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The Effect of Supply Chain Disruptions on Organizational Performance: Mediating Role of Supply Chain Resilience and Moderating Role of Firm Flexibility

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Abstract
In today's interconnected business world, supply chain disruptions from supplier failures, policy crises, logistics breakdowns, or pandemics inflict serious multidimensional damage: financial loss, operational inefficiency, eroding customer satisfaction, and weakened strategic positioning. Despite growing awareness, there is little empirical insight into exactly how these disruptions hurt performance and under what conditions organizations can soften the blow. This thesis investigates that relationship, testing supply chain resilience as a mediator and firm flexibility as a moderator. Drawing on the Dynamic Capabilities View, resilience is framed as a dynamic capability that helps firms absorb, adapt, and recover from shocks. Using an integrated mediation-moderation model, the study finds that disruptions severely undermine organizational performance. Resilience partially mediates this link, cushioning the negative impact and supporting recovery. More importantly, firm flexibility proves to be a powerful boundary condition: in highly flexible firms, the disruption–performance connection is weaker, while the resilience–performance connection is stronger. The thesis contributes a combined model of resilience and flexibility that shapes performance outcomes during turmoil. The practical message is that resilience strategies truly pay off when backed by flexible organizational structures that can quickly reconfigure operations and strategy.

Keywords: *Supply Chain Disruptions, Organizational Performance, Supply Chain Resilience, Firm Flexibility, Dynamic Capabilities View*

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Introduction

In today's hyper-connected business landscape, organizational performance depends heavily on the reliability and speed of complex, globally dispersed supply networks. While globalization, outsourcing, and lean models have cut costs and boosted efficiency, they've also created fragile, tightly synchronized systems that function well in stability but buckle under shocks (Katsaliaki, Galetsi, and Kumar, 2022; Ivanov & Dolgui, 2022). Supply chain disruptions supplier breakdowns, pandemics, port crises, cyber-attacks, regulatory changes, and demand swings unleash ripple effects that degrade production schedules, extend lead times, and erode customer confidence (Duong et al., 2024; Choi et al., 2022). The resulting performance losses are multidimensional, hitting profitability, operational continuity, delivery capability, market stability, and strategic positioning all at once (Pu, Li, and Bai, 2023; Piprani et al., 2022).

This thesis argues that performance breakdown after disruption is not inevitable. Supply chain resilience functions as a mediating recovery mechanism: it absorbs the initial shock, enables rapid adaptation, and channels recovery into sustained performance (Christopher and Peck, 2004; Hsieh, Chen, and Huang, 2023). When resilience is low, disruptions translate directly into severe performance decay; when high, the disruption–performance link is defused through proactive preparedness, multi-sourcing, visibility, and collaborative responsiveness (Lucker et al., 2025; Durugbo et al., 2025). However, resilience alone does not guarantee protection. Firm flexibility acts as a crucial moderator, setting the boundary conditions for how effectively resilience can be activated. Operational, sourcing, logistics, workforce, structural, and strategic flexibility determine whether a firm can swiftly reconfigure processes, reroute supplies, and realign resources after a shock (Jum'a, L., & Bushnaq, M., 2024; Cui, J., 2025). Highly flexible firms exhibit a weaker disruption performance relationship and a stronger resilience performance link; rigid firms see resilience promises fail because internal adaptation cannot keep pace.

Thus, the study tests an integrated mediation-moderation model: disruptions impair organizational performance, resilience mediates that relationship by providing a recovery pathway, and firm flexibility moderates both the direct disruption performance tie and the strength of resilience-driven recovery (Nikander, M., 2025). This framework bridges critical gaps. Much disruption research stops at isolated financial metrics and treats resilience as a standalone outcome, not as a causal transmitter (Duong et al., 2024; Katsaliaki et al., 2022). Flexibility is overwhelmingly studied as a general trait, rarely as a conditional boundary that shapes when and how resilience yields performance sustainability (Shams et al., 2021; Sony et al., 2023). Moreover, few empirical works simultaneously embed resilience and flexibility into a single performance model that reflects today's systemic, synchronized shocks (Raetze et al., 2022; Grote et al., 2018). The thesis addresses the need to explain performance variation under sustained disruption by showing that resilience converts shock into recovery, while flexibility defines the speed, cost, and completeness of that recovery (Setyadi et al., 2025; Fares, N., & Lloret, J., 2023). In doing so, it offers a clearer

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understanding of how adaptive competence not just operational redundancy preserves multidimensional performance in a volatile world.

