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Supply Chain Resilience Strategies for Surviving of Industry in Thailand

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ABSTRACT. Thailand's advantageous location, strong infrastructure, and uptake of digital technologies all contribute to its standing as a Southeast Asian centre for logistics and supply chains. The impact of internal skills on performance during interruptions and how Thai-listed firms handle the risk of supply chain disruptions are poorly understood. By combining the resource-based view, contingency theory, and dynamic capabilities theory, this research fills this knowledge gap by investigating how industry reacts to particular threats, including those involving infrastructure, planning, workforce, and security, and how their mitigation strategies—such as internal risk management and collaboration—affect firm performance. The research investigates 14 hypotheses that relate disruption threats and mitigation techniques to firm performance using data from 167 listed firms on the Stock Exchange of Thailand (SET), survey data, and statistical analysis. The findings show that while well-managed employees and security concerns may have beneficial effects, infrastructure hazards significantly impair corporate performance. Performance is improved by internal resources and cooperative partnerships with supply chain partners, although collaboration with government organisations might be less successful. The results also founded on three recognised ideas, the research contributes to theory and in action by giving governments and businesses advice on how to prioritise resilience investments. To increase Thailand's total supply chain resilience in accordance with national plans like Thailand 4.0, recommendations include enhancing infrastructure, customising regional responses, and fostering digital capabilities. Future studies on sector-specific hazards, resilience indicators, and cross-country comparisons in an ASEAN context are suggested by the findings.

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1. Introduction

Because of its advantageous location, advanced infrastructure, and expanding use of digital technology, Thailand has become one of Southeast Asia's top hubs for logistics and supply chains [1]. Thailand is a key entry point to the ASEAN market, situated in the centre of the region and bounded by Myanmar, Laos, Cambodia, and Malaysia. Its position in regional and international trade is further supported by the existence of important deep-sea ports like Laem Chabang and its closeness to major shipping lanes. Furthermore, government measures under the Thailand Digital Economy and Society Development Plan, in conjunction with developments in digital technologies like blockchain, Artificial Intelligence (AI), and internet of thing (IoT), have improved logistical efficiency and bolstered the nation's growing e-commerce industry.

Thailand's significant involvement in regional trade agreements further strengthens its logistics industry. Thailand benefits from lowered trade barriers and expedited customs procedures, which facilitate cross-border travel, as a major member of ASEAN and the ASEAN Economic Community (AEC). New trade opportunities with large economies like China, Japan, and South Korea have been made possible by its participation in the Regional Comprehensive Economic Partnership (RCEP). These agreements, which are backed by Board of Investment (BOI) policies in Thailand, make the nation more appealing and competitive as a supply chain and logistics hub with substantial growth potential [1].

Natural disasters, pandemics, geopolitical turbulence, cyberattacks, and infrastructure failures can all disrupt supply chains in today's unstable global environment, affecting delivery, communication, and transportation systems. Building resilience, visibility, and agility through tactics including supplier diversification, buffer inventory, nearshoring, digital monitoring, and proactive cooperation is now the main focus of effective disruption management [2]. Tools for risk assessment, such as scenario analysis and simulation, aid in classifying disruptions according to their impact and degree of severity. Businesses must strike a balance between resilience and lean operations, modifying their tactics to suit the demands of their clients and the sector. Stability and performance depend on dynamic capabilities, solid stakeholder connections, and real-time data sharing. Thailand plays a vital position in global supply chains as a major regional centre for exports and manufacturing, and it must constantly improve its ability to handle and bounce back from such disruptions.

Due to its strategic location, sophisticated infrastructure, and adoption of digital technologies, Thailand is known as a regional hub for logistics and supply chains. However, little research has been done on how Thai businesses actually handle supply chain disruptions, particularly in light of the increasingly complex global risks like cyber threats, natural disasters, and geopolitical instability. The firm-level resilience methods necessary to sustain performance in the face of

shocks are frequently overlooked in existing studies, which primarily highlight Thailand's trade potential and integration into ASEAN and RCEP.

Furthermore, although supply chain resilience, visibility, and agility are emphasised in international literature, there aren't many empirical studies that examine how Thai-listed firms implement these tactics and how they affect organisational performance. Additionally, little study has been done to explain how internal resources, adaptive capacities, and contextual factors influence the efficacy of supply chain disruption tactics by integrating theoretical views such Resource-Based View, Dynamic Capabilities Theory, and Contingency Theory. Furthermore, the Thai environment has not adequately evaluated some disruption kinds (like infrastructure or planning threats) and mitigation strategies (like internal risk management, cooperative relationships). By using data from Thai-listed firms to experimentally examine the links between different supply chain disruption threats, mitigation strategies, and company performance, this study aims to close these gaps.

