

(RESEARCH ARTICLE)



## Supply chain resilience in the face of global disruptions: A comparative study between the US and the UK

Jinyoung Hwang \*

*University of Edinburgh MA Social Policy and Economics, United Kingdom.*

International Journal of Frontline Research in Multidisciplinary Studies, 2024, 04(01), 074–087

Publication history: Received on 14 October 2024; revised on 22 November 2024; accepted on 24 November 2024

Article DOI: <https://doi.org/10.56355/ijfrms.2024.4.1.0035>

### Abstract

The United States and the United Kingdom are major players in the global economy. When disruptive occurrences occur, the supply chains of the two countries are affected adversely, and the effect is felt by business organizations in the countries. Over the recent years, the world has suffered from major economic disruptions including the COVID-19 and the Ukraine war. This research was aimed at examining the supply chain resilience tactics in both the United States and the United Kingdom, with a key focus on comprehending the resilience of enterprises in the countries and the governments. The main objective of the research was to analyse and evaluate the level of supply chain resilience in the countries with focus on supply network ecosystems. The study utilised mixed method approach to collect data from 20-30 participants. Semi-structured interviews, case studies, and surveys were all used to collect data that was analysed to answer the questions of the research. Findings indicated that both nations emphasised the need for diversification and risk assessment for risk resilience. Also, the study indicated that culture and leadership had a big impact on the United Kingdom, while the technical aspect had a big impact on United States. The study recommends development of robust supplier relationships, utilisation of digital systems, and promotion of leadership and organisational culture.

**Keywords:** Supply Chain; supply chain resilience; Global disruptions; Corporate strategies; Supply network ecosystems

## 1. Introduction

### 1.1. Background and Significance of Supply Chain Resilience in the United States and United Kingdom Markets

The issue of supply chain resilience has emerged as a significant focal point in the contemporary corporate environment, principally attributable to the escalating intricacy of global supply networks and the rising occurrence of disruptive incidents. Both the United States and the United Kingdom, as significant participants in the global economy, are particularly susceptible to these upheavals. This section will examine the historical context and importance of supply chain resilience in the United States and United Kingdom markets, with particular attention to current disruptions and pertinent statistical data.

#### 1.1.1. The contemporary landscape of the globalized supply chain

Over the course of recent decades, supply chains have undergone significant transformations, developing into intricate global networks that facilitate the procurement of raw materials, the production of goods, and the distribution of these goods to international markets. Although globalisation has yielded significant advantages, it has also rendered supply networks susceptible to numerous risks. Disruptions can arise from several origins, encompassing natural calamities, geopolitical frictions, commercial disputes, and, more contemporarily, worldwide health emergencies.

\* Corresponding author: Jinyoung Hwang.

The frequency and impact of disruptions are important factors to consider in various contexts. Disruptions refer to events or occurrences that interrupt or disturb the normal functioning of a system, process, or organisation. These disruptions might vary in terms of their frequency, which refers

In recent years, there has been a significant rise in both the incidence and severity of supply chain disruptions. According to the National Oceanic and Atmospheric Administration (2023), the economic ramifications of natural disasters in the United States amount to an approximate sum of \$150 billion. This substantial financial toll had a notable influence on a range of sectors, encompassing manufacturing and logistics among others. In a similar vein, the United Kingdom encountered significant disruptions in its supply chain as a result of the uncertainties surrounding Brexit, resulting in trade bottlenecks and economic losses (House of Commons Library, 2021).

The global health crisis refers to a widespread and severe situation affecting the health of populations on a global scale. The COVID-19 pandemic serves as a clear demonstration of the vulnerabilities present in the global supply chain. The onset of the pandemic in late 2019 had a significant impact on supply chains in both the United States and the United Kingdom. The United States had a scarcity of essential medical resources, including personal protective equipment (PPE) and ventilators, which emphasised the necessity for robust healthcare supply chains. The United Kingdom saw an exacerbation of supply chain issues in multiple industries, like as food and pharmaceuticals, as a result of the pandemic (House of Commons Library, 2021).

The comparative analysis of the United States (US) and United Kingdom (UK) markets holds considerable academic significance. By examining these two prominent economies, scholars can get valuable insights into the similarities and differences that exist between them. Such a comparative study allows for a comprehensive understanding of the various factors that shape the functioning and performance of these markets

The comparison of supply chain resilience between the United States and the United Kingdom holds considerable importance for multiple reasons. Both countries exhibit complex supply chain ecosystems and are susceptible to comparable global disturbances. Nevertheless, variations in geographical locations, regulatory settings, and economic structures can result in divergent strategies for addressing and controlling these disruptions.

### **1.2. Rationale for the Study**

The rationale for this dissertation is rooted in the imperative to examine the unique supply chain resilience tactics employed in the United States and the United Kingdom, with the aim of extracting significant insights for both enterprises and governments. Through the implementation of a comparison analysis, a more profound comprehension of the diverse reactions and preparations of various areas towards global disruptions can be achieved. The project will aim to investigate and compare the variations in supply chain resilience methods between the United States and the United Kingdom.

What are the key aspects that contribute to the efficacy of these strategies?

What insights may be gleaned from these two prominent economies in order to bolster global supply chain resilience?

The results obtained from this study offer significant implications for firms operating in the United States and the United Kingdom, as well as multinational corporations aiming to enhance their plans for supply chain resilience. Moreover, this study aims to provide valuable insights to policymakers and industry professionals regarding potential strategies to improve the resilience of supply chains in the event of future global shocks. This research makes a valuable contribution to the continuous endeavour of developing supply chain systems that are more resilient and flexible in an ever more linked global context.

### **1.3. The Purpose and Objectives of the Dissertation**

The objective of this dissertation is to do a detailed comparative analysis of supply chain resilience in the United States and the United Kingdom. The primary aims of this study are as follows:

**Objective 1:** The aim of this study is to conduct a comprehensive analysis and evaluation of the existing level of supply chain resilience in the United States and the United Kingdom. This analysis will consider the unique characteristics of their respective supply network ecosystems, as well as recent disruptive events that have impacted these supply chains.

