

2019

## Strategies to Mitigate Negative Results of Supply Chain Disruption

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*Walden University*

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# Walden University

College of Management and Technology

This is to certify that the doctoral study by

Manal AlRamadin

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Walden University  
2019

Abstract

Strategies to Mitigate Negative Results of Supply Chain Disruption

by

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MBA, University of Jordan, 2006

BS, University of Jordan, 2003

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Global Supply Chain Management

Walden University

December 2019

## Abstract

Supply chains are considered the foundation of the global economy, and businesses with global supply chains usually encounter at least 1 disruption annually. Mitigating the negative impact of disruptions is critical to supply chain managers, as disruptions can negatively impact organizational profitability and performance. Grounded in the resource dependence theory, the purpose of this qualitative multiple case study was to explore strategies organizational and supply chain managers use to mitigate negative results from supply chain disruption. Participants were 4 supply chain managers working in 2 different international organizations located in Jordan, who used effective strategies to mitigate supply chain disruptions. Data collection involved semistructured interviews and a review of organizational documents. Data were analyzed using thematic analysis, and 2 main themes emerged: Developing relationships and collaboration and strategy to identify supply chain disruption. The implications for positive social change include the potential for organizational and supply chain managers to mitigate negative results of supply chain disruptions and improve organizational performance. Sustaining organizational performance promotes the well-being of employees, families, communities, and the economy, which can result in customer satisfaction, business growth, and stable employment.

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## Dedication

I would like to dedicate this academic accomplishment to my dad, Dr. Yahya AlRamadin, and my mom, Asmahan, for their support and encouragement to pursue my education throughout my lifetime. I want to dedicate my dissertation to my husband Omar, and my kids, Mira, Adam and Daniel, for their encouragement, support, and patience throughout my doctoral journey. Their unconditional love, prayers, understanding, and sacrifices throughout this journey encouraged and helped me to finish my doctoral study. Thank you Omar for your support through this experience, I could not have done it without you!

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## Section 1: Foundation of the Study

Between 2000 and 2015, supply chains became one of the most critical subjects of management research, and managers started to establish strategies to adjust to supply chain dynamics and to mitigate disruptions (Ivanov, Mason, & Hartl, 2016). Supply chains can be considered the foundation of the global economy, and organizational managers became more interested in supply chain disruptions and how to mitigate risk (Varzandeh, Farahbod, & Jake, 2016). Varzandeh et al. (2016) stated that organizational managers who can respond to supply disruptions efficiently and rapidly obtain an additional advantage over their competitors. The findings from this study may provide insights into effective strategies managers can use to mitigate the effects of supply chain disruptions.

### **Background of the Problem**

Due to the increased occurrence and the critical effects of past supply chain disruptions, organizational managers and researchers have started to focus more on supply chain disruption and the need to address its risk (Heckmann, Comes, & Nickel, 2015). Additionally, as a result of the increasing difficulty and interrelation of current supply chains, managers find it hard and sometimes impossible to address the nature and description of any uncertain developments (Heckmann et al., 2015). For organizations to be competitive, managers must ensure they are obtaining a cost-efficient, responsive, and flexible supply chain to deliver products with high quality at the right time and place (Milovanović, Milovanović, & Radisavljević, 2017). A supply chain (SC) is an integrated network concerned with the flow of products or services from suppliers to customers

(Esmailikia et al., 2016). SC disruption occurs when an unexpected incident happened that caused an interrupted flow of products or services in the SC and result in undesirable outcomes for normal SC operations (Tse, Matthews, Tan, Sato, & Pongpanich, 2016). SC disruptions negatively influence organization performance levels, cost, and responsiveness to industry changes (Srivastava, Chaudhuri, & Srivastava, 2015), and managers need to develop strategies to mitigate SC disruption and reduce its outcome (Kumar, Himes, & Kritzer, 2014). Organizational managers are required to ensure efficient responsiveness to costly disruptions (Chopra & Sodhi, 2014) and manage its risk (Parihar & Rahul, 2014) to enhance organizational performance and competitiveness.

Globalization of business increased the complexity of organizational SC management, and customers became more demanding for innovative products at a reasonable price (Milovanović et al., 2017). Therefore, managers have found it increasingly challenging to establish responsive and cost-effective SCs (Milovanović et al., 2017). Organizational managers need to develop effective strategies to control the impact of SC disruption, or the organization can suffer from revenue losses and, sometimes, can close operations (Kumar et al., 2014).

### **Problem Statement**

The growing complexity of managing an SC has resulted in SC disruptions that negatively impact organizational performance and increase costs (Kamalahmadi & Parast, 2017). According to Alcantara's (2015) supply chain resilience survey of over 519 organizations from 71 countries, 75% of these organizations encountered at least one SC disruption, 15% faced disruptions that cost more than one million euros, and 9%

addressed a single disruption that cost above one million euros. The general business problem is that some managers lack strategies to mitigate the negative results of SC disruptions. The specific business problem is that some managers in the mining industry lack strategies to mitigate the negative results of SC disruptions.

### **Purpose Statement**

The purpose of this qualitative multiple case study was to explore the strategies some SC managers in the mining industry use to mitigate the negative results of SC disruption. The target population was four SC managers in the mining industry in Amman, Jordan, who successfully developed and implemented effective strategies to mitigate the negative results of SC disruption. There may be contributions to positive social change by mitigating negative results of SC disruptions, which may allow organizations to maintain success, create more jobs, save resources, and support the welfare of their employees, families, and communities.

### **Nature of the Study**

For the study, I used the qualitative research methodology. The qualitative design provides an in-depth analysis of the descriptive questions (Gerring, 2017). Researchers use the qualitative methodology to explain and explore the meaning of social and human behavior and decisions (Bailey, 2014). Therefore, qualitative methodology was the most appropriate design for this study. The quantitative approach was not appropriate for the study because I am not seeking to test hypotheses and examine variables. Researchers use the quantitative approach to identify, describe, and investigate the relationship between variables (Yin, 2014) and provide a descriptive mathematical analysis (Park & Park,

2016), which this study did not have. In mixed methodology, there is a need to combine quantitative and qualitative methodologies in the same research when either methodology is insufficient on its own (Turner, Cardinal, & Burton, 2017). Therefore, the mixed methodology was not appropriate for this study because this study did not need a combination of qualitative and quantitative methods for collecting and analyzing the data.

For the study design, I reviewed the following qualitative research designs: (a) case study, (b) phenomenology, (c) ethnography, and (d) narrative design. A multiple case study was the most appropriate design for the study, given the intricate complexity of the subject under investigation and because the study would involve few participants. Researchers use a case study methodology to gain an in-depth understanding of a problem (Yin, 2014) involving complex subjects and few participants (Park & Park, 2016). The phenomenological design was not suitable because the study would not include individual viewpoints and understandings from experiencing one or more incidents. Researchers use the phenomenological design when the research involves studying members for their actual human experience in a major life event (Bentahar & Cameron, 2015). The ethnographic design was not suitable for the study. Researchers use the ethnographic design when studying the cultures of specific groups, how people within groups interact with each other, and how culture affects group member (Kruth, 2015). The narrative study design was not suitable for the study. Researchers use the narrative design to concentrate on the life experiences of individuals over time and analyze their experiences (Garud, Gehman, & Giuliani, 2016).

### **Research Question**

The main research question of this study was: What strategies do managers in the mining industry use to mitigate the negative results of supply chain disruptions?

### **Interview Questions**

The following are the interview questions for this study:

1. How do managers in the mining industry define SC disruption?
2. What type of SC disruptions do companies in the mining industry encounter?
3. What processes do you use to identify SC disruption in the mining industry?
4. How have you responded to SC disruption in your organization?
5. What processes have been put in place to reduce SC disruptions in the mining industry?
6. What types of collaboration within the SC do you use to reduce the negative results of SC disruption in the mining industry?
7. How do you align strategies for mitigating SC disruption in the mining industry with SC partners?
8. How do you evaluate the success of the strategies you employ to mitigate the negative effects of SC disruptions in the mining industry?
9. What difficulties have you encountered or you are still encountering in your attempt to reduce or eliminate SC disruption?
10. What additional comments and suggestions can you make regarding SC disruptions in the mining industry?