Both theoretically and practically, this study is important. Theoretically, it adds to the expanding corpus of knowledge on supply chain disruption management by combining the three fundamental ideas of contingency, dynamic capabilities, and resource-based view (RBV) into a single framework. Especially in the context of an emerging economy like Thailand, this integration provides a more thorough knowledge of how contextual factors, internal resources, and adaptation interact to affect business performance under disruption scenarios. Additionally, the study contributes to the empirical understanding of the understudied effects of particular disruption types and mitigation techniques on firm-level outcomes in Southeast Asia.

For managers, legislators, and other stakeholders engaged in Thailand's supply chain and logistics industries, the report provides useful practical insights. This research assists businesses in prioritising resilience investments by determining which disruption types (e.g., infrastructure, planning, manpower, security) have the biggest effects on performance and which mitigation techniques (e.g., internal controls, recovery planning, collaboration) work best. Additionally, in line with Thailand's strategic economic goals under programs like Thailand 4.0 and the Digital Economy and Society Development Plan, the findings can help government agencies and industry bodies create more focused support policies, training initiatives, and digital infrastructure development to improve the robustness of the country's supply chain. The Thai government introduced Thailand 4.0 in 2016, a national economic development strategy, to make the nation a high-income, innovation-driven economy [3]. It signifies a significant change from the old industry-based growth model, which was centred on manufacturing and agriculture, to a more value-based, technology-driven economy.

2. Literature Review

Three theories were utilised in this research: resource-based view (RBV) to determine the internal strengths of the firm's resources, contingency theory to determine the firm's context-specific strategies, and dynamic capabilities to evaluate the firm's flexibility. Linking these three theories results in a comprehensive model that links supply chain disruption risks, mitigation strategies, and business success of the firm.

The Resource-Based View (RBV)

The Resource-Based View is a strategy paradigm that was first presented by [4] and highlights a firm's internal resources as the primary sources of long-term competitive advantage. [4] maintained that resources can be utilised to influence corporate strategy in the same way that products are used to place businesses in marketplaces. RBV contends that rather than merely responding to outside market factors, businesses should concentrate on obtaining and creating valuable, rare, and hard-to-copy resources because these are more sustainable sources of performance. By moving the strategic focus inward—from external competitive positioning to the effective utilisation and deployment of internal capabilities—RBV set the stage for later researchers like [5]. Therefore, to generate long-term advantage, innovation, and resilience in dynamic markets, the RBV encourages businesses to identify their distinctive resource bundles, whether they be organisational, human, or physical.

In the analysis of the RBV in relation to supply chain management, [6] highlight how enterprises can obtain a sustained competitive edge by utilising precious, scarce, non-replaceable, and distinctive internal resources. The RBV is frequently employed in strategic management, little is known about how it may be directly applied to supply chain operations, particularly with regard to internal capacities and sustainability. To improve supply chain resilience and long-term performance, [6] advise academics and practitioners to strategically utilise internal resources. [7] also indicated the strategic importance of internal resources in attaining market responsiveness and operational efficiencies. According to [8], the reason for RBV theory's continued popularity is the ongoing interest in effective and efficient resource allocation in firms.

The Contingency Theory

The contingency theory was first proposed by in 1967, there is no one ideal way to run a firm; rather, the optimum management strategy relies on how well a firm's internal structure and external environment scopes. [9] underlined that to thrive, businesses functioning in more unpredictable or complex circumstances need to be more adaptable and unique. Expanding on this, [10] improved the idea by emphasising that attaining a suitable "right" between structure, strategy, and context leads to firm performance. The basic view of contingency theory is that the effectiveness of a firm depends on how effectively its management practices and systems match situational factors including size, market dynamics, and technological advancements.

[11] highlighted the fact that resilience is context-dependent and influenced by both strategic and operational contingencies, this research highlights the applicability of contingency theory in comprehending organisational and supply chain resilience. When adding highly correlated variables to their models, researchers are advised to be mindful of multicollinearity and to recognise and adjust these contingencies to their particular industry contexts. [12]'s study is based on contingency theory, comes to the conclusion that top management leadership styles have varying degrees of effectiveness in promoting supply chain integration. Transactional leadership improves internal processes, while transformational leadership, when combined with advanced manufacturing technology, allows small firms to integrate external partners more strongly. [13]'s research demonstrates that the link between supply chain integration (SCI) and supply chain sustainability (SCS) differs depending on the setting, with customer satisfaction acting as a mediating factor in Ghana and the UK in various ways.

