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COVID-19 pandemijos poveikis tiekimo grandinės sutrikimams: Filipinų maisto pramonės atvejis	The Impact of the COVID-19 Pandemic on Supply Chain Process: The Case of the Philippine Food Industry
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**MASTER THESIS PROJECT**

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## **LIST OF ABBREVIATIONS**

AFM - Accounting and Financial Management  
ASEAN - Association of South East Asian Nations  
APOR - Authorized Persons Outside Residence  
CHIPS - Creating Helpful Incentives to Produce Semiconductors  
COVID-19 - Coronavirus Disease 2019  
DA - Department of Agriculture  
DTI - Department of Trade and Industry  
DBP - Development Bank of the Philippines  
EQC - Enhanced Community Quarantine  
FSRF - Financial Support to Rice Farmers  
FSC - Food Supply Chain  
GDP - Gross Domestic Products  
JICA - Japan International Cooperation Agency  
LBP - Landbank of the Philippines  
MSME - Micro, Small, and Medium Enterprises  
NGO - Non-Governmental Organization  
PAR - Philippine Area of Responsibility  
PAGASA - Philippine Atmospheric, Geophysical, and Astronomical Services Administration  
PRDP - Philippine Rural Development Project  
PSA - Philippine Statistic Authority  
PHF - Post-Harvest Facilities  
PHEIC - Public Health Emergency of International Concern  
RA - Republic Act  
RFFA - Rice Farmers Financial Assistance  
UAW - Unioned Auto Workers  
WHO - World Health Organization

## INTRODUCTION

**Relevance of the topic and the necessity for a solution:** The food industry is one of the most significant industries globally, as it is the sector in which the products produced, manufactured, and delivered possess a finite lifespan and are vital for human survival. A minor disruption alone may cause localized food shortages, and a significant disruption compromises the food supply chain, causing a shutdown to the whole industry (Staniforth, 2020). The COVID-19 pandemic was transformative for all business enterprises and supply chains worldwide. Due to the pandemic's lasting effect, significant disruptions have been felt in various levels and sectors of the international supply chain (Karunaratna, Siriwardhane & Jayarathne, 2023).

The Micro, Small, and Medium Enterprises (MSMEs) are crucial to the movement and development of the Philippine economy. According to the Asian Development Bank's report (2020), 99.5% of all the businesses within the nation belong to the group of MSMEs, providing employment to 63.2% of laborers in 2018 alone. The COVID-19 pandemic, the unpredictability it has brought, and the continuous extension of the restrictions imposed with the objective of controlling and containing its spread have brought significant damage to various informal Micro, Small, and Medium Enterprises, resulting in definite and indefinite closures of numerous business entities (United Nations Philippines, 2021).

The motivation to explore this particular topic is due to a gap in existing literature regarding the impact of the pandemic and the prolonged government restrictions, as well as the resilience strategies used by the MSMEs, specifically within the Philippine food sector.

**Motives for choosing the particular topic:** The relevance and the intention of creating a practical impact on ordinary food MSME business owners in the Philippines were the primary reasons for the selection of this particular topic. As the focus is on understanding the significant disruption and its long-lasting impact on the Philippine food business landscape, as well as the identification of effective crisis aversion and strategies the surviving food businesses employed, the major motivation of this topic selection is to enhance the crisis preparedness and management of the small-scale businesses within the Philippine food industry.

**Research problem:** It is essential to analyze the lessons learned from the COVID-19 pandemic to ensure that the food supply chain is managed correctly to avoid potential food shortages and insecurity in future crisis situations. This study aims to understand the consequences of pandemics and their impact on food supply chain processes in order to prepare for future crises. In addition, this study is relevant because it addresses the low resilience of SMEs in the Philippine food industry. The Philippines is known as a country prone to many natural extreme events, and MSMEs are prone to disruptions.

There is a lack of research on which supply chain challenges in the context of the COVID-19 pandemic are specific to the food supply. The master thesis aims to fill this gap.

**The aim of the master's thesis** is to analyze the supply chain processes and challenges caused by the COVID-19 pandemic in the food supply industry in order to increase business resilience in case of future challenging situations.

**Master thesis objectives:**

- 1) To examine the theoretical aspects of supply chains and supply chain disruptions.
- 2) To analyze various food supply chain disruptions and issues.
- 3) To analyze the impact of COVID-19 on the food supply chain process.
- 4) To determine the unique challenges faced by the Philippine food industry during the peak and after the COVID-19 pandemic and the lockdowns.
- 5) To construct proposals aimed at increasing the resilience of food supply chains.

**The theoretical value of this research:** to contribute supplementary knowledge on various factors that influenced the survival or demise of food supply chains during and after the pandemic, as well as effective and ineffective resilience strategies that academic bodies may assess and access for the further development of current government programs and policies and business frameworks.

**The practical value of this research** is to offer valuable information for the future formulation of strategies that various MSME owners can utilize as guidance in terms of crisis management, resilience, and preparedness.

**Research methods of the master's thesis:** Analysis of literature, collation, and clustering of authors' opinions, in-depth examination of secondary data such as relevant government legislation, programs, and industry guidelines to gather information for a broader study, in-depth interviews with owners and managers of various MSMEs. Individual, in-depth interviews will ensure a more in-depth understanding of the unique experiences of the various MSME experts and the subtleties of their decision-making processes.

**Limitations:** While the qualitative research provides insights in the actual experiences and strategies implemented by the participants selected as the sample size, limitations, and unavailability of the statistical and quantitative aspects of supply chain disruptions and its impact on MSMEs of the Philippine Food Industry may be present.

**Structure of the Master Thesis:** This study is composed of 4 segments, namely: The Review of Related Literature, Methodology of the Empirical Research, Research Data and Analysis Results, and the Conclusions and Summary. The initial segment, Review of Related Literature, contains an analysis of the topics and literature related to the key concepts of this study. This segment is composed of two major sub-segments exploring the concept, issues, and influences of the process, as well as the impact of the COVID-19 Pandemic to the overall process of the global supply chain. The second sub-segment mostly focuses on the definition of Philippine MSME's and the impact of the COVID-19 pandemic to the operations and supply chain structure of the forementioned businesses. The second chapter focuses on the methodology of the study gathered from the analysis of related literature. This chapter is composed of the formulated aim and stages of the qualitative research, articulated format and design of the interview questionnaire and structure, and a brief description of the various business owners/experts selected for the study. The third chapter contains the summary, analysis, and the conclusions of the collected research findings in the empirical study. Lastly, the final segment is comprised of the conclusions of the study as well as the recommendations for the succeeding research and development.

# **I. THEORETICAL BACKGROUND: SUPPLY CHAINS AND THEIR DISRUPTIONS**

## **1.1. Concept of Supply Chains and Supply Chain Management**

Supply chains cover a vast number of business enterprises and operations from the product creation to production, beginning product production and creation, and manufacturing, which includes the design and packaging process to the delivery of the goods and services towards the end goal of consumption, making it a crucial factor in the daily business process operations and the business survival (Hugos, 2018). Supply chains cover different business operations and sectors, including service and manufacturing enterprises. The chain's complexity may differ based on the different industries and their unique intricacies (Ganeshan and Harrison, 2002). Additionally, Albrecht (2009) defined the supply chain as a complex chain of various steps and institutions involved in the process of producing products of value for the buyers. According to Hayes et al. (2023), the supply chain's complex process includes numerous steps and parties. This process includes parties, such as the producers, logistical centers, and companies, to the retail stores before the products get delivered to the final stage, the consumers. The supply chain process may vary based on the supply chain model of different companies and the sectors in which they operate. However, the process always begins with the procurement of the raw materials.

According to Taulia (2023), the process of the supply chain formally starts with the purchasing of materials and services. The second stage transpires as the purchased raw materials are processed into the intended final product. The process continues to the third stage, logistics, and delivery, which involves partnerships with distribution and logistics companies in storing and transporting the final products to various retailers and customers. Frequently, some consumers request a return of the products and a refund, which adds stage to the entirety of the supply chain process. According to Annis (2021), the supply chain management process begins with the planning stage to ensure the overall success of the complex process, from product procurement to product delivery. The planning stage involves the identification of product demand and material supply and availability, as well as the negotiation and the establishment of connections and collaborative partnerships with



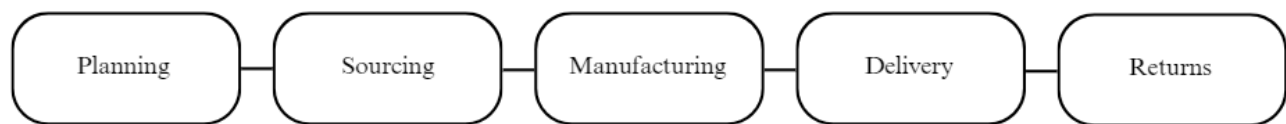
different suppliers and vendors.

Figure 1 below depicts the principal process of the supply chain (Gunnoo, 2023):

- *Planning* involves a series of negotiations and relationship building among the companies and the supplier of raw materials, as well as the demand and supply availability forecast.
- *Sourcing* involves the procurement or exchange of raw materials or services suitable for the business process. Sourcing includes not only the procurement of raw materials but also the negotiation of plans and inventory, the establishment of partnerships between the supplier and the manufacturer, and so on (McCloud, 2021).
- *Manufacturing* includes all processes, such as product processing, quality control inspection, etc., involved in transforming the source materials into the final product (Luther, 2023).
- *Delivery* is also known as the transportation of processed products to retailers or consumers. According to Luther (2023), since this stage is the final stage before the consumers receive the ordered products, any delays in this stage of the supply chain process may lead to customer dissatisfaction and are indicators of whether the customers will return or not. This makes delivery a crucial stage in the overall supply chain process and performance (Westland, 2022).
- *Return* happens due to customer dissatisfaction or product defect. According to Taulia (2023), mishandling or delays in this stage of the cycle may significantly impact the customer-business relationship. In contrast, rapid response and smooth return/refund processing will improve consumer trust and relationships.

Figure 1

### The Process of Supply Chain



Source: Gunnoo, 2023

The supply chain system provides a multitude of benefits for both companies and consumers. According to Spotos (2023), an efficient supply chain and increased supply chain performance will minimize the overall costs of operations of the company, excess inventory, and operational waste, create better relationships with all the parties involved in the operation, and create an improvement in the predictions of consumer demand and product supply, making the overall process smoother and rapid for the customers, ensuring optimal customer satisfaction and product sustainability.

The first table provides a comparison of the supply chain descriptions based on the opinions of various authors.

Table 1

The Comparison of the Supply Chain Definitions

<b>Definitions of Supply Chain</b>	<b>Author (Year)</b>
A crucial factor in business covers the vast process of product creation, production, manufacturing, and delivery with the end goal of consumption.	Hugos (2018)
The process covers different business operations and industries. Its complexity may vary based on the industry's complexities	Ganeshan and Harrison (2002)
The process involves various steps and parties, from the producers to the final stage, the consumers. It may vary based on the model, company, and sector; however, the process always begins with procuring the raw materials.	Hayes et al. (2023)
The process includes four parts: Procurement of raw materials, processing raw materials into finished products, transporting the final products to retailers and customers, and returning the products and a refund.	Taulia (2023)
The process must begin with the planning stage to ensure the overall success from product procurement to delivery.	Annis (2021)
The process involves four principal processes: Planning, Sourcing, Manufacturing, Delivery, and Return.	Gunnoo (2023)
A chain that will minimize the overall costs of operations of the company and ensure optimal customer satisfaction and product sustainability.	Spotos (2023)
A complex chain of steps and institutions produces value products for the buyers.	Albrecht (2009)

Source: Compiled by the author based on the results of the literature analysis

Based on the research compilation above, the complex process of the supply chain is crucial in enhancing and streamlining business processes and ensuring business efficiency. From the company perspective, effective supply chain management results in effective cost management, decreased waste and lead time, smoother business operations, increased customer satisfaction and loyalty, adaptability, competitiveness, sustainability, and overall success. From the consumer perspective, on the other hand, an effective supply chain process results in shorter waiting times, convenience, and availability of a broad range of different products or services, to name a few. These fosters sustainability, availability, and increased satisfaction in the overall marketplace.

## **1.2. Factors Affecting the Supply Chain Process**

Effective and efficient supply chain processes benefit both the company and the market; however, expected and unexpected factors may arise at any given time that may potentially result in disruptions in the supply chain process. When these disruptions occur, several complications also surface, creating multiple issues such as bottlenecks, shortages, delays, and other factors that affect the overall processing of goods and services either temporarily or in the long term. According to Hans (n.d.), any disruption in the interconnected web of the supply chain process stemming from inconsequential nuances to significant issues may lead to dire company problems and substantial financial losses. According to Dunaj (2024), supply chain disruptions may vary into two categories: disruptions that can be expected or predicted or those that occur unexpectedly. A company may predict the expected disruptions before they happen. Some might arise due to shifting consumer preferences or market and economic changes. The other type of disruption is unpredictable and might have more impactful and lasting effects on various companies and supply chains. These include supply chain disruptions such as geopolitical conflicts, sudden weather shifts, and unforeseeable cyber security strikes.

Additionally, disruptions may stem from within and outside the companies' supply chain processes. Internal factors may vary in various companies as these factors mainly stem from the current challenges and limitations a particular company faces. These internal factors might be a company's existing internal, operational, financial, production, and planning issues (Dunaj, 2024). According to the study by Parajuli, Kuzgunkaya, and

Vidyarthi (2017), internal supply chain disruptions may happen at various stages of the supply chain process. Furthermore, Parajuli, Kuzgunkaya, and Vidyarthi (2017) identified three sections of the supply chain process in which specific internal disruptions may occur: upward, middle, and downward. Disruptions such as substandard logistics quality, unavailability of materials, and insufficient workforce usually happen in the earlier stages of the SC process. Mid-level process disruptions may consist of insufficient processing power, inadequate processing performance, and substandard final product quality. Lastly, the unpredictability of the supply, demand, and timing may further disruptions within the process of the supply chain as a whole.

External factors, on the other hand, are usually unforeseen circumstances that may affect the supply chain process, such as extreme natural occurrences, geopolitical factors, and health crises (Dunaj, 2024). Annex 3 shows a timeline of various supply chain disruptions that have occurred recently within the U.S. Territory.