## Conceptual Framework

The conceptual framework and the underlying theory for this qualitative multiple case study was resource dependence theory (RDT). Pfeffer and Salancik introduced RDT in 1978. According to the RDT, organization survival depends on managers' abilities to obtain critical resources from the external environment (Pfeffer & Salancik, 1978) for a long term (Wolf, 2014). Furthermore, according to RDT, the foundation of organizational performance is its ability and degree of dependence on different resources (Bryant & Davis, 2012). According to Arik, Clark, and Raffo (2016), organizational success depends on an organization's abilities to adjust its structure to obtain the required external resources and reduce its reliance on others for resources. Organizational managers use different procedures to reduce uncertainty in the flow of resources (Klein & Diniz Pereira, 2016), and according to RDT, establishing interorganizational relationships is an appropriate procedure to attain organization resources, maintain dependence, and reduce uncertainty (Pfeffer & Salancik, 2003). In addition, managers seek to increase their organizational dependence by establishing a collaborative relationship with organizational SC partners (Klein & Diniz Pereira, 2016). Resource dependency directions are important to organizations for understanding the difficulty of external dependencies (Malatesta & Smith, 2014). Researchers have use RDT to study and understand the development of interorganizational relationships to decrease uncertainty in the flow of resources (Klein & Diniz Pereira, 2016). According to RDT, managers attempt to manage their resource dependencies by establishing several forms of interorganizational arrangements to direct organizations toward their benefits (Klein &

Diniz Pereira, 2016). RDT is appropriate for my study because managers leverage customer and supplier relationships to reduce operational uncertainty.

### **Operational Definitions**

*Global supply chain*: Provides organizations with the ability to encounter new, different customers and markets; attain supplies; increase the discovery of innovative products; and obtain the best products at the best prices (Kim, Park, Jung, & Park, (2018).

*Risk management*: A proactive method that organizational managers use to address, analyze, and control risks and uncertainties within an organization (Cagnin, Oliveira, Simon, Helleno, & Vendramini, 2016).

*Supply chain collaboration*: An interorganizational partnership process in which two or more independent parties work together to organize, align, and fulfill SC operations to operate a value-added method for the fulfillment of mutual goals and benefits (Liao, Ding, & Hu, 2017).

*Supply chain disruption*: An unexpected occurrence causing an interrupted flow of goods or services in the SC and resulting in undesirable outcomes for normal SC processes (Tse et al., 2016).

*Supply chain management*: A combination of processes for efficiently managing the operations of the SC to deliver value to customers and stakeholders and increasing SC performance (Kumar & Kushwaha, 2018).

*Supply chain relationships*: Interorganizational interconnected relationships and collaborations between SC members, which lead to SC responsiveness to market challenges (Skippari, Laukkanen, & Salo, 2017).

*Supply chain risk management*: A collaboration between organization partners and stakeholders and key decision makers to identify and manage the risks and uncertainties of the SC network (Qazi, Quigley, Dickson, & Gaudenzi, 2018).

*Supply chain responsiveness*: The capability of SC managers to satisfy customer orders and adapt to customer order changes within a promised time (Hum, Parlar, & Zhou, 2018).

*Supply chain strategy*: The understanding, development, and operation of design to sustain organizational fit with environmental changes to achieve higher performance (Prajogo, Mena, & Nair, 2017).

### **Assumptions, Limitations, and Delimitations**

In this section, I describe the assumptions, limitations, and delimitations of this study. Assumptions are factors of a study considered out of the researcher's control and all research contains assumptions (Givens, 2008). Limitations are potential weaknesses of research beyond the researcher's control (Givens, 2008). Researchers allocate the delimitations of the study to recognize the boundaries of the study and limit its range (Givens, 2008).

Assumptions are statements or truths that people realize and approve without carrying any evidence (Schoenung & Dikova, 2016). The first assumption in this study was that organizational managers and SC managers were the most knowledgeable and appropriate candidates in a company to identify and explain strategies for mitigating disruptions in the SC. Another assumption was that the study participants would assign sufficient time to participate in the interview process. Additionally, I assumed that the

interviewees provided honest, accurate, and complete responses to interview questions based on their knowledge and experience regarding strategies to mitigate SC disruption. I depended on organization documents for triangulation and assumed that organizational managers would deliver appropriate documentation.

Limitations are restraints and weaknesses that the researcher cannot control (Yin, 2017). According to Yin (2017), study limitations can influence result transferability. The study was limited to the participants' availability for interviews, their openness and honesty in responses, and their knowledge about the research subject. Although a researcher can manage the study population and sample size, the researcher has no control over the participants' responses and cannot ensure the truthfulness of the them. However, to minimize this limitation, I assured the confidentiality of the participants' personal information, which included their names and the company name. I depended on documentation for triangulation. Therefore, my access to appropriate organizational documents could have been a limitation.

Delimitations represent the boundaries of a study (Givens, 2008) that the researcher uses to limit the scope of the research (Marshall & Rossman, 2016). I chose four organizational and SC managers from two global companies in Jordan, which delimitate the study. I controlled the scope of the study by interviewing only managers with at least 5 years of experience and currently working in the organization and SC sector. Furthermore, the data sources of the study involved interviews and organization documents, which were the most appropriate method for obtaining in-depth descriptions

of the strategies used to mitigate SC disruption. I conducted this study to gain knowledge of effective strategies to mitigate the negative results of SC disruption.

### **Significance of the Study**

#### **Contribution to Business Practice**

The purpose of this study was to explore the strategies managers use to mitigate the negative results of SC disruption. The results of this study may present insight into effective strategies managers in the Jordanian mining industry use to mitigate the negative results of SC disruption. SC disruption can lead to massive losses for organizations and SC partners (Youyu et al., 2017). Effectively managing and controlling SC disruption allows organizational managers to compete in the marketplace and sustain competitiveness (Mellat-Parast & Spillan, 2014). In addition, efficient and successful managing of SC disruptions can improve organizational performance (Parihar & Rahul, 2014). Ignoring disruption risks can lead to negative outcomes, such as financial loss, increased transportation costs, inventory shortages, order delays, and reduction in market shares (Peng, Snyder, Lim, & Liu, 2011). Additionally, a manager's ability to manage an SC influences organizational success or failure (Mellat-Parast & Spillan, 2014). The outcomes of this study may assist SC managers in minimizing the negative results of SC disruptions.

#### **Contribution to Social Change**

Society may benefit from the study results regarding the best strategies to mitigate the negative results of SC disruption, which affect organizations, employees, and communities. The social change covers social matters concerning the well-being of

individuals, communities, organizations, and society (O’Cass & Griffin, 2015).

Deploying effective SC management strategies can save organizational resources and enhance customer value and satisfaction (Omar, Davis-Sramek, Fugate, & Mentzer, 2012). Gaining knowledge about the proper strategies to mitigate the negative results of SC disruption may enhance organizational SC outcomes and may allow a company to compete for more customers and increase employment in the community. Effective SC management strategies may improve control over product costs and reduce cause for price increases (Sekip-Altug & Van Ryzin, 2014). According to Ellinger et al. (2012), the leading SC organizations reveal higher degrees of customer satisfaction and produce higher levels of shareholder value. Successful organizations and managers positively and effectively impact individual lives and social conditions by creating jobs, contributing to environmental sustainability plans, and promoting economic growth (Polonsky, Grau, & Mcdonald, 2016). Organizational managers may integrate social and environmental concerns in organizational strategies, increase organization performance, and enhance customer service (Tseng, Lim, & Wong, 2015). Improving work conditions benefits worker communities.