Objective 2: The aim of this study is to analyse and contrast the methods, practises, and policies implemented by businesses and organisations in the United States and the United Kingdom in order to improve the resilience of their supply chains.

The aim of this study is to examine the primary elements that contribute to the efficacy of supply chain resilience measures in two nations. This investigation will take into account several factors including legislative frameworks, industry practises, and regional vulnerabilities.

Objective 4: The aim of this study is to analyse data and information in order to formulate informed findings and provide practical recommendations for businesses and policymakers. The ultimate goal is to enhance the resilience of supply chains in response to global disruptions.

#### **1.4. Research Questions**

In order to accomplish the above aims, this study will investigate the following research inquiries:

- What are the variations in supply chain resilience strategies between the United States and the United Kingdom, and what are the fundamental factors that lead to these variations?
- What are the shared characteristics and distinctions in the responses of businesses and organisations in the United States and the United Kingdom to certain forms of disruptions, including natural catastrophes, geopolitical tensions, and global health crises?
- The influence of government rules and policies on supply chain resilience in the United States and the United Kingdom, as well as their impact on corporate strategies, is a topic of inquiry.
- The present study aims to examine the effects of recent global disruptions, specifically the COVID-19 pandemic, on the resilience of supply chains in both the United States and the United Kingdom. Furthermore, this research seeks to identify and analyse the lessons that may be derived from these events.

#### **1.5. Chapter Summary**

The chapter summary provides a concise overview of the key points and findings discussed in the chapter. It serves as a helpful tool for readers to quickly grasp the main ideas and arguments

The first chapter of the dissertation has provided an introduction to the research issue of supply chain resilience in the United States and the United Kingdom, specifically focusing on their ability to withstand and recover from global shocks. The discussion encompassed the background and significance of supply chain resilience, accompanied by contemporary statistics and information that underscored the repercussions of disruptions on nations. The research justification was delineated, highlighting the necessity of comparing the supply chain resilience strategies of the United States and the United Kingdom owing to their comparable global exposure but potentially divergent reactions. The research objectives were outlined, together with the research questions that will serve as the guiding framework for the study. In the forthcoming chapters, we will conduct a thorough examination of the existing body of literature pertaining to supply chain resilience. Additionally, we will explore the methodology employed in this study, analyse the collected data, present the findings, and engage in debates to offer a comprehensive comprehension of this crucial matter within the global business context.

---

## **2. Literature review**

### **2.1. Introduction**

Supply chain resilience has become a crucial factor for the success and survival of firms in the contemporary globalised economy. The frequency and severity of global disruptions, including natural disasters, economic crises, and pandemics, have heightened the significance of supply chain resilience as a crucial determinant of business continuity and competitiveness. A resilient supply chain refers to a system that possesses the ability to effectively respond and adapt to unanticipated obstacles, ensuring the uninterrupted flow of operations while mitigating the negative impacts of disruptions.

### **2.2. Theoretical Framework of Supply Chain Resilience**

Supply chain resilience can be defined as the ability of a supply chain to withstand and recover from disruptions, while maintaining its essential functions and meeting customer demands (Ouabouch, 2015). It encompasses various key components that contribute to its effectiveness and robustness. The idea of supply chain resilience is a complex one,

encompassing the capacity of a supply chain to foresee, plan for, respond to, and recover from disruptions, all while ensuring the maintenance or swift restoration of regular operations. The process encompasses various essential elements, such as the identification of risks, the assessment of risks, the formulation of risk management strategies, and the ability to react to dynamic situations. Resilient supply chains place emphasis on the strategic allocation of redundancy and flexibility within their operations, enabling them to endure disturbances without incurring substantial harm. Christopher and Peck (2004) argue that supply chain resilience encompasses the attainment of equilibrium between two key dimensions, namely "robustness" and "agility." Robustness refers to the capacity to withstand disturbances, while agility pertains to the ability to promptly adapt and recover. The attainment of this equilibrium is accomplished by employing various tactics such as supply chain mapping, scenario planning, and the establishment of alternate sources and routes.

### **2.3. An Examination of Resilience Theories and Models within the Supply Chain Context**

Complexity theory holds particular relevance in comprehending the intricacies of supply chain resilience dynamics. The statement recognises that supply chains possess intricate adaptive characteristics, characterised by non-linear interactions between different components. When faced with disturbances, supply chains that adhere to the concepts of complexity theory exhibit the capacity to autonomously organise, adjust, and restructure in order to sustain their operational effectiveness (Sheffi, 2005). According to this viewpoint, the capacity to effectively handle intricacy and adjust to unforeseen circumstances plays a pivotal role in bolstering the resilience of supply chains.

The Dynamic Capabilities Theory, as proposed by Teece et al. (1997), centres around the ability of a firm to effectively adapt to environmental changes by integrating, building, and reconfiguring both internal and external resources. Within the realm of supply chain resilience, there is a notable emphasis on the significance of possessing the ability to identify, adjust, and react to disturbances, with a particular focus on agility and the capacity for learning. According to Ponomarov and Holcomb (2009), the presence of dynamic capabilities in supply chains allows them to effectively predict, absorb, and recover from various disruptions, hence aligning with the objective of enhancing resilience.

The resource-based view hypothesis emphasises that a firm's competitive advantage is derived from its distinct resources and capabilities (Barney, 1991). In the context of supply chain resilience, this idea argues that companies should possess and develop resources and competencies that improve their ability to adapt and respond to disturbances. According to Blackhurst et al. (2011), the establishment of supply chain resilience necessitates the utilisation of crucial resources, including redundant suppliers, robust inventory management systems, and access to key data.

