Investigating the implementation of logistics and supply chain resilience strategies in Japanese companies

[日本企業におけるロジスティクスおよびサプライチェーンのレジリエンス戦略の実施についての調査研究]

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Research Report Meeting

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研究報告会

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Outline of presentation（発表の内容）

1. Introduction
2. Literature review
3. Research methods
4. Results
5. Conclusion and suggestions

References

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List of abbreviations and definitions

List of abbreviations

BCP	Business continuity planning
LE	Large enterprises
SME	Small and medium enterprises
SC	Supply chain
Resilience strategies	Logistics and SC resilience strategies

Definitions[1]

Large enterprises

300 employees or more or capital 300 million yen or more.

Small and medium enterprises

10 or more employees, 299 or less, or capital of 0 yen or more, less than 300 million yen

[1] Statistics Bureau of Japan, https://www.stat.go.jp/english/data/e-census/2016/industry.html#e

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Introduction

Impacts SC disruption

Importance of resilience strategies

Research motivation

Research objectives

Research questions

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Introduction

Racing to meet global chip demand

Air conditioners including other appliances are on a long list of consumer electronics impacted by the global semiconductor shortage.
Due to the global SC disruptions, the problem isn't likely to go away soon.[2]
June 29, 2022

Bloomberg
Asia Edition

Toyota Vehicle Output Shrinks Before Planned Production Hike

- Firm made 634,940 vehicles in May, down 5.3% from year earlier
- Automaker sold 761,466 units, also lower than May last year

TOYOTA Motor produced 5.3% fewer vehicles in May 2022 than a year earlier as it slowed output due to SC disruptions afflicting global manufacturers.[3]

SC disruptions cost the average organization 45% of one year's profits over the course of a decade (McKinsey & Company, 2021).

Source:
2. NHK News, https://www3.nhk.or.jp/nhkworld/en/news/backstories/2034/, June 29, 2022
3. Bloomberg Asia Edition, https://www.bnnbloomberg.ca/toyota-vehicle-output-shrinks-before-planned-production-hike-1.1785376#:~:text=(Bloomberg)%20%2D%2D%20Toyota%20Motor%20Corp,the%20Japanese%20carmaker%20said%20Wednesday .June 13, 2022

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Introduction

- Resilient logistics and SCs are essential for national security, economic security, technological leadership, and fulfilling the needs and wants of people.
- Many studies acknowledged that SC resilience is one of the most important issues and a way to combat disruptions in the SC (Klibi et al., 2010; Spiegler et al., 2012; Brandon-Jones et al., 2014; Dixit et al., 2016; Dehghani et al., 2018; Xu et al., 2020) since resilient firms are less vulnerable to disturbances and better able to manage internal resources (Ponomarov and Holcomb, 2009; Ambulkar et al., 2015).

Logistics and SC resilience

It is the ability to be prepared for unexpected risks, respond to and recover quickly from potential disruptions to return to its original situation or grow by moving to a new, more desirable state to increase customer service, market share, and financial performance (Hohenstein et al. 2015).

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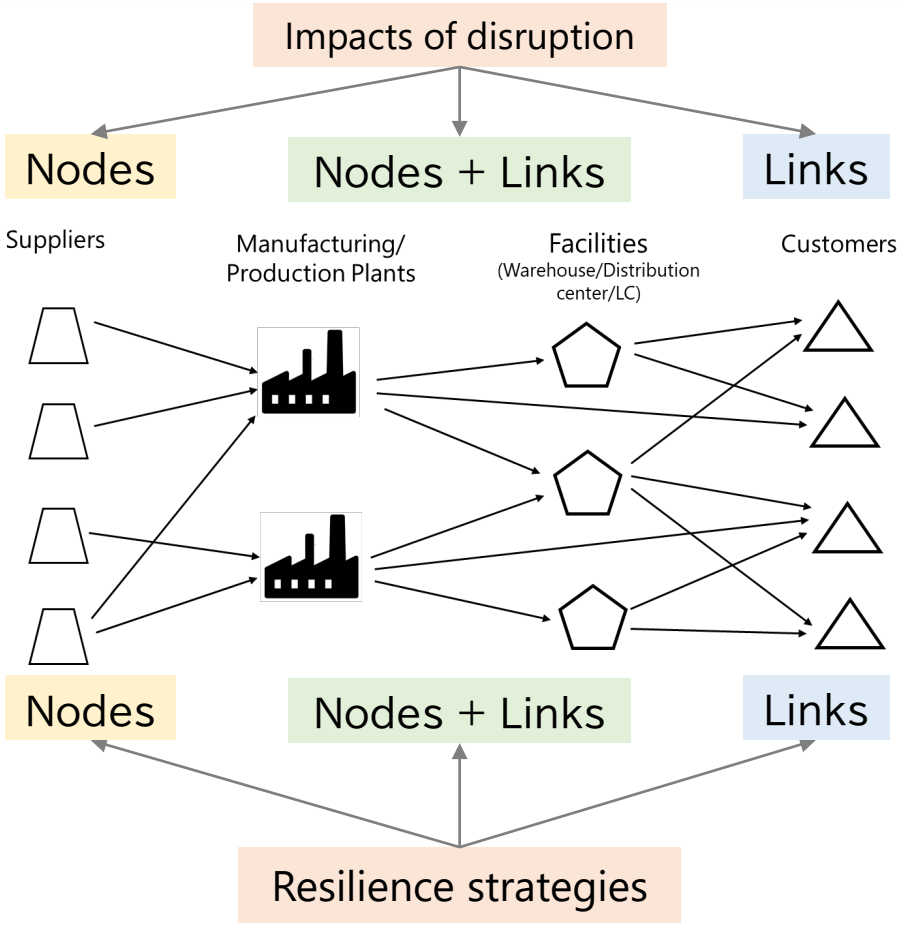
Logistics and SC resilience strategies

Logistics and SC resilience strategies "Resilience strategies"

The strategies adopted to avoid, withstand, respond, and recover quickly from the impacts of the disruption on various activities.

Resilience strategies
(Maharjan and Kato, 2022)

1. Multiple sourcing
2. Facility dispersion
3. Backup supplier
4. Lateral transshipment
5. Facility fortification
6. Facility redundancy
7. Inventory prepositioning
8. Adding extra production capacity
9. Rerouting
10. Collaboration with stakeholders
11. Business continuity plan



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Research motivation

Japan is a highly disaster-vulnerable country consequently the adoption of resilience strategies is and will be highly important for Japan.

Enhancing national resilience is one of the Japanese government's top priorities.

The transportation and logistics sector is considered one of the sectors contributing to national resilience under the "Policy for promoting initiatives for building national resilience" in Japan since 2014 (Cabinet decision 2014, 2018).