### **A Review of the Professional and Academic Literature**

The purpose of this qualitative multiple case study was to explore the strategies SC managers use to mitigate the negative results of SC disruption. The following section includes a review of literature and resources connected to the research subject. I used EBSCOhost, ProQuest in the Walden library database to obtain all scholarly peer-reviewed articles related to my research study. I used the following key terms to collect

the articles for the study literature review: *supply chain management*, *supply chain collaboration*, *supply chain disruption*, *supply chain risk*, *supply chain strategies*, and *supply chain mitigation*. Through the literature review, I provided a comprehensive approach to understand the topic of mitigating disruptions in SCs and to explore the strategies managers use to mitigate SC disruption on business performance. Researchers use a literature review to provide a logical framework for the study and support the study subject (Marshall & Rossman, 2016). The research question of this study is intended to address the strategies managers in the mining industry use to mitigate the negative results of SC disruptions.

### **Resource Dependency Theory**

The theory underlying this study is RDT, which focuses on the organizational manager's ability to obtain external resources (Wolf, 2014). Ulrich and Barney (1984) explained that RDT illustrates a collection of power relations created through the exchange of resources. First, organizations establish internal and external alliances, which develop from social exchanges to influence and control the environment (Ulrich & Barney, 1984). Second, organizational managers try to manage the environment's rare and valuable resources, which are critical for the organization's existence (Ulrich & Barney, 1984). Third, managers attempt to gain control over resources to reduce their reliance on other organizations (Ulrich & Barney, 1984). This framework can be used by SC managers to develop efficient reactions to SC disruptions. Additionally, RDT is a helpful method for ensuring SC stability. Successful managers need to adjust their

organizations' structures and activities to secure the necessary external resources (Arik, Clark, & Raffo, 2016).

According to Pfeffer and Salancik (2003), the foundation of an organization's survival is its ability to secure resources in an uncontrolled environment; otherwise, organizations depend on others to supply the resources they need. Understanding an organization's environment and the barriers to obtaining resources therein allows researchers to develop the procedures that should be performed by organizational managers (Pfeffer & Salancik, 2003). The goal of an organizational manager is to decrease the organization's reliance on other firms for the supply of limited resources (Mwai, Kiplang'at, & Gichoya, 2014). The target of any organizational managers is to decrease organization reliance on other firms by obtaining resources and by responding to market demands (Ntim, Lindop, Osei, & Thomas, 2015). According to RDT, resources are the source of an organization's strength and independence, and organizations are most competitive when they control their resources (Mwai et al., 2014; Arik et al., 2016). Obtaining critical resources is a necessary principle of organizational strategy and tactical management (Mwai et al., 2014). In addition to increasing an organization's independence, obtaining more resources also increases an organization's control over other organizations in the market (Huo, Zhang, & Zhao, 2015). Organizations that control essential resources in the SC decrease their level of dependency on other organizations (Rajesh & Ravi, 2015).

In any environment, an organization faces a level of uncertainty that can be minimized by managers' ability to develop relationships within the SC (Mwai et al.,

2014). Through the development of formal and informal partnerships and obtainment of some resources internally, organizational managers may reduce uncertainty and better control an SC (Ulrich & Barney, 1984). Soosay and Hyland (2015) explain that SC managers work in partnership with external organizations to achieve higher performance and decrease uncertainty in organization resources to meet expectations. The focus of RDT is on managing and controlling external resource supplies to reduce dependency (Bode, Wagner, Petersen, & Ellram, 2011; Pfeffer, 1981). One problem that managers often face in this process is a shortage of resources (Bell, Mollenkopf, & Stolze, 2013). According to Prajogo and Sohal (2013), managing scarce resources affects establishing SC strategies. According to Riley, Klein, Miller, and Sridharan (2016), handling information flows can strengthen firms' risk management capabilities. Managers can create a collaborative communication system to manage and mitigate risk in the SC (Riley et al., 2016). Employing practical information and material flow systems may minimize the uncertainty of an SC meeting management expectations (Riley et al., 2016). Collaboration among SC partners allows managers to maintain flexibility in the SC and to implement change when needed (Riley et al., 2016). Talluri, Kull, Yildiz, and Yoon (2013) suggested that to manage SC disruptions effectively, managers must identify the causes of uncertainty and design an effective SC based on the management of information and material flows. Organizational managers need to maintain reliable relationships between organizations and SC partners (Gadde & Snehota, 2000). Gadde and Snehota (2000) considered a reliable relationship with suppliers a source of competitive advantage (Gadde & Snehota, 2000). Such a stable relationship ensures the

availability of the resources that enhance organizational sustainability and reduces any possible disruptions (Greening & Rutherford, 2011).

RDT provides a framework for recognizing the connection between an organization and its environment (Esfahbodi, Zhang, & Watson, 2016). One of the primary hypotheses of RDT is that an organization depends on its environment and its resources for the accomplishment of both short-term and long-term goals (Kisaka & Anthony, 2014; Parastuty, Schwarz, Breitenecker, & Harms, 2015). Organizational managers attain critical resources from external sources outside the organization (Malatesta & Smith, 2014; Nuruzzaman, 2015), which may result in competitive advantage (Green, Toms, & Clark, 2015; Nuruzzaman, 2015). Furthermore, RDT highlights the importance of SCs and the drivers for a sustainable SC (Varsei, Soosay, Fahimnia, & Sarkis, 2014). To compete effectively in today's environment, organizational managers need to create a reliable SC that will deliver high quality, on-time products and services to customers. Maintaining stable and reliable relationships is a fundamental step in developing global supply networks (Tachizawa & Yew Wong, 2014). The process of retaining a stable SC is increasingly challenging, but RDT provides a framework for understanding how an organization can best utilize its environment, resources, and relationships to provide more reliable products with higher quality. Malatesta and Smith (2014) explained that organizational managers can use the resource-based theory to direct organizational strategy from short-term survival to long-term growth.

## **Supply Chain Management**

A SC is a series of activities involving the flow of products, services, and information from the primary manufacturer to the customer (Kembro & Näslund, 2014). Organizational SC have links both within the organization and outside of it, and organizational managers have less control over the external parts of the SC (Kirovska Josifovska, & Kiselicki, 2016). SC managers must reduce costs, increase flexibility, and improve communications to compete in the global market (Tarofder, Marthandan, Mohan, & Tarofder, 2013). Organizational managers need to use all the resources, tools, and strategies at their disposal to direct material and information flows inside the organization and between SC partners (Pashaei & Olhager, 2015). Therefore, managers must design and organize SC processes to ensure the availability of alternative flows in case of disorder or disruption (Kirovska et al., 2016). SC design refers to decisions concerning operating facilities, information flow, inventory, and transportation in the SC (Prasad, Subbaiah, & Rao, 2014). Because of their dynamic environments and the continuous changes to technology, managers are required to design a flexible SC capable of addressing current and future changes and uncertainties.

SC management is the practice of planning, applying, and managing the operations of a SC efficiently (Kirovska et al., 2016). Organizational managers use SC management to monitor the purchase of raw materials, the transformation of those materials into final products, and the delivery of those final products to customers (Prasad et al., 2014). Kirovska et al. (2016) identify four key advantages of SC management: better control of suppliers, decreased organizational costs, transparent documentation,

and improved working speed. SC management restructures the negotiation and contracting process and ensures a secure and stable relationship with suppliers (Sundram, Chandran, & Bhatti, 2016). Managers deploy SC management to lower organization costs, increases productivity level, and enhance buyer relations (Sundram et al., 2016). Finally, SC management benefits employees in the procurement department by removing unnecessary operations, thus improving efficiency (Kirovska et al., 2016). By using SC management practices, supply chain managers can increase resource efficiency and ensure flexibility (Sundram et al., 2016). Supply chain management process provides a method for coordinating the flow of materials, services, and information among supply chain partners to match the needs of the organization (Kirovska et al., 2016). Sundram et al. (2016) stated that information quality, organizational vision and goals, supply relationships, and information sharing are essential management practices managers utilize to enhance SC performance.