The disruptions that affect the conventional supply chain process (SAP News. 2022): Geopolitical conflicts (Russia-Ukraine War, U.S.-China Trade War, China-Taiwan Dispute, etc.), Insufficiency in raw components, Increased gas prices, Volatility in government regulations, Increasing interest rates, Absence of contingency plans within the supply chain, Local or Global Health Crises, Inflation, Dependence on international suppliers, Shortages in workforce and shortages in qualified workforce, Weather Extremities, Virtual Work, United States on-demand supply chain strategy, Unpredictable change in consumer trends.

The geopolitical issues remain the most common cause of supply chain disruptions. Geopolitical unrest alone makes up 58% of the overall supply chain disruptions on a global scale. In recent years alone, multiple geopolitical factors, such as the Russia-Ukraine war, the U.S. and China trade dispute, and the government-imposed measures to contain the spread of the COVID-19 pandemic, impacted the global supply chain. The Russia-Ukraine war alone has affected numerous companies in various industries worldwide. According to Correll (2022), the conflict between Russia and Ukraine caused multiple effects on the global supply chain, including the stable flow of goods resulting in inflation and global shortages of numerous raw materials, such as wheat, steel, gasoline, and seed oil, to name a few. Furthermore, both countries are significant suppliers of wheat (33%), barley (25%), and sunflower oil (75%), which meant

that the conflict between the two countries also caused a significant food scarcity locally and in numerous countries, most especially in the developing countries within the region of Africa. Sanctions in international border crossings and ports were also imposed due to the conflict, causing numerous delays and logistical obstacles to transporting goods and materials (Stackpole, 2022).

Additionally, since Russia is a major gas supplier in Europe, a dramatic increase in gasoline and oil prices has been felt globally since the war began (Lavsi, 2022). The trade and tariff war between the United States of America and the People's Republic of China also impacted the global supply chain operations. The trade war between the countries of the United States and China began in 2018, during the Trump administration when the United States imposed a 25% tariff and other trade restrictions on significant Chinese importation amounting to \$50 billion (Borak & Meyersohn, 2018). According to Zeng (2023), at the beginning of 2022, the highest tariff fees were imposed and assigned to the raw materials, production equipment, and machinery imported from China, causing an impact and change in the current supply chain pattern. Furthermore, the tension between the two countries amid the trade war resulted in logistical issues, increased tariff fees, and overall instability in the global supply chain (Singhal, 2022).

Table 2 provides a summary of the factors influencing supply chain disruptions.

Table 2  
Summary of Factors Affecting Supply Chain Process

<b>Types of Supply Chain Disruptions</b>	<b>Supply Chain Disruptions</b>	<b>Authors (Year)</b>
Internal	Insufficient workforce	Parajuli, Kuzgunkaya, and Vidyarthi (2017)
	Volatility in Supply and Demand	
	Substandard Quality of the Product	
	Insufficient Processing Power and Performance	
	Unavailability of Materials	
	Unstable Flow of Goods	Correll (2022)
	Logistical Issues	Singhal (2022)
	Logistical Delays	Stackpole (2022)
	Insufficiency in Funds/Investments	Georgiev (n.d.)
	Dependence on International Suppliers	SAP News (2022)

	Absence of Contingency Plans	
External	Geopolitical Conflicts	SAP News (2022)
	Increase in Gasoline and Oil Prices	Lavsi (2022)
	Shift in Consumer Preferences	Sethupathy and Gupta (2021)
	Unforeseen Cyber Security Strikes	Dunaj (2024)
	Extreme Natural Occurrences	
	Economic Changes	
	Local and Global Health Crises	
	Increased Tariff and Interest Fees	Singhal (2022)
	Constant Change in Government Regulations	Datta et al. (2020)

Source: Compiled by the author based on the results of the literature analysis

Supply chain complications from both the internal process and the external disruptions may cause significant issues in the delicate and interconnected process of the supply chain. The aforementioned disruptions may cause significant delays and challenges in local or international supply chains in the form of supply shortages or delays, which as a result, may impact communities as a whole in the form of supply insecurity and inflation. This highlights the benefit of effective resilience strategies and crisis preparedness that will essentially prevent the cascading of the effects/disruptions within the supply chain process.

#### **1.4. Issues in the Food Supply Chain Process**

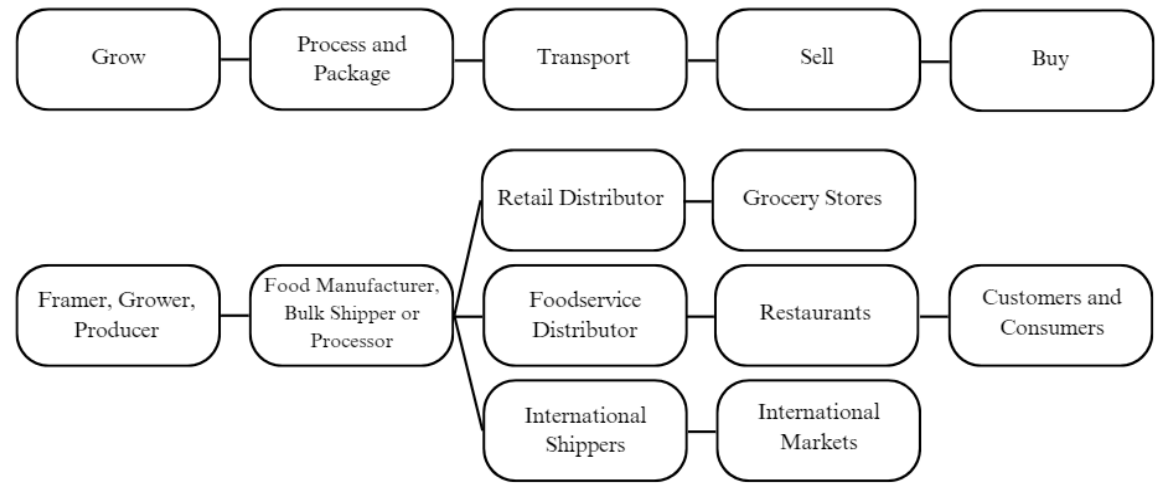
The food supply chain may be referred to as the process of converting and transporting raw food supplies into processed products from the producer (farmer) to the manufacturer and the consumers at the final stages or destinations (Yousef et al., 2023). The food supply chain, also known as FSC, plays an essential role in the consistent availability and accessibility of food as well as the economic stability and growth of nations globally. According to Georgiev (n.d.), it has a significant role in fulfilling customer demands and producing safe, high-quality food products to ensure customer satisfaction. However, according to Food Marketing Technology (2021), despite being a significant industry that possesses consequential influences in communities all over the globe, this particular industry needs to be considered in terms of investments. FSC, on a

global scale, ensures the manufacturing and delivery of various food products internationally. According to Rodriguez (2019), the process and complexities of various FSCs may depend on the sheer number of parties involved in the overall process, such as the raw material producers, manufacturers affixing additional value to the food products, down to the wholesalers transmitting the products to the retailers, down to product consumption.

Furthermore, Bukeviciute, Dierx & Ilzkovitz (2009) identified three sectors involved in the food supply chain process: the farming sector, the food manufacturing sector, and logistics. The entire food supply chain process starts in the agricultural sector, where crops are grown and different livestock are cultivated, after which the crops or the raw components are passed on to the manufacturers for processing. In this stage, processes such as product construction, storage, and distribution to different logistic companies and partners are involved. The final stage involves the distribution of the final products to different consumers.

Figure 2 shows the components of the food supply chain (Food Marketing Technology, 2021):

Figure 2  
The Variables of the Standard Food Supply Chain



Source: Food and Marketing Technology, 2021

The food supply chain, similar to other supply chains, is susceptible to expected and unexpected issues that may disrupt the flow of product processing, manufacturing, and delivery. These disruptions may take various forms, ranging from natural disasters and unforeseen weather events to geopolitical tensions and global health crises. They may cause a significant impact and consequences on the otherwise smooth flow of food from the production level to the consumers' table. According to Reddy et al. (2016), any failures or breakdowns within the food supply chain process may happen and can be referred to as food supply chain disruptions; however, the most consequential disruption that may happen within the process is a disruption from the source or production-level as this may severely create various repercussions, both minor and significant, not only to the local food supply chain but to the global scale as well.

Furthermore, disruptions and delays in the logistical perspective of goods and services from an international scale may result in a change or repercussions in various economies worldwide. Recent events such as the tariff/trade tension between the United States and China, Brexit, the ongoing war between Russia and Ukraine, and the government-imposed policies to fight the spread of COVID-19 have caused significant damages and disruptions to both the local and international supply chain and economies (Meier and Pinto, 2020). As mentioned in the section above, the continuous war between the countries of Russia and Ukraine caused multiple disruptions in the processing of wheat (33%), barley (25%), and sunflower oil (75%), locally and internationally, resulting in a shortage of the mentioned products in various countries, especially in the countries within the region of Africa (Stackpole, 2022). Brexit, or the departure process of the countries within the United Kingdom from the European Union, caused major disruptions within the supply chains within the region. According to Datta et al. (2020), the food trade and FSC within the UK and EU depended heavily on each other as no tariffs and border fees were required before the UK's departure. Based on the records, 40% of the food products consumed in the UK were produced by the countries within the European Union, predicting a shortage of usually imported food products and, as a result, an increase in food prices. As the new regulations post-Brexit were implemented, shortages and delays in imported goods also followed. According to Ziady (2023), the UK government's move has resulted in major inflation in 2019. Food supply shortages also remain a concern and have developed fear among citizens as the usual imports of food products were cut in half after



Brexit. Another event that caused severe global and international food supply chain disruptions was the spread of the COVID-19 virus. COVID-19 caused severe disruptions and uncertainty within different aspects and levels of the global food supply chain, including production, manufacturing, and distribution. According to Sethupathy and Gupta (2021), the distribution of crops and other ingredients has faced severe challenges and disruptions due to the restrictions imposed by the government. As a result, the food supply chain has been even more complex than how it was pre-pandemic, resulting in food shortages and delays. Product shortages may have also resulted from unpredictable consumer behavior, such as overstocking and overbuying during the pandemic. This sudden change in consumer behavior may have been the effect of either consumer panic buying or the widespread fear due to misinformation. In other parts of the world, such as Africa, food shortages were also felt due to logistical issues faced by the region in the midst of the lockdowns. According to Marks (2020), 28 major trade hot spots in Africa experienced delays and grave challenges in food distribution due to government-imposed lockdowns, delays in local and international logistics, and strict quarantine measures, causing critical food insecurity within the region. The United Kingdom also experienced major repercussions due to COVID-19. Reuters (2021) reported that the food supply chain within the U.K. during the pandemic's peak was on the verge of failing as it triggered major labor shortages of the employees working within the meat and food sector. On the other side of the globe, Australia reported a record-breaking surge of people relying on government support and food charity. Based on the report by Carey, Murphy, and Alexandra (2022), the effect of the pandemic, together with natural disasters such as extreme flooding, resulted in numerous road closures, damage to raw food ingredients such as crops, and issues in the distributions of food and other products in some regions of Australia, causing major shortages in food which also results in inflation among food products. Due to these unforeseen challenges, 28% of Australians, primarily average workers and immigrants, experienced major food insecurity by 2020 (McCrindle, 2020). Furthermore, Godrich et al. (2022) conducted a combination of quantitative and qualitative research in order to explore the impact of the COVID-19 pandemic on the food supply chain within the southwestern region of Australia. Based on the study conducted, 73% of the respondents reported experiencing the after-effects of the pandemic and supply chain disruption, such as inflation, food supply shortage, and sudden unpredictability in consumer behavior. The consequences of unforeseen major events can be felt all over the

world. Food shortages, business closures, and food insecurities were felt in different regions. This research undermined the idea that a disruption within the food supply chain can cause major damage to both local and international communities, especially to already vulnerable families. Disruptions within the beginning of the production level of FSC will result in significant losses for companies, a drastic increase in food wastage, major challenges in the rest of the FSC production, and customer dissatisfaction. They may even result in significant food instability and insecurity. This highlights the need for contingency plans and strengthening of the food supply chain resilience and adaptability in order to create more flexible, responsive, and technologically integrated systems to ensure the reliable and secure provision of food for all.

Table 3  
Summary of the Characteristics of Various Food Supply Chain Disruptions

<b>Major Supply Chain Disruptions</b>	<b>Authors (Year)</b>
United States and China Tariff/Trade tension	Meier and Pinto, 2020
Russia and Ukraine War	Stackpole, 2022
Departure of the United Kingdom from the European Union	Datta et al. (2020)
Brexit Inflation	Ziady (2023)
COVID-19 Pandemic	Sethupathy and Gupta (2021)
Government-imposed Lockdowns	Marks (2020)
Strict Quarantine Measures	
Major Labor Shortages	Reuters (2021)
Natural Disasters	Alexandra (2022)
Unpredictable Consumer Behavior	Godrich et al. (2022)

Source: Compiled by the author based on the results of the literature analysis

### **1.3. The Impact of the COVID-19 Pandemic on the Supply Chain Process**

Before the geopolitical conflicts, another major event occurred that had a significant and long-lasting impact on the global supply chain. The COVID-19 pandemic disrupted every sector globally and significantly impacted the global supply chain (Hayes et al., 2023). The COVID-19 pandemic marked the peak of unpredictability in every aspect. According to Wallace (2023), pre-pandemic, businesses were forced to cancel already made customer orders in the expectation that the pandemic would cause a massive fall in consumer finances; however, the opposite happened as the U.S. government invested trillions of dollars to keep the businesses and the population running. In the middle of the pandemic and government-imposed measures, the demand for finished goods had risen despite the labor shortages and the blockages, causing a multitude of issues to arise. Issues such as delays and bottlenecks were reported among different sectors of businesses as the demand for goods arose and the supplies depleted, highlighting the complexity of the supply chain and how disruptions may easily cause major complications (Ellyatt, 2021).

The research proposed that supply chains' delicate, complex, and interdependent nature can be easily impacted by different disruptions stemming from internal and external sources. From minor disruptions, such as a delay in logistics, to major disruptions, such as the unexpected and unparalleled impacts of the COVID-19 pandemic and geopolitical conflicts, disruptions threaten the supply chain. They may cause a ripple effect, significant damages, and a multitude of issues, such as process bottlenecks and supply shortages, which would further impact businesses, consumers, the community, and the economy alike. This research highlights the importance of business and supply chain resilience, the gravity of assessing the current supply chain processes, the benefits of identifying the vulnerabilities within the process, and creating a contingency plan for businesses to withstand the foreseen and unforeseen circumstances that may arise.