The government of Japan has taken several initiatives to enhance the resilience of Japanese companies. The initiatives include,

- providing subsidies for implementing resilience strategies (The Japan Times, 2020 and Todo, 2022)
- promoting investment in Japan to strengthen SCs (METI, 2022)
- investing in SC resilience in the Indo-Pacific (Nikkei Asia, 2022 and Suzuki, 2022)

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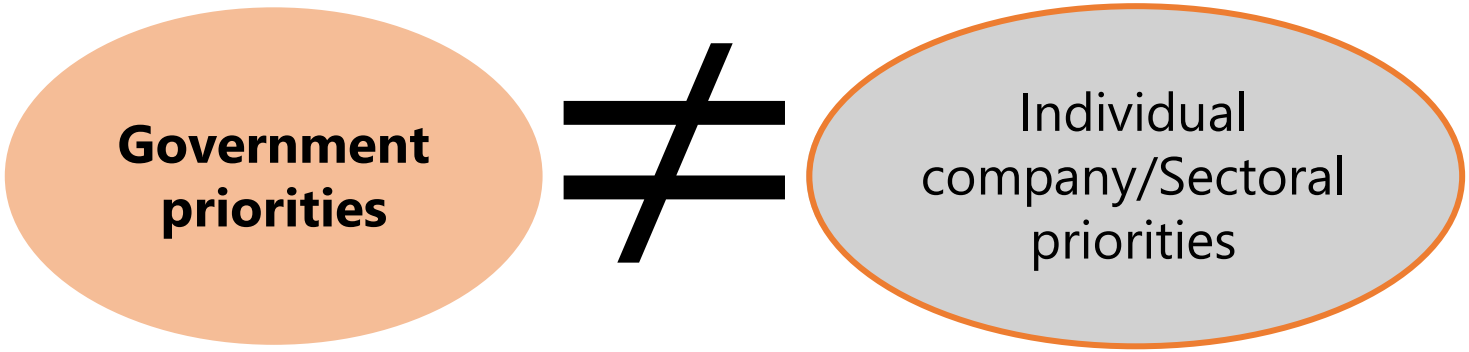
Research motivation

1. Issues with existing resilience enhancement initiatives

- Todo, (2022) states currently implemented policy initiatives such as earmarked funding for shifting production bases (The Japan times, 2020) are doubtful as to whether "industrial policy" as narrowly defined as policy focusing on supporting a particular industry, such as semiconductors, can produce positive effects.
- Watanabe (2022) argues that Japan's efforts in securing SC resilience have not been successful.

Why haven't existing initiatives been successful?



Current policies aimed toward resilience enhancement are narrowly defined and consequently do not include the needs of different industry sectors.

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Research motivation

2. Issues to enhancing logistics and SC resilience

Willingness to implement resilience strategies

Perception and willingness play a critical role in shaping the policies and actions undertaken by organizations when risk management is concerned (Creazza et al, 2021; Prataviera et al., 2022).

However, the willingness of Japanese companies to implement resilience strategies is still unknown.

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Research objectives and novelty

Research objectives

1. Investigate the implementation of resilience strategies in Japanese companies.
   - Status
   - Types of resilience strategies
   - Factors affecting
2. Investigate the willingness of Japanese companies to implement resilience strategies.

Research novelty and contribution

1. **From a practical perspective**, although there has been heightened attention towards enhancing the resilience of Japanese companies, the actual status, and willingness to implement resilience strategies have not been well researched.
2. **From an academic perspective**, empirical research on this topic is lacking in the literature. Furthermore, to the best of my knowledge, the topics dealt with in this study have not been investigated yet.

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Research questions (リサーチクエッション)

RQ1 Implementation of resilience strategies

RQ1.1

What is the status of the implementation of resilience strategies in Japanese companies?

RQ1.2

What types of resilience strategies are implemented?

RQ1.3

What factors affect the implementation of resilience strategies?

RQ2 Willingness to implement resilience strategies

Have the global impacts of the COVID-19 pandemic led to an increase in willingness to implement resilience strategies?

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Literature review

Status of implementation

Factors affecting implementation

Willingness to implement

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Literature review: Status

Table 1: Surveys on the impacts of COVID-19 overseas

Source	Survey period	Respondents	Impacts of the COVID-19 pandemic
Institute for Supply Management, 2020	May 7 – 25, 2020	650 individuals	97% of the respondents said they will be or have been impacted.
Capgemini Research Institute, 2020	August – September 2020	807 organizations	68% of organizations have taken more than three months to recover.
Gartner Inc., 2021	September – November 2020	1,300 SC professionals	60% admit that their SCs have not been designed for resilience, but for cost-efficiency.

- Amid the global and widespread impacts of the COVID-19 pandemic, most companies have failed to produce a plan for improving their resilience (Remko, 2020).
- Serious questions have been raised about the resilience of global SCs.
- Studies have highlighted a dire need for companies across the world to improve the resilience of their global SCs (Craighead et al., (2020); Capgemini Research Institute, (2020); Linton and Vakil (2020); Remko (2020); and Verma and Gustafsson, (2020)).

The current status and the types of resilience strategies implemented by companies in different sectors are largely unknown.

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Literature review: Factors

- Künzli (2016) investigated the impacts of firm age, firm size, managerial education, and managerial experience on organizational resilience using a survey of 475 SMEs in the northern Netherlands.
  - ➢ Found that among all variables only personal characteristics (level of education and level of experience of managers) is positively related to the level of organizational resilience.
- Todo et al., (2021) investigated the robustness and resilience of SCs during the COVID-19 pandemic through their study of firms in ASEAN and India.
  - ➢ Found that larger or younger firms tended to be resilient and robust, and the robustness and resilience of SCs are found to have led to higher performance.

The factors that affect the choice to implement resilience strategies are still unclear.

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Literature review: Willingness

There are no studies investigating the past level of willingness and change in the willingness of the companies to implement resilience strategies as an impact of the COVID-19 pandemic.

Prataviera et al., (2022) investigated the relationship between the impacts of SC disruption on perceptions towards developing resilience strategies in the future focusing on manufacturers of grocery SC in Italy.

- The main element affecting perceptions about future resilience strategies is the impacts experienced on the manufacturing side of the SC process.

The company's willingness to implement resilience strategies is still unclear.

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Research methods

Questionnaire survey	Descriptive analysis	Choice model

RQ1.1 Status of implementation of resilience strategies	Descriptive analysis
RQ1.2 Types of resilience strategies implemented	Descriptive analysis
RQ1.3 Factors affecting implementation of resilience strategies	Choice model
RQ2: Willingness to implement resilience strategies	Descriptive analysis

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Survey questionnaire details

Survey method:	Questionnaire survey (WEB + PAPER)
Survey target:	Japanese companies in the manufacturing sector
Survey partner:	Tokyo Shoko Research
Target respondents:	Logistics and/or Supply chain professionals
Number of questions:	24 questions
Number of samples:	628 samples (549 valid samples)
Response rate:	7.85 percent
Implementation time:	March 28, 2022 - April 15, 2022

Survey Questionnaire outline

1. Profile of the companies
2. Profile of the respondents
3. Logistics and SC activities of the companies
4. Impacts of the COVID-19 pandemic on the companies
5. Resilience strategy implementation
6. Willingness to implement resilience strategies

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Reason for selecting four industry sectors

