performance?

## **Annex C: Questionnaire Survey**

Dear Madam/Sir:

I am a doctoral candidate in ISCTE Business School of University Institute of Lisbon in Portugal. I am conducting a research on the trade-off between corporation social responsibility response and business innovation of state-owned enterprises under large-scale emergencies such as COVID-19, and I hope to get your help through the following questionnaire.

It will take you less than twenty minutes to answer the questionnaire. It will take you less than twenty minutes to answer the questionnaire. In the questionnaire, there are some structured questions about your basic information, about the impact of COVID-19 on the policy environment, market environment, technology environment and resource conditions of the target state-owned enterprises, and about the trade-offs or changes of the target state-owned enterprise in the area of strategic adjustment, intergovernmental coordination, decision-making procedures, human resources and a series of other aspects in the context of the COVID-19.

There is no “right” or “wrong” distinction in the answers, and most of the answers are described to seven degrees, including strongly disagree, disagree, slightly disagree, neither, slightly agree, agree and strongly agree. Just tick the appropriate boxes based on your true opinion and feelings. Just tick the appropriate boxes based on your true opinion and feelings. If you do not understand or can not make a choice, you may tick the “neither” option, which means there is no “agree” or “disagree”, and can be regarded as neutral attitude.

The questionnaire is anonymous. I promise that the information you fill in will only be used for academic research. Please feel free to fill in.

In addition, some points are added to this questionnaire:

(1) Corporate social responsibility refers to that while creating profits and bearing legal responsibilities to shareholders, an enterprise should also consider the impact on various stakeholder responsibilities. In more straightforward and popular terms, it is the responsibility and obligation of an enterprise to the society other than itself and its shareholders.

(2) Corporation social responsibility mentioned in this questionnaire mainly refers to the behaviors that need to be independently decided by enterprises, not including the social responsibilities that enterprises must undertake without independent decision-making, such as employment and tax payments.

(3) Sacred Mountain Molin Group Co., Ltd., Sichuan (SMMG) is a wholly owned subsidiary of Wuliangye Group, a famous state-owned Enterprise. Before the outbreak of COVID-19, SMMG's main business was the production and sales of alcoholic packaging bags (mainly non-woven products), the production and sales of clothing, and the trade of goods, not involve in the field of medical protective clothing and masks.

(4) The questionnaire is divided into four sections: Questions 1-10 are about basic information, questions 11-43 are about the impact of COVID-19 on business environment that SMMG in face of, questions 44-63 are about the trade-off between corporate social responsibility response and business innovation, and questions 64-71 are about SMMG's performance.

(5) The author of the questionnaire is the researcher himself, the contact number is 17380107631. If you have any doubts or questions in the questionnaire, please call me. I will take it seriously.

I would like to express my heartfelt thanks to you for your kind help and support.



## **I. Basic Information**

1. What is your gender?

- Male
- Female

2. What is your age?

- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55 years old or above

3. What is your marital status?

- Married
- Unmarried
- Other

4. What is your highest level of education?

- High school/technical secondary school and below
- Associate college degree
- Bachelor's degree
- Graduate degree or above

5. Where is your permanent residence?

- City or town
- Countryside

6. What type of organization do you belong to?

- Government agency
- Industrial association
- Enterprise
- Other

7. How long have you been working in your organization or industry?

- Within a year

- 1-3 years
- 4-6 years
- 7-9 years
- 10 years above

8. What department are you in or responsible for \_\_\_\_\_? (Please fill in the blank)

---

9. Do you know that SMMG is a state-owned enterprise?

- Yes
- No

10. What is the relationship between your organization (or yourself) and SMMG? Or in other words, what is your organization (or yourself) relative to SMMG?

