

Sustainable Supply Chain Development and Risk Management: Case Study of Huawei's Strategies During the Epidemic

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Abstract. This study examines the general trend of sustainable development for modern businesses, focusing on the four development strategies adopted by Huawei during the epidemic: digital inclusion, security and trustworthiness, greenness, and harmonious ecology. This study explores the risk to corporate sustainability and how supply chain risks can be effectively managed. Through a case study of Huawei's three-year sustainability report and related data, it offers practical advice that will be valuable to other companies. The study calls on companies to develop sustainable supply chains while paying attention to social responsibility, incorporating environmental protection concepts, actively adopting digital communication technologies to cope with unknown risks, and enhancing their image to achieve long-term stable development. In the face of increasing global carbon emissions and sustainable development challenges, enterprises should strengthen their risk response capabilities, comprehensively consider the impacts of their supply chains, and practice the concept of sustainable development.

1 Introduction

In today's era, sustainable development has become a prevailing trend for every enterprise. Given the deteriorating environment and the scarcity of resources, modern enterprises cannot solely rely on economic benefits as the sole indicator for measuring their development prospects. Instead, they must consider sustainable development from economic, social, and environmental aspects, representing one of sustainable development's core principles [1]. In the 21st century, competition among enterprises has transformed into competition among supply chains. Therefore, sustainable supply chain development is crucial for determining a company's competitiveness in the market.

Achieving supply chain sustainability necessitates effective risk management strategies to address losses resulting from unforeseen events, such as disruptions caused by earthquakes, economic crises, terrorist attacks, and other unforeseen circumstances. These disruptions can significantly impact a company's short-term performance [2]. For instance, the epidemic led to border closures, quarantines, and the complete shutdown of key facilities, markets, and activities in socio-economic centers, resulting in far-reaching socio-economic impacts. Furthermore, it completely disrupted normal business plans for firms [3]. During the shutdown, businesses will suffer significant losses if production and operations are halted. Even though revenues and cash flows are interrupted, they still have to cover various expenses [4]. Moreover, the efficiency of the enterprise declines,

affecting employees' salaries, bonuses, and employment to some extent.

While the production and operation of various industries are gradually recovering, it remains essential to summarize sustainable development strategies to address various risks during the epidemic and ensure the future development of enterprises' supply chains. While the epidemic's impact on different micro-enterprises varies, as a leading enterprise in China's digital products industry, Huawei's development strategies and tactics in the face of challenges and crises undoubtedly provide valuable insights for other enterprises [5]. As China's strongest private enterprise, Huawei has prioritized "green products and services" at the top of its stakeholder and strategic agendas and actively participated in various sustainable development organizations [6]. Additionally, Huawei has proposed four development strategies: "Digital Inclusion", "Security and Trustworthiness", "Green Environment", and "Harmonious Ecology", as part of the company's sustainable development plan. This paper will concentrate on Huawei's four development strategies to investigate a sustainable supply chain. The research will adopt a case study approach by analyzing Huawei's three-year sustainable development report from 2019 to 2021 and relevant data to examine the company's sustainable development status during the epidemic. Moreover, it will analyze and summarize Huawei's supply chain sustainable development strategy amid the epidemic, providing valuable insights for other major enterprises in the country.

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2 Literature review

Sustainability is a comprehensive concept that encompasses ecology, economy, and society. It can be integrated with specific products, institutions, and behaviors to form an extensive system. Regarding the definition of a sustainable supply chain, different scholars have diverse interpretations, all of which revolve around the core concept of the triple bottom line (environment, economy, and society) [7]. In broad terms, it implies that enterprises should consider economic factors while incorporating environmental and social impacts into supply chain management practices [8]. For Huawei, sustainable development can be fully explicated through the company's four sustainable development strategies: "Digital Inclusion", "Security and Trustworthiness", "Green Environment Protection", and "Harmonious Ecology".

Risk is widely recognized in academia, defining risk as a potential loss stemming from events that possess objectivity, contingency, complexity, and variability [9]. Han Na combines the definition of supply chain risk to describe it as an uncertainty or unexpected event that can result in losses for individuals or the entire supply chain. These events may reduce supply chain efficiency or even lead to failure and destruction [10].

The impact of epidemics on the supply chain is reflected in the impact on the flow of information, capital, and products within the supply chain. When the flow is blocked, the supply speed will be affected, and even the supply chain may be broken, at this time, the resilience and flexibility of the supply chain become more important. And how to effectively reduce the risk losses caused by natural disasters and political factors outside the supply chain through strategies is also the significance of supply chain risk management.