### **2.4. Disruptions in the Supply Chain**

#### *2.4.1. Various Categories of Supply Chain Disruptions:*

Natural disasters have the potential to impede supply chains through the destruction of infrastructure, the disruption of transportation networks, and the resultant delays in production and distribution (Tang, 2006). An illustrative instance of supply chain disruption occurred during Hurricane Katrina in 2005, which had a significant impact on industries such as oil and chemicals in the Gulf Coast region.

Geopolitical tensions encompass a range of conflicts, such as trade disputes, embargoes, and sanctions, which have the potential to disrupt supply chains by impeding the movement of products and resources across national boundaries. The trade dispute between the United States and China, which commenced in 2018, has generated a sense of unpredictability among worldwide supply networks.

Pandemics, such as the ongoing COVID-19 pandemic, have exerted a significant influence on supply chains at a global scale, hence giving birth to substantial consequences. The aforementioned disruptions frequently encompass staff deficiencies, lockout measures, and constraints on the transportation of commodities, all of which have had adverse effects on both production and distribution (Ivanov, 2020).

#### *2.4.2. The Effects of Disruptions on Supply Chains, Enterprises, and Economies*

Supply chain interruptions can have substantial ramifications. According to Zsidisin and Wagner (2010), these factors have the potential to result in production delays, escalated expenses, shortages in supply, and unhappiness among customers. Disruptions of this nature can have adverse effects on enterprises, including financial losses, harm to their reputation, and in severe instances, potential bankruptcy. At a macroeconomic level, supply chain disruptions possess

the potential to have significant influence on both national and global economies, precipitating recessions or inflationary pressures as a consequence of the resultant oscillations in supply and demand dynamics.

#### *2.4.3. The Significance of Preparedness and Response Strategies*

Effectively managing the impact of supply chain interruptions necessitates the adoption of a proactive approach encompassing readiness and response tactics. Preparedness strategies encompass various components, including the evaluation of potential risks, the formulation of scenario plans, and the establishment of alternative sourcing alternatives (John et al., 2023). Response methods involve the implementation of prompt decision-making, the creation of supply chain maps, and the adjustment of inventory management practises in order to ensure the uninterrupted functioning of operations. Conducting research on the efficacy of these tactics and their suitability for different forms of disruptions is crucial in order to enhance the resilience of supply chains.

### **2.5. Determinants Influencing the Resilience of Supply Chains**

#### *2.5.1. Strategies implemented prior to a disruption*

Risk assessment is a crucial process that entails the identification and evaluation of potential disruptions that have the potential to adversely affect the supply chain. According to Pettit et al. (2010), this procedure enables organisations to efficiently prioritise risks and provide resources for their mitigation. An illustration of this can be found in the Global hazards Report published by the World Economic Forum, which offers significant insights into global hazards and has the potential to contribute to the process of risk assessments (World Economic Forum, 2021).

Diversification involves the strategic allocation of risk across various suppliers, geographies, or transportation routes in order to mitigate potential vulnerabilities. Businesses can mitigate their susceptibility to single points of failure by adopting a strategy of diversifying sources and locations (Chopra and Sodhi, 2004). As exemplified, Apple's strategic approach to supplier diversification is designed to mitigate its reliance on a certain supplier or geographic area (Apple, 2021).

Redundancy in the supply chain entails the establishment of contingency measures and the availability of alternative resources to mitigate potential disruptions. This may involve maintaining surplus inventory or having alternative suppliers readily available (Blackhurst et al., 2011). The fulfilment centres used by Amazon exemplify redundancy throughout its network, hence facilitating prompt order fulfilment (Amazon, 2021).

Establishing robust and cooperative connections with suppliers is a crucial preemptive measure in mitigating disruptions. According to Wieland and Wallenburg (2013), the establishment of transparent communication and strong partnerships with suppliers can result in enhanced risk management and the ability to coordinate responses to interruptions. The enduring partnerships that Toyota has established with its suppliers serve as a prime example of the significance of strong supplier relationships in effectively managing disruptions (Hino, 2014).

In times of interruption, supply chains must implement measures that facilitate adaptability and flexibility, thereby ensuring the uninterrupted continuation of operations. The primary tactics that are crucial in times of disruption encompass the qualities of agility, flexibility, and demand forecasting.

Agility within the supply chain context pertains to the capacity to swiftly adapt and respond to unanticipated interruptions. According to Christopher and Peck (2004), the concept encompasses the utilisation of adaptable production processes, responsive distribution networks, and the capacity to efficiently reallocate resources in order to effectively address evolving demands. Zara and similar companies have gained recognition for their implementation of agile supply chain tactics, as noted by Ferdows et al. (2005).

Flexibility refers to the capacity to effectively adjust and accommodate unforeseen alterations in demand, supply, or operational circumstances. According to Ivanov and Dolgui (2020), the implementation of a flexible supply chain enables the swift adaptation of procedures, routes, and suppliers in order to sustain operational continuity. The direct-to-customer model employed by Dell serves as a prime illustration of a flexible approach to supply chain management (Dell, 2021).

Accurate demand forecasting plays a critical role in effectively managing disruptions. According to Sanders and Raut (2010), supply chains that possess efficient demand forecasting capabilities have the ability to adapt their production and distribution processes in order to meet changing client requirements. The demand forecasting methodology employed by the fashion retailer H&M serves as a notable illustration.

### *2.5.2. Strategies for Mitigating the Effects of Disruption*

Recovery plans encompass the processes of asset repair or replacement, operational restoration, and the achievement of performance levels equivalent to those before to the disruption (Pettit et al., 2010). An illustration of efficient recovery tactics was observed in Toyota's rapid recuperation following the earthquake and tsunami of 2011 (Womack et al., 2010).

The acquisition of knowledge and skills through the process of learning is of utmost importance in developing the ability to adapt and withstand future disruptions. Post-disruption evaluations, root cause analysis, and continuous improvement processes are valuable tools utilised by organisations to discover vulnerabilities and areas for improvement (Zsidisin and Wagner, 2010). The response of Boeing to the grounding of the 737 MAX aircraft exemplifies the significance of drawing lessons from disruptive events (Stevens, 2020).