Problem Statement

In today's globalized business environment, organizations depend on highly interconnected supply chains that are increasingly vulnerable to disruptions from supplier failures and logistical snarls to regulatory shutdowns and geopolitical instability. These shocks cascade across operations, finances, delivery reliability, and customer satisfaction, yet firms differ enormously in how much performance they lose and how well they recover. This variation points to a pressing puzzle: why do some organizations collapse under supply chain pressure while others remain stable or bounce back? The answer likely rests in two internal capabilities supply chain resilience, which absorbs, adapts, and recovers from shocks, and firm flexibility, the capacity to quickly reconfigure operations, resources, suppliers, and logistics.

However, research has rarely treated resilience as a causal mediator that transmits disruption effects into performance outcomes, nor has it empirically tested firm flexibility as a boundary condition that moderates both the direct disruption performance link and the resilience-driven recovery pathway. Moreover, existing studies often view disruptions as isolated operational risks measured by narrow financial metrics, overlooking the systemic, multi-node character of modern shocks and their simultaneous impact on strategic, operational, and market dimensions. This leaves managers without clear guidance on when and how resilience and flexibility actually protect performance. The core problem this thesis tackles is that organizations continue to suffer performance losses from supply chain disruptions, yet we lack empirical insight into the mechanistic pathway (mediation through resilience) and the conditional boundaries (moderation through flexibility) that shape vulnerability and recovery. The study aims to build proactive frameworks that help firms not just recover, but sustain performance amid ongoing disruption.

Research questions

1 How do supply chain disruptions impact on organizational performance?
2 Does the supply chain resilience moderate the relationship between the supply chain disruptions and the organizational performance?
3 Does the supply chain disruption and organizational performance relationship depend on firm flexibility?
4 Does firm rigidity also intervene in the relationship between supply chain resilience and organizational performance?
5 What is the role of disruptions in organizational performance as a result of resilience and boundaries of flexibility in the firm?

Research Objectives

1. To investigate how the disruption of supply chains impacts the performance of organizations.

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2. To examine the mediating effects of supply chain resilience in the correlation between the supply chain disruption and the organizational performance.
3. To determine the moderating effect of the firm flexibility in relationship between organizational performance and supply chain disruptions.
4. To test the hypothesis on whether the relationship between resilience of supply chain and organizational performance depends on the aspect of firm flexibility.
5. To examine the joint action between supply chain resilience and firm flexibility in terms of the results of organizational performance observed in response to disruption pressure.

Supporting Theory

Dynamic Capabilities View (DCV) is the most accurate and theoretically sound basis of this thesis since it completely explains the mechanistic process (mediating role of supply chain resilience) and the situational bound condition (moderating role of firm flexibility) inherent in the subject: The Effect of Supply Chain Disruptions on Organizational Performance: Mediating Role of Supply Chain Resilience and Moderating Role of Firm Flexibility. DCV claims that the success of organizations in turbulent and unstable environments does not solely hinge on the resources a firm possesses and is more of dynamically integrating, building, modifying, and reconfiguring organizational capabilities when faced with external shocks that are not expected. According to the theory, markets that are unstable, uncertain and constantly under the influence of disruption demands that firms have adaptive capability frameworks which enable them to detect threats in the environment fast, strategic appropriation of alternative operational responses and re-organization of internal and external supply chain processes efficiently to maintain organizational functionality and performance outputs. Given that supply chain disturbances are unavoidable, non-linear, unpredictable and high impact events, DCV is ideally adapted since it alters the strategic perspective to avoidances to capability-based recovery execution processes and, therefore, the magnitude of the performance loss is determined by the speed and efficiency with which a firm can mobilize disruption response capabilities and not the disruption occurrence.