3 Case studies

3.1 Social development risks

As a company aiming for sustainable development for many years, Huawei's concern for risk is not limited to potential problems within its supply chain. It also looks at society to contribute to its development. In contrast to traditional supply chains, Huawei tends to view every member of society as a part of its supply chain, and social harmony is fundamental to the stability of the company's supply chain. Huawei has also made unremitting efforts to bring digital technology to more families, keeping everyone up in the digital world and using information technology to help the public solve social problems. The outbreak of the epidemic at the beginning of 2020 brought great health and safety crises to people all over the world. Still, in addition to the threat to their health, the new crown of the epidemic has also caused great inconvenience to the daily life of the

global population. According to Huawei's research, in 2020, nearly 1 billion students will be forced to stop attending school due to the outbreak. In the face of the severe challenges posed by the epidemic, Huawei has taken the initiative to help people worldwide fight the epidemic, using ICT technology to help society get through this difficult period. In 2020, in cooperation with UNESCO IITE and UNESCO-ICHEI, Huawei organized an online education forum for higher education institutions to help students suspended from school due to the epidemic access to quality education. Education. Through its cloud, AI, 5G, and other technological capabilities, Huawei provided emergency teaching live streams to more than 5,000 schools and enterprises free of charge during the suspension of classes during the outbreak. The number of online students exceeded 50 million; at peak times, more than 11 million people were online simultaneously. 2020 Huawei has also been working with UNESCO IITE and UNESCO-ICHEI to organize an online education forum for colleges and universities to help them access quality education. Through Huawei's technology, in 2020, it will help more than 50 million teachers and students in China to maintain normal teaching, ensuring the quality of education for the whole society.

3.2 Supplier production safety and health risks

As a dynamic and open complex system, Huawei needs to pay attention to preventing and managing supplier risk in the supply chain. In an environment where the Xin Guan epidemic is raging, Huawei not only needs to consider the risks of supplier selection due to the quality and reliability of suppliers' production but also needs to effectively respond to the impact of the epidemic on suppliers' production and operations, as well as the risk of supply chain disruptions that may ensue.

In pursuit of sustainable development, Huawei has always attached importance to the social responsibility of its own and global suppliers, adopting CSR management to implement ethical sourcing and rigorous screening of suppliers. Combined with the data, according to Figure 1 below of the number of suppliers participating in on-site audits, you can intuitively find that in recent years, the scale of Huawei's annual sustainability audits of its main suppliers has been on a year-on-year upward trend, from 110 in 2016 to more than 300 in recent years. The total number of audits has also risen from 1,230 to more than 1,600, which suggests that the attractiveness of Huawei, as a core enterprise, to suppliers has been increasing year by year in recent years. This shows that Huawei's attraction to suppliers as a core enterprise has been increasing year by year and that Huawei also promotes the development of suppliers while strictly requiring them to do so, and ultimately promotes the benign development of the entire supply chain, which is also a reflection of Huawei's social responsibility.

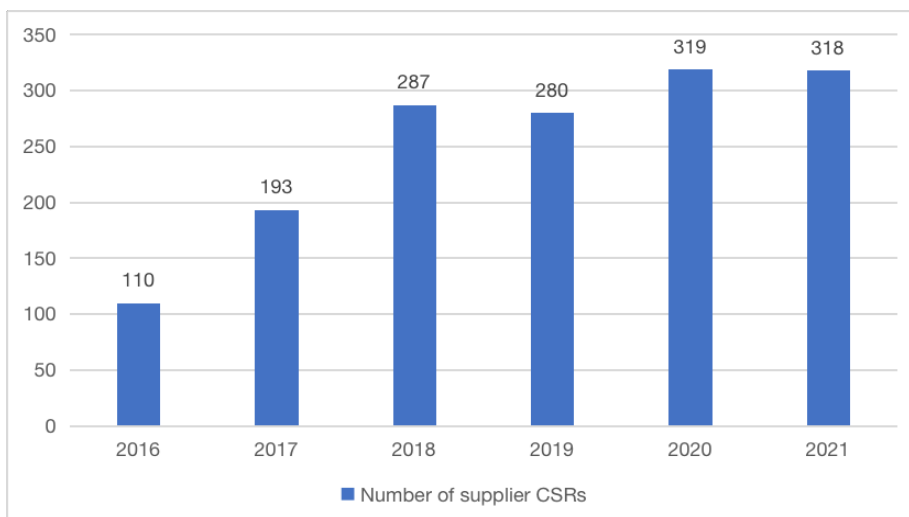


Fig. 1. Number of supplier on-site CSR audits 2016-2021. (Photo/Picture credit: Original)

As the times evolve, Huawei continues to make appropriate adjustments to its CSR auditing standards to adapt to the development of society. For example, in addition to prohibiting child labor, forced labor, and other basic audit indicators, in 2020, Huawei also added the New Crown Epidemic Protection to its CSR requirements in response to the New Crown Epidemic, urging suppliers to make preparations for the Epidemic through rigorous requirements and reviews, to help suppliers prepare for the possible impact of the Epidemic and minimize the risk of supply chain disruptions caused by the Epidemic. The following is a summary of the latest developments in the supply chain.