- A government supervisory and administrative agency
- A supplier
- A dealer
- A shareholder
- A consumer
- A cooperator
- (I am) An employee (of SMMG)
- Other

## II. About the impact of COVID-19 on the business environment of SMMG

### Part A: About policy environment

11. After the outbreak of COVID-19, the central and local governments have increased their policy support for SMMG to switch to produce epidemic prevention products.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

12. After the outbreak of COVID-19, the governments at all levels have increased their financial support for SMMG to switch to produce epidemic prevention products, including but not limited to tax rebates, tax incentives, various policy subsidies or cash input.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

13. After the outbreak of COVID-19, the governments have strengthened the devolution of power to managers of SMMG (Such as giving them more operational autonomy and independence, also allow them to try and correct mistakes in economic activities).

- Strongly disagree
- Disagree
- Slightly disagree
- Neither

Slightly agree

Agree

Strongly agree

14. After the outbreak of COVID-19, governments have improved their efficiency of various administrative examination and approval for SMMG (such as simplified procedures and shortened time).

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

15. After the outbreak of COVID-19, The government has been more supportive of SMMG, a state-owned enterprise, than of similar private ones.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

**Part B: About market environment**

16. After the outbreak of COVID-19, increased significantly.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

17. After the outbreak of COVID-19, the increase in market demand for epidemic prevention products is huge.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

18. At the beginning of the COVID-19 outbreak, the number and scale of manufacturers of epidemic prevention products were insufficient.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

19. At the beginning of the COVID-19 outbreak, the market supply of epidemic prevention products was insufficient.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

20. At the beginning of the COVID-19 outbreak, the market supply of raw and auxiliary materials for epidemic prevention supplies was insufficient.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

21. With the increase of market demand and production enterprises, the market supply of raw and auxiliary materials for epidemic prevention materials has increased.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

22. After the outbreak of COVID-19, Market prices of raw and auxiliary materials for epidemic prevention materials rose sharply.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

23. After the outbreak of COVID-19, the number of suppliers of raw and auxiliary materials for

epidemic prevention increased.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

24. With the development of COVID-19, the supply of raw and auxiliary materials for epidemic prevention materials on the market has increased rapidly.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

25. After the outbreak of COVID-19, the market price of epidemic prevention products increased significantly.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

26. Compared to pre-epidemic, after the outbreak of COVID-19, producing epidemic prevention products and raw materials have been more remunerative.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

**Part C: About technical environment**

27. Before and after the COVID-19 outbreak, the production technology of epidemic prevention products was mature enough in China.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

28. Before and after the COVID-19 outbreak, the network technology was sufficiently advanced for the supply chain of epidemic prevention products in China.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

29. Before and after the COVID-19 outbreak, the equipment manufacturing technology (refers to the manufacturing technology of machinery and equipment used in the manufacture of epidemic prevention materials and raw and auxiliary materials) is sufficiently advanced for



manufacturers of epidemic prevention products and raw and auxiliary materials in China.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

30. Before and after the COVID-19 outbreak, the R&D of epidemic prevention products was adequate for production needs in China.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

31. Before and after the COVID-19 outbreak, technical standards for epidemic prevention products existed and were in line with international standards in China.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

32. Before and after the COVID-19 outbreak, the basic scientific research was sufficient to support the R&D and production of epidemic prevention products in China.

- Strongly disagree

- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

33. In China the production technology (such as sewing techniques) of some epidemic prevention products (such as medical protective clothing and masks) can be transferred from the production technology of other non-epidemic prevention products (such as clothing sewing techniques).

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

**Part D: About resource condition**

The following “quasi-internal resources” refer to the external resources that the enterprise does not nominally control and does not have the ownership and the right of use, but under certain conditions can be approximately regarded as the direct or indirect control and having the right of use belong to the enterprise.

To illustrate, Under normal circumstances, the government’s examination and approval of enterprises’ qualifications is the same for all enterprises. Such “right of approval” is obviously more likely to be regarded as an external resource for state-owned or private enterprises. However, in face of the disaster like COVID-19, if the government adopts a more friendly or favorable attitude to the qualification examination and approval of state-owned enterprises than that of non-state-owned enterprises under the same conditions, taking into account the equity relationship, subsidy allocation, responsibility investigation and other factors, then the relevant “approval right” for state-owned enterprises at this time, it is defined as “quasi-internal resources” by the author.

