

QUANTIFYING THE IMPACT OF SOCIAL AND POLITICAL INSTABILITY ON SUPPLY CHAIN OPERATIONS: A RISK ASSESSMENT FRAMEWORK

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Abstract: *This study examines the effects of social and political unrest, risk management, and climate change on global supply networks. The intention is to expose intricate linkages between components by dismantling the conventional research division. Supply networks are being more impacted by world events. Decisions on strategy must therefore consider the effects of every occurrence. A qualitative study comprising sixteen saturated semi-structured interviews was utilized to guarantee the depth and richness of the data. The three phases of thematic analysis were as follows: formulation of topics, coding, and familiarization with the data. A systematic framework for interpreting data and delving more deeply into the experiences and perspectives of participants was provided by the three-stage theme analysis approach, which was ultimately chosen. This feature enhances the validity of the findings by enabling a meticulous examination of the data while retaining the flexibility to detect emerging trends. The findings of the study offer valuable insights into the complex interconnections among climate change, social and political instability, and risk management in global supply chains. It has been determined that risk mitigation strategies, environmental changes, and geopolitical events are all significant variables that influence supply chain resilience. To mitigate the effects of external uncertainties on disruptions in the supply chain, proactive risk management has grown in significance. This underscores the critical necessity for adaptive approaches to effectively navigate evolving geopolitical and environmental circumstances. This*

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research stands out strategically because of its comprehensive approach, which stresses strong and adaptable supply networks.

Keywords: *Supply Chain Operations, Supply Chain Resilience, Social and Political Instability, Climate Change, Risk Management.*

1. Introduction

The global supply chain is marked by an unprecedented level of interconnection, given the cross-continental movement of raw materials, components, and finished products. The complex network of interdependencies has significantly transformed traditional business frameworks, and exposed vulnerabilities while generating prospects for expansion and enhancement (Gebhardt, Spieske, Kopyto, & Birkel, 2022). Before this era, the main focus of supply chain management was on operational aspects. However, organizations have since elevated it to their highest priority (El Baz & Ruel, 2021). Efficiency is a critical factor for supply chain operations to maintain cost-effectiveness and competitiveness in a global marketplace characterized by ever-changing client expectations and demands (J. Liu, Wu, & Gong, 2023). Ensuring political and social stability is critical within the intricate context that governs worldwide supply networks. Political events, encompassing modifications in governance, trade strategies, and geopolitical conflicts, have the potential to disrupt and introduce unpredictability into supply chains (Alikhani, Eskandarpour, & Jahani, 2023). Likewise, sociopolitical factors such as labor strikes, transportation disruptions, and civil unrest possess the capacity to hinder the smooth flow of goods, cause delays in production, and ultimately obstruct advancements (Longoni, Luzzini, & Guerci, 2018). The identification and management of risks are critical components in effectively managing disruptions in the supply chain. Risk assessment is the process of identifying potential threats and vulnerabilities in the supply chain and determining their likelihood and severity (Sekhri, Kumar, Fürst, & Pandey, 2020). To guarantee uninterrupted operations, the objective of risk management systems is to mitigate these hazards while concurrently fortifying resilience. In order to efficiently confront the vagaries that arise from social and political instability, it is imperative for organizations to incorporate risk assessment and management methodologies (Vasconcelos, de Paula Barros, Soares, & da Costa, 2023).

Despite progress in understanding the effects of social and political instability, climate change, and risk management on supply chains, a full study of their interlinked effects is still lacking. Political instability affects supply chains. Aljabhan (2023) emphasizes proactive risk management, whereas Chrisandina, Vedant, Iakovou, Pistikopoulos, and El-Halwagi (2022) examined climate change adaptation and supply network repair. Global events also affect supply chain vulnerability, according to (Poo, Wang, & Yang, 2024). W. Liu, Li, Liu, Wang, and Liu (2023) also underlined the strategic necessity of geopolitical adaptation. Although it focused on supply chain management, the previous study was helpful (Bai & Zhang, 2022). The literature does not clearly link supply chain resilience to social and political instability and climate change (Longoni et al., 2018). Geopolitical and environmental problems affect global supply networks, supporting these gaps.

This research examines the complex relationships between global supply networks, risk management, climate change, and social and political instability. This study goes beyond standard methods by revealing underlying patterns, dynamics, and linkages. This study seeks to bridge information gaps, inform policymakers and supply chain practitioners, and improve academic understanding. This study may change global supply chain management and academics. Several reasons make this discovery significant. Given the unprecedented impact of external events on supply chain operations, understanding the interconnectedness of social and political instability, climate change, and risk management is crucial. The study's detailed findings are crucial for academics, legislators, and supply chain managers. Its potential to address research gaps and solve complicated global issues makes it relevant. To preserve resilience and sustainability, organizations should protect their linked global supply chain components against weather disruptions. This research emphasizes robust supply chain management. Integrating academic research with effective execution helps firms adapt to global business changes.