The COVID-19 pandemic was an unforeseen global event that had a prominent impact on every business and non-business sector, community, and economy worldwide. A pandemic, as defined by Rogers (2024), is a disease or illness that has the ability to spread from one person to another in rapid succession, infecting multiple areas and the

majority of the world within just months. A pandemic starts as an epidemic where numerous individuals living within a particular area or geographic location become infected. The pandemic started in a rural province of Wuhan, China, where symptoms were limited to a small number of individuals. However, the virus promptly spread across the regions connected to Wuhan. Due to the freedom of travel, the virus eventually spread across different nations in various succession. The spread of the virus varied by location and country due to a number of factors, such as cultural behaviors, responses, and the size of the population, to name a few (Brahma et al., 2020). As the spread of COVID-19 continued, the total number of individuals infected was on a constant rise. By the 30th of January 2020, the World Health Organization held an announcement declaring COVID-19 as a public health emergency of international concern (PHEIC) (Pharmaceutical Technology, 2020). As the government-imposed lockdowns began, the virus rapidly spread, and uncertainty materialized, provoking fear in the masses. This led to immense unpredictability in consumer behavior. A new buying thread emerged; store shelves were emptied quickly due to panic buying (Islam et al., 2021). This rapid and unforeseen change in consumer behavior caused disruptions in various supply chains, impacting major businesses and causing supply shortages in various nations.

According to a study conducted by Dey-Chowdhury et al. (2022), the COVID-19 pandemic has severely impacted numerous industries between the years 2020 thru the year 2021. The most impacted sectors were the industries that were highly reliant on physical contact, namely the wholesale, retail, hotel, restaurant, aviation, transportation, and entertainment industries. The service and in-contact dependent industries experienced a decrease of 37% between 2020-2021, which is considered a steep decline in comparison to the 17% decline of the industries that require less physical or service contact. All of the sectors were definitely affected; however, the service sector received the burnt of it all, as social distancing was implemented and the services offered are not and cannot be offered online (Chen et al., 2021).

Table 4

## Supply Chain Challenges Post-COVID-19 Pandemic

<b>Supply Chain Recovery Challenges</b>	<b>Authors (Year)</b>
Volatility in quality and quantity of supply and manufacturing	(Raj et al., 2022)
Shortage of labor	
Inadequate transportation	
Unpredictability in demand, leading to a surge of supply of certain products and shortage in others	(Graves et al., 2022)
Decreased capability in terms of production	(Khodoomi et al., 2023)
Absence of effective logistical planning and management	(Bayhaqi & Ge Lai, 2022)
High expenses in logistics and supply delivery	
Major shifting and unpredictability in consumer behavior, trends, and buying patterns	(Panwar et al., 2022)
Abrupt economic changes	
Absence of adequate crisis preparedness	(Van Hoek, 2020)
Limitations in the current proper crisis response	
Administration of digitalization	
Inadequacy in the number of available and skilled workers	Xu et al. (2020)

Source: Compiled by the author

The global food supply chain process was highly affected by the widespread pandemic and strict government regulations in all stages, from sourcing to manufacturing. Starting from the source of the ingredients, the agriculture or farming sector, according to Xu et al. (2020), was not necessarily affected at the production level as the virus can only be transmitted through human interactions and did not directly affect livestock and farming, however, due to the same reason, inadequacy in the number of available and skilled workers needed to continue the production has been felt. This is due to a multitude of reasons. A few of these are the hesitancy of various workers to travel to individual workplaces due to health concerns, travel ban by the government, social distancing, and strict disallowance of traveling and working in groups, limiting the number of people engaging in work and business (Devereux, S. 2020).

Similar to other industries in terms of the supply chain process, the food supply chain also experiences massive fluctuation and instability in terms of supply and demand. According to the study conducted by Alsuwailem et al. (2022), the food and consumer demand in food industries such as restaurants, fast foods, and other service-oriented establishments dwindled. However, there was an incremental growth in sales and demand for grocery supplies in various stores due to what the consumers experienced called ‘panic buying.’ Furthermore, the unexpected pandemic caused boredom and significant fear for the consumers regarding physical contact, altering consumer behavior. According to Xu et al. (2020), the weariness experienced by the majority resulted in a preference for fatty, carbohydrate-rich, and high-sugar diets, altering the usual and predicted behavior of the consumers, and further creating fluctuations in the demand for various products. Food logistics was also greatly impacted due to domestic and international border closures. According to Montenegro & Young (2020), food logistics, whether by means of air, water, or land transportation, has been highly influenced by the rapid speed of the spread of the virus as much as the increase in demand causing major disruptions and delays with the food supplies and deliveries between the source, suppliers, and the consumers alike.

In conclusion, the COVID-19 pandemic, partnered with government restrictions to control its swift spread, created numerous disruptions and unpredictability in the global food supply chain. As the virus progressed, business closures multiplied, impacted by unexpected changes in the supply chain and consumer behavior. This highlights the importance of resiliency in both the FSC and within the business, as various internal and external factors may unexpectedly affect the entire process.

## II. THE IMPACT OF COVID-19 ON MSMEs SUPPLY CHAIN IN PHILIPPINE: CONTEXT OF RESEARCH

### 2.1. Description of Philippine Micro, Small, and Medium Enterprises (MSMEs)

MSME, which stands for Micro, Small, and Medium Enterprises, are defined by the Philippine Republic Act 9501, section 3 as: “Any business activity or enterprise engaged in industry, agribusiness and/or services, whether single proprietorship, cooperative, partnership or corporation whose total assets, inclusive of those arising from loans but exclusive of the land on which the particular business entity’s office, plant and equipment are situated, must have value falling under the following categories: micro, small, and medium.” (Republic Act 9501, 2008). Within the nation of the Philippines, the abundance of various Micro, Small, and Medium Enterprises plays a significant part in driving the nation’s overall economy. According to the Asian Development Bank's report (2020), a total of 99.5% of all the businesses within the country belong to the group of MSMEs, providing employment to 63.2% of laborers in 2018. Table 5 below identifies the different categories, employment range, and asset sizes of MSMEs (Philippine Statistics Authority, 2022):

Table 5

The Various Range of the Asset Sizes of Philippine MSMEs

Scale of Business	Employment Scale	Asset Scale
<b>Micro</b>	1-9 workers	Up to P3,000,000
<b>Small</b>	10-99 workers	P3,000,001-P15,000,000
<b>Medium</b>	100-199 workers	P15,000,001-P100,000,000
<b>Large</b>	200 and above workers	P100,000,001 and above

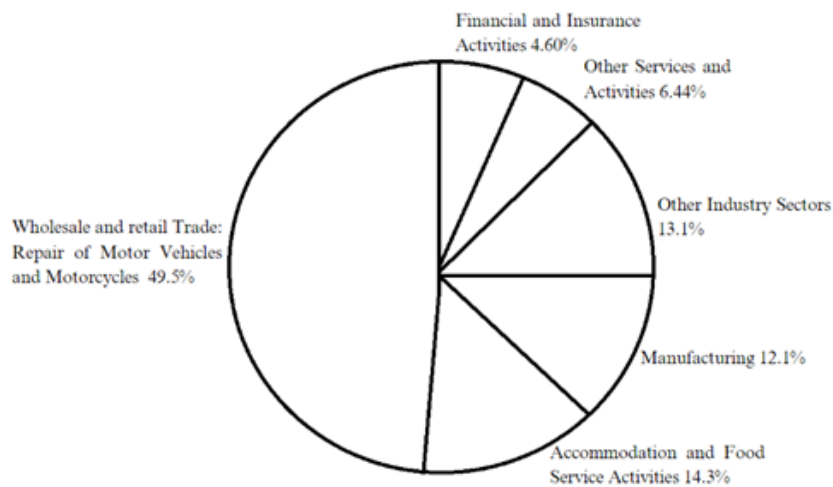
Source: Philippine Statistics Authority, 2022

As depicted in the table above, micro businesses are typically manned by only a handful of workers and have a reasonably modest asset size. Micro businesses within the nation's food industry typically consist of family-owned businesses, such as sari-sari stores, which are small community variety stores ordinarily established within or near a household home, street vendors, or food cart owners who usually employ family members. According to Digidio Financial Writers Team (2024), businesses within the rice retail industry are also one of the most common forms of MSMEs within the country, as rice is a cultural staple. Other small businesses on the small scale also include family-owned eateries, bakeries, pastry shops, and so on. In the report of the Philippine Department of Trade and Industry in 2022, over a million enterprises were active, totaling 1,109,684. Analyzing the data provided, the DTI (2022) presented a statistical report categorizing various enterprises into different categories, determining that a staggering total of 99.59% of the active businesses in 2022 fall under the MSME category, compared to only 0.41% of the large enterprises. In a further breakdown of the statistics, 90.49% of active businesses were within the micro category, 8.69% fell within the small enterprise category, and only 0.40% were identified as medium-sized businesses (DTI, 2022). Most active MSMEs are in the wholesale and retail trade, including various food product wholesalers and retailers. 12.31% of the active small businesses are operating within the scope of the food industry. Figure 4 below presents the categorization of various Micro, small, and medium enterprises with active operations in 2022:



Figure 3

The Different Categories of Various Active Philippine MSMEs



Source: Philippine Statistics Authority, 2022, cited by DTI

According to the 2022 List of Establishments by the Philippine Statistics Authority (PSA, 2022), a total amount of 5,607,748 employment opportunities were created by the total number of MSMEs, massively contributing 65.10% in the overall employment within the nation. Table 6 below shows the percentages of the generated employment of various businesses within the scales of MSMEs:

Table 6

Various Percentages of MSMEs Employment

<b>BUSINESS SIZES</b>	<b>TOTAL NUMBER OF ESTABLISHMENTS</b>	<b>TOTAL PERCENTAGE OF SHARES</b>
MICRO-SCALE	1,004,195 in total	90.49 percent
SMALL-SCALE	96,464 in total	8.69 percent
MEDIUM-SCALE	4,484 in total	0.40 percent
LARGE-SCALE	4,541 in total	0.41 percent
<b>TOTAL</b>	1,109,684 in total	100 percent
<b>MSME</b>	1,105,143 in total	99.59 percent

Source: Philippine Statistics Authority, 2022

The business size, capacity, assets, and capital of various MSMEs may pose a challenge and expose vulnerabilities in comparison to more extensive and more established businesses. The Senate of the Philippines (2012) categorized these constant challenges and obstacles faced by Philippine MSMEs into financial-related challenges and non-finance-related issues. As the name implies, financial obstacles are the challenges small-scale businesses face in finding access to or ways to fund their businesses continuously. Government regulations, various mandatory taxes, and bureaucracy also pose threats and hurdles in maintaining the stability of small-scale enterprises. Most MSME business owners often resort to informal finance lending to sustain their businesses as formal sources of loans, such as banks requiring more documents and processes before granting financing. Factors such as business size, the business' total fixed assets, and technologies are further examined by bank and loan institutions (Desiderio, 2019). In addition to the challenges in possessing sufficient capital and financial capacity, extreme weather conditions also add hindrances to the further growth of the businesses, resulting in insufficiency of initial funding, business and economic stagnation, diminished track and character records, and insufficient formal financial statements. The lack and inept processing and possessing of vital documents creates a major reluctance of business owners to request financial grants from the banks due to unpredictability and risks (Claveria and Mendoze, 2021). Furthermore, inadequate technological and business equipment, insufficient qualified workforce, complex document processing, complicated government procedures and regulations, steep market competition, and inadequate manufacturing processes and equipment are the factors that contribute more to the numerous challenges and hurdles that SMEs in the Philippines typically come across in daily business processes (Franciso and Canare, 2019).

With the undoubtedly massive contribution of MSMEs to the Philippines' overall growth and perpetual economic development, the Philippine government perpetually aims to provide support and promotions through numerous policies, programs, and legislations that would encourage the growth of certain businesses that fall within this category. One of the first government acts imposed to provide assistance and support to various MSMEs is the Magna Carta for Micro, Small, and Medium Enterprises, also known as the Republic Act 9501, in which the objective was to provide immense assistance to small-scale

enterprises and to recognize their significance in the nation (Lu, 2023). This legislation requires public government financial institutions to provide a maximum of 10% financial assistance to various MSMEs in order to offer more accessible options for business capital and funding (Khor et al., 2015). Another government institution, the Department of Trade and Industry, continually provides various programs for MSME owners to have easier access to finance and business development. However, since MSMEs are scattered across the nation, some businesses are located on rural farmlands and hard-to-reach places, and aiding and supporting every MSMEs within the country is proving to be an improbable task. According to Yao (2014), one policy or strategy would be insufficient due to the MSME's variety in terms of size, scalability, location, types, and strength. The Philippine government must develop a strategic plan to provide more assistance, support, and education to various MSME owners within the rural and far-flung areas of the nation in order to ensure continuous growth of the sector and smoother business operations and food supply.