Literature Review

Supply chains are complex networks of sourcing, production, logistics, and distribution that are increasingly vulnerable to unpredictable disruptions natural disasters, technological failures, political instability, and pandemics (Chopra & Meindl, 2016; Ivanov, 2020). Such interruptions, defined as unplanned breaks in the flow of goods, services, and information (Craighead et al., 2007), can originate internally or externally (Tang, 2006) and trigger cascading effects that severely damage organizational performance (Ivanov & Dolgui, 2020). Performance, measured across financial profitability, operational efficiency, customer satisfaction, market share, and strategic positioning (Venkatraman & Ramanujam, 1986), suffers through higher costs, delayed deliveries, eroded customer trust, and tarnished brand reputation (Hendricks & Singhal, 2005; Craighead et al., 2007). Strategic setbacks often force

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expensive long-term network redesigns (Christopher & Peck, 2004). Accordingly, H1 posits that supply chain disruptions are negatively related to organizational performance.

The capacity to withstand and recover from such shocks rests on supply chain resilience the ability to anticipate, absorb, adapt, and bounce back while maintaining reasonable performance (Ponomarov & Holcomb, 2009). Resilient supply chains rely on supplier diversification, strategic inventory, real-time analytics, and robust risk management (Tang, 2006; Ivanov, 2020) and act as a mediating mechanism through which disruption effects are transmitted into performance outcomes (Christopher & Peck, 2004). Firm flexibility, rooted in Dynamic Capability Theory and Strategic Flexibility Theory (Sanchez, 1995), functions as a critical moderator that shapes the resilience performance link. Flexibility—the capacity to rapidly reconfigure operations, production schedules, sourcing, and market strategies (Vickery et al., 1999; Zhang et al., 2003) enables organizations to leverage their resilience more effectively, reducing performance losses and accelerating recovery (Wieland & Wallenburg, 2013). Operational flexibility (Slack, 2005; Swafford et al., 2006) and market flexibility (Zhang et al., 2003) together ensure that resilient firms can quickly switch suppliers, alter production, or reposition products during crises. The combined effect of resilience and flexibility, supported by proactive communication and digital visibility (Christopher & Peck, 2004; Ivanov, 2020), allows firms to sustain operations, protect customer relationships, and maintain competitive standing in an increasingly uncertain global environment.

H1: There is negative impact of Supply chain disruptions on Organizational Performance.

Supply chain resilience has become a cornerstone of modern supply chain management as organizations face rising uncertainty, volatility, and recurring disruptions (Sheffi & Rice, 2005; Tukamuhabwa et al., 2015). Unlike traditional risk management that emphasizes prevention, resilience is a dynamic capability that enables supply chains to anticipate, absorb, adapt to, and recover from disruptions while maintaining operational continuity and acceptable performance (Hohenstein et al., 2015; Pettit et al., 2013). In today's complex, globally dispersed networks, a shock in one node can rapidly cascade, making resilience essential to protect organizational performance (Blackhurst et al., 2011).

Resilience operates as a key mediator in the disruption–performance relationship: disruptions directly threaten performance through delays, cost escalation, and service failures, but resilient supply chains cushion these impacts and accelerate recovery, thereby weakening the negative link (Ambulkar et al., 2015; Brandon-Jones et al., 2014). Its core dimensions preparedness, responsiveness, adaptability, and recovery are built on multiple enablers. Strong, trust-based supplier relationships and supplier flexibility provide alternative options during crises (Nyaga et al., 2010; Blome et al., 2014), while strategic inventory buffers, safety stocks, and decoupling points counterbalance lean vulnerabilities (Tomlin, 2006; Christopher & Holweg, 2011). Logistics flexibility, such as multi-modal transport and dynamic rerouting, ensures

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continued goods flow (Ponis & Koronis, 2012). Real-time information visibility and digital technologies like predictive analytics, AI, and blockchain enhance risk sensing, coordination, and rapid decision-making (Barratt & Oke, 2007; Dubey et al., 2021). Leadership commitment, a learning-oriented culture, and skilled, empowered employees further embed resilience into organizational DNA (Bhamra et al., 2011; Sheffi & Rice, 2005).