In addition, Huawei also took immediate measures to assist suppliers in resuming work and production in response to the sudden outbreak of the New Crown in early 2020, which resulted in the widespread suspension of work and production. For example, Huawei screened high-risk suppliers for risk identification and included them in the list of key targets for attention to discuss solutions with the government; in terms of experience sharing, Huawei provided the "Huawei's Supplier Partners' Initiative on Prevention and Control of the Epidemic" and the "On-site Checklist for Preventing the New Coronavirus in the Production Department" to more than 500 suppliers for real-time sharing of state-of-the-art experiences in combating the outbreak. In terms of workforce and resources, Huawei, Huawei was the first to open up the purchase of masks to provide suppliers with a stable source of supply. It also set up a special bus transport programme to help suppliers' employees leave their posts even when released. This series of key measures helped Huawei's suppliers complete the delivery of key customer projects promptly, minimizing the risk of supply chain disruption.

3.3. Resource depletion and global warming risks

Under the epidemic's impact, Huawei has persisted in implementing a series of green initiatives and has always been committed to a circular economy business model and closed-loop industrial chain. Under the premise of ensuring that products can be packaged and delivered to customers in good condition, Huawei has been implementing the "6R1D" green packaging strategy and has integrated environmental protection into the entire process of supply chain operations.

The reduction in the number of pages of Huawei's product manuals has positively impacted product use. Still, it has further enhanced the user experience by preinstalling apps on the devices that provide more tips on how to use the products.

As shown in Figure 2, the paper savings and carbon emission reductions in the three years from 2019 to 2021 are increasing year by year, and the percentage of reduction in the number of pages of manuals is positive, indicating that Huawei is making continuous efforts to go green and has achieved good results. This initiative helps to enhance corporate image, attract the attention of investors and customers, improve product competitiveness, effectively respond to global warming, the resource depletion crisis, and reduce risks to related parties (e.g., the company's shareholders), while also presenting opportunities for innovation and growth, as the implementation of carbon emission reduction measures requires the continuous development of new technologies and products.

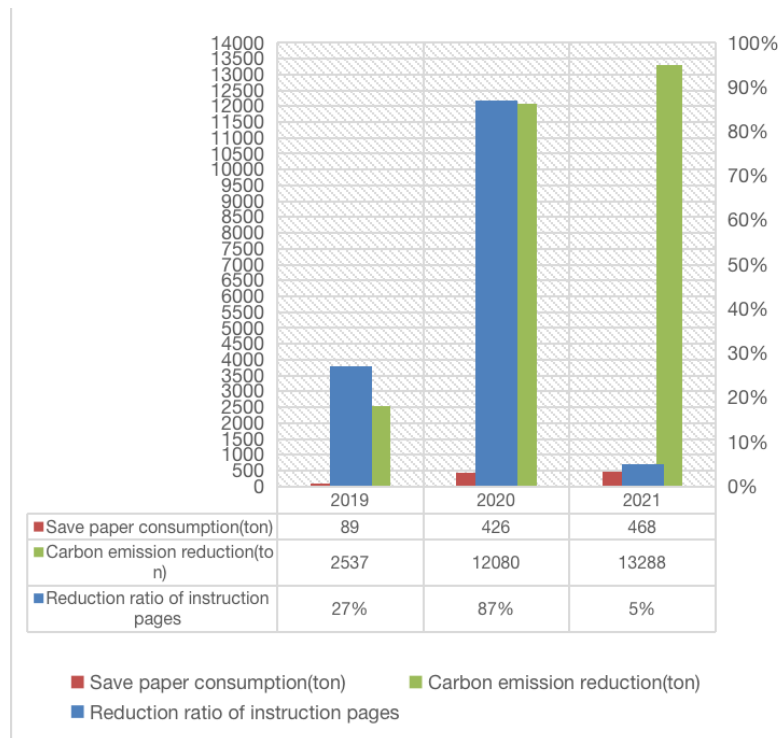


Fig. 2. Development trend of green packaging for Huawei products. (Photo/Picture credit: Original)

Economic development has long been closely linked to increased carbon emissions. With the large-scale resumption of business after the outbreak, the issue of sustainable development needs to be taken seriously. The epidemic is just one of the uncertain risks that companies face on the road to sustainable supply chain development, and they need to plan for and respond to different types of risks.

3.4. Human health and natural disaster risks

The New Crown epidemic forced many offline activities to go online, and the deployment of epidemic prevention and control work, especially the handling of some urgent emergencies, required guaranteeing the smooth flow of communications. In addition to the outbreak, this paper summarises the key features of Huawei’s network operation risk control measures about the other risks mentioned in the report (rainstorms, earthquakes, etc.).