34. After the outbreak of COVID-19, quasi-internal resources appeared or were more easily identified.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

35. After the outbreak of COVID-19, quasi-internal resources seemed to be more.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree

Strongly agree

36. After the outbreak of COVID-19, quasi-internal resources played a greater role in state-owned enterprises than in private ones.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

37. 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 products industry.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

38. After the outbreak of COVID-19, A large amount of capital was transferred from other industries to the epidemic prevention products industry (for example, enterprises that previously invested in the production of diaper bags for women and children began to increase investment in medical protective clothing and masks).

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

39. After the outbreak of COVID-19, it became easier for manufacturers of epidemic prevention products to obtain capital.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

40. After the outbreak of COVID-19, more professionals were moving from other industries to epidemic prevention enterprises.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

41. After the outbreak of COVID-19, it became easier for epidemic prevention manufacturers to integrate external resources (for example, epidemic prevention manufacturers integrate external enterprise resources originally used for clothing production to assist themselves in sewing medical protective suits and masks).

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

42. After the outbreak of COVID-19, other enterprises were more willing to support epidemic prevention manufacturers in the field of resource integration.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

43. After the outbreak of COVID-19, it became easier for epidemic prevention manufacturers to get the support and cooperation of their employees.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

### **III. About the trade-off between corporation social responsibility response and business innovation**

#### **Part E: About strategic adjustment**

44. After the outbreak of COVID-19, SMMG's business strategy was helpful to overcome the original strategic regarding of corporation social responsibility as a burden.

Strongly disagree

Disagree

Slightly disagree

- Neither
- Slightly agree
- Agree
- Strongly agree

45. After the outbreak of COVID-19, SMMG's business strategy focused more on the explanation and publicity of business innovation in corporation social responsibility.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

46. After the outbreak of COVID-19, SMMG's business strategy focused more on capturing potential business innovation opportunities from corporation social responsibility activities.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

47. After the outbreak of COVID-19, SMMG's business strategy put more emphasis on the balance between its business vision and social expectation.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree

- Agree
- Strongly agree

**Part F: About incentive mechanism**

48. After the outbreak of COVID-19, governments strengthened the coordination between the assessment indicators such as corporation social responsibility performance and business innovation performance for SMMG.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

49. After the outbreak of COVID-19, SMMG emphasized the basic requirements of corporation social responsibility behavior in salary design and employment contract.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

50. After the outbreak of COVID-19, SMMG strengthened incentives mechanism (material or moral) for internal departments and employees to encourage their corporation social responsibility contribution in business innovation behaviors.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither



Slightly agree

Agree

Strongly agree

51. After the outbreak of COVID-19, SMMG has increased penalties for internal departments and employees who exhibit socially irresponsible behavior (such as doing not obey the work arrangement of the production of epidemic prevention materials, discharging substandard industrial waste, wasting resources, violation of community interests) in business innovation for corporation social responsibilities.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

**Part G: About the Decision making process**

52. After the outbreak of COVID-19, Shareholders' approval of SMMG's corporation social responsibility business became easier.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

53. After the outbreak of COVID-19, external government departments became easier in their administrative approval of corporation social responsibility business for state-owned enterprises (such as SMMG).

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

54. After the outbreak of COVID-19, external government departments became more efficient in the administrative approval of corporation social responsibility business of state-owned enterprises (such as SMMG), which was helpful for the corporate performance.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

55. After the outbreak of COVID-19, SMMG's internal decision-making and approval procedures for corporation social responsibility activities became simpler and more efficient, which was helpful for the corporate performance.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

56. After the outbreak of COVID-19, SMMG'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.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

57. After the outbreak of COVID-19, It became easier for SMMG to allocate resources to carry out corporation social responsibility activities, which was helpful for the corporate performance.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

58. After the outbreak of COVID-19, It became easier for SMMG to deploy employees for corporation social responsibility activities (such as arranging employees to work overtime outside of working hours, temporarily transferring or supporting other positions), and employees showed more cooperation with such deployment, which was helpful for the corporate performance.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

59. After the outbreak of COVID-19, SMMG's internal organizational changes became easier, which was helpful for the corporate performance.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