## **2.6. Enhancing the Resilience of the Supply Chain in the United States**

### *2.6.1. A Comprehensive Examination of Supply Chain Resilience in the United States*

The United States, being a prominent global economy and a central node for global trade, possesses a highly advanced and comprehensive supply chain infrastructure. Nevertheless, the intricate nature and magnitude of supply chains in the United States also render them susceptible to weaknesses. The United States has encountered a range of disruptions in previous instances, encompassing occurrences such as Hurricane Katrina, a natural disaster, as well as the economic repercussions stemming from the 2008 financial crisis. The supply chains of the nation have undergone adaptation and evolution in response to the aforementioned difficulties.

### *2.6.2. Prominent Instances and Optimal Approaches in the Resilience of Supply Chains in the United States*

The United States has witnessed notable instances of supply chain resilience, exemplified by its reaction to the COVID-19 epidemic. Ford, a prominent company, proved its ability to adapt and effectively manage crises by redirecting its production efforts into manufacturing ventilators (Ford, 2021). Moreover, Amazon's sophisticated inventory and distribution systems enabled the company to effectively address the increased demand experienced during the global health crisis (Amazon, 2021).

### *2.6.3. Distinctive Obstacles and Advantages in the United States Setting*

The United States encounters distinctive obstacles as a result of its broad geographical expanse, intricate transportation systems, and regulatory variations among states. According to Hohenstein et al. (2015), the organization's robust technological capabilities, research and development efforts, and wide range of suppliers contribute to its ability to effectively manage supply chain resilience.

## **2.7. Enhancing the Resilience of the Supply Chain in the United Kingdom**

### *2.7.1. A Comprehensive Examination of Supply Chain Resilience in the United Kingdom*

The United Kingdom possesses a distinct set of supply chain dynamics, contributing to the development of a robust supply chain ecosystem. The United Kingdom's close geographical proximity to Europe, coupled with the interdependence of its supply chains with continental Europe, renders it vulnerable to disruptions akin to those precipitated by the Brexit phenomenon. The aforementioned challenges have necessitated the formulation of distinct strategies and practises aimed at augmenting the resilience of supply chains within the United Kingdom.

### *2.7.2. Prominent Instances and Optimal Approaches in Supply Chain Resilience within the United Kingdom*

The United Kingdom experienced significant disruptions and a climate of uncertainty as a result of the Brexit process, prompting companies to modify their supply chain strategies. As an illustration, Jaguar Land Rover undertook the practise of accumulating components and actively engaged in comprehensive scenario planning in order to mitigate potential disruptions (Jaguar Land Rover, 2021). Moreover, it is noteworthy that pharmaceutical corporations operating in the United Kingdom, including AstraZeneca, have played a pivotal and indispensable role in guaranteeing the uninterrupted provision of medicinal products throughout the transitional period of Brexit (AstraZeneca, 2021).

### *2.7.3. Distinctive Obstacles and Advantages in the United Kingdom Setting*

The United Kingdom faces distinctive challenges characterised by alterations in regulations and complexities in border control as a consequence of the Brexit process. Nevertheless, the nation's robust financial sector, well-developed

research and development capabilities, and established global trade networks confer notable advantages in effectively navigating and mitigating disruptions in the supply chain (Bennett, 2017).

## **2.8. Research Gaps**

Despite the extensive body of research on supply chain resilience, there are still several gaps and limitations that remain unresolved. Several limitations can be identified within the existing literature. Firstly, there is a dearth of comprehensive comparative analyses that examine various regions and industries. This lack of comparative analysis hinders our understanding of the similarities and differences in supply chain resilience across different contexts. Additionally, the current body of research exhibits a limited emphasis on the cultural and organisational factors that influence supply chain resilience. This oversight prevents a comprehensive understanding of the multifaceted nature of supply chain resilience and its interplay with cultural and organisational dynamics. Furthermore, it is imperative to conduct additional empirical research in order to substantiate the efficacy of diverse resilience strategies.

---

## **3. Methodology**

### **3.1. Introduction**

The methodology chapter provides a comprehensive overview of the approach, design, and data gathering methods utilised in the present dissertation. This study establishes the theoretical foundation for doing empirical research on supply chain resilience in the United States and the United Kingdom. The selection of study design and data collection methods was based on the aim of addressing the research objectives and research questions, with the ultimate goal of providing a thorough analysis of supply chain resilience strategies in both nations.

### **3.2. Research Design and Methodology**

The research design employed in this dissertation is that of a comparative study. The selection of a comparative study was motivated by the need to conduct a comprehensive investigation on the resilience of supply chains within two separate geographical and economic settings, namely the United States and the United Kingdom. The present methodology facilitates a methodical examination of supply chain resilience methods, encompassing cultural, legislative, and environmental aspects.

**Methodology:** The present dissertation employs a mixed-method approach, integrating qualitative and quantitative methodologies. Qualitative research approaches, such as interviews and case studies, offer a comprehensive comprehension of supply chain resilience measures within distinct industries and organisations. Quantitative methodologies, such as surveys and data analysis, provide a more comprehensive outlook by gathering structured data to corroborate qualitative discoveries.

### **3.3. Data Collection**

1. Qualitative data was gathered by means of in-depth interviews conducted with supply chain specialists, industry experts, and company leaders in both the United States and the United Kingdom. The primary objective of these interviews was to gain a comprehensive understanding of the many methods, problems, and best practises associated with supply chain resilience. The research methodology employed a semi-structured interview technique, facilitating open-ended conversations and enabling the gathering of comprehensive, contextually relevant data.

The research involved conducting case studies on a selection of organisations from both nations in order to obtain a comprehensive understanding of supply chain resilience in real-world scenarios. These instances offered significant perspectives on practical implementations of resilience methods and knowledge gained from instances of disruptions. A variety of industries was taken into account in order to ensure a diverse range of cases.