Additionally, Foerstl et al. (2015) stated that organizational managers could more efficiently control uncertainties in the supply chain by using supply chain management. Supply chain management is one of the main sources of competitive advantage (Barros, Barbosa- Póvoa, & Blanco, 2013). According to Mackelprang, Robinson, Bernardes, and Webb (2014), managers need to recognize the relationship between supply chain management and competitive advantage. In addition to creating harmony among supply chain partners, there are other ways to use management processes to optimize supply chain performance. The use of information technology is another important part of SC, as it maintains a reliable relationship among supply chain members through shared

information (Levi-Bliech, Naveh, Pliskin, & Fink, 2018). A managers' ability to innovate is an important aspect of leveraging supply chain performance (Lii & Kuo, 2016), and organizational managers can motivate innovativeness by rewarding the development of new behaviors and practices (Seo, Dinwoodie, & Kwak, 2014). Managers using innovation and information technology practices within supply chain management practices can positively influence supply chain performance (Levi-Bliech et al., 2018).

Effectively managing both the external and internal parts of the supply chain enhances organizational performance and yields a sustainable competitive advantage (Arora, Arora, & Sivakumar, 2016). Therefore, supply chain managers are required to coordinate the activities of suppliers, manufacturers, and distributors to reduce supply chain costs, increase performance and competitiveness, and meet or exceed customer expectation. According to Prasad et al. (2014), supply chain management consists of a series of organized decisions and actions. Managers must focus on coordinating all parts of the supply chain, including individuals, organizations, resources, operations, and technology which occupied in designing, manufacturing, selling, and delivering the products to its users. Additionally, Kirovska et al. (2016) explained that trusted and long-term relationships are a critical element of the supply chain, and Arora et al. (2016) concur that supply chain collaboration and integration practices enhance supply chain harmonization. Any unsuccessful collaboration between external and internal supply chain partners can negatively influence organization performance (Kirovska et al., 2016). Stevens and Johnson (2016) stated that managers need to align supply chain activities

with the organization's competitive strategy and objectives to effectively perform in a competitive business environment.

Understanding the importance of managing supply chain relays on the nature and role of the organizational supply chain. Supply chains differ in size, design, and form, affected by technological changes, the appearance of new products and markets, and geographical location (MacCarthy, Blome, Olhager, Srari, & Zhao, 2016). Professionally managing a supply chain adds value to an organization and its market, but to do this, managers need to be aware of supply chains' complexity (Kirovska et al., 2016).

Organizations have suppliers that deal with sub-suppliers, distribution centers, and retail outlets, all of which build supply chains (Kirovska et al., 2016). When searching for new opportunities to enhance organizational performance and productivity, managers can open an organization's supply chain to global markets and new SC partners (Kirovska et al., 2016). Supply chain management procedures had a significant AND direct positive influence on supply chain performance (Odongo, Dora, Molnar, Ongeng, & Gellynck, 2016). Ibrahim and Hamid (2014) explained that supply chain management practices, which include information sharing, supplier management, customers, and delivery management and integration, obtain a significant positive effect on supply chain performance. Understanding how globalization, technological knowledge, and changing markets influence the performance of organizational supply chains is critical to all organizational managers. Njegomir and Rihter (2015) stated that organizations with global supply chain usually encounter with one annual supply chain disruption.

Effectively managing supply chain enhances organizational performance and yields a sustainable competitive advantage (Arora et al., 2016). Sustainable SC management indicates how SC managers organize material, information, resources, and establish plans and decisions basis on the economic, environmental, and social basis (Beske & Seuring, 2014; Tseng et al., 2015). According to Ahmad, de Brito, and Tavasszy (2016), SC managers seek to deploy sustainable SC management procedures to both the organizational SC and SC participants. Sustainable SC management consider method managers utilize to identify the challenges of sustainability risks from organization and value chain perception to enhance sustainable SC performance (Schaltegger & Burritt, 2014). Functional sustainable SC management procedures involve establishing a long-term relationship, a collaboration between SC members, supplier enlargement, and efficient communication between SC members with the support of top management (Wu, Liao, Tseng, & Chiu, 2016). Maintaining a sustainable SC may improve organizational efficiency, products quality, employee satisfaction, new market entree, maintain a superior position in the market and enhance organizational reputation (Ortas, Moneva, & Alvarez, 2014).

### **Global Supply Chain and Supply Chain Relationships**

Due to globalization and the expansion of SC networks, proper management of global supply chains is an essential step for any organization. A global SC involves several companies in different geographical situations, directed by suitable control and management among different SC partners (Choi, 2018). Choi (2018) states that it is essential for organizational managers to select appropriate SC members and connect them

through appropriate technological applications to guarantee efficient global SC operations that matched market conditions (Choi, 2018). The global SC is more complicated and difficult to control due to the differences in the culture, language, laws, and currency between each (Fabbe-Costes, Roussat, Taylor, & Taylor, 2014). When entering a new market, managers need to offer an economic reward to a local supplier, which guarantees a contract with higher transaction volumes (Usui, Kotabe, & Murray, 2017).

The high level of competition and uncertainty in the markets force organizational managers to seek to decrease product cost while increasing quality (Usui et al., 2017). Managers need to partner with suppliers in developing economies to create a SC system that provides reliable, high-quality products while reducing operational cost (Usui et al., 2017). Maintaining proper relationships with suppliers may enhance the efficiency of organization operations and strategic decision-making (Usui et al., 2017). An organization with an effective decision-making process boast a higher performance in the global market (Usui et al., 2017). There must exist a close, long-term partnership between the organization and the selected suppliers to elicit supportive behavior (Usui et al., 2017). In addition, managers develop their organization's competitive advantage by obtaining resources internal and external relationships (Usui et al., 2017). Building strong relationships between an organization and its supply chain partners may create a favorable environment for shared benefits and decreased transactional costs (Usui et al., 2017). Usui et al. (2017) stated that organizational managers need to use the long-term relationship as an investment to obtain a high level of control over SC partners

relationships. To ensure collaborative relationships with suppliers, managers must exhibit the right level of authority and control (Usui et al., 2017).

Flexible relationships in SC management have three advantages: (a) it offers strategic alternatives for decision making. (b) It helps prevent SC partners from engaging in opportunistic behaviors; and (c) it enhances supplier performance as a result of competition between SC partners (Usui et al., 2017). Usui et al. (2017) explain that having only one partner can result in an inflexible relationship between the organization and its supplier, as it may limit the possible options for both sides. Organizations that maintain control in the market have more opportunities to trade with new partners who hold innovative technology and enhanced conditions (Usui et al., 2017).

Global supply chains are also subject to higher risk than local supply chains, due to the different taxes, exchange rates, customs clearance, transportation prices, and trade difficulties (Steven, Dong, & Corsi, 2014). Managing the flow of the material within the global SC is more complicated than in a local SC (Steven et al., 2014). Managers must understand the critical influence of government stability and infrastructure in countries that are involved in global supply chains (Steven et al., 2014). According to Liu, Wang and Chen (2017), global supply chain managers must learn to consider product cost and quality, and customer reaction, while in the local SC, managers may control the product without these considerations (Liu et al., 2017). The benefit of globalization is that organizational managers with the global SC can attain a higher return compared to the local SC (Huo et al., 2015).