2. Literature Review

In recent years, social and political volatility has affected supply chain management. Due to the changing geopolitical context, much study has focused on understanding the intricate interaction of numerous components. [Yontar \(2023\)](#) explored supply network effects of social and political instability. As seen, global uncertainty causes risks and issues. The researcher stresses the importance of a robust risk assessment plan that anticipates interruptions and provides practical advice for supply chain resilience ([Abeysekara, Wang, & Kuruppuarachchi, 2019](#); [Wong, Lee, Tan, Ooi, & Sohal, 2022](#)). Socio-political factors must be considered when assessing supply chain success as firms integrate. Many types of social and political instability in supply chains are studied. Civil disturbances affect transportation infrastructure, logistics, and distribution networks, according to ([El Mokrini & Aouam, 2022](#); [Yan & Ramayah, 2023](#)). [Kunkel, Matthess, Xue, and Beier \(2022\)](#) examined how government policy affects supply chains during political turmoil. Researchers have examined case studies from different industries to determine how corporations respond to political and social instability ([Soffiantini, 2020](#)). These studies underline the need to understand the complex links between world events and supply chain operations. Effective risk management requires awareness.

2.1 Social And Political Instability

Many aspects of modern society have been hampered by global social and political volatility in recent decades. Researchers from several fields have studied this instability. They comprehend how volatility impacts society, governance, and economics globally. [Tuffuor \(2023\)](#) analyze social and political unrest causes. These principles show how economic disparity and geopolitical conflicts cause national instability. These studies demonstrate the complexity of global instability and the need to understand social and political factors. Social and political instability affects international interactions and domestic dynamics. [Barma \(2021\)](#) examined how social media worsens political unrest. The study shows how internet communication can change public perception and start social movements. Government frameworks affect instability, according to ([Soffiantini, 2020](#)). These findings underline the need of

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strong political institutions for social resilience. Interdisciplinary approaches to understanding social and political events are increasingly valued by academics. Society is struggling due to social and political unrest (Burton, 2023). The literature addresses social and political instability from several angles. These findings should inform politicians, researchers, and practitioners addressing these dynamic processes.

2.2 Climate Change Risk

Climate change danger has dominated recent global environmental negotiations. Both statesmen and scholars. Patel and Patel (2024) show how climate change affects ecosystems, the economy, and human well-being through substantial research. Climate change affects wealthy and developing nations. Climate change must be addressed immediately, according to research. Climate change is causing more frequent and intense storms, droughts, and wildfires, which affect vulnerable communities. Cepni, Şensoy, and Yilmaz (2024) explore climate change risk's economic effects. Yan & Ramayah (2023) established a model to evaluate the benefit of Enterprise Resource Planning for commercial policy and strategies making. These studies illustrate that industries, supply networks, and worldwide markets must adjust to avoid disruptions. Climate change risk cascades through agriculture, infrastructure, and healthcare. Due to its systemic character, climate change requires proactive and coordinated management (Fraser & Fiedler, 2023). This acknowledgment requires participants to create long-term policy. Climate change research studies how international collaboration and legal frameworks might reduce global environmental consequences. Mangla, Srivastava, Eachempati, and Tiwari (2024) and Minguito and Banluta (2023) emphasize the need for coordinated efforts to reduce greenhouse gas emissions, adapt to climate change, and strengthen global resilience. Climate change threatens the world and to overcome that international cooperation is needed. Studies show that climate change requires cooperation, educated decision-making, and sustainable activities.

2.3 Supply Chain Disruption

As increasing challenges threaten to disrupt product and service delivery, supply chain disruption has become a current issue. Gebhardt et al. (2022) examined supply chain interruption causes and impacts. Natural disasters, geopolitical conflicts, economic concerns, technology challenges, and other events generate these interruptions, highlighting the range of supply chain risks organizations face. The literature advises proactive supply chain disruption management. Regmi, Zhang, and Zhang (2023) emphasize risk management and contingency planning for supply chain resilience. Preventive measures include identifying vulnerabilities, analyzing risks, and developing adaptable frameworks to continue operations during emergencies. Risk management must be proactive due to the shifting global corporate landscape and complex supply chain interconnections (Guo, Yin, Zhao, & Zhu, 2022). Supply chain disruptions damage numerous firms and economies, according to academic research. Beck, Birkel, Spieske, and Gebhardt (2023) examine long-term disruptions in consumer satisfaction, distribution, and production. Supply chain networks are interconnected when issues in one area influence the whole value chain. Understanding supply chain dynamics is crucial to risk mitigation measures that

address disruptions' larger impacts on companies and stakeholders. Technology controls and reduces supply chain disruptions. [Kamakela, Callychurn, and Hurreeram \(2023\)](#) found that blockchain, AI, and data analytics improve supply chain visibility, disruption prediction, and rapid response. Technology helps firms create more flexible and responsive supply networks and control risk. Organizations must utilize technology advances to anticipate disruptions and maintain flexibility in the complicated business environment.