Industry	Reason
Transportation equipment & machinery manufacturing	• In terms of product shipping value, this industry accounts for a maximum of about 20% of all manufacturing industries in Japan. • Furthermore, approximately 90% of this ratio is composed of automobile related manufacturing.
Pharmaceutical manufacturing	• Essential sector • Japan's pharma industry is one of the largest with a share of approximately seven percent of the world market (Statistica, 2022).
Semiconductor & device manufacturing	• This is the best prospect industry sector for Japan. • Japan has been prioritizing semiconductor industry in a bid to enhance economic security (The Japan Times, (2021) and Togashi, (2022)).
Textile manufacturing	• Japan is the 3rd largest importer of Textile and Apparel (T&A) in the world with an import value of US$ 37.14 billion in 2019 (The Textile Magazine, (2021) and Nikkei Asia, (2021)). • Non-essential sector for comparison

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RQ1: Implementation of resilience strategies

RQ 1.1 What is the status of the implementation of resilience strategies? RQ1.2 What factors affect the implementation of resilience strategies?	Descriptive analysis
RQ1.3 What factors affect the implementation of resilience strategies?	**Choice model** • Hypothesis • Model overview

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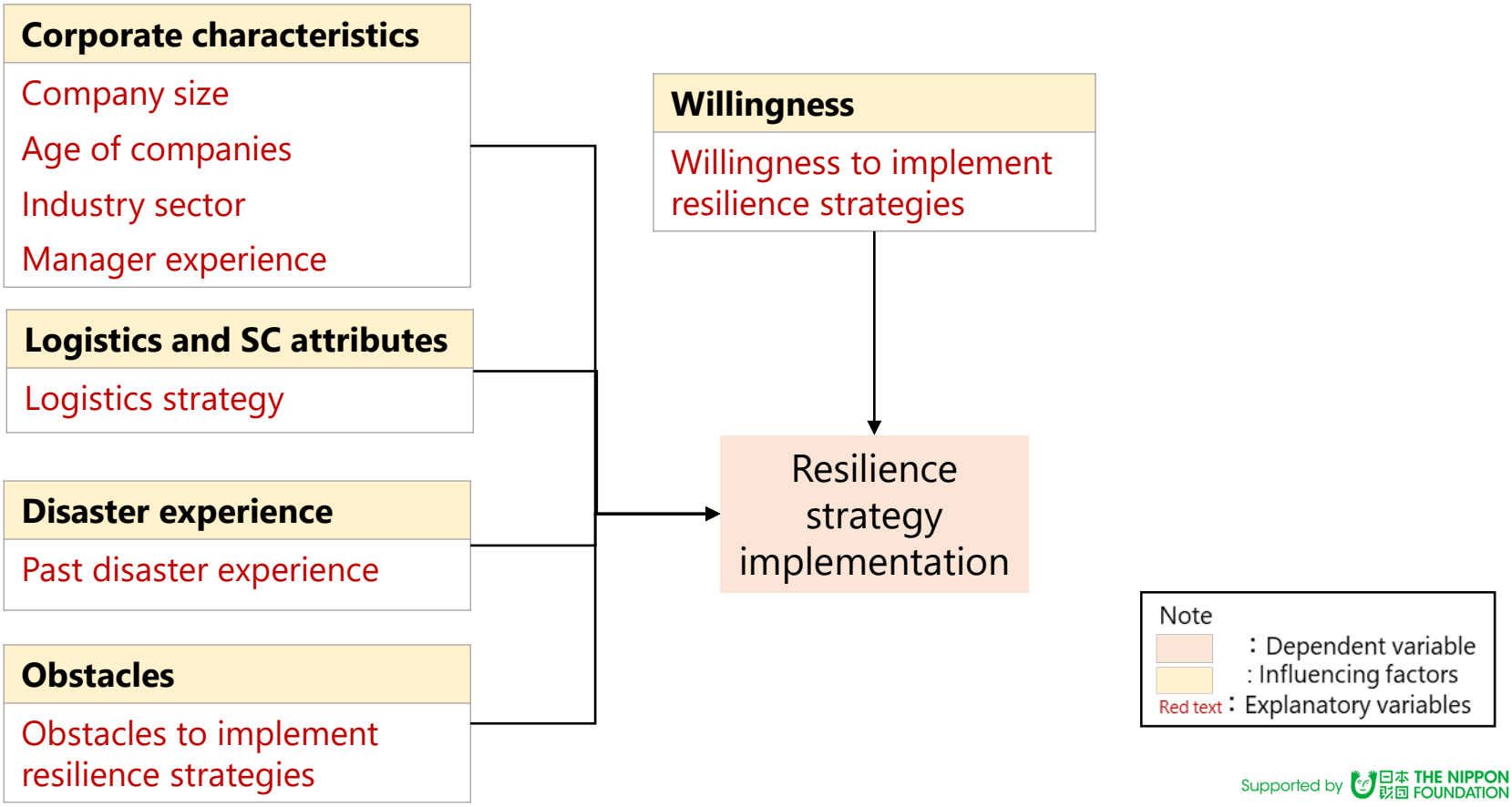
Resilience strategy implementation

Factors affecting resilience strategy implementation (Before COVID-19)

H1: Implementation of resilience strategies before the COVID-19 pandemic varies by organization size, age of the company, industry sector, manager experience, logistics strategy, past disaster experience, obstacles and willingness.



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Resilience strategy implementation

Factors affecting resilience strategy implementation (Before COVID-19)

$$y_{jn} = \beta_0 + \beta_1 X_{1n} + \beta_2 X_{2n} + \beta_3 X_{3n} + \beta_4 X_{4n} + \beta_5 X_{5n} + \beta_6 X_{6n} + \beta_7 X_{7n} + \beta_8 X_{8n} + \varepsilon_{jn} \quad (2)$$

Binary logit model,

$$\boldsymbol{P(y_{jn})} = \frac{\mathbf{1}}{\mathbf{1+e^{-y_{jn}}}} \quad (1)$$

0: Not implemented resilience strategy

1: Implemented resilience strategy

j: alternatives (j=0,1)

n: companies (n=1, 2,.....549)

X_1: Company size = $\begin{cases} 1\ if\ LE \\ 0\ otherwise \end{cases}$

X_2: Company age = $\begin{cases} 1\ if > 20\ years \\ 0\ otherwise \end{cases}$

X_3 : Industry sector = $\begin{cases} TE\ and\ M \\ Pharmaceutical \\ Semiconductor\ and\ device \\ Textile \end{cases}$

X_4: Manager experience= $\begin{cases} 1\ if > 15\ years \\ 0\ otherwise \end{cases}$

X_5 : Logistics strategy= $\begin{cases} 1\ if uses\ own\ logistics\ assets \\ 0\ otherwise \end{cases}$

X_6 : Past disaster experience= $\begin{cases} 1\ if yes \\ 0\ otherwise \end{cases}$

X_7 : Obstacles= $\begin{cases} 1\ if faced\ obstacles \\ 0\ otherwise \end{cases}$

X_8 : Willingness= $\begin{cases} 1\ if willing\ to\ implement \\ 0\ otherwise \end{cases}$