Managers operate in globalized markets and expand their networks internationally to obtain a high financial performance, increased market shares, functioning efficiency, and increased brand awareness and availability (Huo et al., 2015). Global supply chains involve four aspects that influence the global environment: (a) global market forces, (b) technological forces, (c) global cost forces, and (d) global political authority and economic forces (Tannous & Yoon, 2018). Local political authority and cost forces influence the local SC (Tannous & Yoon, 2018). Additionally, controlling information within the global SC is more complicated than in the local SC (Kumar & Banerjee, 2014). According to Zhu and Morgan (2018), to understand the influence of global supply chains on organizations, managers need to recognize how to manage the different styles of global SC relations and authority procedures at suppliers' workplaces (Zhu & Morgan, 2018). Global suppliers from different geographical locations operate in conditions different from the local labor market and local institutional frameworks (Zhu & Morgan, 2018). Managers in the global SC must focus on all the factors that affect and influence the global SC network to ensure efficient performance and maintain strong relationships. Sawik (2018) explained that continuous monitoring and evaluating the implemented SC disruption risk management processes is important for all organizations.

### **Supply Chain Disruptions**

Globalization and international trade may enhance an organization's ability to expand its supply chains while entering new markets, decreasing production costs, and increasing competitiveness. The performance of global supply chains expands SC networks and increase organization exposure to SC disruptions (Bode & Wagner, 2015;

Paul et al., 2015). SC disruption has increased in frequency and intensity and led to more significant consequences (Chopra & Sodhi, 2014). SC disruption can include any combination of unintended and unpredictable incidents in the SC network (Bode & Wagner, 2015), from natural disasters like floods, earthquakes, or hurricanes to human actions such as industrial accidents and terrorist strikes (Snyder et al., 2016). Natural disasters and plant fires occur less frequently but exert a critical influence on organizations (Schlegel, 2015). According to Iakovou, Vlachos, Keramydas, and Partsch (2014), the assessed global economic losses of natural and human-made disasters is around \$960 US billion.

SC disruptions might be a result of outsourcing, fluctuations in demand, reduction in inventory, and technological innovations (Konig & Spinler, 2016). Schlegel (2015) explained that SC disruptions could be a result of customer demand instability, bankruptcy, distribution problems, time delay, inventory shortages, and quality problems. Snyder et al. (2016) stated that the just-in-time method had increased supply chains' vulnerability to disruptions when outsourcing. SC disruptions can also result from weak communication between suppliers and manufacturers, labor strikes, government regulations, and industrial accidents (Macdonald & Corsi, 2013). In sum, SC disruption is a commonly unexpected occurrence that can affect the flow of goods or services and cause undesirable outcomes for normal SC processes (Tse et al., 2016).

SC disruptions may affect an organization's procedures, performance responsiveness, costs, and service levels (Srivastava et al., 2015). Additionally, SC disruption may have negative results on SC members (Blackhurst, Dunn, & Craighead,

2011). These disruptions cause more challenges for SC managers, who must react and respond to disruption effects (Ivanov, 2017). According to Snyder et al. (2016), managers consider SC disruption as an important topic because of its influence on the financial positions of individual organizations and its overall economic impact. In any case, practices surrounding outsourcing and globalization have increased the need for reliable procedures to enhance SC performance and manage disruption risks (Sawik, 2016). These procedures can assist managers in choosing appropriate suppliers, assigning order quantities, and scheduling customer orders in the wake of disruption (Sawik, 2016). It is imperative to try to recognize, forecast, avoid, and manage disruptions (Ivanov, Mason, & Hart, 2016).

Some SC disruptions may be unavoidable; Snyder et al. (2016) state that SC disruptions will exist if supply chains exist. However, successful managers try to identify potential causes that result in SC disruption and sustain effective operations in SC (Scheibe & Blackhurst, 2018). When disruptions spread throughout an organization, negative effects can increase in severity (Scheibe & Blackhurst, 2018). Managers must cultivate the ability to identify potential SC disruptions and proactively address the factors that cause SC disruptions (Scheibe & Blackhurst, 2018), as this will increase the chances of managing disruption and preventing it in the future (Chopra & Sodhi, 2014). Managers must maintain relationships with potential suppliers that can help reduce SC disruptions (Sawik, 2017). Without these practices, SC disruption may cause a decline in sales growth, stock returns, and shareholder value (Snyder et al., 2016). The effects of SC disruption may last for as long as two years (Snyder et al., 2016). Additionally, delivery

performance, business procedures, and demand fluctuations are significant triggers of SC disruptions (Pradhan & Routroy, 2014). In addition to the financial losses, a continued disruption can cause an organization to shut down (Kumar et al., 2014). Schlegel (2015) states that disruption can cause a decline in operating income of up to 107%, 6.9% decrease in sales growth, and 10.66% increase in cost. SC disruptions can negatively affect an organization's brand value and customer loyalty (Chakravarty, 2013), organizational strategies and marketing activities (Zhao, Huo, Sun, & Zhao, 2013). The frequent incidence of SC disruptions requires managers attention to create improved strategies to mitigate the influences of SC disruption.

### **Supply Chain Risk Management**

Qazi et al. (2018) defined supply chain risk management as the collaboration between organization partners, stakeholders, and key decision makers to identify and manage risks and uncertainties throughout the SC network. Outsourcing, the short life cycles of products, supply base reduction, and just-in-time are some trends organizational managers use, which expose the organization to SC risks (Trkman, Oliveira, & McCormack, 2016). SC risk can result from human errors or natural disasters, causing critical concerns for organizations' financial position and operational activities (Rajesh, Ravi, & Rao, 2015). Fan and Stevenson (2018) stated that supply chain risk management (SCRM) consider critical issues that managers need to understand and recognize. Managers use SCRM to create strategies to identify, evaluate, manage, and observe the risks in supply chains (Ho et al., 2015). Managing risk within supply chains requires one

to consider important issues in supply chain management, as well as the significance of the actions of supply chain managers.

Uncertainty in organization environment existed in natural disasters and the risks in the organization's process. Uncertainty in organization environment compels organizational managers to consider supply chain risk management as a fundamental aspect of supply chain procedures and networks. Liu, Wang, and Chen (2017) explained that supply chain risk and uncertainty negatively influence organizational performance. Pournader et al. (2016) stated that organizational managers must identify and manage risks in a supply chain; moreover, managers cannot prevent and avoid supply chain disruptions and function in a risk-free environment. Supply chain risk managers may choose prevention and mitigation strategies, depending on the degree of uncertainty and risk in the supply chain (Rajesh et al., 2015). Tse et al. (2016) explained that uncertainty in demand and product quality negatively relate to disruption risk.

Organizational managers must evaluate the risks associated with the organization and establish contingency plans to mitigate the influence of disruptions and maintain organization stability (Cagnin et al., 2016). It behooves managers to control and manage risk in the supply chain to effectively compete in the market and improve the organization's position in the market (Fan & Stevenson, 2018). Managers can employ SCRM to decrease organizational costs, increase profitability, organizational stability, and ensure organizational growth (Fan & Stevenson, 2018). Effectively implementing and utilizing SCRM assists organizational managers in obtaining a competitive advantage for their firms (Fan & Stevenson, 2018). Tannous and Yoon (2018) stated that while

targeting for competitive advantage and seeking access to global marketplaces, organizational managers may expose an organization to significant risk. Managers use and adopt an SCRM approach to identify, manage, and control risk and uncertainties in the organization (Cagnin et al., 2016). Organizational managers use supply chain risk management to allocate risk resources, measure risk effects, understand risk factors, and mitigate supply chain risk (Pradhan & Routroy, 2014). Konig and Spinler (2016) stated that risk monitoring and contingency planning is another significant part of supply chain risk management.

Carter, Rogers, and Choi (2015) explained the applied conceptual theory building approach to recognizing six foundational principles about supply chain structure and its limits. The six principles of the supply chain are: (a) the supply chain is a network built of nodes and relations; (b) the supply chain operates as a complex adaptive system. (c) The supply chain is suitable for one particular product and organization; (d) the supply chain involves both a physical supply chain and a supportive supply chain. (e) An organizational manager perspective limits the supply chain, and finally (f) a managers perspective is limited by organization physical distance, cultural distance, and uniqueness (Carter et al., 2015).