Beyond immediate recovery, resilience drives strategic renewal: organizations learn from disruptions, reconfigure processes, and often emerge stronger, turning potential threats into competitive advantage (Christopher & Peck, 2004; Hamel & Valikangas, 2003). It stabilizes performance volatility, maintains customer trust, and supports long-term strategic execution even amid turbulence (Ivanov, 2020; Wieland & Wallenburg, 2013). Resilient firms build structural redundancy and relational collaboration, reducing dependency risks and enabling coordinated, system-wide responses (Rice & Caniato, 2003; Cao & Zhang, 2011). Moreover, resilience fosters innovation, stakeholder legitimacy, and sustainability, converting external shocks into manageable challenges rather than organizational failures (Scholten, Scott, & Fynes, 2019; Awan, Sroufe, & Kraslawski, 2021). While building resilience requires upfront investment, the long-term payoffs reduced disruption losses, faster recovery, and sustained performance far outweigh the costs, making resilience a strategic imperative in an era of systemic risk (Hohenstein et al., 2015; Ivanov & Dolgui, 2020).

H2: Supply chain resilience mediates the relationship between supply chain disruptions and organizational performance.

Firm flexibility has emerged as a critical organizational capability in volatile, uncertain business environments, defined as the capacity to rapidly reconfigure structures, processes, resources, and strategies in response to internal and external change (Golden & Powell, 2000; Sanchez, 1995; Volberda, 1996). As a dynamic capability, it enables firms to realign operations swiftly when disruptions strike, safeguarding performance (Eisenhardt & Martin, 2000). In supply chain contexts, flexibility enhances responsiveness by allowing firms to adjust sourcing, production, distribution, and customer service decisions under pressure (Swafford, Ghosh, & Murthy, 2006; Vickery, Calantone, & Droge, 1999; Christopher & Peck, 2004). The construct is multidimensional, encompassing operational flexibility (Gerwin, 1993; Koste & Malhotra, 1999), supply flexibility (Lummus, Duclos, & Vokurka, 2003; Pettit, Fiksel, & Croxton, 2010; Zsidisin & Wagner, 2010), production flexibility (Slack, 1987; Upton, 1994; Beach et al., 2000), logistics flexibility (Sheffi & Rice, 2005; Mason-Jones, Naylor, & Towill, 2000; Gunasekaran, Patel, & McGaughey, 2004), and strategic flexibility (Hitt, Keats, & DeMarie, 1998; Combe & Greenley, 2004; Johnson et al., 2003). Together, these forms provide the adaptability needed to maintain operations, satisfy customers, and stabilize performance during disruptions (Stevenson & Spring, 2007; Tang & Tomlin, 2008).

Crucially, firm flexibility moderates the relationship between supply chain resilience and organizational performance. While resilience supplies the capacity to absorb and recover from shocks, flexibility determines how effectively that capacity is translated

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into action by enabling operational and strategic realignment (Ponomarov & Holcomb, 2009; Wieland & Wallenburg, 2013; Brandon-Jones et al., 2014). Highly flexible firms amplify resilience's positive performance effects; less flexible firms struggle to leverage their resilience potential (Pettit et al., 2010). Flexibility also underpins responsiveness—the speed and efficiency of reaction—which limits disruption propagation and accelerates recovery (Holweg, 2005; Hopp & Van Oyen, 2004; Braunscheidel & Suresh, 2009; Craighead et al., 2007; Ivanov, 2020). Moreover, flexible organizations foster learning and continuous improvement, using disruptions as opportunities to experiment, adapt, and strengthen future responses (Sitkin, Sutcliffe, & Schroeder, 1994; Edmondson, 1999; Teece, Pisano, & Shuen, 1997; March, 1991; Zollo & Winter, 2002). Customer satisfaction benefits from the ability to adjust deliveries, offer alternatives, and communicate effectively, thereby preserving trust and market performance (Fynes, de Búrca, & Marshall, 2004; Homburg, Grozdanovic, & Klarmann, 2007; Day, 1994; Day, 2011).