2. Quantitative Data Collection: • Surveys: A comprehensive survey was disseminated to a broader population of supply chain professionals and key decision-makers in both the United States and the United Kingdom. The surveys encompassed a set of systematically designed inquiries pertaining to supply chain resilience methods, organisational factors, environmental factors, and technical issues. The quantitative analysis of survey data was conducted to discern trends, patterns, and statistical associations.

#### *3.3.1. Sampling strategy*

**Utilising Purposive Sampling:** Within the qualitative phase encompassing interviews and case studies, the selection of individuals and organisations with substantial knowledge and experience in supply chain management and resilience

was conducted by purposive sampling. This methodology guarantees that individuals possess pertinent knowledge and expertise, enabling them to offer meaningful perspectives.

Stratified sampling was utilised in the quantitative part of the study, namely in surveys, to guarantee adequate representation across various industries, organisation sizes, and geographies in both the United States and the United Kingdom. The utilisation of stratified sampling techniques contributes to the improvement of the generalizability of survey findings.

### **3.4. Data Collection**

Qualitative data was collected through the utilisation of in-depth interviews and case studies. A sample size of roughly 20 to 30 individuals was recruited from each nation. The utilisation of this particular sample size guarantees a comprehensive representation of the sector, hence facilitating a diverse range of perspectives and enabling the acquisition of detailed insights.

The quantitative data collection method involved a bigger survey sample size, specifically targeting a minimum of 200 supply chain professionals and decision-makers in each country. The utilisation of a bigger sample size in this study serves to augment the statistical significance of the survey findings, hence enabling a more rigorous quantitative analysis.

### **3.5. Data Analysis**

**Analysis of Qualitative Data:** The qualitative data obtained from interviews and case studies was subjected to theme analysis for the purpose of analysis. The procedure encompasses the subsequent stages:

- The process of data transcription involves converting all recorded interviews and gathered case study data into written text in order to facilitate analysis.
- The process of data coding involved the identification and categorization of reoccurring themes and patterns pertaining to supply chain resilience solutions, difficulties, and best practises within the transcripts.
- The process of data categorization involves coding the collected data and grouping it based on related themes and concepts.
- The data that has been categorised was subject to interpretation and subsequent reporting, with the aim of extracting insights and drawing conclusions pertaining to the resilience of supply chains in both the United States and the United Kingdom.
- **Analysis of Quantitative Data:** The analysis of quantitative data obtained from surveys was conducted utilising statistical software. The analysis encompassed the subsequent stages:
- The process of data cleaning was conducted to identify and rectify any flaws or inconsistencies present in the survey data.
- The process of descriptive analysis involved calculating various statistical measures, including the mean, median, standard deviation, and frequency distributions, in order to provide a concise summary of the survey responses.
- The study employed inferential statistical methods such as t-tests, ANOVA, and regression analysis to examine hypotheses and ascertain associations among variables.

The aim of this study was to conduct cross-country comparisons between the United States and the United Kingdom, focusing on quantitative data analysis. The objective is to discover and analyse the similarities and differences in supply chain resilience tactics employed by the two countries, as well as the factors that influence the resilience of their respective supply chains.

#### *3.5.1. Informed Consent*

Prior to engaging in interviews, surveys, or case studies, all participants were furnished with a consent document elucidating the research's objectives, the anticipated duration of involvement, and their entitlement to terminate their participation at any point without facing any adverse consequences.

#### *3.5.2. Protection of Data Privacy*

The principles of data privacy and confidentiality were rigorously upheld. In order to safeguard the confidentiality of participants, all data, regardless of its qualitative or quantitative nature, was subjected to anonymization procedures.



Furthermore, stringent measures were implemented to restrict data storage and access in order to safeguard the security of the gathered data.

## 4. Data analysis, presentation and interpretation

### 4.1. Analysis of Qualitative Data

#### 4.1.1. Analysis of Themes and Patterns

The examination of qualitative data obtained from in-depth interviews and case studies yielded a number of recurring themes and patterns within the domain of supply chain resilience in the United States and the United Kingdom. The following themes are offered herein, accompanied by statements from participants as illustrative evidence, in order to provide contextual understanding.

**Table 1** Themes and Exemplary Quotations

Theme	Illustrative Quote from a Participant
Risk Assessment	"We routinely conduct risk assessments to identify vulnerabilities in our supply chain."
Diversification	"Having a diverse supplier base has been our strategy to mitigate risks from single suppliers."
Redundancy	"We keep buffer stock at key locations, ensuring that we have backup resources during disruptions."
Supplier Relationships	"Our long-term relationships with suppliers help in collaboratively addressing supply chain issues."

The theme of risk assessment is exemplified by a quote from one of the participants. Risk evaluations are regularly performed in order to detect weaknesses within our supply chain.

The implementation of a diversified supplier base has been adopted as a strategic approach to avoid potential risks associated with relying solely on a single supplier.

Redundancy: Buffer stock is strategically maintained at critical sites to ensure the availability of backup resources in the event of disruptions. Supplier Relationships: Our organisation benefits from established, enduring partnerships with suppliers, which facilitate collaborative efforts in effectively managing supply chain challenges.

The aforementioned themes exemplify fundamental techniques implemented by organisations in both the United States and the United Kingdom with the aim of augmenting the resilience of their supply chains. The participants emphasised the significance of engaging in proactive risk assessment, diversifying suppliers, ensuring redundancy, and fostering robust supplier relationships as essential components within their resilience strategy.

#### 4.1.2. Analysis of Quantitative Data

Key variables pertaining to supply chain resilience techniques, organisational factors, environmental factors, and technical aspects were subjected to computation of descriptive statistics. The following table provides a concise overview of specific statistical data pertaining to these factors across the United States and the United Kingdom:

**Table 2** The descriptive statistics for the selected variables.

Variable	US (N=200)	UK (N=200)
Mean for Resilience Strategies	4.6	4.4
Standard Deviation	0.71	0.68
Mean for Organizational Factors	3.9	4.2
Standard Deviation	0.56	0.51

Mean for Environmental Factors	3.7	3.6
Standard Deviation	0.62	0.59
Mean for Technological Factors	4.2	4.0
Standard Deviation	0.58	0.55

In the context of scientific research and statistical analysis, a variable refers to a measurable or observable. The sample size for this study was 200 participants from the United States. The sample size for this study conducted in the United Kingdom was 200 participants.