## **2.2. The Impact of COVID-19 on Philippine MSMEs Supply Chain Processes**

According to the United Nations Philippines (2021), the continuous extension of the restrictions and physical distancing has resulted in major intensification within the logistical and pricing aspects of the Philippine food supply chain. As a result, the retail and food service industry, especially small to medium-scale businesses, was majorly affected by the continuous increase in product prices. Additionally, various unpredictable factors such as the decline and growth in consumer demand, a perpetual extension of the restrictions, health-related fears, and considerations have resulted in indefinite closures in a significant number of diverse business entities on various scales as financial debts and obligations multiply (Fairlie, 2020). According to the Asian Development Bank's report (2020), a total of 73.1% of the surveyed MSMEs had to shut down their operations just within a few short weeks after the government imposed lockdown. Only a reported 2.3% of the surveyed business owners claimed that their businesses had been withstanding the challenges, and their operations remained normal (Shinozaki and Rao, 2021). Based on the report by Sessions and Jodloman (2021), massive delays and food wastage have been caused by government restrictions prohibiting individuals from leaving the premises of

their homes, limiting farmers from working on their farmlands, and continuing crop production. Only a total of 3 farmers were allowed to go outside of their households to continue with crop processing and harvesting. According to Flaminiano, Francisco, & Caboverde (2021), MSMEs partially operating during the pandemic faced a multitude of hurdles. The top three were the unavailability of available employees due to the restricted public transportation arrangement as well as the fear and high risk of the spread of the infection within the vicinity of the work environment. As per the assessment conducted by the United Nations Industrial Development Organization (2020) of MSMEs within the Philippines, 38.57% percent of the overall respondents, 87% of which belong within the scale of micro-businesses, experienced financial challenges during the peak of the pandemic which means that there was a major change within the consumer behavior, financial revenue, and regular operations of the businesses. A total of 37.14% of the respondents reported issues in obtaining sufficient products and materials to continue their business' daily operations. Lastly, 37.14% reported experiencing setbacks due to the sudden change of consumer behavior. To summarize the information obtained throughout the literature review, COVID-19 impact and influence has been significant in the global FSC and the Philippine food supply chain and business operations on various scales. Due to the extended and stern restrictions imposed by the Philippine government with the objective of controlling the pandemic, the general supply chain has been severely disrupted, and innumerable business operations have collapsed. Food insecurity, shortages, and closures of a multitude of MSMEs within the nation have been reported despite the efforts of both the local government and non-governmental organizations. While various literature tackled the food supply chain process, both globally and within the nation of the Philippines, the significance of the MSMEs in driving the Philippine economy forward, the FSC and MSME limitations, challenges, and disruptions brought about by internal and external factors, as well as the government-support and aid, the researcher was unable to find any researches done in identifying the resilience strategies of various MSMEs within the Philippine food industry which survived or thrived during the peak of the pandemic, addressing the gap in literature. As the Micro, Small, and Medium Enterprises (MSMEs) are important of national and local communities within the country, this research aims to study the lasting impact of the COVID-19 pandemic on the business processes of the Philippine MSME by conducting in-depth interviews to various MSME business owners, whose businesses survived or were subjected to closures, in order to discover how

significant the impact of the supply chain disruptions is to both the businesses and the community alike. Additionally, through in-depth comparative analysis, this research also aims to identify various strategies employed by MSM businesses that survived the pandemic in order to provide valuable information for the future formulation of informed strategies for crisis preparedness and management that various business owners may utilize.

### **III. SUPPLY CHAINS AND THEIR DISRUPTIONS EMPIRICAL RESEARCH METHODOLOGY**

In this part of the master thesis, an empirical research methodology is utilized in order to examine the Philippine food supply chain, MSMEs, and their disruptions during the pandemic. Qualitative analysis is used in this particular research with the aim of providing a better understanding of the various experiences and challenges numerous business owners/experts face in the business operation perspective and food supply chain processes. As defined by Tenny, Brannan, and Brannan (2017), qualitative research offers an extensive understanding of various information, such as diverse actual human experiences, responses, and practical difficulties that may pose strenuous to encapsulate. It provides an opportunity to answer the questions pertaining to the experiences and reasons during a specific period in time, which may prove challenging to obtain using data measurements. According to Maxwell and Reybold (2015), qualitative research utilizes the usage of open-ended questions, which may be used to investigate various interviewees' experiences and the external influences leading to specific outcomes.

Considering that the objective of this research is to identify the various actual and personal experiences of numerous MSME food business owners during the peak of the pandemic, qualitative research through the administration of individual, semi-structured interviews with the various business owners/experts would be suitable for data collection.

#### **3.1. Overview of the Research Methods and Results**

Various studies have been conducted with the objectives of identifying the impact of the pandemic on the global supply chain and the different recovery and crisis preparedness strategies that can be utilized for future purposes. A notable work to mention is by Moosavi et al. (2022), in which the significance of supply chain resilience, effectiveness, and sustainability was discussed. Through the systematic analysis of various literature, supply chain resilience and effectiveness were discovered to be crucial elements of the overall supply chain process. Therefore, the creation of an effective, encompassing strategic crisis management and resilience action plan has proven to be more functional

than focusing on preparation alone. Raassens (2021) conducted a comprehensive Systematic Literature Review (SLR) in order to study the various resilience strategies initially employed during the pandemic. They concluded that adaptability is the most crucial resiliency strategy, whereas alliances are the most vital strategy in navigating the risks of various disruptions within the supply chain. A study on the analysis of supply chain risks was conducted by Ivanov et al. (2017), wherein it was noted that there is an abundance of empirical frameworks that have been created with a focus on the risks and recuperation within the supply chain. The majority of these quantitative studies were focused on flexibility strategies with multiple supplier sourcing and overall flexibility in the process, leading to an abundance of information within the resiliency strategy of multiple product sourcing. Mu et al. (2021) stated that resilience, with a focus on adaptation, is crucial for ensuring a safe and adequate food supply during disruptions.

Table 7

Overview of the Food Supply Chain Process Study

<b>Authors (years)</b>	<b>Study (aim)</b>	<b>Methods of Research</b>
Godrich, S.L., Lo, J., Kent, K., et al. (2022)	To analyze the impact of the pandemic on the FSC in the Southwestern Region of Australia.	Quantitative and Qualitative
Moosavi, J., Fathollahi-Fard, A. M., & Dulebenets, M. A. (2022)	To identify the various SC strategies during the peak of the pandemic.	Systematic Literature Review
Raassens N., Haans H., & Mullick S. (2021)	To identify the resilience strategies employed by various food service establishments in the early stages of the pandemic to keep afloat.	Systematic Literature Review
Ivanov, D., Dolgui, A., Sokolov, B. & Ivanova, M. (2017)	To conduct an in-depth analysis of available research on supply chain design and planning following various supply chain disruptions.	Systematic Literature Review
W. Mu, E.D. van Asselt, H.J. van der Fels-Klerx (2021)	To define resilient food supply chains in food safety and to assess food safety resilience within the supply chain.	Qualitative

Source: Compiled by the author based on the results of the literature analysis

### 3.2. Aim and Stages of the Qualitative Research

**The aim of the qualitative research** is to analyze the various supply chain processes and disruptions caused by the COVID-19 pandemic in the Philippine food industry in order to increase the level of resilience in a future challenging situation.

**This research aims to achieve the following objectives below:**

- 1) To understand the experiences of various Philippine food MSMEs during the peak and after the COVID-19 pandemic and the lockdowns.
- 2) To determine the unique challenges faced by various Philippine food MSMEs during the peak and after the COVID-19 pandemic and the lockdowns.
- 3) To distinguish the reason behind the closures of various Philippine food MSMEs and the survival of others.
- 4) To identify lessons learned in crisis management and resilience.

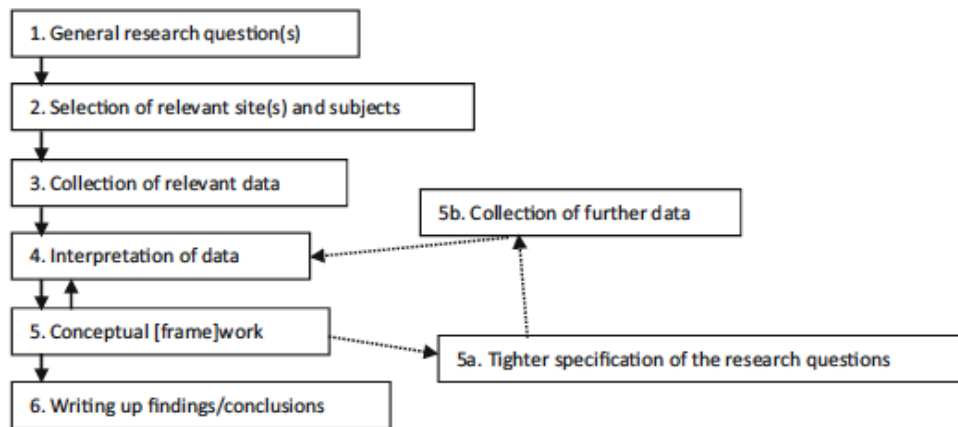
The qualitative research process begins with the formulation of research questions relevant to the chosen topic. In order to acquire a greater knowledge of the intricacies of the selected topic, an in-depth analysis of various literature and articles shall be performed. In qualitative research, the method of data collection is usually in the form of individual or group interviews, observations, and a comprehensive analysis of literature. In this study, a semi-structured form of virtual interviews with varied business owners was chosen in order to gain a deeper understanding of the individualized business experiences of various entrepreneurs. Once the data has been collected, systematic organization, interpretation, and analysis are performed to formulate a proper conclusion. A conceptual framework happens after the analysis of collected data. A decision on further data collection or specification may be an option for further analysis of the study. Subsequently, the creation of a comprehensive report or conclusion is conducted. The following course of action ensures thorough analysis and exploration of the topic and research.

Figure 4 below depicts the progression of a qualitative study:



Figure 4

### The Qualitative Research Steps



Source: Nia, M.G., Vries, M.J., 2017

Based on the statement of Clark et al. (2021), a purposive sampling technique is a non-probability method aimed at selecting participants with ample knowledge and experience within the field of interest to ensure reliable information relevant to the research objectives. Therefore, a purposive sampling technique has been selected for this study to reach the research objectives and to provide a deeper understanding of the topic from various experts in the chosen field.

### 3.3. Design of the Interview Questionnaire

**Research Questions.** Based on the information gathered through the comprehensive literature review conducted, the research questions were developed as depicted below:

- RQ1: How the COVID-19 pandemic impact the standard business processes of MSMEs within the Philippine food industry?
- RQ2: Which aspects of the MSME business operations were permanently altered by the COVID-19 pandemic?
- RQ3: How the COVID-19 pandemic impact the MSME food supply chain?
- RQ4: Which MSME food supply chain processes were affected by COVID-19?
- RQ5: Which strategies increased MSME resilience during the COVID-19 pandemic?

Table 8

## Research Themes and Data Coding Protocols

Theme	Construct	Description	Authors
Business Scales	Standard sizes of MSME business operations	Analyzes the scales and the characteristics of various of the business operations as well as the challenges and limitations faced by MSMEs	(Almeda & Baysic, 2010)
	Philippine Micro, Small, and Medium-Scale Enterprises	Understanding the five performance indicators stemming from characteristics, informality, to financial aspects of various SMEs.	(Ndiaye et al., 2018)
Standard Supply Chain Process Prior the COVID-19 Pandemic	Supply Sources	Discusses the supplier selection process in terms of quality and characteristics fitted for the small-medium scale businesses,	(Mantos et al., 2023)
	Supply Challenges	Identifies the various supply chain issues and challenges small to medium scale enterprises encounter in both demand and supply aspects of supply chain integration.	(Nande et al., 2022)
Challenges Faced by MSMEs in Business Operations Prior the Spread of the COVID-19 Pandemic	Supply	Identifies the major hurdles the small and medium enterprises regularly encounter and stunts their growth	(Yoshino & Hesary, 2016)
	Demand		
The Impact of the COVID-19 Pandemic on the Standard Business Process of MSMEs	Business Operations Disruptions	Analyzes the impact of the COVID-19 pandemic to small and medium scales businesses and identify apparent themes/challenges.	(Bartik et al., 2020)
	Supply Chain Disruptions	Examines the impact of the COVID-19 pandemic in various stages of the Food Supply Chain process such as sourcing, food processing, logistics and distribution, and consumers.	(Aday & Aday, 2020)

Strategies Used to Increase MSME Resilience During COVID-19	Resilience Strategies	Explores the conceptualization of resilience and the challenges faced by the MSMEs post-pandemic.	(Anatan, 2020)
	Contingency Plans	Understanding the effects of proper planning and employment of contingency plans can benefit MSMEs	(Sugiarto, 2019)

Source: Compiled by the author

Table 8 above depicts the various themes and constructs utilized in order to properly analyze the raw data collected. The following themes were derived from the research questions and were further broken down into sub-categories to further analyze the details of the data collected.

**The research objects of the study** are the individuals involved in the operations of Micro, Small, and Medium Enterprises operating within the Philippine food industry sector. As mentioned above, the proposed instrument for this research is the administration of semi-structured interviews with various business owners/experts in order to have a deeper understanding of the unique experiences of the various MSME experts, the intricacies of their specific business processes, and the subtleties of their decision-making processes. The general structure of the interview questions is presented in 6 sections below:

1. **Introduction** in which the researcher will initially provide information regarding the topic of the research, the scope, and the interview structure.
2. **Background of the Study**
  - Please provide a brief description of your business.
  - What are the usual problems/challenges that you encounter in the day-to-day operations?
3. **General information about the Supply Chain**
  - Where do you source your ingredients/products?
  - Do you gather your ingredients/products straight from the source, wholesalers, or retailers?
  - How often are the ingredients/supplies delivered?
  - Have you encountered any disruptions or delays with the business' supply

chain prior to COVID-19 and the lockdowns?

4. **Supply Chain Disruptions in the COVID-19 Pandemic** (How the COVID-19 pandemic impact the standard business processes of MSMEs within the Philippine food industry? RQ2: Which aspects of the MSME business operations were permanently altered by the COVID-19 pandemic? RQ3: How does the COVID-19 pandemic impact the MSME food supply chain? RQ4: Which MSME food supply chain processes were affected by COVID-19?)

- Have you encountered any disruptions or delays with the business' supply chain prior to COVID-19 and the lockdowns?
- What was the state of your business prior to the spread of the virus?
- How did the COVID-19 pandemic and the government restrictions impact your business operations?
- How did the COVID-19 pandemic and government restrictions affect the business's supply chain? Were there any shortages or delays in delivery?
- Which aspect of your business operation has been semi-permanently/permanently altered by the COVID-19 pandemic and the government restrictions?
- What was your initial reaction/business decision during the spread of COVID-19 and when the restrictions were announced?

5. **Resilience Strategies** (RQ5: Which strategies increased MSME reliance during the COVID-19 pandemic?)

- What were the strategies employed in order to keep the business running during the pandemic?
- How did the COVID-19 pandemic and the extended government restrictions change your business decision process?

The interviews are proposed to be conducted in a semi-structured virtual manner through the use of various communication sites/applications. Semi-structured interviews, as defined by Blandford (2013), are interviews that utilize guides; however, they are moderately structured. This research tool has been chosen in order to have a deeper connection and understanding of the interviewees' individual experiences and thought processes.

### 3.4. Key Features of the Experts/Professionals Selected for the Study

The participants were purposely selected based on the various criteria of occupation, level of experience in the field pertinent to the topic, and classification of the business. The selected participants were business owners/experts with active businesses and experience within the food business sector before COVID-19. 15 participants are expected to be interviewed through one-on-one, semi-structured interviews. Table 9 below shows the criteria and the descriptions of the presumed participants.