β: parameters

ε: error terms

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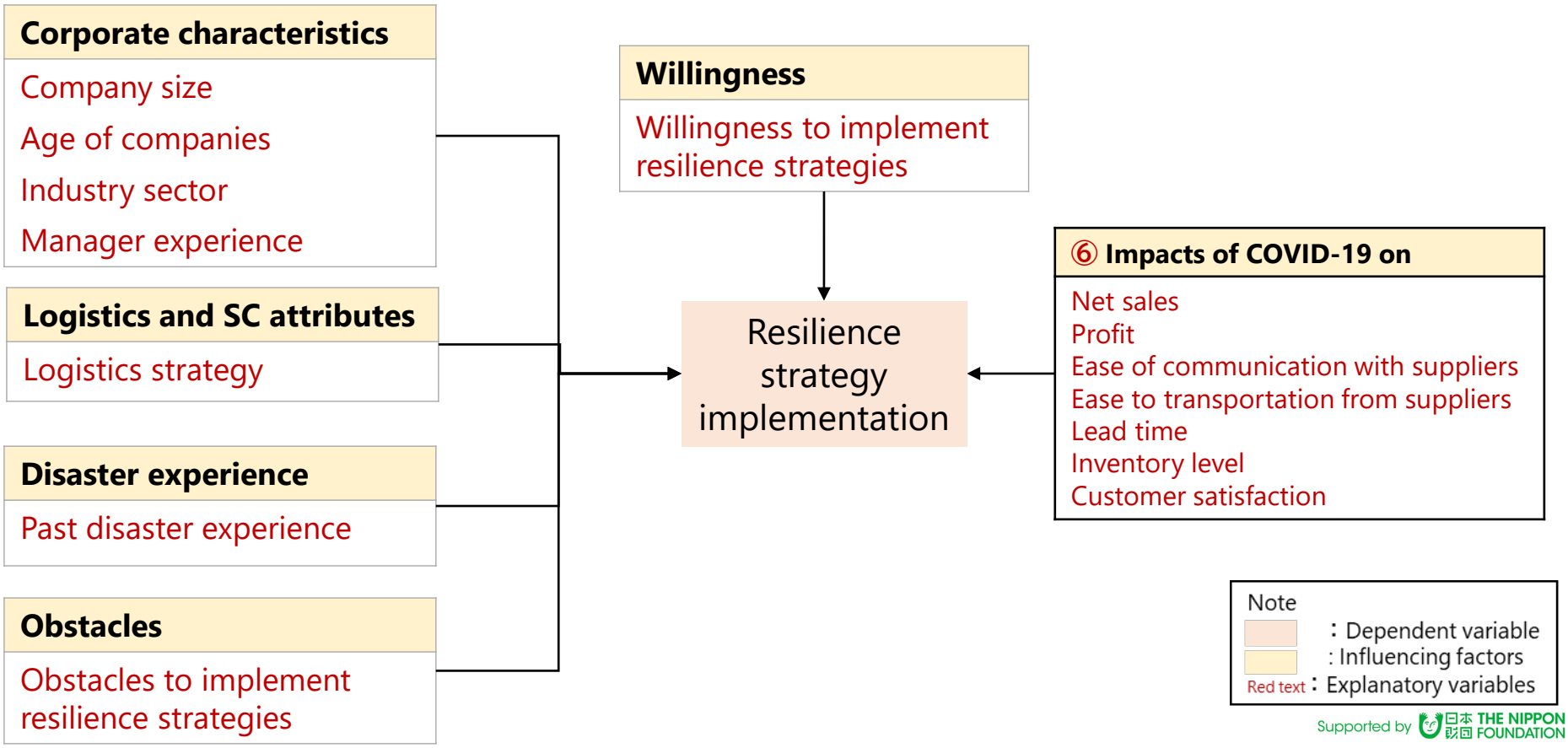
Resilience strategy implementation

Factors affecting resilience strategy implementation (During COVID-19)

H2: Implementation of resilience strategies during the COVID-19 pandemic varies by organization size, age of the company, industry sector, manager experience, logistics strategy, past disaster experience, obstacles, willingness, and **impacts of COVID-19**.



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Resilience strategy implementation

Factors affecting resilience strategy implementation (During COVID-19)

$$y_{jn} = \beta_0 + \beta_1 X_{1n} + \beta_2 X_{2n} + \beta_3 X_{3n} + \beta_4 X_{4n} + \beta_5 X_{5n} + \beta_6 X_{6n} + \beta_7 X_{7n} + \beta_8 X_{8n} + \boldsymbol{\beta_9 X_{9n}} + \varepsilon_{jn} \quad (3)$$

Binary logit model,

$$\boldsymbol{P(y_{jn}) = \frac{1}{1+e^{-y_{jn}}}} \quad (1)$$

0: Not implemented resilience strategy

1: Implemented resilience strategy

j: alternatives (j=0,1)

n: companies (n=1, 2,.....549)

X_1: Company size = $\begin{cases} 1\ if\ LE \\ 0\ otherwise \end{cases}$

X_2: Company age = $\begin{cases} 1\ if\ > 20\ years \\ 0\ otherwise \end{cases}$

X_3 : Industry sector = $\begin{cases} TE\ and\ M \\ Pharmaceutical \\ Semiconductor\ and\ device \\ Textile \end{cases}$

X_4: Manager experience= $\begin{cases} 1\ if\ > 15\ years \\ 0\ otherwise \end{cases}$

X_5 : Logistics strategy= $\begin{cases} 1\ if uses\ own\ logistics\ assets \\ 0\ otherwise \end{cases}$

X_6 : Past disaster experience= $\begin{cases} 1\ if yes \\ 0\ otherwise \end{cases}$

X_7 : Obstacles= $\begin{cases} 1\ if faced\ obstacles \\ 0\ otherwise \end{cases}$

X_8 : Willingness= $\begin{cases} 1\ if willing\ to\ implement \\ 0\ otherwise \end{cases}$