The Dynamic Capabilities Theory

The theory focus on the ability of firms to integrate, build, and reconfigure resources in dynamic environments. This theory is used to explain how firms adapt and respond to supply chain disruptions by evolving their processes and strategies [14]. [15] used Dynamic Capabilities Theory to examine how businesses may modify, integrate, and reorganise their operations to provide exceptional customer service and stay competitive in a changing market. Dynamic capabilities' effects on supply chain management skills patterns of supply and demand and the factors that influence them can be reasonably predicted as long as the supply chain environment is comparatively constant. In such circumstances, even if only momentarily [16], strong supply chain management system might be enough to sustain a firm's success [17]. However, when supply chain environments inevitably change, a company's supply chain management might no longer be successful.

Building on the theory of dynamic capabilities, supply chain dynamic capability refers to the ability to modify the supply chain. It is a new and popular term that is hard to understand. By using dynamic capabilities in the supply chain, the company may successfully address market volatility and adjust to market trends, ultimately gaining a lasting competitive edge in its sector. Supply chain reconstruction, knowledge evaluation, co-evolution, flexible supply chain control, and supply chain partner relationship development are the categories into which [18; 19] divide supply chain dynamic capabilities. As [20] supply chain dynamic capabilities were separated into two categories by collaboration and integration. A firm's competitive advantage comes from the both capabilities rather than from any one of them alone.

The supply chain disruption management emphasizes resilience, visibility, and agility. Key strategies include diversification of suppliers, buffer inventory, nearshoring, scenario planning, digital monitoring, and collaboration across the network. Disruptions are often categorized by

severity, duration, financial impact, and the number of affected nodes. Tools such as simulation, probability modeling, and qualitative scenario analysis help assess risks. Effective disruption response requires both mitigation (reducing risk likelihood and impact) and adaptation (enhancing response and recovery capabilities). Resilient supply chains are characterized by flexibility, responsiveness, and strong stakeholder relationships. While lean operations improve efficiency, they can increase vulnerability—making a balance between leanness and resilience essential. Firms must adapt disruption strategies to their industry, structure, and customer expectations. Real-time data sharing, proactive planning, and dynamic capabilities are crucial to ensuring stability and competitive advantage during and after disruptions. Therefore, the conceptual framework which is modified from [21] and hypotheses can be developed as in figure 1.