2.4 Supply Chain Resilience

Supply chain managers are increasingly concerned about resilience in the face of disruptions and unpredictability. [Junaid, Zhang, Cao, and Luqman \(2023\)](#) extensively examined supply chain resilience. Supply chain resilience is a company's ability to recover from supply network disturbances. This guarantees customer can buy products and services despite restrictions. Numerous supply chain resilience factors are investigated. These include operational, strategic, and organizational factors. [Wu, Zhu, and Cheng \(2023\)](#) found that proactive risk management, flexible organizational structures, and adaptive operational frameworks can boost resilience. The dynamic business environment requires a complete strategy that goes beyond risk reduction and focuses on flexible, adaptable supply chain solutions. Research on supply chain resilience examines how alliances and cooperation fortify supply chains. [El Baz, Ruel, and Jebli \(2023\)](#) and [Yan, Li, Sun, and De Souza \(2023\)](#) have demonstrated the advantages of positive connections with suppliers, customers, and stakeholders. Collaborative efforts enhance the supply chain ecology by promoting information sharing, risk management, and emergency preparation. This guards against more disruptions. The research also highlights how technology contributes to supply chain resilience. The potential benefits of IoT, cloud computing, and predictive analytics for enhancing real-time visibility, traceability, and decision-making are examined by [\(Shukla & Shyam, 2023\)](#). Businesses may identify defects, react swiftly to disruptions, and enhance supply chain processes to boost resilience with the help of technological solutions.

2.5 Risk Management

Business risk management is common and vital. Threats to the organization's objectives must be identified, evaluated, and addressed as a priority. Risk management has been studied in various domains ([Munir, Jajja, Chatha, & Farooq, 2020](#); [Quayson et al., 2023](#)). The literature stresses proactivity. Businesses evaluate risks, devise plans to reduce them, and build solid frameworks to manage today's complex business environment using this technique. [Vasconcelos et al. \(2023\)](#) emphasize strategic risk management's alignment with business goals. Effective risk management requires identifying threats and considering risk when making decisions. This integration embeds risk management into the company's culture by driving strategic and operational decisions to boost resilience. Risk management study goes beyond operations and finance to examine complicated risk-organizational linkages. [Sekhri et al. \(2020\)](#) evaluate political, technological, environmental, and societal risks. Research emphasizes inclusive and comprehensive risk management. This wide view of hazards is compatible with rising perils in today's interconnected, ever-changing world. The survey also found that technology has changed risk management. [Telg, Dubinova, and Lucas \(2023\)](#) studied risk detection, prediction, and

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reaction. This research improve these skills with AI and data analytics. Technology streamlines real-time risk monitoring and decision-making to help enterprises manage volatility.

3. Methodology

To gather thoughts and experiences on a wide range of research topics, this study employed a qualitative approach. Using purposeful sampling, sixteen people were found. The supply chain management, risk management, and related experience of the participants played a role in their selection. Personnel from manufacturing, logistics, retail, and consulting were included in the sample (Table 1). These experts had a range of roles and duties within the firm.

Table 1: Demographic Profile of Respondents

Participant	Gender	Age	Industry	Role	Years of Experience	Country
P1	Male	42	Logistics	Supply Chain Manager	15	USA
P2	Female	35	Retail	Risk Analyst	8	UK
P3	Male	50	Consulting	Operations Director	20	Canada
P4	Female	38	Manufacturing	Procurement Manager	12	Australia
P5	Male	45	Technology	Chief Supply Chain Officer	18	Germany
P6	Female	30	Pharmaceuticals	Quality Assurance Manager	6	France
P7	Male	48	Automotive	Logistics Coordinator	22	Japan
P8	Female	40	Retail	Inventory Planner	10	Brazil
P9	Male	37	Consulting	Risk Consultant	14	China
P10	Female	33	Manufacturing	Operations Manager	9	South Africa
P11	Male	55	Technology	Chief Operations Officer	25	India
P12	Female	28	Pharmaceuticals	Supply Chain Analyst	5	Spain
P13	Male	43	Automotive	Procurement Specialist	16	Mexico
P14	Female	36	Logistics	Distribution Manager	11	Italy
P15	Male	39	Retail	Demand Planning Manager	13	South Korea
P16	Female	32	Technology	Risk Management Specialist	7	Netherlands

Semi-structured interviews were conducted with participants to gain a deeper understanding of their perspectives and experiences related to supply chain risk management (Table 2). Interviews can take place by video conference or in-person, providing access to individuals worldwide. With permission, each 45–60 minute interview was videotaped. The interview guide included open-ended questions to enable participants to talk about supply chain risk management, based on the goals of the study.

Table 2: Interview Guidelines

Variable	Interview Questions
Social and Political Instability	<ol style="list-style-type: none"> 1. How do you perceive the impact of social and political instability on your organization's supply chain operations? 2. Can you share specific instances where social or political events have disrupted your supply chain? 3. How does your organization assess and manage risks associated with social and political instability?
Supply Chain Disruption	<ol style="list-style-type: none"> 1. What types of disruptions has your organization experienced in the supply chain, and how were they addressed? 2. How do you prepare for and respond to sudden changes or interruptions in the supply chain? 3. In your opinion, what role does technology play in mitigating supply chain disruptions?
Supply Chain Resilience	<ol style="list-style-type: none"> 1. How would you define and measure supply chain resilience within your organization? 2. What strategies or practices has your organization implemented to enhance supply chain resilience? 3. How do you collaborate with partners and stakeholders to strengthen the resilience of your supply chain?
Risk Management	<ol style="list-style-type: none"> 1. How is risk management integrated into your organization's overall strategy and decision-making processes? 2. Can you describe the key risks your organization faces in the supply chain, and how are they prioritized? 3. What role does technology play in supporting risk management activities in your organization?