Table 9

Description of the Respondents

<b>Respondent Number</b>	<b>Occupation</b>	<b>Years of Experience</b>	<b>Employment/Business Establishment</b>
Respondent 1	Business owner	6	Community Variety Store
Respondent 2	Business owner	42	One Stop Shop
Respondent 3	Business owner	15	Community Variety Store
Respondent 4	Business owner	10	Community Variety Store
Respondent 5	Business owner	15	Meat and Poultry
Respondent 6	Business owner/Head Chef	8	Restaurant and Vegetable Shop
Respondent 7	Business owner	7	Community Variety Store
Respondent 8	Business owner	11	Community Variety Store
Respondent 9	Business owner	7	Fruits and Vegetable Shop
Respondent 10	Business owner/Head Baker	5	Bakery/Bake Shop
Respondent 11	Business owner	20	Community Variety Store
Respondent 12	Business owner	5	Vegetable Stand
Respondent 13	Manager	6	Community Variety Store
Respondent 14	Business owner/Head Baker	15	Bakery/Bake Shop
Respondent 15	Business owner	7	Community Variety Store

Source: Compiled by the author

The majority of the participants described their businesses as a variety of goods shops, selling various products from food to home supplies. In further details, eight out of fifteen interviewed participants operate a community variety store within their various neighborhoods (Respondents 1, 3, 4, 7, 8, 10, 11, and 15). The other respondents claim to be operating various food businesses such as vegetable stands (Respondent 12), cafeteria

(Respondent 6), and a bakery (Respondent 14). All the interviewed business owners have been operating their various food businesses for a minimum of five years and a maximum of forty-two years; all of which have been operating prior, during, and after the hit of the COVID-19 pandemic.

## **IV. SUPPLY CHAINS AND THEIR DISRUPTIONS**

### **EMPIRICAL RESEARCH DATA ANALYSIS AND RESULTS**

In this part of the master thesis, the analysis, summary, and interpretation of the data collected are conducted. The main objectives of this research and data collection are to determine the unique challenges and issues faced by the Philippine food industry during the peak and after the COVID-19 pandemic and the government-imposed lockdowns in terms of the supply chain and daily operations, as well as the resilience strategies conducted in order to identify the practical methods that various MSME owners can utilize in the future in terms of crisis management and preparedness.

#### **4.1. Summary and Analysis of the Interview Results**

The findings of this study are based on the systematic organization, interpretation, and analysis of the data collected through the method of data collection in the form of semi-structured individual virtual interviews with 15 varied MSME business owners who were in the business field before the spread of the COVID-19 pandemic. The semi-structured online interviews were conducted between the 25th of March and the 20th of April using various online platforms such as MS Team, Zoom, and Facebook Messenger.

The raw empirical data collected were transcribed and then translated from the Filipino language to the English language, and underwent qualitative analyzation thru the use of manual, descriptive-inductive coding wherein the qualitative research codes were obtained directly from data collected was utilized for data analyzation. As per Linneberg and Korsgaard (2019), Inductive Coding breaks down a rather large raw empirical data into smaller significant components to summarize and prepare the data collected for analyzation; additionally increasing the quality.

Table 10

Empirical Interview Results: Challenges Faced in Day-to-Day Business Operations Prior the COVID-19 Pandemic

Second Order Themes	First-order Categories	Respondents	Citations
Challenges Faced in Day-to-Day Operations	Supplies	R1, R3, R4, R5, R6, R7, R10, R15	<p>"The usual problems that must be fixed are the maintenance and arrangement of the supplies from the expiration dates, bug infestations, and so on."</p> <p>"As for the challenges, we usually have some challenges with the deliveries as the supplies come straight from Binondo [Manila]. Sometimes, the supplies are not enough, and sometimes, there's a delay in deliveries as they come from far away."</p> <p>"There have been border closures, so our suppliers are struggling to bring the supplies to us, and we had to close for a while as there is nothing to sell anymore."</p> <p>"Since our products are vegetables and chicken, we collect them early daily to keep our supplies fresh. We only have one vegetable supplier, so some are sometimes out of stock."</p> <p>"We have no problems with the supplies since we gather our ingredients from different stores, and if one ingredient is unavailable, there are multiple options." "Sometimes, if the demand is high, we have a shortage of a particular product. " Identifying, computing, ordering, and re-stocking our supplies are always laborious." "Sometimes, some products are not available from our supplier. We don't have any other suppliers."</p>
	Inflation	R4, R9, R14	<p>"[The problem is] if we have a lot of products, but then the customers don't buy or purchase as much inflation." "The usual challenge is inflation. When our suppliers' prices of fruits and vegetables increase, we must raise our prices for profit. But our customers usually don't like that and keep asking for discounts, which we cannot give. It's something we cannot control."</p> <p>"Inflation. The prices of flour and sugar are on a constant rise. This affects my business because I also must increase the cost of bread. People are always complaining about it."</p>
	Quality	R2, R5	<p>"We sometimes receive products that are not up to par with the quality."</p> <p>"Sometimes, I don't get to sell as much, and since I'm selling vegetables and chicken, they perish and spoil quicker than other products."</p>
	Weather	R11, R13	<p>"My business thrives regularly, but the sales decrease when the rainy season comes in, especially when there's a typhoon."</p> <p>"I always have a hard time with them when it's raining, and they usually don't come in during harsh weather."</p>

Source: Compiled by the author



According to the responses, supply challenges in terms of delay, quality, and shortages were the main obstacles Filipino food MSMEs encountered regularly, even before the COVID-19 pandemic. *Respondent 3, 7, and 15*, reported experiencing insufficiency in supplies, which affected their daily business operations. Two out of the three respondents claimed a shortage in their supplies (*Respondents 3 and 15*) reported experiencing delays in the supply delivery. Three respondents (*Respondents 4, 9, and 11*) stated that inflation has been the primary challenge in their business operations. According to the specific respondents, the constant rise in product and ingredient prices affects their business operations and business-consumer relationships. *Respondents 2 and 5*, commented on the subpart quality of the supplies. *Respondents 11 and 13* claim that natural disasters affect their regular sales and customer engagement. Other respondents stated that competition and labor shortage were the primary challenges in their businesses.

Table 11

Empirical Interview Results: Supply Chain Sources (Pre-COVID-19)

Second Order Themes	First-order Categories	Respondents	Citations
Supply Chain Sources (Pre-COVID-19)	Wholesalers	R1, R2, R3, R5, R6, R7, R8, R9, R10, R13, R14, R15	“We source our products from different wholesalers.” “We have a couple of wholesalers near our area.” “Our stocks come from two massive wholesalers in Binondo and Makati.” “Our sources are vegetables and poultry wholesalers.” “We go to wholesalers in the market every day.” “We have a wholesaler, but they don’t do deliveries, so we usually collect the products straight from their shop.” “I go to two different wholesalers three times a week.” “We have a wholesaler of fruits and another of vegetables.” “We get supplies from a wholesaler every five days, usually every Friday before the weekend since there are more shoppers on the weekend.” “I get my products from only one wholesaler, who delivers twice weekly.” “Our wholesaler constantly delivers our ingredients every week.” “We source our products from our supplier [wholesaler] weekly.”
	Manufacturers	R4	“Our products come from the manufacturers themselves.”

	Retail	R11, R12	<p>“We source products from large retail chains twice a week and then retail them at a slightly higher price in our store.”</p> <p>“I just shop at retail stores. I obtain my supplies from other retail stores three times a week.”</p>
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Source: Compiled by the author

Most of the respondents, twelve out of fifteen to be exact, source their products and ingredients directly from wholesalers (*Respondent 1, R2, R3, R5, R6, R7, R8, R9, R10, R13, R14, R15*). *Respondent 14* claims to have been sourcing their products from the direct manufacturer. *Respondents 11 and 12*, on the other hand, often shop at larger retail stores for their business needs.

Table 12

Empirical Interview Results: Supply Chain Issues (Pre-COVID-19)

Second Order Themes	First-order Categories	Respondents	Citations
Supply Chain Issues (Pre-COVID-19)	No problems	R1, R2, R4, R8, R9, R13, R14	<p>"We didn't encounter any delays in the deliveries before the pandemic."</p> <p>"No, we never had a problem with our supplies since the wholesalers are right around the corner."</p> <p>"We never had problems with the suppliers."</p> <p>"I have never had a problem with my supplies or the delivery of the products because my supplier and I have a great relationship. We've been partners for years."</p> <p>"I have never had a problem."</p> <p>"[I] never really had any problem communicating with my supplier."</p> <p>"No, problem, the flour and sugar are continuously supplied."</p>
	Shortage/Out of stock	R5, R7, R11, R15	<p>"We only have one vegetable supplier, so some are sometimes out of stock."</p> <p>"Sometimes, if the demand is high, we have a shortage of a particular product, and then we have to go to the wholesale store to restock."</p> <p>"We usually go to another if one product is unavailable from our usual wholesaler. We have multiple options [in terms of suppliers]."</p> <p>"Whenever the brand we prefer is out of stock, we try to find an alternative product."</p>
	Delays	R3	<p>"Sometimes there's an hour or so delay in the delivery as the products come from the city, but nothing major."</p>

Source: Compiled by the author

In the aspect of disruptions within the business' supply chain before COVID-19 and the lockdowns, the majority of the respondents, precisely seven out of fifteen (Respondents 1, 2, 4, 8, 9, 13, 14), announced that their individual businesses had no problems or disruptions before the hit of the COVID-19 pandemic. Respondents 5, 7, 11, 15, reported experiencing occasional product shortages, mainly due to the unpredictable shift in supply and demand. Respondent 3 reported experiencing supply delivery delays prior to the pandemic. However, despite the specified limitations and challenges, most reported stability, and growth in their respective businesses. These results indicate a positive economic and business environment preceding the disruptive impact of the pandemic and the government-imposed lockdowns on the MSMEs' business operations and supply chain processes within the Philippine food industry.

Table 13 below analyzes the empirical interview results of the impact of the COVID-19 Pandemic on the business operational and supply chain perspective of the selected MSMEs:

Table 13

Empirical Interview Results: Impact of COVID-19 Pandemic on the Business Operational and Supply Chain Perspective of Philippine Food MSMEs

Second Order Themes	First-order Categories	Respondents	Citations
Impact of COVID-19 Pandemic	Supply shortage	R3, R4, R5, R6, R7, R10, R11, R13, R14, R15	<p>"It was complicated to secure the supplies during the pandemic; some products were unavailable, and there were many delays, especially in the beginning. Some of our products were gone, and the deliveries were late."</p> <p>"There even was a time when we didn't have anything to sell at all cause there were also no deliveries."</p> <p>"We felt the effect of the pandemic intensely. We ran out of supplies, and the deliveries weren't coming in."</p> <p>"We lost our source of supplies because our wholesaler also had to shut"</p> <p>"We still experienced shortages because our supplier stopped the deliveries."</p> <p>" I had no income, and we had nothing to sell."</p> <p>"There were shortages and delays [in supply restocking] because we were the ones who collected them from the retailers, and sometimes we needed help doing it since there were only a few of us working by then."</p> <p>"My wholesaler was also closed, so I had no source of goods. Yes, I only have one source. They are fine but were forced to close and take a break during the pandemic because of fear. I was forced to shut down since my shelves were practically empty."</p> <p>"Our business was doing fine before COVID, but the pandemic brought many challenges. Delivery delays, product shortages, and employee shortages became the norm."</p> <p>"Deliveries were delayed, and there were product shortages."</p>

	Supply Delays	R3, R4, R5, R9, R11, R14	<p>"Some products were unavailable, and there were many delays, especially in the beginning. Some of our products were gone, and the deliveries were late."</p> <p>"There were a lot of delays, and sometimes they [deliveries] couldn't enter our city at all."</p> <p>"We ran out of supplies, and the deliveries weren't coming in."</p> <p>"The delivery [of our products] was slow, and the supply has also decreased."</p> <p>"There were shortages and delays [in supply restocking] because we were the ones who collected them from the retailers, and sometimes we needed help doing it since there were only a few of us working by then."</p> <p>"Delivery delays, product shortages, and employee shortages became the norm."</p>
	Sales decrease	R5, R7, R8, R10, R12, R15	<p>"There were also fewer people buying from us during that time."</p> <p>"Our sales were down during the pandemic."</p> <p>"The sales were weak because no one went out after the curfew, and my sales at the store were limited, only 6 hours a day. It's a waste since there were a lot of customers, especially at night. It was a massive blow to my sales."</p> <p>"We had fewer customers because of the restrictions."</p> <p>"My sales were already weak before the pandemic, and it weakened them even more."</p> <p>"We had to close our stores due to lacking supplies and customers."</p>
	Business closures	R4, R13, R15	<p>"We had to close for a while as there is nothing to sell anymore."</p> <p>"I was forced to shut down since my shelves were practically empty."</p> <p>"We had to close our stores due to lacking supplies and customers."</p>
	Employee shortages	R2, R11, R14	<p>"[During the pandemic,] some of our employees also didn't make it to work on time due to transportation problems."</p> <p>"Due to the government's fear and strictness, our employees could not go to work, and we could not operate properly."</p> <p>"Delivery delays, product shortages, and employee shortages became the norm."</p>

	Limited Operating Hours	R7, R8	"The sales were weak because no one went out after the curfew, and my sales at the store were limited, only 6 hours a day. It's a waste since there were a lot of customers, especially at night. It was a massive blow to my sales." "[Additionally,] I had to close by 6 pm, lesser time to cater to customers."
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Source: Compiled by the author

The COVID-19 pandemic majorly disrupted the Philippine food MSME's daily business operations and supply chain processes in various aspects, as confirmed by all respondents in unison especially as the implementation of tightened measures such as the Extended Community Quarantine (ECQ), curfews, and 'One-Person Per Household' restrictions have employed. Most respondents reported a massive decrease in sales and customer numbers/engagement, albeit for two significant reasons. *Respondents 7 and 8*, claim decrease in customer number and sales due to the curfews imposed by the government during the peak of the pandemic. According to the couple respondents, due to the said reason, their stores' operating hours became extremely limited. *Respondents 5, 7, 8, 10, 12, and 15* claimed that their business' sales decline was due to the population's fear in response to the virus's rapid spread. *Respondents 7, 8, 10, and 12* asserted that the restrictions and curfews attributed to the decrease in the number of customers, emphasizing that the customer's ability to go outside and the working hours were limited based on the restrictions imposed by the local government. *Respondents 2, 11, and 14*, claimed to have experienced challenges in managing their businesses at the time of the pandemic due to the lack of workers or employees.