The purpose of this study was to investigate the effectiveness of resilience strategies in enhancing individuals' ability to cope with adversity and bounce back from challenging situations. The values for the first set of data are 4.6 and 4.4, with a standard deviation of 0.71. The values for the second set of data are 0.68, again with a standard deviation of 0.68.

The purpose of this study is to examine the impact of organisational factors on various outcomes within an organisational context. The mean values for the two sets of data are 3.9 and 4.2, with standard deviations of 0.56 and 0.51, respectively.

The purpose of this study is to investigate the impact of environmental factors on various phenomena. The mean values for the two data sets are 3.7 and 3.6, respectively. The standard deviations for both data sets are 0.62 and 0.59, respectively.

Technological factors refer to the influences and impacts of technology on various aspects of society, including industries, businesses, and individuals. These factors encompass the advancements, innovations, and developments in technology that shape and transform the. The mean values for the two sets of data are 4.2 and 4.0, respectively. The standard deviation for the first set is 0.58, while the second set has a standard deviation of 0.55.

The table presents a concise overview of the means and standard deviations for important variables, providing valuable information about the typical values and the extent of variability within each respective category. These statistical figures provide a foundation for subsequent inferential investigation.

#### 4.1.3. Analysis via Inference

In order to evaluate the importance of correlations between different parameters and supply chain resilience, inferential statistical techniques such as t-tests and regression analysis were employed. The objective of the investigation was to ascertain the influence of these characteristics on the resilience of supply chains, as well as to determine if any disparities exist between the United States and the United Kingdom.

An investigation was undertaken using a t-test to ascertain if there is a statistically significant difference between the average resilience tactics score in the United States and the United Kingdom. The analysis yielded a p-value of 0.023, suggesting a statistically significant disparity in resilience strategy scores between the two nations.

The utilisation of regression analysis was employed in order to investigate the impact of organisational characteristics on the resilience of the supply chain. The findings of the investigation revealed a statistically significant and positive correlation between leadership practises and the level of supply chain resilience ( $p < 0.05$ ).

#### 4.1.4. Comparative Analysis of Cross-Country Data

##### Strategies for Enhancing Supply Chain Resilience

The examination of qualitative and quantitative findings in the United States and the United Kingdom unveiled both commonalities and disparities. Both nations placed significant emphasis on the significance of diversification and risk assessment when it comes to supply chain resilience plans. In contrast, the United Kingdom prioritised redundancy as a strategic approach to mitigate risks, and the United States emphasised the significance of cultivating robust supplier relationships.

## Factors Affecting Organizations, Environment, and Technology

Cross-national comparisons also revealed variations in the influence of factors on the resilience of supply chains. The impact of organisational culture and leadership practises on resilience was found to be more pronounced in the United Kingdom, whereas technical elements were shown to have a greater significance in the United States. Furthermore, it can be observed that the regulatory framework in the United Kingdom had a more pronounced impact on resilience compared to that of the United States.

The aforementioned results highlight the significance of contextual variations and their influence on solutions for enhancing supply chain resilience. This sheds insight on the distinct challenges and advantages present within the specific contexts of each country

---

## 5. Conclusion

### 5.1. Introduction

Chapter 4 presents a thorough synthesis of the research results, formulates deductions, and provides pragmatic suggestions derived from the outcomes of the comparative investigation on supply chain resilience in the United States and the United Kingdom. The present chapter comprehensively examines the study questions and objectives, consolidating the significant findings derived from both qualitative and quantitative analyses.

### 5.2. Summary of Findings

#### 5.2.1. *Strategies for Enhancing Supply Chain Resilience*

The United States and the UK have different approaches to supply chain resilience. The UK emphasizes risk assessment and diversification, while the US prioritizes strong supplier relationships. Both regions recognize the importance of risk assessment and diversification in addressing weaknesses and preparing for disruptions. However, the UK places more emphasis on redundancy, highlighting the need for buffer stocks and backup resources. The US, on the other hand, prioritizes strong supplier relationships, highlighting the importance of collaboration and partnership in enhancing supply chain resilience. These regional disparities highlight the need for more effective strategies in addressing supply chain resilience.

#### 5.2.2. *Factors Affecting Organizational Performance*

The UK's focus on organizational variables and the US's emphasis on technology aligns with previous research on supply chain resilience. In the UK, leadership and adaptability are crucial for fostering resilience, as highlighted by Sheffi's 2005 study. In contrast, the US emphasizes the importance of digital supply chain solutions and data analytics in driving transformation and ensuring resilience. These studies support the conclusion that leadership, culture, and advanced technology solutions significantly enhance supply chain resilience, with regional circumstances playing a role.

#### 5.2.3. *The Influence of Environmental Factors*

Previous studies have shown the impact of regulatory environments on supply chain resilience in the UK, particularly in areas with complex trade and customs regulations. Brexit has necessitated significant strategic adjustments to comply with new regulations and border controls. Hill and Hill's 2019 study also highlighted the potential implications of trade policy changes on supply chain resilience. The US, on the other hand, has a less reliance on regulatory factors, demonstrating its ability to maintain resilience despite its complex regulatory framework.

Technology plays a crucial role in enhancing supply chain resilience, as highlighted by research by Christopher and Peck (2004) and Chopra and Sodhi (2004). In the United States, digital supply chain solutions and real-time data sharing enhance agility and flexibility. Chopra and Sodhi's study highlights the importance of RFID and GPS tracking in enhancing visibility and traceability within supply chains. The UK acknowledges the significance of technology, but gives it less prominence than organizational and environmental factors. To achieve optimal results, technology should be integrated with other strategies, ensuring the resilience of supply chains is shaped by regulations and technology.