The three-step theme analysis approach proposed by [Braun and Clarke \(2006\)](#) was applied to the data analysis. Initially, a verbatim transcription of every interview tape was made to ensure that the data was accurate and comprehensive. After that, two academics looked over the transcripts to identify themes, ideas, and trends connected to supply chain risk management. A rudimentary coding framework was created through debate and iterative coding. The broad scope and comprehensiveness of the data are captured by this framework. The data were coded and then organized into themes and sub-themes. These themes included noteworthy observations and important interview findings. In order to attain dataset coherence and uniformity, this technique periodically compared and modified themes. Lastly, in order to confirm the validity of the study, the research team thoroughly examined the subjects. The data became saturated after sixteen interviews, and no new themes or insights emerged. The high data saturation indicates this. The study was more rigorous and reliable in several aspects. A summary of the results was sent to participants as part of the member verification process in order to validate their feedback. By use of reflexivity and peer debriefing, the researchers scrutinized their prejudices, assumptions, and

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biases. Frequent team meetings and a diverse pool of coders aided in consensus-building and triangulation, which increased the study's legitimacy and dependability.

4. Results

The findings of this study were derived from semi-structured interviews with executives, stakeholders, and specialists in the field. The study uses rigorous theme analysis to look for patterns in the qualitative data. It demonstrates how supply chain disruption and resilience are impacted by social and political issues, climate change, and risk management. The complicated state of the supply chain today is explained in the study's findings section. The concepts in this section are supported by participant insights, theoretical underpinnings from the literature, and pertinent sources. This discovery sets the stage for a complete understanding of the many connections examined. This paper clarifies the strategic aims and difficulties facing global supply chain operations in an evolving environment.

4.1 Social and Political Instability Influences Supply Chain Disruption

Data from interviews revealed that supply chain activity is severely disrupted by social and political unrest. Political, civil, and regulatory changes hampered supply chain operations, members said. Respondent 4 linked abrupt trade and regulatory policy changes that affect our supply chain operations to political turmoil in our major operating jurisdictions. Respondent 11 concurred. Respondent 11 said their company operates globally and that social and political conditions in various countries affect the supply chain. Unrest and protests in one region could interrupt our network, causing logistics and transportation issues. Political instability affects supply chains, and (Warmbier, Kinra, & Ivanov, 2022) stressed the connection between global events and operational continuity. Okolie et al. (2021) stressed that businesses must monitor political developments and respond to prevent supply chain delays. This analysis supports previous findings that social and political factors affect supply network sensitivity and flexibility (see Table 3).

Table 3: Weightage analysis for social and political instability influences supply chain disruption

Result/Themes	Weightage
Impact of Political Instability on Regulations	0.35
Cascading Effects of Global Events	0.30
Resilience Strategies in Response to Political Risks	0.20
Role of Technology in Mitigating Political Disruptions	0.15

4.2 Social and Political Instability Influences Supply Chain Resilience

An examination of interview data showed that social and political instability affects supply chain resilience to disturbances. The corporations were advised to secure their supply networks and make backup plans to handle political and social unpredictability. Respondent 7 made this point by saying, "In areas susceptible to political instability, our primary objective is to enhance resilience by implementing alternative sourcing strategies and formulating contingency plans that take into account the unpredictability of social and political environments." Respondent 14

agreed that social and political instability causes unpredictability, hence supply chain resilience must be strengthened and assessed. Situations like this require close partner engagement and more providers. In response to geopolitical challenges, [Chauhan, Kaur, Arrawatia, Ractham, and Dhir \(2022\)](#) stressed strategic initiatives and teamwork to strengthen supply networks. These conclusions are reinforced by authors' remarks. To address evolving social and political issues, [Chervenkova and Ivanov \(2023\)](#) advised corporations to incorporate flexibility and adaptation into their supply chain strategy. The proactive and cooperative techniques of this study reinforce past studies on supply chain resilience during social and political upheaval (see Table 4).

Table 4: Weightage analysis for social and political instability influences supply chain resilience

Result/Themes	Weightage
Building Resilience in Regions Prone to Instability	0.40
Collaborative Strategies for Resilience	0.30
Sustainable Practices as Resilience Initiatives	0.20
Global Impact of Social and Political Dynamics	0.10

4.3 Climate Change Influences Supply Chain Disruption

Interviews showed a pattern of climate change disrupting supply systems. Hard weather and changing environmental conditions caused several respondents' bodily difficulties. Deteriorating transportation infrastructure and more natural disasters were mentioned. Respondent 9 said "The imminent and tangible danger that climate change poses to our supply chain is undeniable." Hurricanes, floods, and other climate-related disasters have impeded logistics and commodity transport. Our company has these issues. Respondent 13 says weather volatility worries our supply chain. This supports the earlier opinion. Climate change threatens transport and industry, requiring quick action. Climate change is increasing supply chain disruptions, highlighting the need for strategic climate resilience planning, according to [\(Ni et al., 2022\)](#). This study supports the conclusion. [Fritz \(2022\)](#) found climate changes affect global supply networks. They said disruptions should be avoided to reduce their impact. This study stresses understanding and mitigating climate change to improve supply chain resilience and reduce disruptions (see Table 5).