According to Konig and Spinler (2016), the main source of risk in the organizational supply chain involves disruption risks and operational risks. Supply chain operational risks involve process, supply, control, and demand risks (Parihar & Rahul, 2014). Disruption risk results from human-made error and natural disasters, so they are more difficult to forecast than operational risks (Konig & Spinler, 2016). Organizational

managers employ risk management practices to identify and mitigate strategic and operational risks (Boyson, 2014). SCRM is the process of risk identification, assessment, treatment, and monitoring, utilizing internal tools, methods and strategies with external coordination and collaboration of supply chain members, thereby decreasing weakness and increasing profitability (Fan & Stevenson, 2018).

Managers must effectively employ a risk management process to evaluate risk in the organization (Gualandris & Kalchschmidt, 2015). Effectively managing supply chain risk enhances improvement in organizational supply chain performance (Simangunsong, Hendry, & Stevenson, 2016). Gualandris and Kalchschmidt (2015) stated that implementing an effective supply chain risk management practices leads to achieve a competitive advantage, which means that a positive relationship exists between SCRM practice and competitive advantage. Organizational managers must balance supply chain risk management with environmental conditions while creating an organizational competitive advantage (Gualandris & Kalchschmidt, 2015). Managers deploy SCRM to effectively mitigate risk by evaluating risk probability and level and measure disruption influence on a given supply chain (Kaki, Salo, & Talluri, 2015).

Organizational managers must understand and recognize how to control and manage risk in the organization by utilizing supply chain risk management, thereby producing value for the supply chain (Trkman et al., 2016). Supply chain complexity and the uncertainty related to supply chain risk consider the main factors causing difficulties to supply chain managers to accurately identify risk sources (Kumar et al., 2014). Kumar et al. (2014) suggested that multi-sourcing, price and promotion planning, the make-and-

buy approach, and assortment planning strategies mitigate supply chain disruption.

Chang, Ellinger, and Blackhurst (2015) recommended that supply chain managers need to use a mix of redundancy flexible risk mitigation strategy. Rajesh, Ravi, and Rao (2015) address five of the most useful mitigation strategies to reduce risk influence on the supply chain: (a) obtaining insurance, (b) decreasing bullwhips, (c) increasing resilience, (d) enhancing collaboration and (d) managing revenue.

SCRM may reflect the character of risk management and supply chain management (SCM), which provide a general understanding of SCRM to assist managers in solving business problems (Fan & Stevenson, 2018). According to Giannakis and Papadopoulos (2016), SCRM process includes five sequential steps: (a) risk identification, (b) risk assessment, (c) risk analysis, (d) risk treatment, and (e) risk monitoring. Managers to control SC risk proactively utilize risk identification to address the important risks within the supply chain and identify any future uncertainties to the organization. Neiger et al. (2009) explained that risk identification is a crucial step to manage SCRs successfully. Allocating risk within SC help managers to identify and activate the best risk management action (Fan & Stevenson, 2018). Enyinda, Mbah, and Ogbuehi (2010) stated that managers need an initial judgment in risk identification to assess whether the risk within SC is significant and need more assessment and mitigation actions. Managers must identify risk and understand the factors causing risk in the supply chain to accurately design risk treatment plans (Fan & Stevenson, 2018).

Managers to attain an effective SCRM need an overall, quick, and cost-efficient assessment of supply chain risk management (Zsidisin et al., 2004). Managers must

prioritize risk, so they may appropriately recognize the most significant risks (Fan & Stevenson, 2018). Fan and Stevenson (2018) identify two risk drivers: probability and impact drivers. Probability drivers are competitive pressure with risk-source consequences (Ritchie & Brindley, 2007), which may raise or reduce supply chain exposure to risk (Wagner & Bode, 2006). Impact drivers are situations with risk-consequence implications (Wagner & Bode, 2006) that influence the amount of loss (Fan & Stevenson, 2018). Some risk drivers are partnerships and other close relationships (Li et al., 2015; Chen, Su, & Ro, 2016), which may both be probability and impact drivers (Fan & Stevenson, 2018). Managers can measure risk within SC by using data, professional judgment, and formats (Cohen & Kunreuther, 2007), additionally, managers can use formal or informal and quantitative or qualitative methods (Zsidisin et al., 2004). Gaudenzi and Borghesi (2006) stated that risk assessment is subjective to researchers and managers own understanding of what creates the risk and the nature of relationships within SC.

In risk assessment, managers need to focus on SCR prioritization (Fan & Stevenson, 2018). According to Tsai et al. (2008), using both objective data and subjective perception can enhance the effectiveness of risk estimation and assessment. Risk prioritization assists managers in choosing the appropriate risk treatment plan, matching organization resources and evaluating the degree of supply risks (Guertler & Spinler, 2015) and apply effective risk management activities (Sarker et al., 2016). Researchers consider risk as a connected and scatter incident within SC and obtain inter-relationships with other risks, which can influence an organization (Kayis & Karningsih,

2012). Understanding risk effects and inter-relationships assists managers with risk prioritization and to evaluate the criticality of supply risks (Guertler & Spinler, 2015).

Furthermore, managers with the ability to understand risk and relationships can provide risk treatment plans (Chopra & Sodhi, 2004), and implement effective risk management activities. Venkatesh et al. (2015) stated that the main concept is to identify the most serious risk that can lead to multiple risks causing a critical effect on SC. Sarker et al. (2016) stated that different types of dependencies exist among risks in SC, the positive dependence, where eliminating one risk assists in mitigating one or several risks. However, negative dependence exists when removing one risk may produce one or several other risks.

Organizational managers are unable to avoid and deal with all possible risk, so they must consider risk treatment as an investment for the organization (Fan & Stevenson, 2018). Fan and Stevenson (2018) provide five general risk treatment types: risk acceptance, avoidance, transfer, sharing, and mitigation. Additionally, Fan and Stevenson (2018) stated that there is no standard level of how much risk managers should accept depending on a manager's ability to become involved in risky behavior and acknowledge the result of decisions related to the risk at hand (Park & Park, 2016). Managers must continuously monitor and follow risk within their organization to guarantee the results of risk remain controlled and do not increase (Aqlan & Lam, 2015). Organizational managers attempt to avoid and mitigate risk in the supply chain, reducing or removing the source of the risk (Aqlan & Lam, 2015). For example, if supply is

untrustworthy, organizational managers can terminate products, suppliers, or markets (Hajmohammad & Vachon, 2016).

In case of an unexpected disruption, organizational managers and suppliers may suffer from different types of risk and financial difficulty, producing supply shortage and a loss to the organization and the whole supply chain (Li, Zhen, Qi, & Cai, 2016). Organizational managers try to transfer business disruption risks through business disruption insurance (Li et al., 2016) as a method of risk transfer. Managers use risk transfer to the relocated responsibility for disruption risk to a different party than the organization (Diabat et al., 2012). However, Aqlan and Lam (2015) explained that risk transfer is more appropriate for disruption risks with a small probability and high impact (natural disasters and terrorist attacks) than for operational risks with a high probability and low impact. Additionally, managers attempt to share disruption risk with other parties in SC. Buzacott and Peng (2012) stated that risk could be shared by obtaining agreements to outline responsibilities for any potential changes related to risks and by developing relationships (Camuffo, Furlan, Romano, & Vinelli, 2007). Risk transfer and risk sharing are suitable for dealing with a low probability and high impact risk to decrease the costs (Lai, Debo, & Sycara, 2009) and boost customer service levels (Scheller-Wolf and Tayur, 2009). Furthermore, managers try to reduce risk to an acceptable level, for both the probability of risk to happen and its consequences (Norrman & Jansson, 2004). Aqlan and Lam (2015) consider mitigation strategies to be appropriate for operational risks with high probability and low effect.