Furthermore, supply and labor shortages due to fear and tight restrictions also contributed to the challenges faced by Philippine food MSMEs during the pandemic's peak. Most respondents reported experiencing supply chain disruptions such as supply limitations, shortages, and depletion during the pandemic. All the respondents unitedly confirmed delays in deliveries. The majority of the respondents *Respondents 3, 4, 5, 6, 7, 10, 11, 13, 14, and 15*, experienced supply shortages that massively affected their individual business operations. *Respondents 3, 4, 5, 9, 11, and 14*, claimed to have experienced delays in supply deliveries to various national and intercity lockdowns and

closures. These supply chain and business operation disruptions have led to business closures, some temporarily, for *Respondents 4, 13, and 15*.

Table 14

Empirical Interview Results: Resilience Strategies During COVID-19

Second Order Themes	First-order Categories	Respondents	Citations
Resilience Strategies During COVID-19	No Strategies/Contingency Plans	R1, R13	<p>“We didn't have any [strategies/contingency plans]. We had to close our business down.”</p> <p>“We did not have any. I had to shut my store down.”</p>
	Relationship-Building	R2, R3, R4, R11	<p>“Even though our business shrunk down a little due to the pandemic, we have loyal customers and good-quality products. We managed to bounce back after a while.”</p> <p>“The best strategies are having options, having a great relationship with your customers, treating them nicely, and paying taxes.”</p> <p>“People continue to approach us for their needs despite the closures and restrictions.”</p> <p>“The [best business survival] strategy for us is our [expansive] connection. We managed to expand our connections from our 20 years of operation. We're a trusted store within the community.”</p>
	Back-up suppliers	R3, R12	<p>“We learned to connect with a local supplier that allowed us to order online in bulk. Nowadays, we still order from our original wholesaler in Binondo [Manila]; however, we also have a local supplier here in our city.”</p> <p>“[When asked about the strategies] Strategies? If the supply is the problem, it's better to have a lot of [suppliers] resources. That's all. My supply was all right.”</p>
	Product Variation	R4	<p>“Instead of restocking the unnecessary products, we focused more on selling food and necessities [like water and household items].”</p>

	Hawking	R5, R7	<p>“We started selling our products through hawking. During the height of the lockdown, I was hawking, walking through neighborhoods, and knocking on doors to offer our products.”</p> <p>“We did not expand online, but we did start hawking.”</p>
	Digitalization	R5, R6, R8, R9, R10, R12, R14, R15	<p>“We started selling through Facebook Messenger.”</p> <p>“We registered our small shop in [applications like] Grab and Lalamove, etc. to reach more customers. There were also Pasabuys [also known as personal shoppers]. These apps have helped us a lot.”</p> <p>“I started to do an online business. I don’t know how to use it as much. I’m still learning, but so far, it is working.”</p> <p>“Our sales increased even more when we registered our store in the Grab and Food Panda application and started to market on Facebook. I say we’re doing alright and expanding our operations in another city.”</p> <p>“Social media has been a massive help with our bounce back.”</p>

Source: Compiled by the Author

After inquiring about the effects of the COVID-19 pandemic and the government-imposed restrictions on the participants’ various business operations and supply chain processes, resiliency in multiple aspects of their businesses was implored. The strategies mentioned by the participants vary to a certain degree. Based on the data collected, a couple of respondents who did not possess a contingency plan or any resilience strategies (*Respondents 1 and 13*) were compelled to close their business operations down temporarily. Some participants admitted to business losses but were saved by their extensive and dynamic business connections. *Respondents 2 and 4* revealed that despite the challenges and business shrinkages, both were able to start again after the pandemic due to the stable relationship between their consumers and suppliers. A couple of the respondents, *Respondents 5 and 7*, resilience strategy, discovered an alternative business avenue to cater to their ongoing clients and attract more customers through hawking. *Respondents 3 and 12* claimed that having multiple product suppliers prevented them from experiencing stock loss and product shortages. *Respondents 5 and 6*, started a



combination of digitalization and traditional door-to-door deliveries through the use of technology in communication with their customers. *Respondents 3 and 11*, highlight the importance of creating trust and strong business to consumer relationship for business long-term sustainability. Additionally, adapting to change in consumer demand through product variety was utilized by *Respondent 4*, claiming that during the peak of the pandemic, necessities were prioritized. However, the majority of the respondents, *Respondents 6, 8, 9, 10, 12, 14, and 15*, based on the data collected, utilized the functionality and convenience of modern-day technology through the usage of various platforms varying from social media applications such as Facebook to food delivery platforms such as Grab and Food Panda to assist their businesses and ensure the stability of consumer connection during the peak of the lockdowns, pandemic, and social distancing.

#### 4.2. Summary and Conclusions of the Empirical Findings

The summary and conclusions of the empirical findings and data analyzation are as follows:

Table 15  
Coding of the Empirical Data

First-Order Categories	Second-Order Themes	Themes
Wholesalers	Supply Sources	Standard Supply Chain Process Prior the COVID-19 Pandemic
Manufacturers		
Retailers		
No problem	Supply Challenges	
Product Shortage		
Supply Delivery Delays		
Supply Shortage	Supply	Challenges Faced by MSMEs in Business Operations Prior the Spread of the COVID-19 Pandemic
Oversupply		
Pricing	Demand	
Product Quality		
Weather Conditions		
Limited Operating Hours	Business Operations Disruptions	
Sales Decrease		

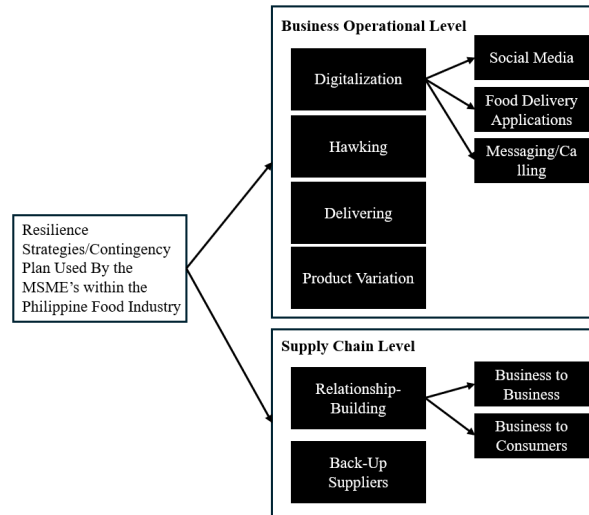
Employee Shortage		
Business Closures		
Supply Delays	Supply Chain Disruptions	
Supply Shortage		
Relationship Building	Resilience Strategies	Strategies Used to Increase MSME Resilience During COVID-19
Product Variation		
Digitalization		
Hawking		
Deliveries		
Back-up Suppliers	Contingency Plans	

Source: Compiled by the author

The analysis of the interview results revealed the condition of the Philippine food MSMEs prior to and throughout the COVID-19 pandemic. Preceding the pandemic and the restrictions, the constant ascent of product and supply prices, inflation, and disputes regarding supply deliveries were the obstacles faced by MSME owners in their regular business operations. However, despite the specified limitations and challenges, most reported stability and growth in their respective businesses. These results indicate a positive economic and business environment preceding the disruptive impact of the pandemic and the government-imposed lockdowns on the MSMEs' business operations and supply chain processes within the Philippine food industry.

Figure 5 below depicts the summary of the various resilience strategies and contingency plan various Philippine food MSMEs used as survival mechanisms during the COVID-19 pandemic:

Figure 5  
The Summary of the Various MSME Resilience Strategies



Source: Created by the author

As confirmed by all respondents unanimously, the widespread unease caused by the virus's rapid spread, national lockdown, curfews, and various restrictions imposed by the government both locally and across the nation affected their daily business operations in various ways, resulting in a noticeable decline in their sales and customer numbers. Furthermore, labor shortages and limitations in business operating hours were also caused by the abovementioned reasons. As to the various businesses' supply chain processes, the respondents reported delays, shortages, and supply absences, causing further hardships to the MSME owners and leading some businesses to shut down. These disruptions to the MSMEs' daily business operations and supply chain process have led to few unforeseen business closures.

However, different resilience strategies were employed by the food MSME owners to adapt to the unforeseen disruptions. As observed, the owners who did not possess a contingency plan or undertake any resilience strategies were compelled to close their business operations. Despite the restrictions and losses, some business owners utilized their present connections to stay within the business and focused on improving customer and expanding supplier business relationships. Additionally, modern-day technology and

digitalization were explored by the majority of the interviewed business owners through the use of various platforms, from social media applications such as Facebook, communication platforms such as Facebook Messenger, calls, and texting, to food delivery platforms such as Grab and Food Panda in order to continue with their business operations. Based on the data collected, the business owners who maximized the use of technology stayed relevant and even reported growth after the pandemic. Lastly, a few business owners resorted to an alternative way of reaching customers and selling through hawking or peddling. Hawking, as defined by Merriam-Webster. (n.d.), is “to sell from place to place, usually in small quantities.” Some participants reported traveling around with small carts or baskets to attract more customers. In summary, the COVID-19 pandemic and the government's imposed tight restrictions invoked fear and a multitude of challenges to the Philippine food MSMEs, especially with the persistent community extension within the nation. Disruptions in this scale emphasized the importance of contingency plans and resiliency in various aspects of business operations in order to ensure survival.

## CONCLUSIONS AND PROPOSALS

To conclude, this master's thesis project has evaluated the relationship between the COVID-19 pandemic and the supply chain from the perspective of Micro, Small, and Medium Enterprises (MSMEs) in the Philippines. The topic was deemed relevant due to a moderate amount of research focused explicitly on the repercussions of the pandemic and government-imposed restrictions on MSMEs, particularly within the Philippine food sector. The motivation to explore this particular topic is due to a gap in existing literature regarding the impact of the pandemic and the prolonged government restrictions, as well as the resilience strategies used by the MSMEs, specifically within the Philippine food sector, to increase the understanding of the critical factors leading towards supply chain vulnerabilities and opportunities to mitigate potentially negative impacts in the future that may occur under similar globally disruptive events.

The analysis of the scientific literature depicts the supply chain's vulnerability to various types of disruptions that threaten organizations that are unprepared to deal with the challenges that may arise. The literature analysis describes the main internal factors influencing supply chain disruptions, which vary depending on the company's nature; however, these internal disruptions are often defined as operational, financial, production, and planning issues. On the other hand, external factors have a more significant impact on business operations. The external disruptions are described as extreme natural occurrences, geopolitical events, and health crises like the COVID-19 pandemic. These factors are more challenging to prepare for as these may prove to be unforeseen and require additional resilience preparation to ensure flexibility. COVID-19 has affected the global economy like any other recent international event. The pandemic illustrated that many enterprises, especially MSMEs, were unprepared to deal with the economic impacts of the crisis. Therefore, a study that will provide further insights and recommendations for resilience development would prove valuable for MSMEs and supply chain resilience.

The selected procedure to achieve the research goals and address the gap in the literature was qualitative research, which includes semi-structured interviews with various Philippine food MSME owners to provide a deeper understanding of this selected topic. Based on the results of the analysis of the interview results, issues within the standard business operations, such as inflation and supply chain limitations, such as transportation

delays and supply shortages within the Philippine food MSME field, existed prior to the hit of the COVID-19 pandemic and the extended tight government measures. The food supply chain disruptions and the widespread fear and government restrictions brought about by the pandemic further heightened the aforementioned issues, leading to business closures or shrinkage.

To summarize the results of the empirical study, several related sub-themes were analyzed, namely: the experiences various MSMEs operating in the Philippine food industry prior and during the COVID-19 pandemic and the challenges that these organizations faced, which includes supply sourcing issues, changes in the supply and demand dynamics and so on. This study also evaluated the resilience strategies that were utilized by the MSMEs affected by the pandemic, the analysis of strategies used to adapt and overcome disruptions by using new ways of conducting business, as well as the contingency plans used.

Based on the empirical findings, MSMEs without contingency plans or resilience strategies were subjected to business closures. On the other hand, various food MSMEs with resilience strategies managed to remain afloat and even reported growth after the pandemic. Business digitalization, which involves integrating technology and social media for marketing and business assistance, was the most effective strategy the Philippine food MSME owners used, with some even reporting growth after the pandemic. In a more conventional manner, customer, and supplier relationship-building, as well as community connection expansion, proved effective in business recovery. Alternatively, hawking and peddling, though unusual, also proved to be effective in catering to the clients and increasing customer awareness.

## **RECOMMENDATIONS**

Based on the research conducted, the following recommendations were developed:

1. As the nation of the Philippines is one of the more disaster-prone countries, developing resilience strategies and contingency plans for various food MSMEs should be explored and encouraged to avoid future supply chain and community-wide disruptions leading to wide-spread business closures.
2. As a nation with a massive and dynamic social media presence, digitalization for food MSME owners should be utilized and encouraged in order to ensure the business operations' stability, flexibility, and increased customer awareness and engagement.
3. Government support in business financing and continuous learning through public seminars and workshops may be provided to enhance small business owners' knowledge in various aspects of business, such as digitalization, financial management, supply chain management, resilience strategies, and crisis preparation.

### **Future research directions:**

As qualitative research focuses mainly on the individual experiences of the Philippine food MSMEs, quantitative research is suggested in order to assess the magnitude of the impact of the COVID-19 pandemic on the food MSMEs by the collection of various information such as the number of business closures, financial losses, and the decline in sales. Additionally, research regarding the long-term impact and changes brought upon by the COVID-19 pandemic on the food MSMEs within the nation is also recommended

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## **SUMMARY OF THE MASTER'S THESIS IN ENGLISH**

### **The Impact of the COVID-19 Pandemic on Supply Chain Process: The Case of the Philippine Food Industry**

**Reena Aidyn Bental**

**Master Thesis**

***Business Process Management Programme***

Faculty of Economics and Business Administration

**Academic Supervisor:** As. Dr. Laura Pilukienė, Vilnius, 2024

### **SUMMARY**

This Master Thesis is composed of 80 pages, 5 figures, 13 tables, and 63 references.

The primary intent of this Master thesis is to analyze the supply chain processes and challenges caused by the COVID-19 pandemic in the food supply industry in order to increase business resilience in case of future challenging situations.