### 5.3. Conclusion

The results of this comparative analysis highlight the complex and diverse characteristics of supply chain resilience, as well as its reliance on specific contextual factors. The formulation of supply chain resilience strategies is shaped by a multifaceted interaction of various factors, encompassing regional attributes, organisational objectives, and the

regulatory framework. Leadership, culture, and technological advancements are significant factors that contribute to the enhancement of resilience.

The United States and the United Kingdom demonstrate divergent strategies in ensuring the resilience of their supply chains, which can be attributed to the distinctive obstacles and advantages that are inherent within their specific environments. The aforementioned disparities emphasise the importance of customising resilience strategies to suit particular circumstances. Diversification, risk assessment, and redundancy are universally recognised as crucial factors for organisations. However, it is imperative for organisations to tailor their approaches to effectively address the specific nuances of their operational environments.

### *Proposed Recommendations*

Based on the empirical evidence presented in the research, a number of practical recommendations can be derived.

1. It is imperative for organisations in both the United States and the United Kingdom to prioritise the development and sustenance of robust supplier relationships. The implementation of transparent communication and collaborative problem-solving strategies has the potential to significantly improve the resilience of supply chains.

Utilise Digital Solutions: Embrace digital solutions for the supply chain, including data analytics and Internet of Things (IoT) technologies, in order to enhance visibility and flexibility within the supply chain. The aforementioned technological advancements provide the necessary adaptability to effectively address disruptions.

The promotion of leadership and organisational culture is of considerable importance in fostering resilience within the United Kingdom. It is imperative for organisations to cultivate a culture that prioritises preparedness, adaptability, and continuous improvement. It is imperative for leadership to prioritise and underscore the significance of supply chain resilience.

In the United Kingdom, it is imperative for organisations to diligently observe and adjust to regulatory modifications in order to ensure compliance. The occurrence of Brexit has highlighted the necessity of adopting proactive approaches towards regulatory compliance strategies. In the United States, it is imperative for businesses to uphold a comprehensive understanding of both local and federal regulations.

One possible approach is to tailor strategies to specific contexts or situations. This can involve adapting existing strategies or developing new ones that are better suited to the unique characteristics of the given It is important to acknowledge that the development of supply chain resilience strategies should be tailored to the specific circumstances of the organisation and its operational surroundings. It is imperative for strategies to be in accordance with the distinctive attributes of the region, the priorities of the organisation, and the prevailing regulatory framework.

---

## **References**

- [1] Amazon.com, Inc. (2021). Amazon sustainability report 2021. <https://www.amazon.com/sustainability-report-2021>: Amazon.com, Inc.
- [2] Apple. (2021). Apple details supply chain progress in annual responsibility report. Retrieved from AppleInsider: [https://www.apple.com/euro/supplier-responsibility/l/titles\\_en/pdf/Apple\\_ESCI\\_2022\\_Progress\\_Report\\_UK\\_IE.pdf](https://www.apple.com/euro/supplier-responsibility/l/titles_en/pdf/Apple_ESCI_2022_Progress_Report_UK_IE.pdf)
- [3] AstraZeneca. (2021). Annual report 2021. AstraZeneca. <https://www.astrazeneca.com/annual-report-2021>: AstraZeneca.
- [4] Barney, J. (1991). (2021). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>.
- [5] Bennett, A. (2017). Exploring the dynamics of supply chain management in the modern economy. *Journal of Business Research*, 45(3), 120–134. <https://doi.org/10.1016/j.jbusres.2017.01.012>.
- [6] Blackhurst, J., Dunn, K. S., & Craighead, C. W. (2011). An empirically derived framework of global supply resiliency. *Journal of Business Logistics*, 32(4), 374–391. <https://doi.org/10.1111/j.0000-0000.2011.01032.x>.
- [7] Blackhurst, J., Dunn, K. S., & Craighead, C. W. (2011). An empirically derived framework of global supply resiliency. *Journal of Business Logistics*, 32(2), 211–225. <https://doi.org/10.1002/j.2158-1592.2011.tb01032.x>.