Willingness to invest. Huawei has invested a lot of human, material, and financial resources in dealing with risks and has done its best. Many engineers are on duty 24 hours daily, providing sufficient equipment and materials.

Fast response. Huawei activates the network security emergency plan the first time it receives a task and notifies the relevant personnel to gather quickly and implement the emergency plan immediately after discussing it in a short period.

Good programme. The Huawei team’s professional and technical skills are excellent, and the negotiated

solution has a high success rate, enabling the recovery and subsequent operations to be completed successfully.

Regarding business continuity, Huawei has adopted key initiatives such as diversified solutions, scenario-based reserves, visibility of supply and demand capabilities, manufacturing and supply capabilities backup, and full-life-cycle spare parts reserves. It has established a BCM system and related platforms to formulate contingency plans and staff training, so it can continue to safeguard the continuity of supply and product deliveries even when it is impacted by a variety of risky events, which demonstrates that Huawei’s management mechanism works well and can withstand the test of risk. This shows that Huawei’s management system is effective and withstood the risk test.

4 Suggestions

4.1 Digital inclusion

Use of digital communication technologies to help societies cope with unforeseen disasters such as epidemics. In today’s information technology era, just as Huawei used ICT technology to help teachers and students to stop classes and schools during the epidemic, the introduction of digital information technology into supply chain management, in addition to the use of digital information technology for high-efficiency internal management of enterprises, the major Internet companies should also begin to use their digital communication technology to benefit the broader community in all aspects of the day-to-day shopping, medical care or travel. While effectively dealing with all kinds of social risks, such as epidemics, and maintaining

the stability of market players, this can also undoubtedly help enterprises improve their public image in society and help them achieve sustainable development.

4.2 Ecological harmony

Implementation of ethical procurement and increased requirements for suppliers. Ethical sourcing programs that scrutinize key suppliers and filter out unqualified firms at the screening stage, or remediate high-risk firms, are effective strategies for addressing the risks of supplier selection. While reducing the risk of supply chain disruptions due to production quality or inventory issues at suppliers throughout the supply chain, stringent requirements can also help suppliers to better cope with unforeseen risks.

4.3 Green

Increasing investment in technology research and development is crucial to developing environmentally friendly products based on advanced technology and integrating environmental protection into the entire supply chain business process. Emphasizing sustainable development and achieving harmony between humanity and nature require significant efforts. Leveraging technology to drive sustainable development in the entire supply chain can not only effectively address various developmental challenges and gain a competitive edge but also enhance the corporate image, prevent short-term resource depletion, and enable long-term growth.

4.4 Security and credibility

Invest human, material, and financial resources appropriately according to the enterprise's situation, in which human resources should pay attention to attracting and cultivating professional talents. The input of the enterprise can provide resource supply and, at the same time, reflect its initiative and responsibility to enhance the image in front of the public. The input of professional talents can improve the effectiveness and success rate of the program, and the reserve of talent can also pave the way for sustainable development of the enterprise to ensure a sufficient supply of talent to meet the needs of business development.

5 Conclusion

Sustainable development is the need of the times to enhance the enterprise's risk-resistant ability and to guarantee better the sustainable development of the future enterprise supply chain. This paper firstly reviews the existing literature, clarifies the concept of sustainable development and risk and the importance of supply chain risk management, and then introduces the research method of this paper, conducts case analysis and puts forward corresponding practical suggestions for reference and reference for the majority of enterprises, i.e., enterprises need to widely use digital communication technology to cope with risks more

efficiently and benefit society; adopt strict supplier management system to implement ethical recommendations. Then, after introducing the research methodology of this paper, the case study of Huawei during the epidemic in the four aspects of digital inclusion, security and trustworthiness, green environmental protection and harmonious ecology is analyzed. The corresponding practical suggestions are put forward to provide reference and reference for the majority of enterprises, i.e., enterprises need to widely use digital communication technology to cope with the risk more efficiently and to benefit society; to adopt a rigorous supplier management system and to carry out ethical purchasing to prevent the risk of the suppliers; to increase the investment in science and technology to gain competitive advantages and enhance the image; and to cultivate professionals to ensure the supply of talents and development needs.

With enterprises' large-scale resumption of work and production after the epidemic has subsided, global carbon emissions have hit a new record high, and sustainable development is facing even greater challenges. There are many kinds of risks, and the sustainable development of supply chains directly determines the world's sustainable development. Enterprises need to improve their risk-resistant ability while developing sustainable supply chains, make sufficient preparations for preventing unknown risks and coping with risks that have already occurred, take up social responsibility and integrate careful considerations into the formulation of their strategies, pay full attention to the impact of their supply chains on the economy, society, and the environment, and put into practice the concept of sustainable development.

Authors Contribution

All the authors contributed equally, and their names were listed alphabetically.

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