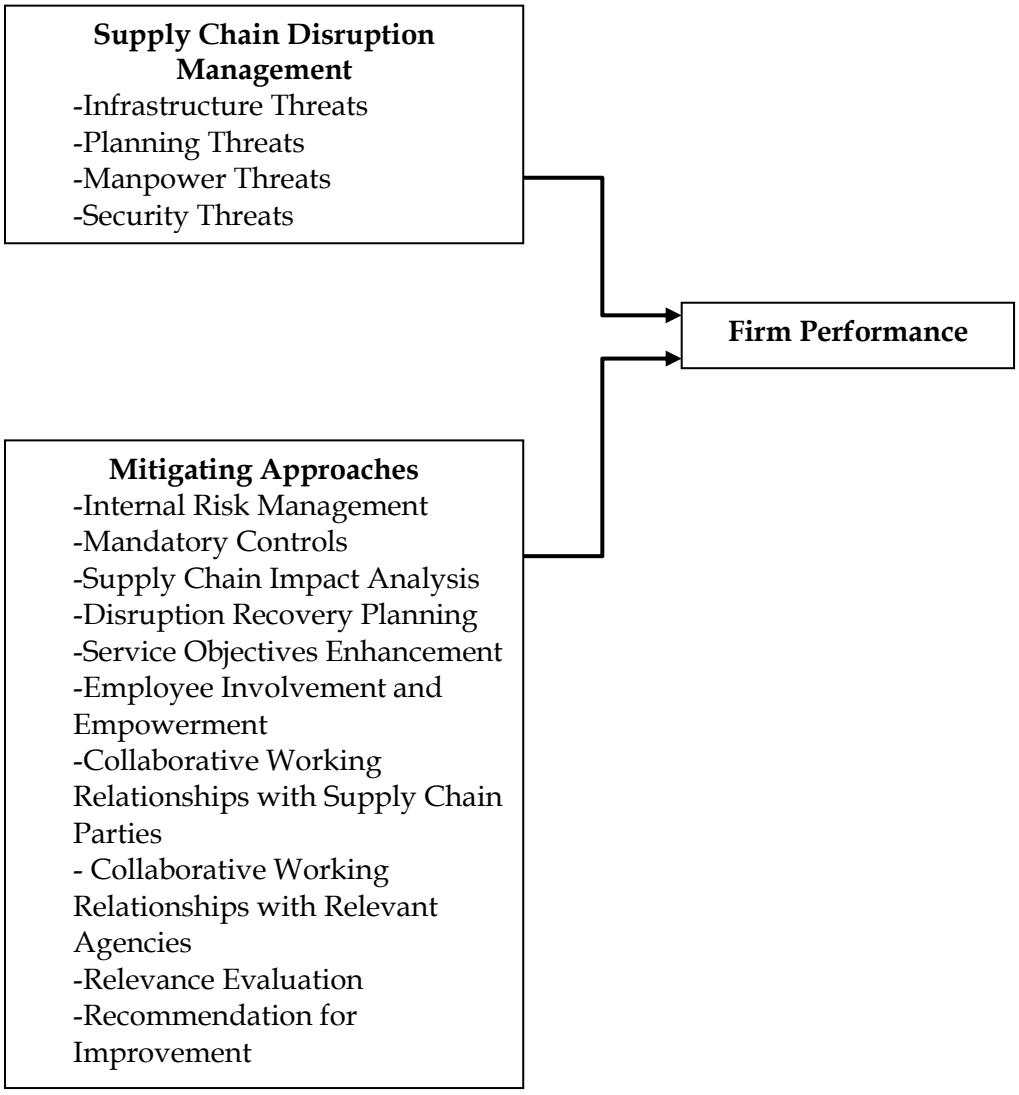

Figure 1. Conceptual Framework

As a consequence, the research hypotheses are proposed as follows:

Hypothesis 1: Infrastructure Threats are related to firm performance.

Hypothesis 2: Planning Threats are related to firm performance.

Hypothesis 3: Manpower Threats are related to firm performance.

Hypothesis 4: Security Threats are related to firm performance.

Hypothesis 5: Internal Risk Management is related to firm performance.

Hypothesis 6: Mandatory Controls are related to firm performance.

Hypo thesis 7: Supply Chain Impact Analysis is related to firm performance.

Hypothesis 8: Disruption Recovery Planning is related to firm performance.

Hypothesis 9: Service Objectives Enhancement is related to firm performance.

Hypothesis 10: Employee Involvement and Empowerment are related to firm performance.

Hypothesis 11: Collaborative Working Relationships with Supply Chain Parties are related to firm performance.

Hypothesis 12: Collaborative Working Relationships with Relevant Agencies are related to firm performance.

Hypothesis 13: Relevance Evaluation is related to firm performance.

Hypothesis 14: Recommendation for Improvement is related to firm performance.

3. Methodology

This research examines the registered firms in the Stock Exchange of Thailand (SET). The information from the Stock Exchange of Thailand (SET) data base is displayed on the website : www.settrade.com. The sample size for this research will be calculated according to the formula recommended by [22] which is as bellows.

$$n = N / (1+Ne^2)$$

$$n = 922 / (1+922*0.05^2) = 279 \rightarrow 300 \text{ samples}$$

where,

n = size of the sample

N = population

e^2 = probability of error

The error probability of this research calculates as five percent (e = 0.05). The questionnaire was designed and adjusted the questionnaire to fit the Thai industry's terms by [21]. A total of 300 questionnaires were distributed to Thai-listed firms in 2025, selected randomly from 922 companies listed on the Stock Exchange of Thailand (SET). Of these, 167 completed responses were received, resulting in an effective response rate of 55.67%. This exceeds the 20% benchmark for mail surveys without follow-up, as suggested by [23]. The sample size of 300 firms aligns with [22]'s formula for a 95% confidence level, ensuring statistical adequacy.

Reliability

Reliability assesses the consistency of measurement. This research used Cronbach's alpha to test internal consistency, with values ranging from 0.745 to 0.938—well above the recommended 0.70 cut-off—demonstrating strong reliability across all constructs [24; 25].

4. Results

Results on Descriptive Analysis

This research presented the results of data analysis as follows:

Section 1: Demographic information about the firms,

Section 2: Opinions on likelihood of supply chain disruption management,

Section 3: Opinions on mitigating approaches, and

Section 4: Correlation analysis, multiple regression analysis, and predicting equation building of likelihood of supply chain disruption management and mitigating approaches on firm performance.

The general information of respondents in Thai-listed firms consists of total number of employees, respondents' functional area, respondents' designation, and the experience in the industry are table 1.