60. After the outbreak of COVID-19, it became easier for SMMG to develop and implement internal systems and policies, which was helpful for the corporate performance.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

61. After the outbreak of COVID-19, it became easier for shareholders to authorize SMMG in the field of corporation social responsibility, which was helpful for the corporate performance.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

62. After the outbreak of COVID-19, it became easier for SMMG to authorize downward in the field of corporation social responsibility, which was helpful for the corporate performance.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

63. After the outbreak of COVID-19, SMMG's corporation social responsibilities tended to support the government's epidemic prevention and control (compared with other corporation social responsibility behaviors such as poverty alleviation), which was helpful for the corporate performance.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

#### **IV. About Corporate Performance**

After the outbreak of COVID-19, SMMG made internal decisions quickly, and obtained shareholder approval, and invested in the production and sale of epidemic prevention products (including medical protective suits, gowns and masks).

#### **Part H: About financial performance**

64. SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in face of the epidemic were helpful to increase its business revenue.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

65. SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in face of the epidemic were helpful to increase its total profit.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

66. SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful to increase its retained profits.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither

Slightly agree

Agree

Strongly agree

**Part I: About market performance**

67. SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful to increase its brand value.

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

68. SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful to exploit new markets (Market of epidemic prevention products).

Strongly disagree

Disagree

Slightly disagree

Neither

Slightly agree

Agree

Strongly agree

69. SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful to promote the market performance of the its original business segment (non-epidemic products market).

Strongly disagree

Disagree

Slightly disagree

- Neither
- Slightly agree
- Agree
- Strongly agree

**Part J: About social performance**

70. SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful for the government and the public to enhance their sense of identity to SMMG.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

71. SMMG's consideration and actions between corporation social responsibility behaviors and business innovation in the face of the epidemic were helpful for the governments' evaluation of SMMG.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither
- Slightly agree
- Agree
- Strongly agree

**At the end of the questionnaire, please make a self-evaluation of your response to the above questionnaire:**

72. Are you confident about your answers to this questionnaire?

- Strongly unconfident



- Unconfident
- Slightly unconfident
- Neither
- Slightly confident
- Confident
- Strongly confident

[This page is deliberately left blank.]

## Annex D: Reference statistical table and graphs

Table d.1: Table of literature statistics in year dimension

Plate	Year	Quantity	Proportion
Literature review	2017 and before	22	19.82%
	2018 and beyond	89	80.18%
	2023	3	2.70%
	Subtotal	111	100.00%
Others	2017 and before	73	45.34%
	2018 and beyond	88	54.66%
	2023	7	4.35%
	Subtotal	161	100.00%
Full text	2017 and before	95	34.93%
	2018 and beyond	177	65.07%
	2023	10	3.68%
	Total	272	100.00%

Table d.2: Table of literature statistics in language dimension

Language	Quantity	Proportion
Chinese	25	9.19%
English	247	90.81%
Total	272	100.00%

Table d.3: Table of literature statistics in data base source dimension

Data base	Quantity	Proportion
Google Scholar	112	41.18%
Scopus	39	14.34%
Web of Science	35	12.87%
Baidu Scholar	19	6.99%
CNKI	24	8.82%
Science Direct	17	6.25%
ResearchGate	13	4.78%
Others	13	4.78%
Total	272	100.00%