This study is composed of 4 segments, namely: The Review of Related Literature, Methodology of the Empirical Research, Research Data and Analysis Results, and the Conclusions and Summary. The initial segment, Review of Related Literature, contains an analysis of the topics and literature related to the key concepts of this study. This segment is composed of two major sub-segments exploring the concept, issues, and influences of the process, as well as the impact of the COVID-19 Pandemic to the overall process of the global supply chain. The second sub-segment mostly focuses on the definition of Philippine MSME's and the impact of the COVID-19 pandemic to the operations and supply chain structure of the forementioned businesses. The second chapter focuses on the methodology of the study gathered from the analysis of related literature. This chapter is composed of the formulated aim and stages of the qualitative research, articulated format and design of the interview questionnaire and structure, and a brief description of the various business owners/experts selected for the study. The third chapter contains the summary, analysis, and the conclusions of the collected research findings in the empirical study. Lastly, the final segment is comprised of the conclusions of the study as well as the recommendations for the succeeding research and development.

## **SUMMARY OF THE MASTER'S THESIS IN LITHUANIAN**

### **COVID-19 pandemijos poveikis tiekimo grandinės procesams: Filipinų maisto pramonės atvejis**

**Reena Aidyn Bendal**

**Magistro baigiamasis darbas**

*Verslo procesų valdymo programa*

Ekonomikos ir verslo administravimo fakultetas

**Akademinis vadovas:** As. Dr. Laura Pilukienė, Vilnius, 2024

### **SANTRUKA**

Ši magistro darbą sudaro 80 puslapiai, 5 paveikslai, 13 lentelių ir 63 literatūros šaltiniai.

Pagrindinis šio magistro darbo tikslas - išanalizuoti tiekimo grandinės procesus ir iššūkius, kuriuos sukėlė COVID-19 pandemija maisto produktų tiekimo pramonėje, siekiant padidinti verslo atsparumą ateityje susidarius sudėtingoms situacijoms.

Ši tyrimą sudaro 4 segmentai, t. y: Susijusios literatūros apžvalga, empirinio tyrimo metodologija, tyrimo duomenys ir analizės rezultatai, išvados ir apibendrinimas. Pradiniame segmente „Susijusios literatūros apžvalga“ pateikiama temų ir literatūros, susijusios su pagrindinėmis šio tyrimo koncepcijomis, analizė. Ši segmentą sudaro du pagrindiniai poskyriai, kuriuose nagrinėjama proceso samprata, problemos ir įtaka, taip pat COVID-19 pandemijos poveikis bendram pasaulinės tiekimo grandinės procesui. Antrajame posegmente daugiausia dėmesio skiriama Filipinų MVĮ apibrėžčiai ir COVID-19 pandemijos poveikiui minėtų įmonių veiklai ir tiekimo grandinės struktūrai. Antrajame skyriuje daugiausia dėmesio skiriama tyrimo metodologijai, surinktai analizuojant susijusią literatūrą. Ši skyrių sudaro suformuluotas kokybinio tyrimo tikslas ir etapai, suformuluotas interviu klausimyno formatas ir struktūra bei trumpas įvairių tyrimui atrinktų verslo savininkų ir (arba) ekspertų apibūdinimas. Trečiajame skyriuje pateikiamas apibendrinimas, analizė ir išvados. Galiausiai paskutinį skyrių sudaro tyrimo išvados ir rekomendacijos tolesniems tyrimams ir plėtrai.



## ANNEX 1: LIST OF FIGURES

Figure 1

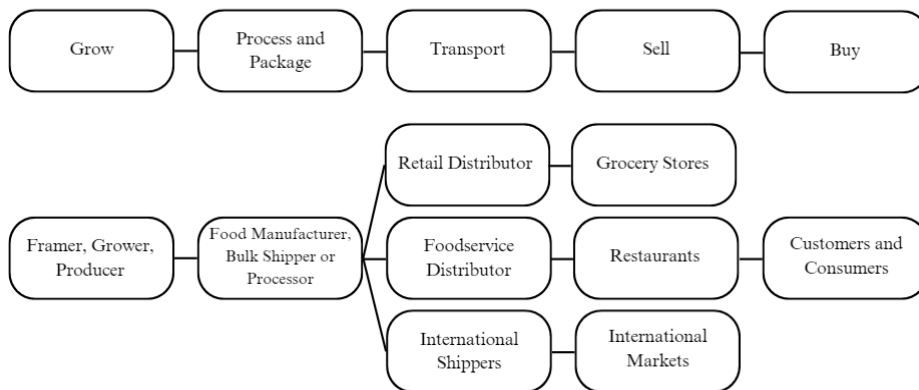
The Process of Supply Chain



Source: Gunnoo, 2023

Figure 2

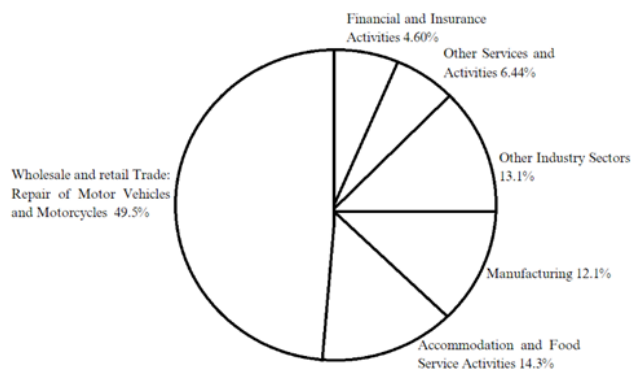
The Variables of the Standard Food Supply Chain



Source: Food and Marketing Technology, 2021

Figure 3

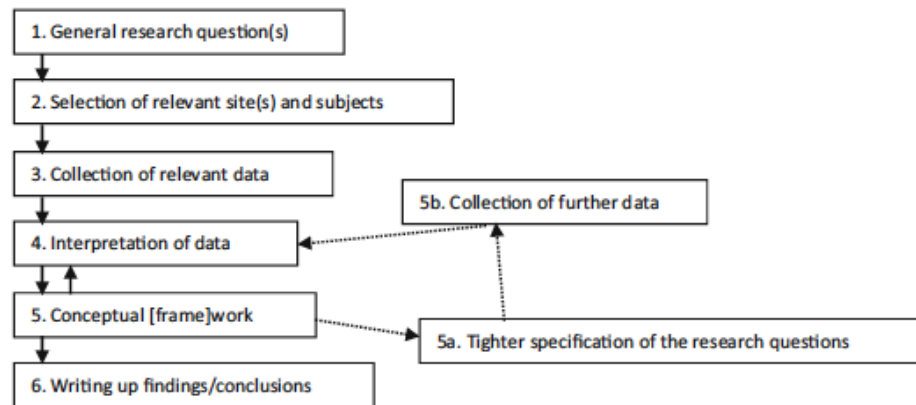
The Different Categories of Various Active Philippine MSMEs



Source: Philippine Statistics Authority, 2022, cited by DTI

Figure 4

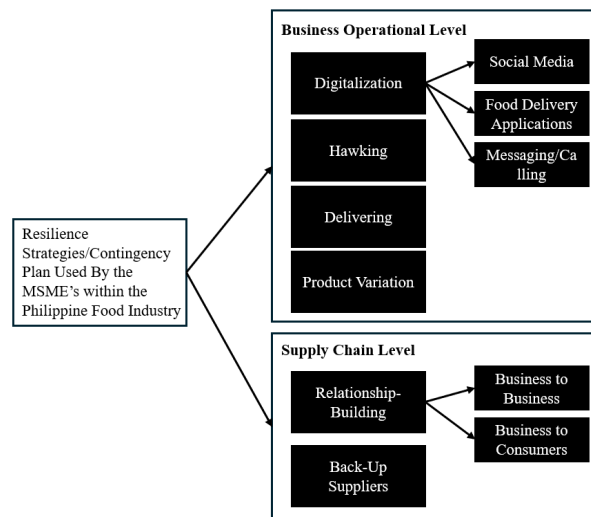
The Qualitative Research Steps



Source: Nia, M.G., Vries, M.J., 2017

Figure 5

The Summary of the Various MSME Resilience Strategies



Source: Created by the author

## ANNEX 2: LIST OF TABLES

Table 1

The Comparison of the Supply Chain Definitions

<b>Definitions of Supply Chain</b>	<b>Author (Year)</b>
A crucial factor in business covers the vast process of product creation, production, manufacturing, and delivery with the end goal of consumption.	Hugos (2018)
The process covers different business operations and industries. Its complexity may vary based on the industry's complexities	Ganeshan and Harrison (2002)
The process involves various steps and parties, from the producers to the final stage, the consumers. It may vary based on the model, company, and sector; however, the process always begins with procuring the raw materials.	Hayes et al. (2023)
The process includes four parts: Procurement of raw materials, processing raw materials into finished products, transporting the final products to retailers and customers, and returning the products and a refund.	Taulia (2023)
The process must begin with the planning stage to ensure the overall success from product procurement to delivery.	Annis (2021)
The process involves four principal processes: Planning, Sourcing, Manufacturing, Delivery, and Return.	Gunnoo (2023)
A chain that will minimize the overall costs of operations of the company and ensure optimal customer satisfaction and product sustainability.	Spotos (2023)
A complex chain of steps and institutions produces value products for the buyers.	Albrecht (2009)

Source: Compiled by the author based on the results of the literature analysis

Table 2

Summary of Factors Affecting Supply Chain Process

<b>Types of Supply Chain Disruptions</b>	<b>Supply Chain Disruptions</b>	<b>Authors (Year)</b>
Internal	Insufficient workforce	Parajuli, Kuzgunkaya, and Vidyarthi (2017)
	Volatility in Supply and Demand	
	Substandard Quality of the Product	
	Insufficient Processing Power and Performance	
	Unavailability of Materials	
	Unstable Flow of Goods	Correll (2022)

	Logistical Issues	Singhal (2022)
	Logistical Delays	Stackpole (2022)
	Insufficiency in Funds/Investments	Georgiev (n.d.)
	Dependence on International Suppliers	SAP News (2022)
	Absence of Contingency Plans	
External	Geopolitical Conflicts	SAP News (2022)
	Increase in Gasoline and Oil Prices	Lavsi (2022)
	Shift in Consumer Preferences	Sethupathy and Gupta (2021)
	Unforeseen Cyber Security Strikes	Dunaj (2024)
	Extreme Natural Occurrences	
	Economic Changes	
	Local and Global Health Crises	
	Increased Tariff and Interest Fees	Singhal (2022)
	Constant Change in Government Regulations	Datta et al. (2020)

Source: Compiled by the author based on the results of the literature analysis

Table 3

Summary of the Characteristics of Various Food Supply Chain Disruptions

<b>Major Supply Chain Disruptions</b>	<b>Authors (Year)</b>
United States and China Tariff/Trade tension	Meier and Pinto, 2020
Russia and Ukraine War	Stackpole, 2022
Departure of the United Kingdom from the European Union	Datta et al. (2020)
Brexit Inflation	Ziady (2023)
COVID-19 Pandemic	Sethupathy and Gupta (2021)
Government-imposed Lockdowns	Marks (2020)
Strict Quarantine Measures	
Major Labor Shortages	Reuters (2021)
Natural Disasters	Alexandra (2022)
Unpredictable Consumer Behavior	Godrich et al. (2022)

Source: Compiled by the author based on the results of the literature analysis

Table 4

## Supply Chain Challenges Post-COVID-19 Pandemic

<b>Supply Chain Recovery Challenges</b>	<b>Authors (Year)</b>
Volatility in quality and quantity of supply and manufacturing	(Raj et al., 2022)
Shortage of labor	
Inadequate transportation	
Unpredictability in demand, leading to a surge of supply of certain products and shortage in others	(Graves et al., 2022)
Decreased capability in terms of production	(Khodoomi et al., 2023)
Absence of effective logistical planning and management	(Bayhaqi & Ge Lai, 2022)
High expenses in logistics and supply delivery	
Major shifting and unpredictability in consumer behavior, trends, and buying patterns	(Panwar et al., 2022)
Abrupt economic changes	
Absence of adequate crisis preparedness	(Van Hoek, 2020)
Limitations in the current proper crisis response	
Administration of digitalization	
Inadequacy in the number of available and skilled workers	Xu et al. (2020)

Source: Compiled by the author

Table 5

### The Various Range of the Asset Sizes of Philippine MSMEs

<b>Scale of Business</b>	<b>Employment Scale</b>	<b>Asset Scale</b>
<b>Micro</b>	1-9 workers	Up to P3,000,000
<b>Small</b>	10-99 workers	P3,000,001-P15,000,000
<b>Medium</b>	100-199 workers	P15,000,001-P100,000,000
<b>Large</b>	200 and above workers	P100,000,001 and above

Source: Philippine Statistics Authority, 2022

Table 6

### Various Percentages of MSMEs Employment

<b>BUSINESS SIZES</b>	<b>TOTAL NUMBER OF ESTABLISHMENTS</b>	<b>TOTAL PERCENTAGE OF SHARES</b>
MICRO-SCALE	1,004,195 in total	90.49 percent
SMALL-SCALE	96,464 in total	8.69 percent
MEDIUM-SCALE	4,484 in total	0.40 percent
LARGE-SCALE	4,541 in total	0.41 percent
<b>TOTAL</b>	1,109,684 in total	100 percent
<b>MSME</b>	1,105,143 in total	99.59 percent

Source: Philippine Statistics Authority, 2022

Table 7

### Overview of the Food Supply Chain Process Study

<b>Authors (years)</b>	<b>Study (aim)</b>	<b>Methods of Research</b>
Godrich, S.L., Lo, J., Kent, K., et al. (2022)	To analyze the impact of the pandemic on the FSC in the Southwestern Region of Australia.	Quantitative and Qualitative
Moosavi, J., Fathollahi-Fard, A. M., & Dulebenets, M. A. (2022)	To identify the various SC strategies during the peak of the pandemic.	Systematic Literature Review
Raassens N., Haans H., & Mullick S. (2021)	To identify the resilience strategies employed by various food service establishments in the early stages of the pandemic to keep afloat.	Systematic Literature Review
Ivanov, D., Dolgui, A., Sokolov, B. & Ivanova, M. (2017)	To conduct an in-depth analysis of available research on supply chain design and planning following various supply chain disruptions.	Systematic Literature Review
W. Mu, E.D. van Asselt, H.J. van der Fels-Klerx (2021)	To define resilient food supply chains in food safety and to assess food safety resilience within the supply chain.	Qualitative