Table 1. Demographic Information of Respondents' Firms

Demographic Information of the Firms	Frequency	Percentage
1. Total number of employees:		
1.1 < 100	13	7.80
1.2 100 – 499	36	21.60
1.3 500 – 999	48	28.70
1.4 1,000 – 4,999	44	26.30
1.5 5,000 – 9,999	20	12.00
1.6 10,000 +	6	3.60
Total	167	100.00
2. Functional area:		
2.1 Strategic Planning	42	25.10
2.2 Logistics Planning	28	16.80
2.3 Operations	37	22.20
2.4 Health, Safety & Environment	15	9.00
2.5 Others	45	26.90
Total	167	100.00

3. The designation:		
3.1 Executive	24	14.30
3.2 Manager	59	35.30
3.3 Senior Management	38	22.80
3.4 Top-level Executive	38	22.80
3.5 Others	8	4.80
Total	167	100.00
4. The experience in the industry		
4.1 < 1 year	6	3.60
4.2 1 to 5 years	17	10.20
4.3 5+ to 10 years	48	28.80
4.4 10+ to 20 years	53	31.80
4.5 > 20 years	43	25.60
Total	167	100.00

According to the table 1, most of total number of employees are 500-999 (28.70%), functional areas are others such as finance, accounting, etc. (26.90%), most of respondents' designation are manager (35.30%), and experience in the industry are between 10 and 20 years (31.80%).

Section 2: Opinions on likelihood of supply chain disruption management are presented in the table 2.

The questionnaire answers of the research are determined by following points: Frequent = 5 points, Likely = 4 points, Possible = 3 points, Unlikely = 2 points, and Rare = 1 point.

With five-level Likert scales, it means that the scores failing between the following ranges could be considered generally the level of the most appropriate response as: Mean: 4.51 – 5.00 → Frequent, Mean: 3.51 – 4.50 → Likely, Mean: 2.51 – 3.50 → Possible, Mean: 1.51 – 2.50 → Unlikely, and Mean: 1.00 – 1.50 → Rare.

Table 2. Opinions on Likelihood of Supply Chain Disruption Management

Likelihood of Supply Chain Disruption Management	$\overline{X}$	**SD**	**Scale**
1. Infrastructure Threats	3.301	1.027	Possible
2. Planning Threats	3.406	1.150	Possible
3. Manpower Threats	2.349	1.001	Unlikely
4. Security Threats	2.060	0.938	Unlikely
Overall	2.779	0.776	Possible

According to the table 2, the respondents have expressed their opinions on likelihood of supply chain disruption management for overall at possible level ($\overline{X}$ = 2.779) and for every variable at possible and unlikely scales which the 3 variables ranked from high to low mean are planning threats ($\overline{X}$ = 3.406), infrastructure threats ($\overline{X}$ =3.301), and manpower threats ($\overline{X}$ =2.349), respectively.

Section 3: Opinions on mitigating approaches

The questionnaire answers of the research are determined by following points: Strongly Agree = 5 points, Agree = 4 points, Neutral / Not Sure = 3 points, Disagree = 2 points, and Strongly Disagree = 1 point.

With five-level Likert scales, it means that the scores failing between the following ranges could be considered generally the level of the most appropriate response as: Mean: 4.51 – 5.00 → Strongly Agree, Mean: 3.51 – 4.50 → Agree, Mean: 2.51 – 3.50 → Neutral / Not Sure, Mean: 1.51 – 2.50 → Disagree, and Mean: 1.00 – 1.50 → Strongly Disagree.

Table 3. Opinions on Mitigating Approaches

Mitigating Approaches	$\overline{X}$	**SD**	**Scale**
1. Internal Risk Management	3.889	0.896	Agree
2. Mandatory Controls	3.617	0.858	Agree
3. Supply Chain Impact Analysis	3.814	0.934	Agree
4. Disruption Recovery Planning	3.898	0.940	Agree
5. Service Objectives Enhancement	3.572	0.852	Agree
6. Employee Involvement and Empowerment	3.458	0.992	Neutral / Not Sure
7. Collaborative Working Relationships with Supply Chain Parties	3.565	0.803	Agree
8. Collaborative Working Relationships with Relevant Agencies	3.774	0.974	Agree
9. Relevance Evaluation	3.635	0.910	Agree
10. Recommendation for Improvement	3.253	0.939	Neutral / Not Sure
Overall	3.648	0.570	Agree

According to the table 3, the respondents have expressed their opinions on mitigating approaches for overall at agree level ($\overline{X}$ = 3.648) and most variables at agree level as well which the 3 variables ranked from high to low mean are Disruption Recovery Planning ($\overline{X}$ = 3.898), Internal Risk Management ($\overline{X}$ = 3.889), and Supply Chain Impact Analysis ($\overline{X}$ = 3.814), respectively.