The development of firm flexibility relies on supportive organizational structures, decentralized decision-making, cross-functional collaboration, and a culture that values initiative and psychological safety (Adler, Goldoftas, & Levine, 1999; Galbraith, 2002; Schein, 2010; Edmondson, 1999). Leadership commitment is essential to embedding adaptability (Judge & Elenkov, 2005; Kotter, 1996). Advanced digital technologies—data analytics, AI, and integrated platforms—enhance visibility and accelerate coordinated responses (Dubey et al., 2021; Wamba et al., 2020; Kache & Seuring, 2017). Resource reallocation capabilities, including financial flexibility that permits rapid liquidity access and budget shifts, further ensure that adaptation is not resource-constrained (Sanchez, 1995; Teece, Peteraf, & Leih, 2016; Denis, 2011; Gamba & Triantis, 2008). Inter-organizational flexibility allows renegotiation of contracts and roles with supply chain partners, preserving collaborative efficiency under stress (Cao & Zhang, 2011; Nyaga, Whipple, & Lynch, 2010). In sum, firm flexibility is a foundational, multi-level capability that not only mitigates the immediate performance impacts of supply chain disruptions but also facilitates strategic renewal, innovation, and long-term competitive advantage in an era of intensifying uncertainty.

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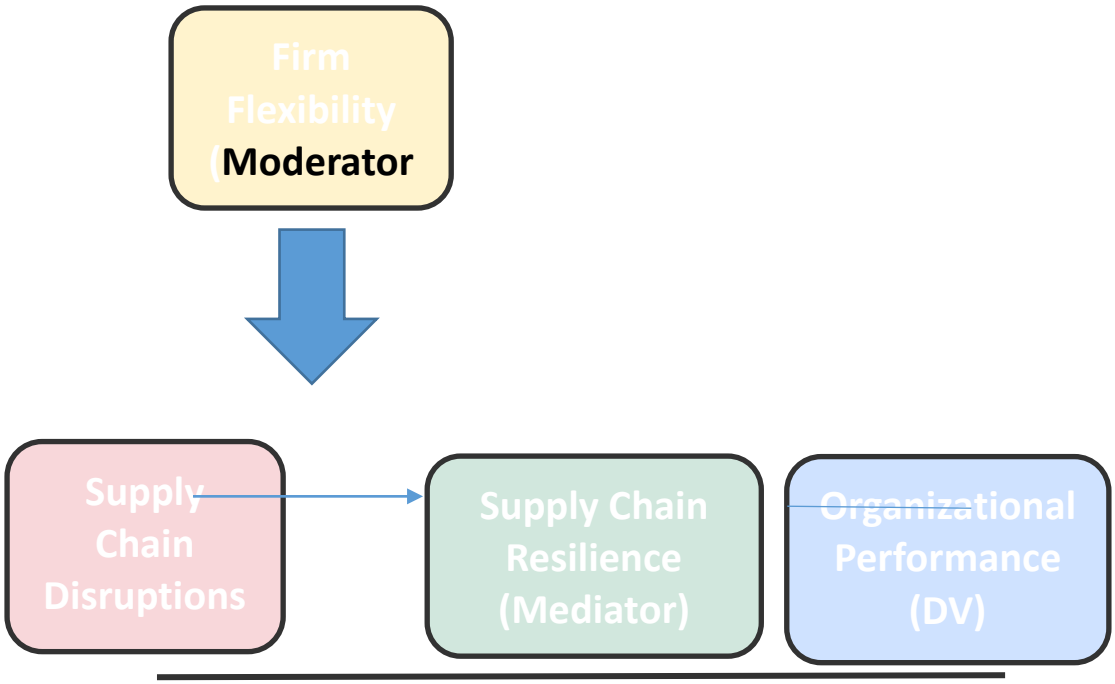
H3: Firm flexibility moderates the relationship between supply chain resilience and organizational performance.

Conceptual Framework



Methodology

This study adopts a quantitative, cross-sectional, explanatory survey design to test hypotheses regarding the impact of supply chain disruptions on organizational performance, with supply chain resilience as a mediator and firm flexibility as a moderator. A deductive approach is used, grounding the model in existing theory. Data are collected via a structured questionnaire administered both online and in physical form to managers and professionals directly involved in supply chain, logistics, procurement, or operations within manufacturing and service organizations in Pakistan a context marked by supply chain volatility. The target sample of 200–250 respondents is drawn using stratified random sampling across sectors and organizational sizes to ensure representativeness. Key informants provide organization-level assessments, not personal opinions.