Table 5: Weightage analysis for climate change influences supply chain disruption

Result/Themes	Weightage
Impact of Extreme Weather Events	0.35
Disruptions in Transportation Infrastructure	0.30
Increased Frequency of Natural Disasters	0.20
Role of Technology in Mitigating Disruptions	0.15

4.4 Climate Change Influences Supply Chain Resilience

Qualitative interviews highlighted the recurring and substantial issue of supply chain resilience to climate change. Participants stressed the importance of anticipating and reducing environmental impacts on supply chain networks. Respondent 5 says climate change threatens supply chain resilience. The statement stressed the importance of corporations funding sustainable sourcing and production. Diversity in sourcing regions and new partnerships are needed to address environmental

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challenges, according to the proposal. Participant 12 agreed, emphasizing proactive supply chain resilience. This required planning for future changes and addressing climate change issues. The business's plan included eco-friendly technologies and processes and sustainability. Building a sustainable, flexible supply chain network that can endure environmental changes is another priority. [Ullah, Zahid, Rizvi, Qureshi, and Ali \(2022\)](#) examined whether supply chain resilience methods should include environmental issues to support qualitative findings. Climate change affects business survival, according to the study. Businesses must prioritize sustainability in their resilience plans. The members emphasize sustainable measures to safeguard their supply chains against climate change disruptions. [Vinco, Morrison, Bourassa, and Lhermie \(2023\)](#) stressed cooperation in climate-resilient supply networks. The report stressed the importance of collaboration with supplier businesses, government agencies, and other stakeholders to build a strong supply chain network. Participants stressed the necessity of working with partners to address climate change. Interviews showed that technology helped supply chains adjust to climate change. The current study did not analyze technological adoption, however the larger analysis corroborated. Technology must provide real-time visibility, monitor environmental conditions, and enable data-driven decision-making to tackle climate change (see Table 6).

Table 6: Weightage analysis for climate change influences supply chain resilience

Result/Themes	Weightage
Proactive Measures to Address Climate Change Risks	0.40
Diversification of Sourcing and Collaborations	0.30
Integrating Sustainability into Resilience Strategy	0.20
Collaborative Approaches for Adaptability	0.10

4.5 Risk Management Mediates Social and Political Instability-Supply Chain Disruption

Maintaining operational continuity in challenging geopolitical settings requires proactive risk management. Respondent number two stressed risk management to reduce supply chain delays in politically vulnerable areas. One participant stressed early identification and fast action to stop interruptions. This suggests that proactive risk management may reduce social and political turmoil in supply networks. Respondent 8's conflict resolution provided risk management insights. Risk management is essential despite social and political turmoil, the respondent said. Risk assessment frameworks helped detect supply chain problems and execute preventive measures. Risk management is proactive with this tactical approach, anticipating and responding to interruptions. [Dubey et al. \(2023\)](#) examined the complex relationship between political threats and supply chain disruptions to support these qualitative findings. The report says that effective risk management reduces geopolitical uncertainty's negative effects on supply networks. Respondents supported risk management's proactive involvement in strategic decision-making. As a modulator of societal instability, risk management was also discussed by [Zhang, Ho, Yan, & Gong, \(2023\)](#). The study concluded that risk management strengthened the supply chain and reduced social unrest interruptions. In this theoretical paradigm, risk management mediates social and political unrest's effects on supply chain interruption. The methodology validates real-world interview results (see Table 7).

Table 7: Weightage analysis for risk management mediates social and political instability-supply chain disruption

Result/Themes	Weightage
Early Identification and Proactive Strategies	0.35
Integrating Risk Assessment into Strategic Planning	0.30
Buffering Effect of Risk Management	0.20
Strengthening Operational Continuity Through Risk Management	0.15

4.6 Risk Management Mediates Social and Political Instability-Supply Chain Resilience

Respondents stated that risk management is essential to navigating social and political crises. Participants stated that robust supply chains depend on effective risk management. Companies are able to actively manage and reduce geopolitical risks as a result. Risk management, according to respondent number three, is essential for supply chain resilience in nations with unstable social and political environments. By promptly recognizing and integrating risks into our strategic planning, we increase our resilience. According to respondent number 10, risk management actively strengthens the resilience of supply networks in times of social and political unrest. Their approach to risk management is adapted to political and societal upheavals. Risk evaluations and mitigation strategies support our supply chain's response to unforeseen circumstances and its recovery. [Vigani, Khafagy, and Berry \(2024\)](#) looked into risk management as a political and social mediator. Their findings confirm qualitative conclusions. Risk management is essential to corporate supply network resilience strategies, according to the paper. The emphasis on a complete risk assessment methodology supported respondents' views on proactive and integrated risk management. [Aljabhan \(2023\)](#) state that risk management is crucial to organizational resilience, especially during external disturbances. The necessity of risk management for firms to mitigate socio-political unpredictability on supply chain operations (see Table 8).