Results on Correlation Analysis

Table 4 shows the results from correlation metric. All the four dimensions of likelihood of supply chain disruption management is related positively significant to firm performance. The value of variance inflation factor (VIF) is between 1.294 and 2.061, which is lower than the cut-off score of 10 as suggested by [26]. For regression analysis, the VIF and correlations both ensure that multicollinearity issues do not arise.

Table 4 presents the results of correlations for likelihood of supply chain disruption management. All variables are subjected to a correlation analysis for two reasons. Investigating the connections between variables is the primary goal. Verifying the multicollinearity issue, which arises when the inter-correlation between independent variables is more than 0.80 [24], is the second goal. Table 4 displays the findings of correlation analysis for every variable used in this research. Thus, the results indicate no multicollinearity problem in this research.

Table 4. The Results of the Correlations

	TC	**INF**	**PLN**	**MAN**	**SEC**	**TT**	**VIF**
Mean	3.131	3.301	3.406	2.349	2.060	2.779	
SD	0.829	1.027	1.150	1.001	0.938	0.776	
INF	-0.067						1.862
PLN	0.045	0.661**					2.061
MAN	0.174*	0.414**	0.472**				1.481
SEC	0.224**	0.164*	0.351**	0.423**			1.294
TT	0.118	0.759**	0.748**	0.763**	0.623**		

N = 167

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

According to the table 5, each independent variable is correlated each other that might cause multicollinearity problem. Therefore, the researcher has tested the multicollinearity by using VIF value of the independent variable of Mitigating Approaches that has value from 1.423 – 2.126 which is less than 10. Thus, it illustrates that the independent variables are correlated each other at the level that does not cause multicollinearity problem [27]. Consequently, the results indicate no multicollinearity problem in this research [24].

Table 5. The Results of the Correlations

	TC	INT	MND	SUP	DIS	SER	EPY	COL	AGE	EVA	IMP	TR	VIF
Mean	3.131	3.889	3.617	3.814	3.898	3.572	3.458	3.565	3.774	3.635	3.253	3.648	
SD	0.829	0.896	0.858	0.934	0.940	0.852	0.992	0.803	0.974	0.910	0.939	0.570	
INT	0.121												1.484
MND	0.122	0.457**											1.842
SUP	0.140	0.378**	0.436**										1.813
DIS	0.209**	0.335**	0.281**	0.493**									1.634
SER	0.351**	0.197*	0.435**	0.343**	0.391**								2.126
EPY	0.280**	0.264**	0.312**	0.391**	0.176*	0.563**							1.866
COL	0.379**	0.318**	0.323**	0.314**	0.298**	0.542**	0.518**						1.984
AGE	0.072	0.238**	0.325**	0.089	0.196*	0.309**	0.285**	0.497**					1.521
EVA	0.199*	0.209**	0.216**	0.021	0.253**	0.193*	0.105	0.338**	0.390**				1.423
IMP	0.173*	0.205**	0.486**	0.317**	0.287**	0.507**	0.429**	0.398**	0.297**	0.362**			1.752
TR	0.322**	0.572**	0.676**	0.605**	0.593**	0.709*	0.649**	0.716**	0.582**	0.491**	0.685**		

N = 167

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

Table 6 illustrates the multiple regression analysis of the relationship among Supply Chain Disruption Management, Mitigating Approaches, and firm performance. This research has analyzed multiple regressions and built equation to predict firm performance as follows:

Model 1:

$$TC = 2.912 - 0.144\ INF + 0.134\ MAN + 0.156\ SEC$$

Model 2:

$$TC = 1.425 + 0.195\ SER + 0.313\ COL - 0.175\ AGE + 0.129\ EVA$$

Model 3:

$$TC = 1.483 + 0.268\ COL - 0.163\ AGE$$

Table 6 The Results of the Regression Analysis

	Model 1 Firm Performance	**Model 2** Firm Performance	**Model 3** Firm Performance
Independent Variables	**coefficient**		
Constant	2.912*** (0.239)	1.425*** (0.395)	1.483*** (0.465)
Infrastructure Threats (INF)	-0.144* (0.083)		-0.069 (0.088)
Planning Threats (PLN)	0.018 (0.078)		0.013 (0.078)
Manpower Threats (MAN)	0.134* (0.076)		0.091 (0.083)
Security Threats (SEC)	0.156** (0.076)		0.035 (0.078)
Internal Risk Management (INT)		-0.005 (0.080)	-0.050 (0.088)
Mandatory Controls (MND)		-0.016 (0.093)	0.023 (0.098)
Supply Chain Impact Analysis (SUP)		-0.049 (0.085)	-0.024 (0.089)
Disruption Recovery Planning (DIS)		0.073 (0.083)	0.064 (0.082)
Service Objectives Enhancement (SER)		0.195** (0.099)	0.140 (0.110)
Employee Involvement and Empowerment (EPY)		0.086 (0.081)	0.106 (0.084)
Collaborative Working Relationships with Supply Chain Parties (COL)		0.313*** (0.103)	0.268** (0.110)
Collaborative Working Relationships with Relevant Agencies (AGE)		-0.175** (0.074)	-0.163** (0.075)
Relevance Evaluation (EVA)		0.129* (0.007)	0.124 (0.079)
Recommendation for Improvement (IMP)		-0.071 (0.083)	-0.049 (0.086)
No. of Obs.	167	167	167
R^2	0.081	0.220	0.230
R^2 Adjusted	0.058	0.170	0.159
F-Statistic	3.560**	4.407**	3.246**
Durbin-Watson	1.636	1.665	1.700

*, **, *** represent statistical significance at 10%, 5%, and 1%, respectively

Standard errors are in paratheses

According to the model 1, this research could predict firm performance (TC) at the statistically significant at the 1% level of significance (F = 3.560; p = 0.000) and the coefficient of adjusted forecasting (Adj. R^2) equals to 0.058 (table 6). Then, this research has tested the

relationship between each independent variable of likelihood of supply chain disruption management and dependent variable of firm performance (TC). The results of the ordinary linear regression (OLS) analysis illustrate that the first dimension, infrastructure threats (Hypothesis 1), is significantly and negatively related to firm performance ($\beta = -0.144$, $p < 0.01$). While, manpower threats ($\beta = 0.134$, $p < 0.10$) and security threats ($\beta = 0.156$, $p < 0.05$) have significantly and positively related to firm performance. Therefore, hypotheses 1, 3, and 4 are supported. However, table F illustrates no significant relationship of planning threats with firm performance ($\beta = 0.018$, $p > 0.10$). Therefore, hypothesis 2 is not supported.

Model 2 in table F shows the service objectives enhancement ($\beta = 0.195$, $p < 0.05$), collaborative working relationships with supply chain parties ($\beta = 0.313$, $p < 0.01$), and relevance evaluation ($\beta = 0.129$, $p < 0.10$) have significantly and positively related to firm performance. Therefore, hypotheses 9, 11, and 13 are supported. However, the collaborative working relationships with relevant agencies ($\beta = -0.175$, $p < 0.05$) has significantly in a negative direction related to firm performance. Therefore, hypothesis 12 is also supported.

5. Conclusions and Discussions

This research investigates the likelihood of supply chain disruption management and mitigating approaches among Thai-listed firms, based on responses from 167 companies selected using Yamane's sampling formula. With strong internal consistency (Cronbach's alpha = 0.745–0.938), the research finds that Thai firms perceive supply chain disruption threats, particularly in planning and infrastructure, as "possible," while manpower and security threats are seen as "unlikely." Most respondents agreed on the importance of mitigation strategies, with disruption recovery planning, internal risk management, and supply chain impact analysis ranking highest. Demographic analysis shows that most respondents work in mid-to-large companies, mainly at the managerial level, with over 10 years of industry experience.

The regression analysis results highlight key insights: infrastructure threats negatively impact firm performance, while manpower and security threats show a positive relationship. Among mitigation strategies, collaborative working relationships, service enhancement, and relevance evaluation significantly support performance, whereas collaboration with external agencies shows a negative association. Overall, this research underscores the importance of internal coordination and recovery planning in strengthening organizational resilience.

The research found that threats to infrastructure have a statistically significant detrimental effect on firm performance emphasises how significant strong digital and physical infrastructure are to preserving supply chain effectiveness. Delays, higher expenses, and late delivery of goods and services might result from inadequate transportation networks, substandard IT systems, or poorly maintained facilities. The results are in line with other studies [28; 29] that indicates

infrastructure plays a key role in guaranteeing robust and dependable supply networks. Additionally, it highlights the necessity of government assistance and private sector investment to fortify supply chain and logistics infrastructure, especially in poorer nations where these vulnerabilities are more common.

Interestingly, the results also found that, when handled well, manpower and security threats can have a positive impact on firm performance. This is consistent with [30] who suggested that businesses with strong internal capabilities, like a trained workforce, well-defined safety procedures, and flexible human resource practices, can use potential disruptions to improve operational control rather than passively enduring turbulence. By rapidly adjusting and improving internal efficiency under pressure, these businesses exhibit dynamic capacities, highlighting the significance of proactive planning, internal crisis management mechanisms, and employee training as essential elements of organisational resilience [31].