$\boldsymbol{X_9}$ **: COVID-19 impacts**

β: parameters

ε: error terms

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Results

Summary statistics

Resilience strategy implementation

Willingness to implement resilience strategies

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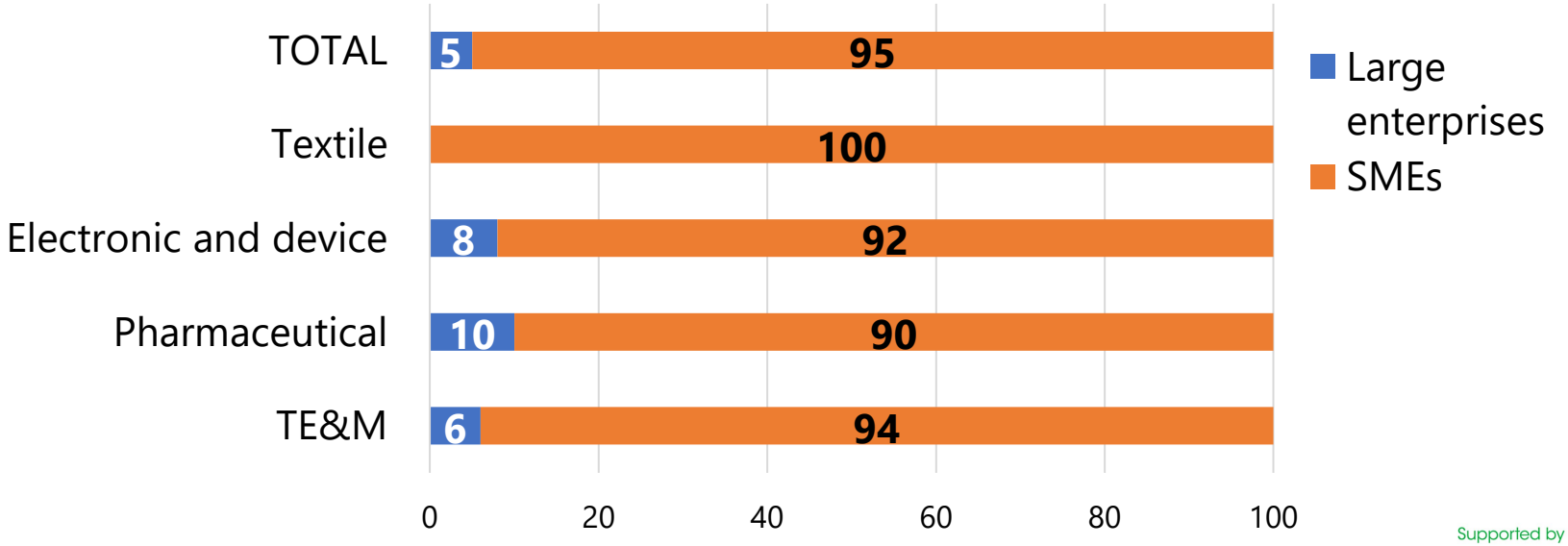
Summary statistics

- 59% of the responses came via mail and 41% by web highlighting the importance of conducting the paper-based survey.
- The majority of the respondent companies had 10-99 employees.
- The average age of the respondent companies is 44 years with a standard deviation of 22 years.
- Out of the 549 valid samples, 5.3% (29) of the respondents are large enterprises, and the remaining 94.7% (520) are SMEs, highlighting SMEs' dominance in the survey sample.

Figure 1. Summary of respondent companies



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Resilience strategy implementation

RQ1.1 Status of implementation of resilience strategies	Descriptive analysis
RQ1.2 Types of resilience strategies implemented	Descriptive analysis
RQ1.3 Factors affecting implementation of resilience strategies	Choice model

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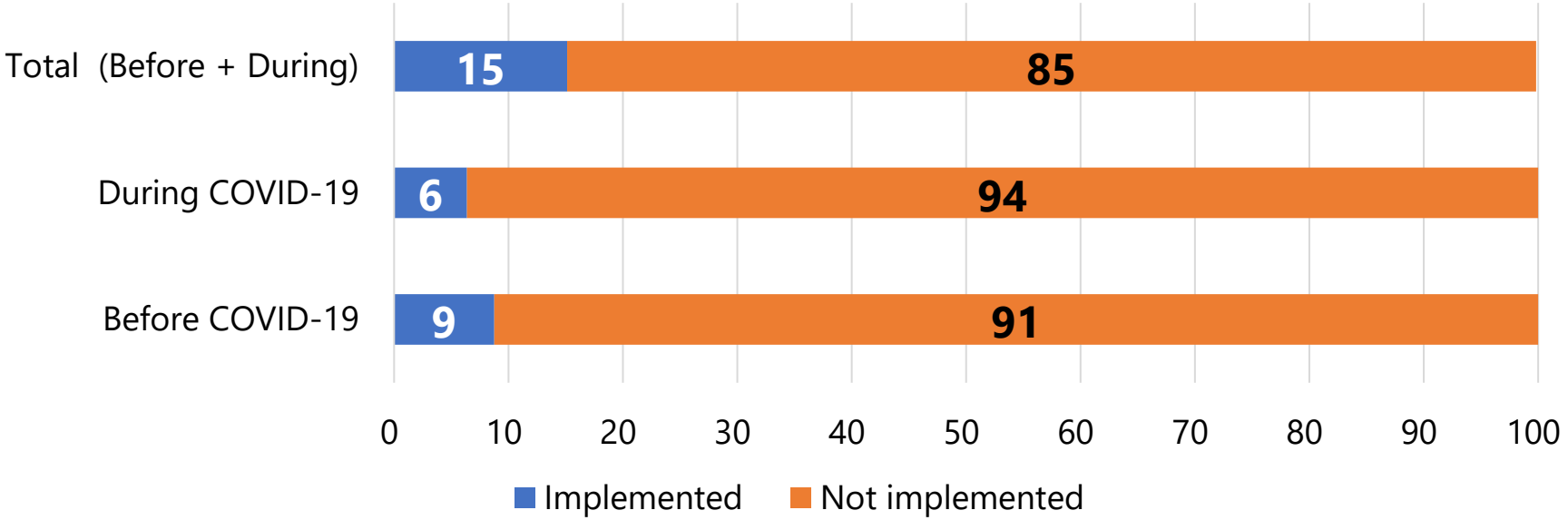
Resilience strategy implementation: Status

Figure 2. Status of implementation of resilience strategies (in %)



- Before the COVID-19 pandemic, only 9% of the companies have implemented resilience strategies.
- During the COVID-19 pandemic, 6% of the companies implemented resilience strategies.
- In total (Before + During) 15% of the companies have implemented resilience strategies.

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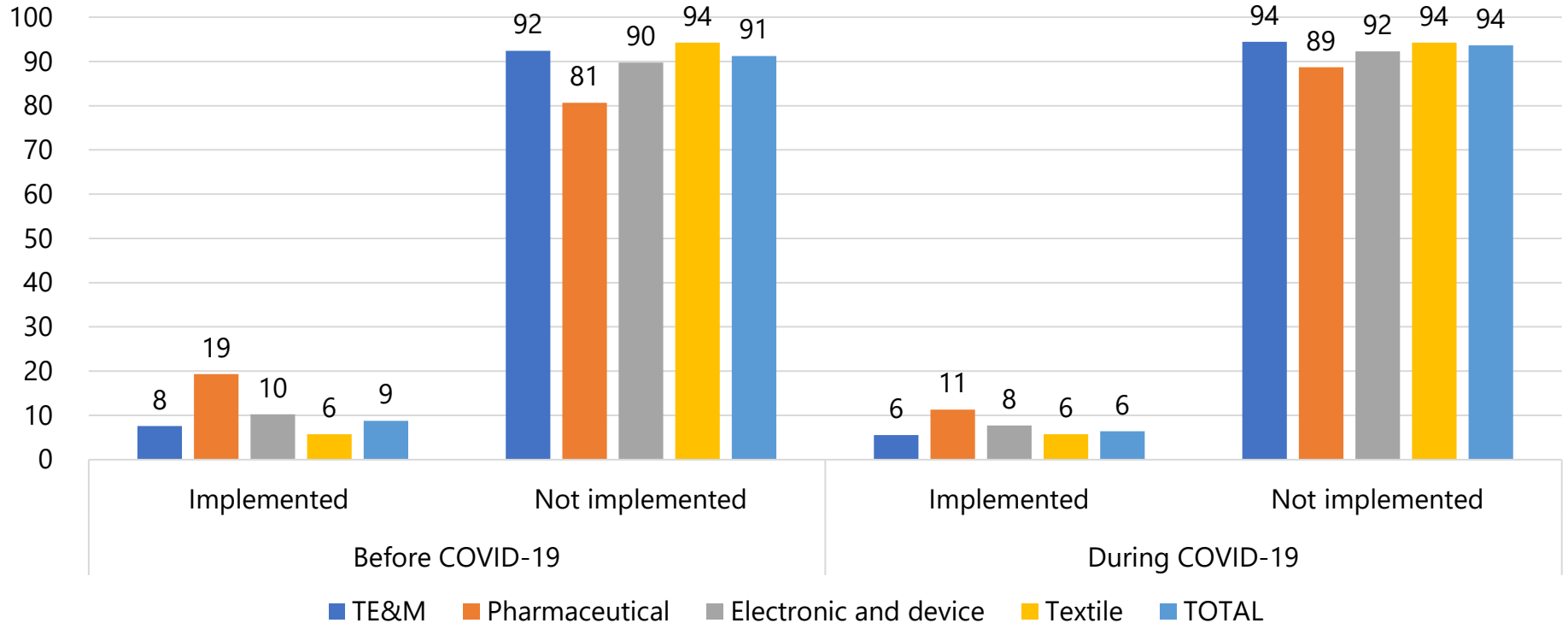
Resilience strategy implementation: Status