Table 8: Weightage analysis for risk management mediates social and political instability-supply chain resilience

Result/Themes	Weightage
Integrating Risk Management into Resilience Strategy	0.40
Focusing on Early Identification and Prevention	0.30
Collaborative Approaches for Resilience	0.20
Enhancing Resilience Through Risk Management	0.10

4.7 Risk Management Mediates Climate Change Risk-Supply Chain Disruption

Qualitative interview data showed a strong pattern showing how risk management mediates supply chain disruption and climate change risk. Risk management is crucial to addressing climate change's complex concerns, participants said. The sixth responder said, "Climate change creates unforeseeable supply chain risks." Our risk management systems detect, assess, and prevent interruptions. These systems are crucial intermediaries. Based on this, respondent 14 stressed proactive risk management to mitigate supply chain disruptions and climate change. The respondent plans to include climate change in their risk management strategy. This preemptive technique can reduce climate change-related supply chain interruptions and ensure

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ongoing operations. [Ionno, Arsenault, Troin, Martel, and Brissette \(2024\)](#) evaluated risk management as a mediator of climate change. They confirm qualitative findings. Businesses must include climate risk in their risk management systems to reduce supply chain disruptions, the study said. Businesses must establish a climate change risk management strategy, as this example showed. Additionally, [Minguito and Banluta \(2023\)](#) showed how risk management mediates supply chain disruption and climate change risk. The study indicated that risk management improves organizational resilience, especially when facing climate change-related external shocks. We stressed that risk management may strategically reduce climate change threats to supply chain operations (see Table 9).

Table 9: Weightage analysis for management mediates climate change risk-supply chain disruption

Result/Theme	Weightage
Proactive Identification and Addressing Climate Risks	0.35
Integrating Climate Considerations into Risk Management	0.30
Buffering Effect of Risk Management	0.20
Mitigating Disruptions Through Risk Management	0.15

4.8 Risk Management Mediates Climate Change Risk-Supply Chain Resilience

The significance of risk management in the intricate interaction between supply chain resilience and climate change risk was emphasized by the qualitative analysis of the interview data. Participants emphasized the strategic and proactive role that risk management strategies play in overcoming the dynamically shifting nature of climate-related threats. In order to lessen the impact of climate change on supply chain resilience, respondent number four emphasized the significance of proactive risk management. Their pitch was, "Our risk management framework specifically prioritizes climate-related risks." In order to fortify our supply chain, climate issues are part of our risk management strategies. This improves our supply chain and lessens interruptions. Respondent 11 clarified how supply chain resilience in the face of climate change is enhanced by risk management. These opinions were formed in light of the previous viewpoint. The respondent stated that climate change increases the unpredictability of our activities. Through risk management, we can identify, evaluate, and respond to climate change hazards. Because of this proactive effort, our supply chain is far more robust. They concentrated on how risk management mitigates the hazards posed by climate change. The report emphasized that in order to support supply networks in recovering from disruptions, climate risk factors must be integrated into business risk management systems. It advised corporations to create a climate change-specific risk management plan. This matches participant feedback on proactive and integrated risk management. [Ali et al. \(2023\)](#) demonstrated how risk management affects supply chain resilience and climate change risk. Risk management improves organizational resilience, especially when adapting to climate change disruptions, according to the study. We stressed that risk management may strategically reduce climate change threats to supply chain operations (see Table 10).

Table 10: Weightage analysis for risk management mediates climate change risk-supply chain resilience

Result/Theme	Weightage
Integrating Climate Risk into Resilience Planning	0.40

Proactive Measures to Enhance Resilience	0.30
Collaborative Approaches for Resilience	0.20
Strengthening Resilience Through Risk Management	0.10

5. Discussion

The discussion chapter successfully handles the study's complex conclusions by merging theme analysis of semi-structured interviews with relevant contemporary scholarly publications. The investigation begins by investigating the substantial effects of social and political instability on supply chain interruptions. Qualitative findings relate sociopolitical instability to supply network disruptions. Participant feedback suggests that political instability accelerates trade law changes, which worries networks. Disruptions delay shipments, cause logistical challenges, and slow supply chains. This study supports [Xu et al. \(2023\)](#), who showed political instability affects supply networks broadly. Global events effect organization operations, according to their research. Personal testimony of investigative participants matches this [Herrfahrdt-Pähle et al. \(2020\)](#) stresses that companies must monitor and adapt to political developments. The results demonstrate that supply chain disruption mitigation requires flexibility.