The selection of a risk mitigation strategy depends on the given organization's budget and risk type (Tummala & Schoenherr, 2011). Forming relationships and enhancing collaboration within the supply chain can improve the effectiveness of an SCRM (Hallikas & Lintukangas, 2016). Few researchers have emphasized how managers can utilize effective relationships to manage probable SCRs (Chen et al., 2016). Managers deploy SCRM to ensure organization profitability (Faisal et al., 2007), save costs (Manuj & Mentzer, 2008), and generate value (Trkman et al., 2016). Organizational managers need to continuously monitor risk in the supply chain, as well as assess the source of the risk and strategies deployed to control risk. Talluri et al. (2013) stated that managers are obtaining effective strategies within all risk types directly to increase supply chain responsiveness. Organizational managers should recognize, understand, and control risks to attain competitive advantage. Managers who are deploying supply chain practices can enhance customer satisfaction by decreasing the possibility and severity of supply chain risk. Fan and Stevenson (2018) explained that organizations with limited resources need to address the best process and time to utilize these resources to avoid risk and reduce their scarceness.

### **Supply Chain Collaboration**

Supply chain collaboration described interorganizational partnership process in which two or more independent parties work together to organize, align and fulfill supply chain operations to operate a value-added method for the fulfillment of mutual goals and benefits (Liao et al. 2017). Supply chain collaboration represents the organizational relationship among supply chain members to align supply chain processes, share

information, and establish a value-added procedure (Hofer et al., 2014). Supply chain collaboration is summarized in the interactive coordinated decision-making process, information sharing, two-way communication, and goal sharing (Scholten & Schilder, 2015). Arora et al. (2016) stated that collaboration includes essential elements as coordination, adaptation, establishing a relationship, and share benefits and outcomes within supply chain members. Managers are seeking for more integrative and collaborative efforts due to evolving technologies, the need to cope with high demand uncertainties, and the need to share costs and risks (Kache & Seuring, 2014).

Supply chain collaboration consider a method to enhance an organizations' performance along with organizations' supply chains (Panahifar, Byrne, Salam, & Heavey, 2018). Kache and Seuring (2014) declared a direct positive relationship between the collaboration within the supply chain members and the overall supply chain performance. Panahifar et al. (2018) explained that supply chain collaboration constitutes an effective method for organizational managers to implement in order to overcome organizational challenges in a competitive environment. In supply chain collaboration, organizational managers and SC partners exchange information to make mutual or tactical decisions to gain more benefits from collaborating (Panahifar et al., 2018). According to Panahifar et al. (2018), a positive correlation exists between supply chain collaboration and an organization's performance. Liao et al. (2017) stated that collaboration constitutes an essential method in any environment to complete assignments and accomplish common objectives. Organizational managers need to work

together and collaborate to obtain better resources and gain more access to limited resources (Liao et al., 2017).

Collaboration constitutes an important approach to supply chain management, as organizational managers are required to collaborate with other organizations and search external environments for opportunities to guarantee that the supply chain will be effective and responsive to dynamic market requirements (Liao et al., 2017).

Organizational managers attempt to attain superior supply chain collaboration to control their suppliers' and customers' resources and information (Masten & Kim, 2015).

Managers with superior supply chain collaboration can achieve a stronger competitive position in the market (Masten & Kim, 2015). Additionally, organizational managers utilize supply chain collaboration to lower organizational uncertainty, attain a competitive advantage, and maintain organizational success (Aggarwal & Srivastava, 2016). Wu & Chiu (2018) explained that supply chain collaboration is a significant process to achieve smooth coordination among SC partners, which affects organizational performance. Supply chain collaboration methods promote the sharing of information among SC partners (Panahifar et al., 2018), which guarantees a faster response to changes in the market, increased organization flexibility and reduces inventory, transportation, and manufacturing costs (Hofmann, 2017; Gunasekaran, Subramanian, & Rahman, 2017). Arora et al. (2016) explained that collaboration has three elements: (a) coordination, (b) adaptation, and (c) relationship building. The major forms of collaboration are strategic alliances, joint ventures, networks, and cooperative procedures (Soosay & Hyland, 2015). Managers seek to increase SC collaboration to manage

demand uncertainties and share costs and risks (Kache & Seuring, 2017). Managers utilize SC collaboration to enhance service levels, improve customer satisfaction, gain access to resources, locate opportunities, and obtain advanced knowledge and information (Kumar & Banerjee, 2014). Soosay and Hyland (2015) explained that supply chain collaboration enhances and improves organization performance because of sharing the resources, capabilities, and procedures among supply chain partners. Furthermore, Zhu, Krikke, & Caniëls (2016) consider collaboration as a valuable strategy manager can utilize to react to supply chain disruptions and mitigate its effects quickly.

Panahifar et al. (2018) identified four critical enablers to form SC collaboration: ensured the sharing of information, level of trust, information accuracy, and readiness. Panahifar, Byrne, and Heavey (2015) highlight the importance of forming a secure sharing of information in SC collaboration, as it influences the trust between SC partners. Organizational managers are required to balance information sharing and the security of strategic information to attain the best collaboration within SC (Panahifar et al., 2018). Soosay and Hyland (2015) believed that the foundation of any collaboration is the trust among partners and their ability to share the rewards and risks, which results in better profitability and performance for the organizations. Additionally, trust constitutes the main enabler of collaboration and emphasizes the value of social relationships in a partnership (Panahifar et al., 2018).

Supply chain collaboration through information-sharing delivered different advantages for an organization's partners, such as the enhancement of forecasting accuracy, improvement in customer service quality, and building strong relationships

between partners (Panahifar et al., 2018). Fu, Ionescu, Aghezzaf, & De Keyser (2016) identified information accuracy as a valuable sign of information quality in collaborative planning. Furthermore, inventory, demand, forecasts, production, and shipment information need to be accurate and timely to ensure an effective SC collaboration (Panahifar et al., 2018). Panahifar et al. (2018) stated that effective collaboration depends on information readiness and SC partners' ability to communicate effectively. Researchers define information readiness as the data available to organizations from their partners within SC (Panahifar et al., 2018). In addition, researchers claimed that information readiness could significantly improve the level of trust (Panahifar et al., 2015). Organizational managers need to enhance information security to encourage SC partners to share their accurate information in a secure environment (Panahifar et al., 2018). Managers are required to ensure the secure sharing of information, information accuracy, timely sharing of information, and information readiness to improve the success of SC collaboration, increase the level of trust among partners, and build trustful relationships (Panahifar et al., 2018).

Managers attempt to obtain an effective collaboration within the supply chain to improve the organization's performance, sales growth, customer satisfaction, and overall operational performance (Panahifar et al., 2018). Durach, Wieland, Jose, and Machuca (2015) consider trust and communication important aspects of supply chain collaboration and supply chain readiness. Revilla and Knoppen (2015) explained that effective communication, positive past collaboration, and personal bonds are the foundation of trust between buyers and their suppliers (Revilla & Knoppen, 2015). Furthermore, the

amount of information shared among supply chain partners depends on the level of trust (Soosay & Hyland, 2015). Managers' ability to share information and benefits among SC partners shapes and affects supply chain collaboration and constitutes the main element of collaborative relationships (Zhu et al., 2016). Fawcett, McCarter, Fawcett, Webb, and Magnan (2015) stated that the absence of collaboration among supply chain partners results from conflicts among SC partners' strategies, low trust, resistance to sharing information, and weak systems connectivity. According to Liao et al. (2017), supply chain information-sharing constitutes a significant external element that influences the effectiveness of a manager's ability to deploy innovative techniques in the organization's supply chain. Additionally, the amount of information shared by supply chain partners through collaborative relationships may enhance the effectiveness of supply chain capability (Liao et al., 2017). Organizational capability describes organizational managers' ability to allocate, use, and integrate both internal and external resources and information (Liao et al., 2017).