- The pharmaceutical industry has the highest proportion of companies implementing resilience strategies both before and during the pandemic.
- Although, the semiconductor and device manufacturing sector is considered highly important from the perspective of national security by the government, the proportion of companies that implemented resilience strategies is not that high.

Figure 3. Resilience strategy implementation by industry



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Resilience strategy implementation: Types

Table 1: Top 3 resilience strategies implemented before COVID-19	
Industry sector	**Resilience strategies implemented before COVID-19**
Transport equipment & machinery manufacturing	**Inventory prepositioning**
	BCP
	Facility dispersion; Rerouting; Facility fortification
Pharmaceutical manufacturing	**Facility fortification, BCP**
	Facility dispersion
	Multiple sourcing, Rerouting, Facility redundancy, Inventory prepositioning
Semiconductor & device manufacturing	**Multiple sourcing**
	Backup supplier BCP
	Facility dispersion, Rerouting, Facility fortification
Textile manufacturing	**Facility fortification, BCP**
	Collaboration
	Facility dispersion, Backup supplier, Facility redundancy

The choice and the priority of resilience strategies basically vary by industry sector.

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Resilience strategy implementation: Types

Table 2: Top 3 resilience strategies implemented during COVID-19	
Industry sector	**Resilience strategies implemented during COVID-19**
Transport equipment & machinery manufacturing	**Inventory prepositioning**
	Rerouting Backup supplier
	Multiple sourcing
Pharmaceutical manufacturing	**Inventory prepositioning**
	Backup supplier, Rerouting, Facility fortification, Extra production capacity
	Facility dispersion
Semiconductor & device manufacturing	**Multiple sourcing, Backup supplier, Rerouting**
	Facility dispersion, Lateral transshipment, Facility fortification, Collaboration, BCP
Textile manufacturing	**Backup supplier**
	Rerouting, Facility fortification, Facility redundancy
	Collaboration

- The choice and priority of resilience strategies vary by industry sector.
- Except for transport equipment & machinery, the top choice of resilience strategy changed for all other industries highlighting the impact of COVID-19.

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Resilience strategy implementation: Factors

Before COVID-19	During COVID-19
H1: Implementation of resilience strategies before the COVID-19 pandemic varies by organization size, age of the company, industry sector, manager experience, logistics strategy, past disaster experience, obstacles, and willingness.	**H2:** Implementation of resilience strategies during the COVID-19 pandemic varies by organization size, age of the company, industry sector, manager experience, logistics strategy, past disaster experience, obstacles, willingness, and impacts of COVID-19.
H1-1: Organization size	H2-1: Organization size
H1-2: Age of companies	H2-2: Age of companies
H1-3: Industry sector	H2-3: Industry sector
H1-4: Manager experience	H2-4: Manager experience
H1-5: Logistics strategy	H2-5: Logistics strategy
H1-6: Past disaster experience	H2-6: Past disaster experience
H1-7: Obstacles	H2-7: Obstacles
H1-8: Willingness	H2-8: Willingness
	H2-9: Impacts of COVID-19

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Resilience strategy implementation: Factors

Choice model result: Before COVID-19

Table 3: Factors affecting resilience strategy implementation before COVID-19

0: Not implemented 1: Implemented	**Coefficient**	**Standard error**	**z**
Company size (0: SME, 1: LE)	0.759	0.572	1.330
Age (0: 20 years or less, 1: 21 years or more)	0.009	0.009	0.960
Industry sector: Textile manufacturing base sector			
Pharmaceutical manufacturing	0.859	0.669	1.120
Semiconductor and device manufacturing	1.019	0.910	0.810
Transport equipment and machinery manufacturing	0.452	0.560	0.000
Manager experience	-0.259 *	0.121	-2.150
LogisticStrategy	0.164	0.718	0.230
Past disaster experience	0.545	0.394	1.380
Obstacle	1.001*	0.423	2.370
Willingness	3.045***	0.437	6.960
***p<0.001; **p<0.01; *p<0.05			

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Resilience strategy implementation: Factors

Choice model result: During COVID-19

Table 4: Factors affecting resilience strategy implementation during COVID-19

0: Not implemented 1: Implemented	**Coefficient**	**Standard error**	**z**
Company size (0: SME, 1: LE)	0.204	0.627	0.32
Age (0: 20 years or less, 1: 21 years or more)	-0.005	0.01	-0.47
Industry sector: Textile manufacturing base sector			
Pharmaceutical	0.066	0.687	0.1
Semiconductor and device	-0.242	0.948	-0.25
TE&M	-0.059	0.548	-0.11
Manager experience	0.068	0.131	0.52
Past disaster experience	0.93*	0.439	2.12
Obstacle before COVID	0.965*	0.47	2.05
Willingness before COVID	1.697**	0.508	3.34
COVID-19 impacts			
Impact on net sales	-0.594**	0.201	-2.95
Impact on ease of communication to suppliers	0.203	0.386	0.53
Impact on ease of access on transport from suppliers	0.205	0.321	0.64
Impact on lead time	0.382	0.274	1.4
Impact on inventory level	-0.406	0.236	-1.72
Impact on customer satisfaction	0.794*	0.389	2.04

***p<0.001; **p<0.01; *p<0.05

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Resilience strategy implementation: Factors

Before COVID-19	During COVID-19
H1-1: Organization size	H2-1: Organization size
H1-2: Age of companies	H2-2: Age of companies
H1-3: Industry sector	H2-3: Industry sector
H1-4: Manager experience	H2-4: Manager experience
H1-5: Logistics strategy	H2-5: Logistics strategy
H1-6: Past disaster experience	**H2-6: Past disaster experience**
H1-7: Obstacles	**H2-7: Obstacles**
H1-8: Willingness	**H2-8: Willingness**
	H2-9: Impacts of COVID-19 (Sales and Customer satisfaction)

- Before COVID-19, manager experience, obstacles, and willingness were determining factors for resilience strategy implementation by companies.
- During COVID-19, in addition to obstacles and willingness, past disaster experiences and impacts of COVID-19 were also found to be significant factors.