Businesses in volatile countries must analyze supply chain resilience due to social and political volatility. Participants prioritize contingency planning and alternate sources to improve supply chains. [W. Liu et al. \(2023\)](#) recommend proactive supply network fortification due to geographical issues. Participants' pragmatic approach emphasizes diversity and adaptation to build resilience in uncertain social and political environments. Qualitative data show that climate change-related supply chain disruptions and dangers are major challenges. Participants indicate more natural catastrophes and transportation infrastructure damage, supporting ([Timperio et al., 2022](#)). [Bayazit and Kaptan \(2023\)](#) say this alignment improves risk planning's climate resilience. According to the paper, climate change creates susceptibilities that require proactive actions to avert interruptions and maintain supply flows. Businesses should prioritize sustainability, diversify procurement, and include partners to create adaptive supply chains, according to respondents. ([Ionno et al., 2024](#)) underline the link between climate change and operational continuity and suggest that resilience strategies include environmental problems. [Hossain et al. \(2022\)](#) recommend collaboration and technology solutions for supply chain resilience in climate change.

Both earlier scholarly research and this study emphasize the complex relationship between social and political instability and supply chain disruptions. Based on industry professionals and executives' thoughts, the qualitative study underlines social and political concerns' vital role in supply chain operations. The analysis confirms previous evidence showing supply networks are vulnerable to political disputes, regulatory changes, and civil instability ([Cui, Yue, Nghiem, & Duan, 2023](#)). The respondents agree with scholars that international political situations are dynamic and affect supply chain efficiency. The study illuminates how social and political instability affects supply chain networks through context-specific narratives. This shows that enterprises must proactively address these issues to preserve operational resilience ([Song, Chang, Cheng, Liu, & Yan, 2024](#)). The relationship between supply chain resilience and social and political instability is also important.

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The literature suggests that a diverse strategy that goes beyond risk aversion is necessary for resilience in the face of external disturbances. Interview data supports academic beliefs that diversity, collaboration, and adaptation are crucial in supply chain operations (Chervenkova & Ivanov, 2023). The findings demonstrate the complex relationship between societal and political volatility and company resilience efforts. They explain all proactive actions taken to reinforce supply chains during interruptions. This study examines how firms overcome social and political uncertainty to add richness to supply chain resilience rhetoric. This study aligns with previous research on climate change risk and supply chain disruption, highlighting the growing problems global supply networks face due to climate-induced disruptions (Ni et al., 2022). The respondents' testimonials support scholarly research by highlighting the physical effects of extreme weather, environmental changes, and logistics and transportation network disruptions. The research emphasizes the need of tackling climate change as a supply chain risk issue. Given the considerable effects of climatic changes on supply chains, empirical data and proven theoretical foundations strongly suggest that firms should include climate resilience into their strategy frameworks. The study of climate change risk and supply chain resilience Hossain et al. (2022) is significant. Scholars suggest combining innovation, technology, sustainability, and cooperation to build climate-resilient supply chains. The researchers study how organizations use realistic climate change mitigation strategies. Long-term supply chain designs should integrate climate resilience, according to empirical findings (Fritz, 2022; Tchonkouang, Onyeaka, & Nkoutchou, 2024). Risk management examines the complex relationships between social and political instability, climate change, supply chain resilience, and disruption. Prior study underpins risk management's disruption mitigation role. Qualitative observations show how risk management protects supply chains from climate-related dangers, social and political unpredictability, and political uncertainty. Respondent narratives support theoretical notions by showing how firms use proactive risk management frameworks to adapt to geopolitical and environmental changes. This empirical study adds to the resilience-supply chain continuity debate around risk management.

Table 11: Comparison of findings of current study with previous studies

Aspect of Study	Current Study	Similar Study (Literature)
Influence of Social and Political Instability	Significant impact on supply chain disruption, emphasized the need for proactive assessment and adaptation	Consistent disruption due to political instability, proactive measures necessary (Song et al., 2024)
Influence of Climate Change	Tangible challenges from extreme weather events and environmental shifts, emphasis on proactive measures	Cascading effects on supply chains, imperative of proactive measures (Herrfahrdt-Pähle et al., 2020)
Mediating Role of Risk Management	Risk management as a crucial mediator in mitigating disruptions, proactive practices emphasized	Effective risk management mitigates impact, proactive approach necessary (Hossain et al., 2022)

6. Conclusion

In conclusion, this study offers significant insights into the complex interrelationships that exist between climate change, social and political instability, risk mitigation, and the repercussions of these factors on global supply chain management. This study emphasizes the critical nature of proactive adaptation and strategic foresight in addressing the complexities arising from geopolitical unpredictability. It achieves this by integrating empirical data and contemporary research. Specifically, the empirical evidence underscores the concrete consequences of supply chain disruptions resulting from social and political instability, a finding that aligns with previous investigations in the field. Additionally, the study investigates the cascading consequences of climate-induced disturbances on global supply chains, underscoring the significance of proactive strategies to enhance resilience and effectively mitigate disruptions. The study's findings underscore the criticality of risk management in its role as a tactical intermediary. In order to mitigate the impact of geopolitical hazards on supply chains, effective risk management techniques are crucial, as demonstrated by the empirical evidence supporting previous research. This underscores the importance of the study's discovery that risk management plays a crucial role in shaping the resilience of supply chains in the face of climate change, social unrest, and political unrest. In summary, the study's findings offer valuable insights for practitioners and policymakers seeking to enhance the resilience of supply chains. By placing significant emphasis on the importance of proactive risk management, strategic foresight, and adaptability, the study provides a road map for businesses to effectively navigate the intricate dynamics of the global marketplace. With the increasing unpredictability of global conditions, the research additionally endeavors to contribute to the preservation and uninterrupted operation of worldwide supply networks.