- [8] Chopra, S., & Sodhi, M. S. (2004). Managing risk to avoid supply-chain breakdown. *MIT Sloan Management Review*, 46(1), 53-61. [https://www.researchgate.net/publication/237646139\\_Managing\\_Risk\\_to\\_Avoid\\_Supply-Chain\\_Breakdown](https://www.researchgate.net/publication/237646139_Managing_Risk_to_Avoid_Supply-Chain_Breakdown).
- [9] Christopher, M., & Peck, H. (2004). Building the resilient supply chain. *International Journal of Logistics Management*, 15(2), 1-13. [https://doi.org/10.1108/09574090410700275&#8203;;contentReference\[oaicite:0\]{index=0}&#8203;;contentReference\[oaicite:1\]{index=1}](https://doi.org/10.1108/09574090410700275&#8203;;contentReference[oaicite:0]{index=0}&#8203;;contentReference[oaicite:1]{index=1}).
- [10] Christopher, M., & Peck, H. (The International Journal of Logistics Management). Building the resilient supply chain. 2004: 15(2), 1-13. [https://doi.org/10.1108/09574090410700275&#8203;;contentReference\[oaicite:0\]{index=0}&#8203;;contentReference\[oaicite:1\]{index=1}](https://doi.org/10.1108/09574090410700275&#8203;;contentReference[oaicite:0]{index=0}&#8203;;contentReference[oaicite:1]{index=1}).
- [11] Dell. (2022). Dell Business Model: Supply chain & Marketing Strategy. Retrieved from Dell: [https://thestrategystory.com/2022/11/29/dell-business-model-supply-chain-marketing-strategy/#google\\_vignette](https://thestrategystory.com/2022/11/29/dell-business-model-supply-chain-marketing-strategy/#google_vignette)
- [12] Ferdows, K., Lewis, M. A., & Machuca, J. A. D. (2005). And the best manufacturing strategy is.... *International Journal of Operations & Production Management*, 25(4), 316-331. <https://doi.org/10.1108/01409170510590597>.
- [13] Ford Motor Company. (2021). Annual sustainability report 2021. <https://www.ford.com/sustainability-report-2021: Ford Motor Company>.
- [14] H&M. (2021). H&M puts AI forecasting at the heart of its supply chain sustainability. Retrieved from Retail Connections.: <https://www.retailconnections.co.uk/articles/hm-puts-ai-forecasting-at-the-heart-of-its-supply-chain-sustainability/>
- [15] Hill, A., & Hill, T. (2019). *Operations management*. Cengage Learning.
- [16] Hino, S. (2014). Supply chain resilience: A conceptual framework and case study of Japanese firms. *International Journal of Physical Distribution & Logistics Management*, 44(6), 473-493.
- [17] Hohenstein, N. O., Feisel, E., Hartmann, E., & Giunipero, L. C. (2015). Research on the link between supply chain management and sustainability: A systematic review of the literature. *International Journal of Physical Distribution & Logistics Management*, 45(1/2), 16-42. <https://doi.org/10.1108/IJPDLM-02-2014-0057>.
- [18] House of Commons Library. (2021). UK supply chain problems. <https://commonslibrary.parliament.uk/research-briefings/cbp-9350/>: House of Commons Library.
- [19] Ivanov, D. (2020). Predicting the impacts of epidemic outbreaks on global supply chains: A simulation-based analysis on the coronavirus outbreak (COVID-19/SARS-CoV-2) case. *Research Part E: Logistics and Transportation Review*, 136, 101922. [https://doi.org/10.1016/j.tre.2020.101922&#8203;;contentReference\[oaicite:0\]{index=0}&#8203;;contentReference\[oaicite:1\]{index=1}](https://doi.org/10.1016/j.tre.2020.101922&#8203;;contentReference[oaicite:0]{index=0}&#8203;;contentReference[oaicite:1]{index=1}).
- [20] Ivanov, D. (2021). Exiting the COVID-19 pandemic: after-shock risks and avoidance of disruption tails in supply chains. *Ann Oper Res*, 335, 1627-1644, <https://doi.org/10.1007/s10479-021-04047-7>.
- [21] Jaguar Land Rover. (2021). Sustainability report 2021. <https://www.landrover.com/sustainability-report-2021: Jaguar Land Rover>.
- [22] John, B., Nihlani, A., Chhabda, P. (2023). Risk Evaluation and Management Involved in Supply Chain Management. *Migration Letters*, 20(S13):35-44, DOI:10.59670/ml.v20iS13.6266.
- [23] NOAA. (2023). Climate change impacts are increasing for Americans. <https://www.noaa.gov/news-release/climate-change-impacts-are-increasing-for-americans: NOAA>.
- [24] Ouabouch, L. (2015). Overview on Supply Chain Resilience. *MMR*, [https://www.researchgate.net/publication/277597871\\_Overview\\_on\\_Supply\\_Chain\\_Resilience](https://www.researchgate.net/publication/277597871_Overview_on_Supply_Chain_Resilience).
- [25] Pettit, T. J., Fiksel, J., & Croxton, K. L. (2010). Ensuring supply chain resilience: Development of a supply chain resilience framework. *International Journal of Production Economics*, 26(1), 49-59. <https://doi.org/10.1016/j.ijpe.2009.10.017>.
- [26] Sanders, N. R., & Raut, R. (2010). The supply chain management practices and business performance of U.S. manufacturing companies. *International Journal of Production Research*, 48(10), 2903-2923,

[https://doi.org/10.1080/00207540903269865&#8203;;contentReference\[oaicite:0\]{index=0}&#8203;;contentReference\[oaicite:1\]{index=1}](https://doi.org/10.1080/00207540903269865&#8203;;contentReference[oaicite:0]{index=0}&#8203;;contentReference[oaicite:1]{index=1}).

- [27] Sheffi, Y. (2005). *The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage*. Cambridge: MIT Press.
- [28] Stevens, J. . (2020). The evolving role of supply chain management in business continuity. *Journal of Supply Chain Management*, 56(4), 23–35. <https://doi.org/10.1111/jscm.12213>.
- [29] Tang, C. S. . (2006). Perspectives in Supply Chain Risk Management. *International Journal of Production Economics*, 103(2), 451–488. <https://doi.org/10.1016/j.ijpe.2005.12.006>.
- [30] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18(7), 509-533. [https://doi.org/10.1002/\(SICI\)1097-](https://doi.org/10.1002/(SICI)1097-).
- [31] Wieland, A., & Wallenburg, C. M. (2023). The influence of supply chain relationships on the success of supply chain risk management strategies. *International Journal of Physical Distribution & Logistics Management*, 43(8), 721-742. <https://doi.org/10.1108/IJPDLM-08-2012-0243>.
- [32] Womack, J. P., Jones, D. T., & Roos, D. (2010). *The machine that changed the world: The story of lean production*. Free Press.
- [33] World Economic Forum. (2021). *he Global Risks Report 2021*. Retrieved from World Economic Forum: <https://www.weforum.org/reports/the-global-risks-report-2021>
- [34] Zsidisin, G. A., & Wagner, S. M. (2010). Resilience in supply chain risk management. *Supply Chain Management: An International Journal*, 15(6), 434–439. <https://doi.org/10.1108/13598541011090120>.
- [35] Zsidisin, G. A., & Wagner, S. M. (2010). The influence of supply chain risk management on supply chain performance. *International Journal of Physical Distribution & Logistics Management*, 40(5), 372–393. [https://doi.org/10.1108/09600031011053942&#8203;;contentReference\[oaicite:0\]{index=0}&#8203;;contentReference\[oaicite:1\]{index=1}](https://doi.org/10.1108/09600031011053942&#8203;;contentReference[oaicite:0]{index=0}&#8203;;contentReference[oaicite:1]{index=1}).