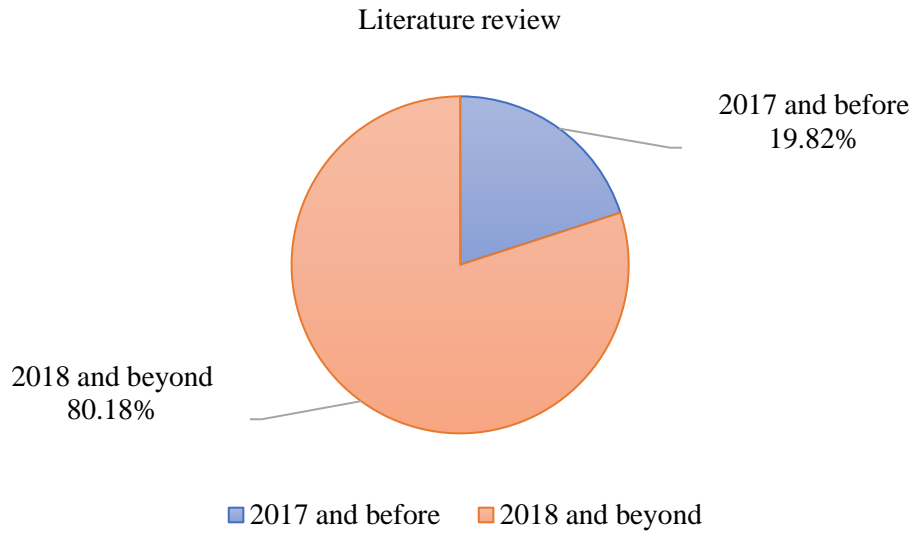


Figure d.1: Statistical graph of references for Literature review

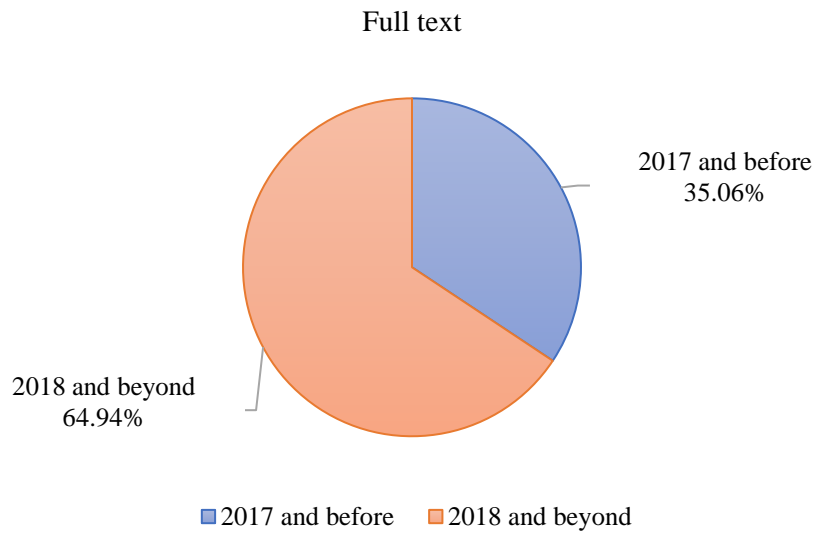


Figure d.2: Statistical graph of references for full text in year dimension

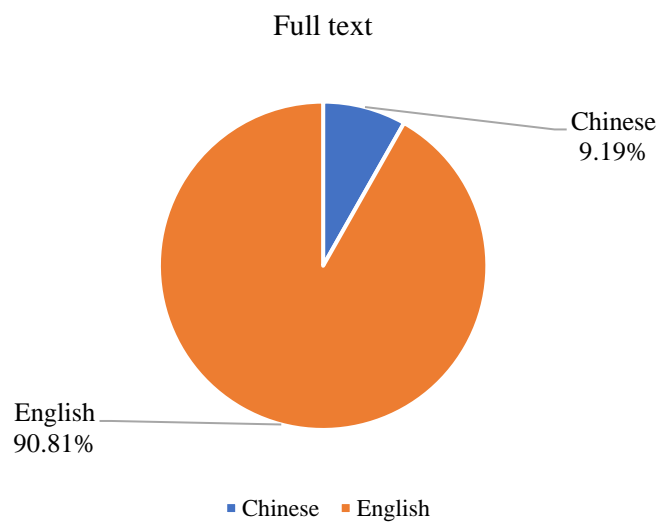


Figure d.3: Statistical graph of references for full text in language dimension

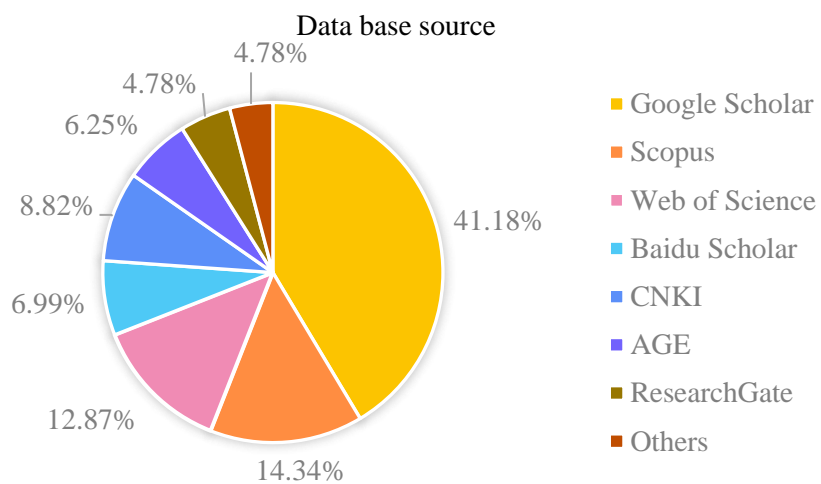


Figure d.4: Statistical graph of references for full text in data base source dimension

[This page is deliberately left blank.]

## Annex E: Descriptive analysis of valid questionnaire data

Table E: Table of descriptive analysis of valid questionnaire data

	Mean	Variance		Mean	Variance		Mean	Variance		Mean	Variance
S <sub>12</sub>	6.12	1.285	S <sub>31</sub>	5.69	1.594	S <sub>49</sub>	6.04	0.847	C <sub>37</sub>	6.02	0.992
S <sub>13</sub>	5.91	1.653	S <sub>32</sub>	5.7	1.666	S <sub>410</sub>	6.07	0.94	C <sub>38</sub>	5.95	1.033
S <sub>14</sub>	6.07	1.372	S <sub>33</sub>	5.67	1.777	C <sub>11</sub>	6.03	1.133	C <sub>39</sub>	5.96	1.082
S <sub>15</sub>	6.04	1.367	S <sub>34</sub>	5.65	1.779	C <sub>12</sub>	6.08	0.993	C <sub>310</sub>	5.87	1.266