All constructs—supply chain disruptions, supply chain resilience, firm flexibility, and organizational performance—are operationalized with multi-item scales adapted from prior research and measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Supply chain disruption captures the frequency and severity of unexpected events; resilience measures the ability to anticipate, respond, and recover; flexibility encompasses operational, supply, and strategic adaptability; and organizational performance is assessed through perceptual financial and non-financial indicators relative to competitors. A pilot study with 20–30 respondents from the

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target population refines the questionnaire for clarity, checks initial reliability (Cronbach's alpha), and estimates completion time. The final survey is preceded by informed consent, and participation is voluntary and anonymous.

Data analysis follows a systematic process: screening for missing values and outliers, descriptive statistics, and reliability and validity assessment using Cronbach's alpha, composite reliability, and convergent/discriminant validity techniques. Structural equation modeling (SEM) via SmartPLS or AMOS tests direct, mediation, and moderation effects simultaneously, with bootstrapping to evaluate the significance of indirect effects. An interaction term between resilience and flexibility examines moderation. Ethical protocols emphasize confidentiality, anonymity, voluntary participation, and unbiased reporting throughout. The integrated methodology provides a robust foundation for examining the hypothesized relationships and contributes methodologically rigorous evidence to supply chain disruption and resilience research.

Results

The demographic profile of the 230 valid respondents—managers and professionals directly involved in supply chain, operations, logistics, and strategic decision-making within manufacturing and service organizations—shows a predominantly male sample (65.2% male, 34.8% female), reflecting current workforce patterns while still capturing meaningful gender diversity. Age distribution is concentrated among mid-career professionals: 42.6% are 31–40 years old, 27.8% are 20–30, and 21.7% are 41–50, with only 7.9% over 50, ensuring respondents possess substantial practical and managerial experience. Educationally, 37.8% hold a master's degree, 30.0% a bachelor's, 23.9% an MS/MPhil, and 8.3% a doctorate, indicating high academic competency that strengthens response reliability. In terms of organizational position, 48.3% occupy middle management, 29.5% operational roles, and 22.2% top management, providing both strategic and operational perspectives. The sample also balances manufacturing (55.2%) and service (44.8%) sectors across organizations of varying sizes, confirming its adequacy for examining supply chain disruptions, resilience, flexibility, and performance across diverse settings

Demographic analysis shows that the largest number of respondents were male (65.2%), whereas female respondents were 34.8 percent of the sample population. This distribution characterizes the current workforce make up in supply chain and operations related position especially in manufacturing and service based organizations. As a result of this disparity, there is diversity in the views of the study, given that female respondents are present. Regarding age, the majority of the respondents were of the 31 40 years (42.6) age group with the next age group being 20 30 years (27.8) and 41 50 years (21.7). The percentage of respondents who were older than 50 years of age was very small (7.9%). This distribution indicates that the sample will consist of middle-career professionals who are both engaged in the process of managerial and operational decision-making. These respondents will have had a significant experience in responding to a supply chain disruption and reaction of an organization, which increases the validity of the data. About the level of education,

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a significant number of the respondents were master degree (37.8%), followed by bachelor degree (30.0) and MS/MPhil (23.9%). Fewer percent of the respondents had doctoral education (8.3%). The education level of the respondents is good, which is reflected in this educational profile, and can grasp the complex ideas associated with the supply chain disruptions, resilience, and firm flexibility.

In regards to the organizational position, almost half of the respondents (48.3) were in the middle management positions, 29.5% at the operational level, and 22.2% in the top management positions. The middle managers are important respondents in the proposed study because they help in the execution of the supply chain strategies and day-to-day operations. The strategic relevance of the findings is further reinforced by the fact that the top management respondents are included. In terms of industry, 55.2% of the respondents were in manufacturing organizations, and 44.8% in the service sector. This balanced representation will be appropriate such that the study captures supply chain dynamics in various contexts of the industry. Lastly, the majority of the respondents worked in the medium-sized organizations (41.3%), and small (33.9%), and large firms (24.8%). This variety of the organizational size increases the external validity of the findings on firms that have different resource bases and structure.