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Willingness to implement resilience strategies

Before COVID-19

After COVID-19

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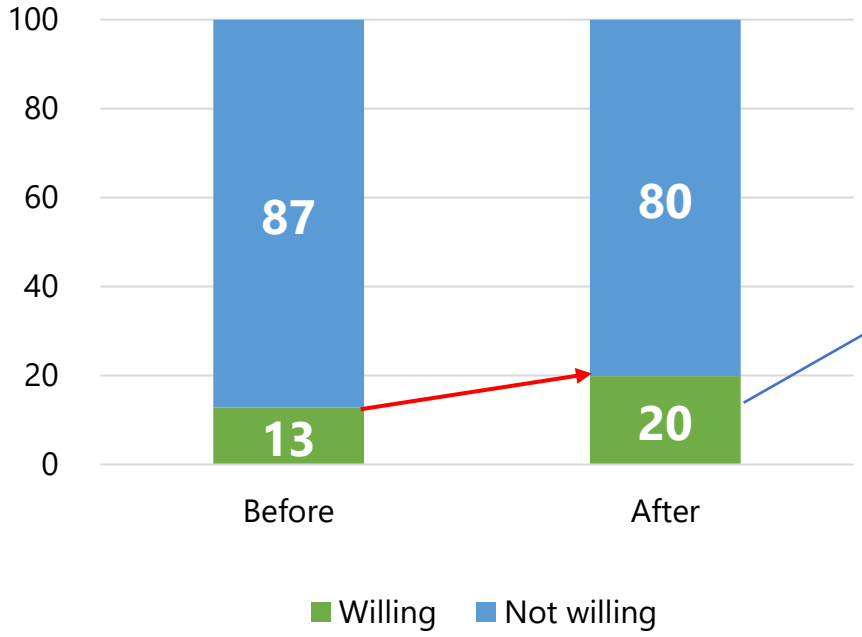
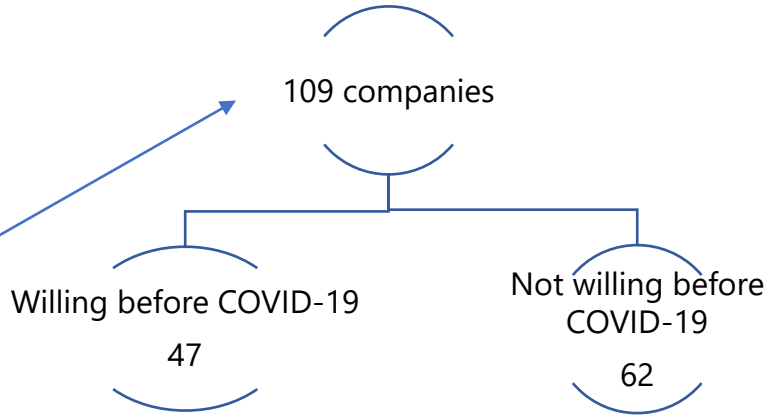
Resilience strategy implementation: Willingness

- The willingness to implement resilience strategies stood at 13% before COVID-19.
- The willingness to implement resilience strategies increased to 20% after COVID-19.

Figure 4. Willingness to implement resilience strategies (in %)





The higher the willingness the more likely that companies will implement resilience strategies.

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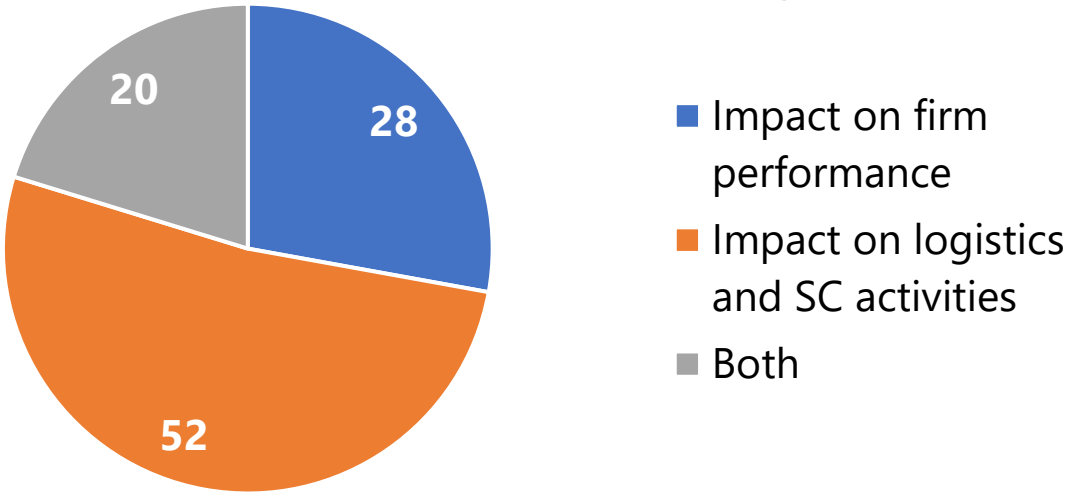
Resilience strategy implementation: Willingness

We further investigated if the impacts of the COVID-19 pandemic led to an increased willingness to implement resilience strategies.

- Out of the 109 companies, for 72% (79) of the companies, the impacts of COVID-19 led to increased willingness.

Figure 5. Factors influencing willingness to implement resilience strategies



For 52% of companies impact on **logistics and SC activities had the biggest influence** on the willingness to implement resilience strategies in the future.

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Conclusion and suggestions

Resilience strategy implementation

- Status
- Types
- Factors

Willingness to implement resilience strategies

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Resilience strategy implementation

Status

Implementation of resilience strategies stands at 15% (including before and during COVID-19) even though Japan is known to be highly disaster vulnerable.

Explanation

Characteristics of business style of Japanese companies

1. Good relationship with counterparts (interview response)
2. Companies working in a group or under a parent company (interview response)
3. Disruptions due to disasters are common in Japan (interview response)

makes them better able to absorb the shock of disruptions and consequently may not have the motivation to have their own resilience strategies. This is typically found in keiretsu.

SUGGESTIONS

1. For companies that work with international counterparts should focus on implementing appropriate resilience strategies.