Another significant finding, while collaboration with supply chain partners increases efficiency, bureaucratic inefficiencies, objective misalignment, or a lack of coordination can hinder engagement with governmental agencies. These findings imply that firm promotes trust, adaptability, and information exchange—all of which are critical elements in dealing with uncertainty which is consistent with [32] and [33]. On the other hand, public agency participation may result in communication breakdowns or regulatory delays, underscoring the necessity for governments to enhance their responsiveness and integration with industries, particularly in emergency situations. An increasing knowledge and maturity in organisational preparation methods are indicated by the research's confirmation of the widespread consensus among businesses regarding the significance of supply chain impact analysis, disruption recovery planning, and internal risk management [34; 35].

6. Implications, Limitations, and Recommendations

Implication

In an economy like Thailand, this research has theoretical and practical implications for conduct supply chain interruptions. The findings emphasise how important it is for businesses to prioritise recovery planning and proactively manage internal risks. Firms should investments in more robust infrastructure and logistics when infrastructure threats impair performance. On the other hand, firms with strong human resource strategy and internal security procedures may be better equipped to adjust during disruptions, as evidenced by the positive impact of workforce and security threats on performance.

The research highlights the significance of targeted risk assessment, employee empowerment, and internal collaboration from a managerial standpoint. The detrimental effects of working with outside firms point to the necessity of more defined responsibilities, channels of

communication, and systems for cooperation with governmental and regulatory entities. These insights can be used by industry executives and policymakers to boost private-public collaborations, create more integrated supply chain frameworks, and encourage risk and disruption response planning training. To increase specific flexibility, more research should be done on solutions designed for certain industries, such as those that deal with hazardous materials or logistics.

Government policymakers should prioritise infrastructure upgrades and create a national framework for risk preparedness to increase the nation's resilience to supply chain disruptions. Investment in strong and weather-resistant logistics infrastructure, such as ports, transportation corridors, and industrial zones, is essential given the substantial detrimental effects that infrastructure-related threats have on businesses' operational performance. It is significant to encourage Public-Private Partnerships (PPPs) to upgrade and digitise the transport infrastructure, especially in high-risk locations. Sector-specific risk assessment techniques for sectors like chemicals, automotive, and agricultural should be included in a standardised national framework for supply chain disruption management. Through these initiatives, industry will be better equipped to foresee, address, and recover from a range of disruption scenarios.

Furthermore, by providing financial incentives and expert training courses centred on supply chain visibility and business continuity planning, the government could encourage firm-level risk mitigation. Enhancing public-private cooperation is also essential; creating centralised platforms between manufacturers, logistical companies, and government agencies will improve communication and collaborative crisis management. Enhancing public agencies' responsiveness and efficiency is essential, particularly in light of the performance issues seen in external partnerships. Additionally, to keep an eye on new dangers and facilitate proactive decision-making, a national risk data infrastructure and early warning system have to be established. Last but not least, government assistance must to be tailored to the specific needs of each region, taking into account the fact that recovery capacities and resilience requirements range among sectors and geographical locations—from major logistics centres to outlying manufacturing zones.

Limitation and Recommendation for Future Research

This research is limited by its focus on detecting threats posed by supply chain disruptions without assessing their resilience. As a result, it is not possible to provide a comprehensive picture of a firm's or company's resilience after a disruption. The assessment of threats is limited to frequency and impact scores, omitting assessments of different severity levels. The analysis also faces limitations in its granularity due to the small sample size, which prevents meaningful comparisons across regions and organization sizes. Furthermore, the risk matrix design uses only a single country, which may obscure strategic insights and complicate the interpretation of risk response strategies. Finally, differences in company maturity and market context are not fully

captured due to the unbalanced sample, suggesting that the model's performance may vary in other scenarios.

Future studies should generate and analyse disruption resilience indicators to supplement threat identification and provide a more thorough resilience framework to overcome these constraints. Sector-specific research would increase the supply chain disruption model's applicability in real-world scenarios, especially in high-risk industries like ports, agro-industry, or electronics. Comparative studies between various global locations, such Asia or Europe, may shed light on location-based resilience tactics. While more thorough analysis of public-private partnership mechanisms could aid in addressing performance gaps seen in external partnerships, longer-term research could more effectively track supply chain disruption management policies created in response to pandemics, climate change, etc. Additionally, investigating the potential of digital technologies like blockchain, AI, and IoT may lead to new opportunities for improving supply chain responsiveness, especially for industries. The identification of best practices and policy models tailored to the Thai context may also be aided by cross-country comparative studies within ASEAN.

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