The summary of central tendency and dispersion of the study variables with the help of descriptive statistics are employed to give an idea about how the data is distributed. The mean and standard deviation of each of the constructs in the supply chain disruptions, supply chain resilience, firm flexibility, and organizational performance have been included in this analysis. Descriptive statistics will assist in determining the general attitude of respondents on each construct and whether the data can be further used in the inferential analysis or not. Measuring of all constructs is done using a five-point Likert scale of between 1 (strongly disagree) to 5 (strongly agree). Greater mean values show a stronger level of agreement with the statements, which described each construct. The standard deviation indicates the level of variability in the perceptions of the respondents.

Table 2 Descriptive Statistics of Study Variables (N = 230)

Variable	Mean	Standard Deviation
Supply Chain Disruptions	3.67	0.81
Supply Chain Resilience	3.54	0.74
Firm Flexibility	3.61	0.77
Organizational Performance	3.58	0.72

Descriptive statistics reveal moderate-to-high levels across all constructs. Supply chain disruptions scored a mean of 3.67 (SD = 0.81), indicating that respondents generally agree their organizations face frequent moderate-to-high disruptions, with some variation across firms. Supply chain resilience averaged 3.54 (SD = 0.74), reflecting a moderately developed ability to anticipate, respond, and recover, with

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relatively consistent perceptions suggesting uniformly implemented practices. Firm flexibility had a mean of 3.61 (SD = 0.77), showing that adaptability in operations, sourcing, and strategy is a recognized strength, though variability exists based on organizational size, structure, and resources. Organizational performance averaged 3.58 (SD = 0.72), with respondents rating their firms favorably relative to competitors in operational efficiency, service quality, and customer satisfaction. The well-distributed data and stable response patterns support the use of structural equation modeling for subsequent hypothesis testing.

A reliability analysis was conducted to assess internal consistency using Cronbach's alpha, ensuring that all items within each construct reliably measure the same underlying concept. Alpha values above 0.70 are acceptable, above 0.80 indicate good reliability, and above 0.90 are excellent. Given that all constructs were measured with multi-item Likert scales, Cronbach's alpha is an appropriate reliability indicator, and satisfactory values are a prerequisite for valid hypothesis testing.

Table 3 =Reliability Analysis of Study Variables (N = 230)

Variable	Number of Items	Cronbach's Alpha
Supply Chain Disruptions	6	0.84
Supply Chain Resilience	7	0.88
Firm Flexibility	6	0.86
Organizational Performance	5	0.82

The reliability analysis confirms strong internal consistency for all constructs. Supply chain disruption achieved a Cronbach's alpha of 0.84, resilience 0.88, firm flexibility 0.86, and organizational performance 0.82, each well above the 0.70 threshold. These high values indicate that the measurement items consistently capture the same underlying concepts, that respondents interpreted the items coherently, and that no items needed removal. The robust reliability supports proceeding to validity assessment and hypothesis testing with structural equation modeling.

A Pearson correlation analysis then examined the strength and direction of relationships among the four continuous variables, offering preliminary insight before mediation and moderation testing. Correlation coefficients range from -1 to +1, with significance evaluated at the 0.01 level to ensure robust findings, and the analysis also serves to detect potential multicollinearity that could affect subsequent regression or SEM results.

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Table 4 = Correlation Matrix of Study Variables (N = 230)

Variable	1	2	3	4
1. Supply Chain Disruptions	1			
2. Supply Chain Resilience	−0.46**	1		
3. Firm Flexibility	−0.39**	0.58**	1	
4. Organizational Performance	−0.41**	0.62**	0.55**	1

Note: p < 0.01

Correlation analysis reveals significant and meaningful relationships among all study variables, aligning with the theoretical framework. Supply chain disruptions are negatively associated with resilience ($r = -0.46$, $p < 0.01$), firm flexibility ($r = -0.39$, $p < 0.01$), and organizational performance ($r = -0.41$, $p < 0.01$), indicating that higher disruption levels correspond to lower perceived resilience, flexibility, and performance. This negative disruption–performance link offers preliminary support for Hypothesis H1. In contrast, resilience shows a strong positive correlation with performance ($r = 0.62$, $p < 0.01$), as does firm flexibility ($r = 0.55$, $p < 0.01$), while resilience and flexibility themselves are positively related ($r = 0.58$, $p < 0.01$). These moderate correlations, all well below multicollinearity thresholds, confirm that the constructs are distinct yet connected, and they justify the planned mediation and moderation analyses.