S <sub>21</sub>	6.21	0.974	S <sub>35</sub>	5.79	1.58	C <sub>13</sub>	6.15	0.827	C <sub>311</sub>	5.81	1.386
S <sub>22</sub>	6.25	0.949	S <sub>36</sub>	5.91	1.281	C <sub>14</sub>	6.15	0.979	C <sub>312</sub>	5.97	1.007
S <sub>23</sub>	5.94	1.567	S <sub>41</sub>	5.68	1.556	C <sub>21</sub>	6.01	1.025	P <sub>11</sub>	5.98	1.035
S <sub>24</sub>	5.92	1.592	S <sub>42</sub>	5.67	1.59	C <sub>22</sub>	5.88	1.366	P <sub>12</sub>	5.96	1.066
S <sub>26</sub>	6.1	0.909	S <sub>43</sub>	5.71	1.518	C <sub>23</sub>	6.05	1.073	P <sub>13</sub>	5.89	1.19
S <sub>27</sub>	5.67	2.216	S <sub>44</sub>	5.83	1.228	C <sub>24</sub>	6.06	0.992	P <sub>14</sub>	6.06	0.928
S <sub>28</sub>	5.92	1.089	S <sub>45</sub>	5.92	1.127	C <sub>33</sub>	6.04	0.857	P <sub>15</sub>	6.09	0.842
S <sub>29</sub>	5.99	1.035	S <sub>46</sub>	5.87	1.161	C <sub>34</sub>	6.04	0.859	P <sub>16</sub>	6.03	0.971
S <sub>210</sub>	5.59	2.141	S <sub>47</sub>	5.85	1.098	C <sub>35</sub>	6.06	0.856	P <sub>21</sub>	6.13	0.796
S <sub>211</sub>	5.15	2.938	S <sub>48</sub>	5.81	1.299	C <sub>36</sub>	6.06	0.906	P <sub>22</sub>	6.16	0.846