A keiretsu is a set of companies with interlocking business relationships and shareholdings where a business network is made up of different companies, including manufacturers, SC partners, distributors, and occasionally financiers

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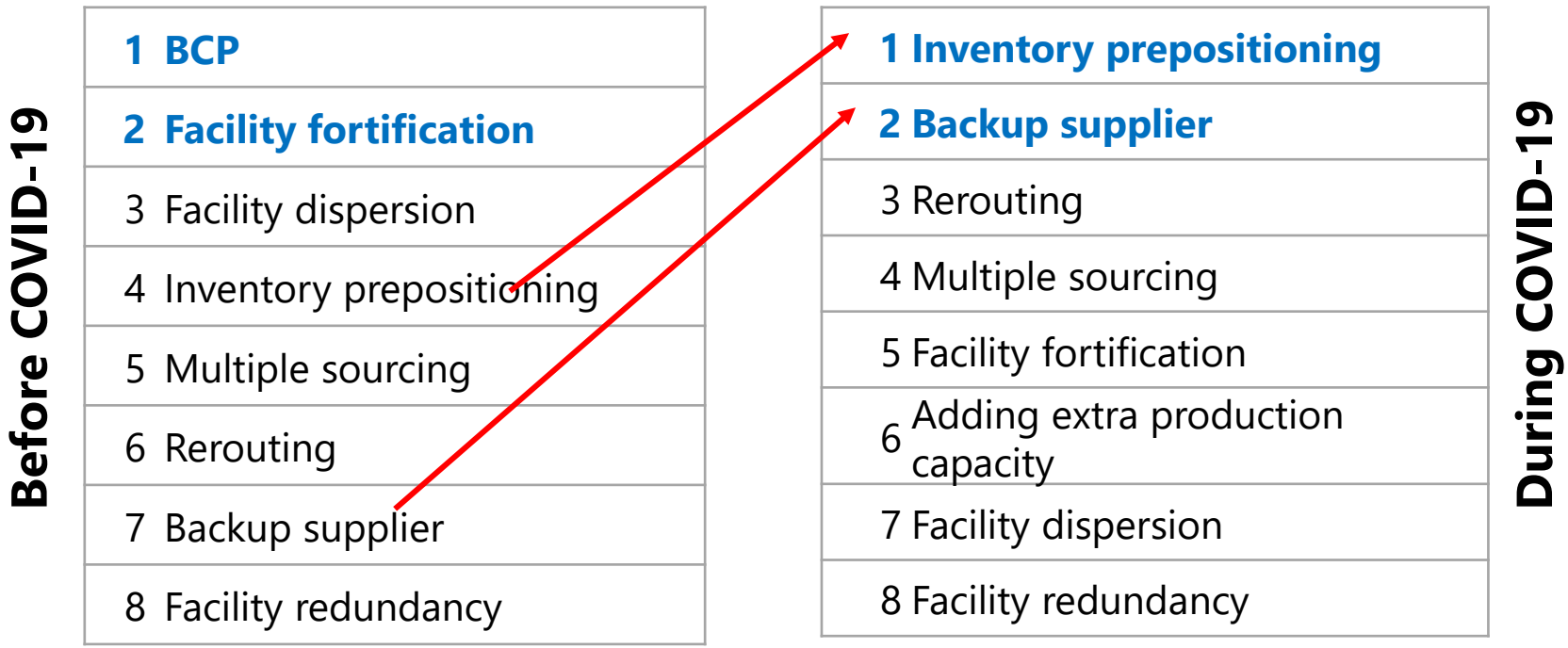
Resilience strategy implementation

Types of resilience strategies

- The choice and priority of resilience strategies varies by industry sector.
- The choice of the type of resilience strategies implemented has changed from before to during the COVID-19 pandemic.

Top priority resilience strategy for different industry sectors



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Resilience strategy implementation

Types of resilience strategies

Resilience strategies subsidized by the government do not match the needs of different industry sectors.

Government priorities

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Individual company/Sectoral priorities

Resilience strategies
SC diversification
Nearshoring
*Relocating production bases to Japan and ASEAN countries

Industry sector	Resilience strategies
Transport equipment &machinery	Inventory prepositioning
Pharmaceutical	Inventory prepositioning
Semiconductor & device	Multiple sourcing; Backup supplier; Rerouting
Textile	Backup supplier

SUGGESTIONS: If the government were to provide a subsidy for the implementation of resilience strategies,

1. SC resilience should be broadly defined incorporating all the different industry sectors.
2. The selection of resilience strategies should reflect the needs of different industry sectors.

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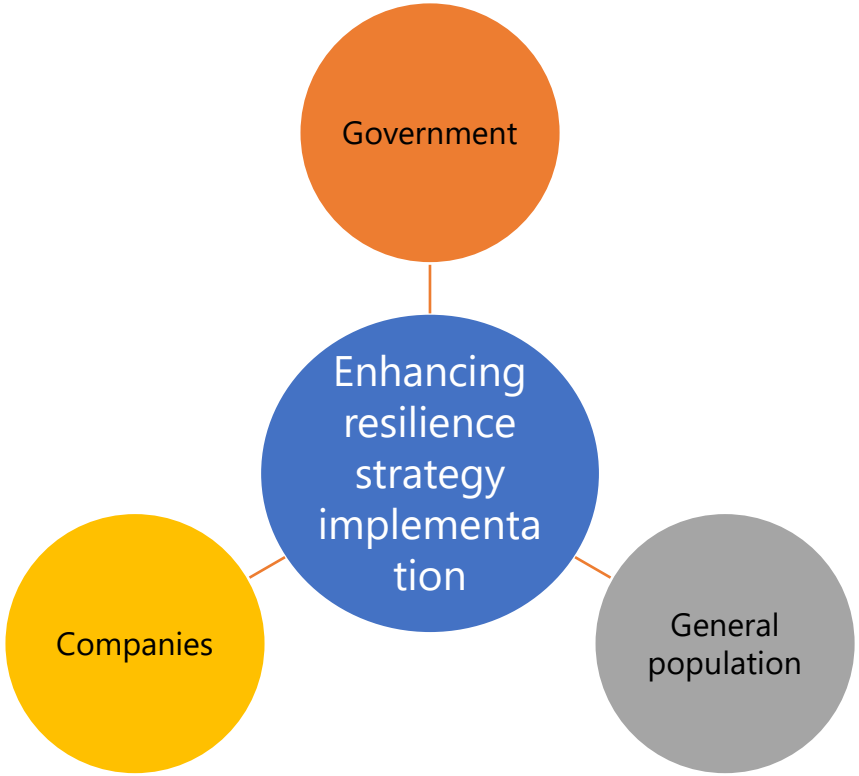
Resilience strategy implementation

Factors	
• **Manager experience** • **Obstacles** • **Willingness** • Impacts of COVID-19 on **Customer satisfaction**	• Past disaster experience • Impacts of COVID-19 on Net sales



SUGGESTIONS

1. Government should facilitate to
   - alleviate barriers and
   - enhance willingness to implement resilience strategies.
2. Companies should focus on raising managers' awareness of the importance of resilience strategies.
3. General population can influence by asking for greater corporate social responsibility.

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Resilience strategy implementation

Willingness

- The willingness to implement resilience strategies is gradually increasing.
- However, more investigation on factors that affect willingness to implement resilience strategies is needed.

SUGGESTIONS: The government of Japan can play an important role in influencing the willingness of the companies to implement resilience strategies by

1. Raising awareness of the importance of implementing resilience strategies,
2. Showcasing examples of companies that benefitted from the implementation of resilience strategies,
3. Facilitating implementation by providing subsidies
4. Formulating a regulatory framework for companies to follow.

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Thank you very much for your time and attention.

ご清聴ありがとうございました。

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