To formally test the hypotheses, multiple regression analysis is conducted in three steps. First, the direct effect of supply chain disruption on organizational performance is estimated. Second, supply chain resilience is introduced to assess its mediating role. Third, an interaction term between resilience and firm flexibility is added to examine the moderating effect of flexibility on the resilience–performance relationship. Standardized regression coefficients, R^2 values, and changes in R^2 are used to evaluate model fit and the significance of each hypothesized path.

Table 5 =Regression Analysis Results (N = 230)

Predictor Variables	β	t-value	P value.
Supply Chain Disruptions → Organizational Performance	−0.41	−7.62	0.000
$R^2 = 0.17$			
Supply Chain Disruptions	−0.24	−4.38	0.000
Supply Chain Resilience	0.48	8.91	0.000

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Predictor Variables	β	t-value	P value.
$R^2 = 0.42$			
Supply Chain Resilience	0.36	6.72	0.000
Firm Flexibility	0.29	5.41	0.000
Resilience × Flexibility	0.21	4.08	0.000
$R^2 = 0.48$			

The regression analysis strongly supports all three hypotheses. Model 1 shows that supply chain disruption significantly reduces organizational performance ($\beta = -0.41$, $p < 0.001$, $R^2 = 0.17$), confirming H1. In Model 2, introducing supply chain resilience reveals partial mediation: the disruption coefficient weakens to -0.24 while resilience positively predicts performance ($\beta = 0.48$, $p < 0.001$), increasing R^2 to 0.42 and supporting H2. Model 3 adds the resilience × flexibility interaction, which is positive and significant ($\beta = 0.21$, $p < 0.001$), with R^2 reaching 0.48, indicating that firm flexibility strengthens the resilience–performance link, thereby supporting H3.

These results confirm that disruptions impair performance not merely as operational hiccups but as strategic threats. Resilience acts as an internal mediator that absorbs shock and enables quicker recovery, showing that performance outcomes depend heavily on organizational preparedness rather than the disruption itself. Firm flexibility serves as a critical boundary condition: the performance benefits of resilience are amplified when organizations can swiftly adapt operations, sourcing, and strategies. The integrated model explains 48% of performance variance and demonstrates that resilience and flexibility are complementary capabilities, not substitutes. Theoretically, the study unifies previously separate constructs into a single framework, illustrating how resilience explains the disruption–performance link and flexibility defines when resilience translates into better outcomes. Practically, managers must invest in both resilient supply chain structures and flexible organizational processes to sustain performance amid ongoing uncertainty.

Theoretical Implication

This study makes several theoretical contributions. It provides robust empirical evidence that supply chain disruptions directly undermine organizational performance, reinforcing that disruptions are strategic threats, not just operational hiccups. The confirmation of supply chain resilience as a partial mediator shows that performance loss depends heavily on internal preparedness—resilience absorbs shocks and enables faster recovery, transforming disruption challenges into manageable events. The significant moderating role of firm flexibility reveals a critical boundary condition: resilience yields greater performance benefits in highly flexible organizations that can swiftly adapt operations, sourcing, and strategies. This demonstrates that resilience and flexibility are complementary capabilities, not substitutes, and their combination

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can form a powerful resource bundle for competitive advantage. By integrating mediation and moderation into one framework, the research offers a more complete causal picture, moving beyond simple direct effects.

Practically, managers must treat disruptions as inevitable strategic risks and shift from reactive firefighting to proactive resilience-building through risk identification, contingency planning, supplier diversification, safety stocks, and enhanced visibility. However, resilience alone is insufficient; firms must simultaneously cultivate operational, supply, and strategic flexibility—modular processes, alternative sourcing, flexible contracts, and decentralized decision-making—to convert resilience capabilities into adaptive actions and sustain performance.

The study has limitations: cross-sectional design restricts causal inference; perceptual measures could be complemented by objective performance data; the geographic and industry scope limits generalizability; and only overall resilience and flexibility were examined. Future research should adopt longitudinal approaches, incorporate objective metrics, test the model in other regions and sectors, disaggregate resilience dimensions, and explore additional moderators like culture, leadership, or digital capability. In conclusion, organizations that embed both resilience and flexibility into their long-term strategy are best positioned to navigate disruption and secure lasting success.

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