Source: Compiled by the author based on the results of the literature analysis

Table 8

Research Themes and Data Coding Protocols

<b>Theme</b>	<b>Construct</b>	<b>Description</b>	<b>Authors</b>
Business Scales	Standard sizes of MSME business operations	Analyzes the scales and the characteristics of various of the business operations as well as the challenges and limitations faced by MSMEs	(Almeda & Baysic, 2010)
	Philippine Micro, Small, and Medium-Scale Enterprises	Understanding the five performance indicators stemming from characteristics, informality, to financial aspects of various SMEs.	(Ndiaye et al., 2018)
Standard Supply Chain Process Prior the COVID-19 Pandemic	Supply Sources	Discusses the supplier selection process in terms of quality and characteristics fitted for the small-medium scale businesses,	(Mantos et al., 2023)
	Supply Challenges	Identifies the various supply chain issues and challenges small to medium scale enterprises encounter in both demand and supply aspects of supply chain integration.	(Nande et al., 2022)
Challenges Faced by MSMEs in Business Operations Prior the Spread of the COVID-19 Pandemic	Supply	Identifies the major hurdles the small and medium enterprises regularly encounter and stunts their growth	(Yoshino & Hesary, 2016)
	Demand		
The Impact of the COVID-19 Pandemic on the Standard Business Process of MSMEs	Business Operations Disruptions	Analyzes the impact of the COVID-19 pandemic to small and medium scales businesses and identify apparent themes/challenges.	(Bartik et al., 2020)
	Supply Chain Disruptions	Examines the impact of the COVID-19 pandemic in various stages of the Food Supply Chain process such as sourcing, food processing, logistics and distribution, and consumers.	(Aday & Aday, 2020)

Strategies Used to Increase MSME Resilience During COVID-19	Resilience Strategies	Explores the conceptualization of resilience and the challenges faced by the MSMEs post-pandemic.	(Anatan, 2020)
	Contingency Plans	Understanding the effects of proper planning and employment of contingency plans can benefit MSMEs	(Sugiarto, 2019)

Source: Compiled by the author

Table 9

Description of the Respondents

<b>Respondent Number</b>	<b>Occupation</b>	<b>Years of Experience</b>	<b>Employment/Business Establishment</b>
Respondent 1	Business owner	6	Community Variety Store
Respondent 2	Business owner	42	One Stop Shop
Respondent 3	Business owner	15	Community Variety Store
Respondent 4	Business owner	10	Community Variety Store
Respondent 5	Business owner	15	Meat and Poultry
Respondent 6	Business owner/Head Chef	8	Restaurant and Vegetable Shop
Respondent 7	Business owner	7	Community Variety Store
Respondent 8	Business owner	11	Community Variety Store
Respondent 9	Business owner	7	Fruits and Vegetable Shop
Respondent 10	Business owner/Head Baker	5	Bakery/Bake Shop
Respondent 11	Business owner	20	Community Variety Store
Respondent 12	Business owner	5	Vegetable Stand
Respondent 13	Manager	6	Community Variety Store
Respondent 14	Business owner/Head Baker	15	Bakery/Bake Shop
Respondent 15	Business owner	7	Community Variety Store

Source: Compiled by the author



Table 10

Empirical Interview Results: Challenges Faced in Day-to-Day Business Operations Prior the COVID-19 Pandemic

Second Order Themes	First-order Categories	Respondents	Citations
Challenges Faced in Day-to-Day Operations	Supplies	R1, R3, R4, R5, R6, R7, R10, R15	<p>"The usual problems that must be fixed are the maintenance and arrangement of the supplies from the expiration dates, bug infestations, and so on."</p> <p>"As for the challenges, we usually have some challenges with the deliveries as the supplies come straight from Binondo [Manila]. Sometimes, the supplies are not enough, and sometimes, there's a delay in deliveries as they come from far away."</p> <p>"There have been border closures, so our suppliers are struggling to bring the supplies to us, and we had to close for a while as there is nothing to sell anymore."</p> <p>"Since our products are vegetables and chicken, we collect them early daily to keep our supplies fresh. We only have one vegetable supplier, so some are sometimes out of stock."</p> <p>"We have no problems with the supplies since we gather our ingredients from different stores, and if one ingredient is unavailable, there are multiple options." "Sometimes, if the demand is high, we have a shortage of a particular product. " Identifying, computing, ordering, and re-stocking our supplies are always laborious." "Sometimes, some products are not available from our supplier. We don't have any other suppliers."</p>
	Inflation	R4, R9, R14	<p>"[The problem is] if we have a lot of products, but then the customers don't buy or purchase as much inflation." "The usual challenge is inflation. When our suppliers' prices of fruits and vegetables increase, we must raise our prices for profit. But our customers usually don't like that and keep asking for discounts, which we cannot give. It's something we cannot control."</p> <p>"Inflation. The prices of flour and sugar are on a constant rise. This affects my business because I also must increase the cost of bread. People are always complaining about it."</p>
	Quality	R2, R5	<p>"We sometimes receive products that are not up to par with the quality."</p> <p>"Sometimes, I don't get to sell as much, and since I'm selling vegetables and chicken, they perish and spoil quicker than other products."</p>
	Weather	R11, R13	<p>"My business thrives regularly, but the sales decrease when the rainy season comes in, especially when there's a typhoon."</p> <p>"I always have a hard time with them when it's raining, and they usually don't come in during harsh weather."</p>

Source: Compiled by the author

Table 11

Empirical Interview Results: Supply Chain Sources (Pre-COVID-19)

Second Order Themes	First-order Categories	Respondents	Citations
Supply Chain Sources (Pre-COVID-19)	Wholesalers	R1, R2, R3, R5, R6, R7, R8, R9, R10, R13, R14, R15	<p>“We source our products from different wholesalers.”</p> <p>“We have a couple of wholesalers near our area.”</p> <p>“Our stocks come from two massive wholesalers in Binondo and Makati.”</p> <p>“Our sources are vegetables and poultry wholesalers.”</p> <p>“We go to wholesalers in the market every day.”</p> <p>“We have a wholesaler, but they don't do deliveries, so we usually collect the products straight from their shop.”</p> <p>“I go to two different wholesalers three times a week.”</p> <p>“We have a wholesaler of fruits and another of vegetables.”</p> <p>“We get supplies from a wholesaler every five days, usually every Friday before the weekend since there are more shoppers on the weekend.”</p> <p>“I get my products from only one wholesaler, who delivers twice weekly.”</p> <p>“Our wholesaler constantly delivers our ingredients every week.”</p> <p>“We source our products from our supplier [wholesaler] weekly.”</p>
	Manufacturers	R4	<p>“Our products come from the manufacturers themselves.”</p>
	Retail	R11, R12	<p>“We source products from large retail chains twice a week and then retail them at a slightly higher price in our store.”</p> <p>“I just shop at retail stores. I obtain my supplies from other retail stores three times a week.”</p>

Source: Compiled by the author

Table 12

Empirical Interview Results: Supply Chain Issues (Pre-COVID-19)

Second Order Themes	First-order Categories	Respondents	Citations
Supply Chain Issues (Pre-COVID-19)	No problems	R1, R2, R4, R8, R9, R13, R14	<p>"We didn't encounter any delays in the deliveries before the pandemic."</p> <p>"No, we never had a problem with our supplies since the wholesalers are right around the corner."</p> <p>"We never had problems with the suppliers."</p> <p>"I have never had a problem with my supplies or the delivery of the products because my supplier and I have a great relationship. We've been partners for years."</p> <p>"I have never had a problem."</p> <p>"[I] never really had any problem communicating with my supplier."</p> <p>"No, problem, the flour and sugar are continuously supplied."</p>
	Shortage/Out of stock	R5, R7, R11, R15	<p>"We only have one vegetable supplier, so some are sometimes out of stock."</p> <p>"Sometimes, if the demand is high, we have a shortage of a particular product, and then we have to go to the wholesale store to restock."</p> <p>"We usually go to another if one product is unavailable from our usual wholesaler. We have multiple options [in terms of suppliers]."</p> <p>"Whenever the brand we prefer is out of stock, we try to find an alternative product."</p>
	Delays	R3	<p>"Sometimes there's an hour or so delay in the delivery as the products come from the city, but nothing major."</p>

Source: Compiled by the author

Table 13

Empirical Interview Results: Impact of COVID-19 Pandemic on the Business Operational and Supply Chain Perspective of Philippine Food MSMEs

Second Order Themes	First-order Categories	Respondents	Citations
Impact of COVID-19 Pandemic	Supply shortage	R3, R4, R5, R6, R7, R10, R11, R13, R14, R15	<p>"It was complicated to secure the supplies during the pandemic; some products were unavailable, and there were many delays, especially in the beginning. Some of our products were gone, and the deliveries were late."</p> <p>"There even was a time when we didn't have anything to sell at all cause there were also no deliveries."</p> <p>"We felt the effect of the pandemic intensely. We ran out of supplies, and the deliveries weren't coming in."</p> <p>"We lost our source of supplies because our wholesaler also had to shut"</p> <p>"We still experienced shortages because our supplier stopped the deliveries."</p> <p>" I had no income, and we had nothing to sell."</p> <p>"There were shortages and delays [in supply restocking] because we were the ones who collected them from the retailers, and sometimes we needed help doing it since there were only a few of us working by then."</p> <p>"My wholesaler was also closed, so I had no source of goods. Yes, I only have one source. They are fine but were forced to close and take a break during the pandemic because of fear. I was forced to shut down since my shelves were practically empty."</p> <p>"Our business was doing fine before COVID, but the pandemic brought many challenges. Delivery delays, product shortages, and employee shortages became the norm."</p> <p>"Deliveries were delayed, and there were product shortages."</p>

	Supply Delays	R3, R4, R5, R9, R11, R14	<p>"Some products were unavailable, and there were many delays, especially in the beginning. Some of our products were gone, and the deliveries were late."</p> <p>"There were a lot of delays, and sometimes they [deliveries] couldn't enter our city at all."</p> <p>"We ran out of supplies, and the deliveries weren't coming in."</p> <p>"The delivery [of our products] was slow, and the supply has also decreased."</p> <p>"There were shortages and delays [in supply restocking] because we were the ones who collected them from the retailers, and sometimes we needed help doing it since there were only a few of us working by then."</p> <p>"Delivery delays, product shortages, and employee shortages became the norm."</p>
	Sales decrease	R5, R7, R8, R10, R12, R15	<p>"There were also fewer people buying from us during that time."</p> <p>"Our sales were down during the pandemic."</p> <p>"The sales were weak because no one went out after the curfew, and my sales at the store were limited, only 6 hours a day. It's a waste since there were a lot of customers, especially at night. It was a massive blow to my sales."</p> <p>"We had fewer customers because of the restrictions."</p> <p>"My sales were already weak before the pandemic, and it weakened them even more."</p> <p>"We had to close our stores due to lacking supplies and customers."</p>
	Business closures	R4, R13, R15	<p>"We had to close for a while as there is nothing to sell anymore."</p> <p>"I was forced to shut down since my shelves were practically empty."</p> <p>"We had to close our stores due to lacking supplies and customers."</p>
	Employee shortages	R2, R11, R14	<p>"[During the pandemic,] some of our employees also didn't make it to work on time due to transportation problems."</p> <p>"Due to the government's fear and strictness, our employees could not go to work, and we could not operate properly."</p> <p>"Delivery delays, product shortages, and employee shortages became the norm."</p>

	Limited Operating Hours	R7, R8	"The sales were weak because no one went out after the curfew, and my sales at the store were limited, only 6 hours a day. It's a waste since there were a lot of customers, especially at night. It was a massive blow to my sales." "[Additionally,] I had to close by 6 pm, lesser time to cater to customers."
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Source: Compiled by the author

Table 14

Empirical Interview Results: Resilience Strategies During COVID-19

Second Order Themes	First-order Categories	Respondents	Citations
Resilience Strategies During COVID-19	No Strategies/Contingency Plans	R1, R13	"We didn't have any [strategies/contingency plans]. We had to close our business down." "We did not have any. I had to shut my store down."
	Relationship-Building	R2, R3, R4, R11	"Even though our business shrunk down a little due to the pandemic, we have loyal customers and good-quality products. We managed to bounce back after a while." "The best strategies are having options, having a great relationship with your customers, treating them nicely, and paying taxes." "People continue to approach us for their needs despite the closures and restrictions." "The [best business survival] strategy for us is our [expansive] connection. We managed to expand our connections from our 20 years of operation. We're a trusted store within the community."
	Back-up suppliers	R3, R12	"We learned to connect with a local supplier that allowed us to order online in bulk. Nowadays, we still order from our original wholesaler in Binondo [Manila]; however, we also have a local supplier here in our city." "[When asked about the strategies] Strategies? If the supply is the problem, it's better to have a lot of [suppliers] resources. That's all. My supply was all right."
	Product Variation	R4	"Instead of restocking the unnecessary products, we focused more on selling food and necessities [like water and household items]."

	Hawking	R5, R7	<p>“We started selling our products through hawking. During the height of the lockdown, I was hawking, walking through neighborhoods, and knocking on doors to offer our products.”</p> <p>"We did not expand online, but we did start hawking."</p>
	Digitalization	R5, R6, R8, R9, R10, R12, R14, R15	<p>“We started selling through Facebook Messenger.”</p> <p>“We registered our small shop in [applications like] Grab and Lalamove, etc. to reach more customers. There were also Pasabuy [also known as personal shoppers]. These apps have helped us a lot.”</p> <p>“I started to do an online business. I don’t know how to use it as much. I’m still learning, but so far, it is working.”</p> <p>“Our sales increased even more when we registered our store in the Grab and Food Panda application and started to market on Facebook. I say we’re doing alright and expanding our operations in another city.”</p> <p>“Social media has been a massive help with our bounce back.”</p>

Source: Compiled by the Author

Table 15  
Coding of the Empirical Data

<b>First-Order Categories</b>	<b>Second-Order Themes</b>	<b>Themes</b>
Wholesalers	Supply Sources	Standard Supply Chain Process Prior the COVID-19 Pandemic
Manufacturers		
Retailers		
No problem	Supply Challenges	
Product Shortage		
Supply Delivery Delays		
Supply Shortage	Supply	Challenges Faced by MSMEs in Business Operations Prior the Spread of the COVID-19 Pandemic
Oversupply		
Pricing	Demand	
Product Quality		
Weather Conditions		
Limited Operating Hours	Business Operations Disruptions	
Sales Decrease		
Employee Shortage		
Business Closures		
Supply Delays	Supply Chain Disruptions	
Supply Shortage		
Relationship Building	Resilience Strategies	Strategies Used to Increase MSME Resilience During COVID-19
Product Variation		
Digitalization		
Hawking		
Deliveries		
Back-up Suppliers	Contingency Plans	

Source: Compiled by the author