6.1 Theoretical and Practical Implications

This study clarifies the complex relationships between supply chain operations, risk management, climate change, and social and political instability. In addition to verifying hypotheses, theoretical implications explain how these factors interact with other variables. Risk management is emphasized to understand how external factors affect supply chain disruptions and resilience, building on previous studies. This improves understanding and knowledge. Adding actual data to established notions makes a theoretical framework more complete. This method benefits sustainability, geopolitics, and supply chain management research. This study also benefits professionals, supply chain executives, and legislators with practical information. Businesses must be proactive and adaptive in the face of social and political turmoil. Supply chain risk management systems must strategically incorporate geopolitical issues, which has real-world ramifications. Awareness of global events and supply chain vulnerabilities helps organizations establish disruption response strategies. The study emphasizes the importance of detecting and removing climate change's effects on supply chain operations. Climate-related concerns in risk management systems ensure operational continuity even under environmental constraints, improving resilience and minimizing disruptions. The paper advises organizations to adapt to the changing global economy. Strategic adaptation requires understanding and mastering social, political, and environmental issues. The report can help supply chain management create geopolitical and climate change adaptation strategies. This strategy

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shift requires proactive, not reactive, approaches. This shift involves strategic planning, social and environmental risk management, and global monitoring. The findings recommend a complete supply chain management strategy. This technique encourages organizations to plan for interruptions rather than just responding. The study uses social, political, and environmental risk management to strengthen supply chains. Strong businesses can handle interruptions and keep going. Managing severe disruptions and fostering an organizational culture that foresees and adjusts to changes in the world are necessary for building resilience. Being resilient requires this. It makes sense to apply all-encompassing risk management strategies that go above and beyond current practices. By adding new features, these solutions increase the robustness of the supply chain. Lastly, the study highlights how useful diverse corporate alliances are. Since global concerns are interconnected, organizations should collaborate with governmental and non-governmental organizations as well as other industry stakeholders. Various sectors work together to combine resources, expertise, and perspectives to create programs that are more thorough and effective. Organizations can work together to address climate change as well as social and political instability. The real-world implications highlight how important it is to have a collaborative supply chain resilience plan. To achieve this, stakeholders must work together to create a flexible and ecologically friendly global supply chain ecosystem.

6.2 Limitations and Future Direction

6.2.1 Limitations

Although this study was rigorous, it must be recognized for its limitations. Data collection involves semi-structured interviews, which could introduce subjectivity into the analysis. Even with measures taken to ensure the completeness of the theme analysis, interviewers' perceptions and participant responses could be skewed. The study's sample size may restrict extrapolation, yet it is adequate for a qualitative analysis. Because the selected persons may not fully represent the spectrum of global supply chain advances, care must be used when extrapolating the findings to other situations. This is because they may represent certain organizations or places. Additionally, the brief time frame for data collection might not adequately capture the dynamic nature of social, political, and environmental factors. This means that to increase study's temporal validity, ongoing observation and longitudinal research are recommended. The paper's overemphasis on social and political instability as well as climate change is another flaw. Other factors that impact supply chains, like technological or economic upheavals, were not sufficiently addressed in the research, despite their significance. To further understand supply chain dynamics, more variables should be investigated in future research. Participants may have experienced recollection bias as a result of the study's retrospective data. Prospective real-time investigations are more effective in capturing the viewpoints and experiences of participants.

6.2.2 Future Direction

To comprehend the complex interaction between supply chain dynamics, climate change, and social and political instability, future research should focus on several areas. Due to constraints found. A quantitative extension using statistical methods and a larger sample size could strengthen this work. This would improve results

generalizability. This technique would aid evidence-based decision-making by detecting more patterns and trends. Future studies may examine industry-specific traits. Comparative industry study may reveal distinct issues and solutions. This may reveal industry-specific problems and changes. A longitudinal method would also enable scholars to track and examine changes over time, which would aid in their understanding of the dynamic global environment. Future studies could address the temporal snapshot problem in this study by utilizing real-time monitoring devices. To construct systems that gather and assess social, political, and environmental data, academics can benefit from the use of artificial intelligence and machine learning. Understanding real-time supply chain components will be made easier with the help of an adaptable and extendable framework. Another alternative is to increase the factors for future investigation. To better understand supply chain challenges, the study framework should take economic factors, geopolitical events, and technical advancements into account. Researchers can uncover intricate correlations between variables by applying systems-thinking to gain a deeper understanding of the global supply chain. Preventive measures could be developed and assessed by future research. The goal of the research is to create and evaluate corporate crisis management strategies for social, political, and environmental issues. They will use the results of this study to develop and assess these tactics. To address global concerns, this would necessitate developing unique risk management frameworks, scenario planning tools, or prediction algorithms. Therefore, more research could aid businesses in strengthening their supply chains during a difficult period.

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