According to Aggarwal and Srivastava (2016), the basic forms of supply chain collaboration are supplier selection, joint planning, and information sharing. Furthermore, supply chain efficiency and waste reduction are the major outcomes of collaboration (Aggarwal & Srivastava, 2016). Aggarwal and Srivastava (2016) explained that developing collaborative practices results in benefits for buyers and sellers and the whole industry. Interorganizational relationships maintain a critical role in reducing the influence of supply chain uncertainty (Teller, Kotzab, Grant, & Holweg, 2016). Organizational managers seek to establish and sustain coordination of the supply chain to

decrease organizations uncertainty and increase access to essential resources (Dries, Gorton, Urutyan, & White, 2014). According to Storer, Hyland, Ferrer, Santa, and Griffiths (2014), managers utilize strategic supplier partnerships to plan and develop supply chain responsiveness effectively. Teller et al. (2016) stated that key supplier relationship management is the main variable that influences the implementation of supply chain management within the organization. Qrunfleh and Tarafdar (2013) identified a direct relationship between supplier partnerships and supply chain responsiveness.

SC innovation can reinforce the organizations' supply chain capability to attain competitive advantage (Liao et al., 2017). Innovation in supply chain collaboration provides an information-transparent platform, which managers utilize to compete effectively in a competitive market (Liao et al., 2017). SC partners deploy innovation in supply chain collaboration to produce product differentiation, meet the market demand more quickly, produce high-quality products, provide a fast delivery system, enhance workflow efficiency, and simplify production procedures, all of which boosts organizations' competitiveness (Liao et al., 2017). Managers develop supply chain integration to manage the supply of raw materials, improve the inventory management system, and reduce production costs (Liao et al., 2017). Liao et al. (2017) stated that managers could utilize innovation in supply chain collaboration to improve a firm's competitive advantage through supply chain capabilities. Organizational managers seek to utilize collaboration in innovation and new product development to accomplish several advantages, such as providing services or products at a lower cost, with high quality and

reduced cycle time, and obtaining effective procedures (Soosay & Hyland, 2015).

Knoppen, Johnston, and Saenz (2015) asserted that managers' ability to recognize and utilize innovations and take advantage of collaboration results in a significant capability for collaborative organizations.

### **Supply Chain Responsiveness**

SC are considered an essential aspect of an organization's environment to coordinate different business units and match supply with demand (Hum, Parlar, & Zhou, 2018). Globalization imposed several challenges and increased the complexity of supply chains and supply chain management, affecting supply chain responsiveness to satisfy customer demands (Hum et al., 2018). Hum et al. (2018) defined supply chain responsiveness as the possibility of satisfying a customer's order within a quoted lead-time. Managers need to decide the appropriate balance between SC efficiency and responsiveness to accomplish a strategic fit and align the organization's SC design with their competitive strategy (AlHusain, & Khorramshahgol, 2018). Organizational managers seek and attempt to be responsive as needed by the market while trying to be efficient at the same time (AlHusain, & Khorramshahgol, 2018). According to Taylor and Vachon (2018), responsiveness involves such topics as quantity, diversity, time, innovation, and service level, where efficiency concerns such matters as reducing cost and lowering waste. Singh (2015) describe SC responsiveness as SC's ability to be flexible and quickly respond and adjust its products, features, volume, and delivery to changes in the market. Organization's SC performance relies on the performance of the entire value chain partners (Singh, 2015). Organizational managers to maintain a

responsive supply chain need to obtain a coordinated method to supply chain management and recognize when it is essential to eliminate non-value adding activities in SC (Singh, 2015).

Supply chain comprises multipart structures, and managers are required to evaluate and boost the organization's capability to fulfill customer needs within a specific time and cost (Hum et al., 2018). SC managers seek to control product manufacturing, assembly, inspection, and delivery before satisfying customers' requirements (Hum et al., 2018). Organizational managers seek to ensure the achievement of organizational responsiveness, which allows organizations to promptly detect any market changes, redesign organizational procedures to match new market needs, share information among organizational partners, gain the most advantage from information processing systems, make new products and process technologies before competitors do (Singh, 2015). Managers need to understand and acknowledge organizational conditions and environments, which impact the organization's ability to react to environmental change promptly. Additionally, managers utilize SCM to direct SC partners to ensure SC responsiveness (Singh, 2015). Managers with a responsive SC are better able to reduce the organizational lead time and service reliability and ensure a quick and flexible response.

Supply chain design or strategy is the process of managing organizational resources to fit SC capability and matching competitive organizational strategy and to balance between SC efficiency and responsiveness (AlHusain & Khorramshahgol, 2018). SC design mainly focuses on the general structure of the SC network and on what each

different stage of the SC will accomplish (AlHusain, & Khorramshahgol, 2018). Prasad et al. (2014) explained that supply chain design focus on the decisions concerning operating facilities, information flow, inventory, and transportation in the supply chain. The standard decisions in SC design focus on which products to produce, factory location and size, transportation method, inventory level, and trade-offs between them (AlHusain, & Khorramshahgol, 2018). Organizational managers seek to design a sustainable supply chain, where the manager's goals are to decrease basic costs, any potential sources of losses (Samet, Bouzembrak, & Lefèvre, 2017). Additionally, researchers verified the effectiveness of SC design by the alignment level between organizational goals and competitive strategy to satisfy customer demands (AlHusain, & Khorramshahgol, 2018). AlHusain and Khorramshahgol (2018) categorized SC drivers into logistical and cross-functional. Logistic SC drivers concern the factory, inventory, and transportation, while cross-functional drivers include information, sourcing, and pricing (AlHusain, & Khorramshahgol, 2018).

Responsiveness is one of the fundamental performing features that organizational managers are required to deal with, a factor that arises from today's dynamic markets (Moyano-Fuentes, Sacristán-Díaz, & Garrido-Vega, 2016). Organizational managers seek to ensure the achievement of organizational responsiveness, which allows organizations to notice any market changes directly, redesign organizational procedures to match new market needs, share information among organizational partners, gain the most advantage from information processing systems and make new products and process technologies before competitors do (Singh, 2015). Organizational managers are forced to respond to

changing customer requests because of increasing product variety, shortening life cycles, demanding competition, and the global marketplace. Therefore, responsiveness to customer requests constitutes a critical competitive factor in the current business environment (Danese, Romano, & Formentini, 2013). Moyano-Fuentes et al. (2016) identify responsiveness as the ability to provide customers with the right products at the right time, which is the primary objective of any supply chain. The supply chain performs the central role in organizational performance and achieving a flexible and more speedy supply chain is an important factor in improving responsiveness, which is considered the most significant competitive capability in today's dynamic environment (Moyano-Fuentes et al., 2016). Organizational managers need to understand that creating value for the organization depends on the manager's ability to manage and smooth out the integration and alignment of internal organization processes and the processes between different partners (Moyano-Fuentes et al., 2016). Managers need to enhance their ability to resolve any possible conflicts with external trading partners and to understand the effect of internal integration on external integration (Moyano-Fuentes et al., 2016). Managers can utilize the positive effects that result from internal integration to improve integration with suppliers and customers (Moyano-Fuentes et al., 2016). Seth and Panigrahi (2015) supported the work of Moyano-Fuentes et al. (2016) as managers face many challenges that result from customized customer demands, product variety, packaging presentations, and the need to quickly produce products or services without compromising quality and delivery.

Supply chain responsiveness (SCR) is a crucial factor in the dynamic fluctuating market due to the product's short life cycle, changing customer preferences, availability of upgraded alternatives products, product proliferation, and inventory issues due to different package sizes and service level requirements. Singh (2015) explained that the globalized economy, product lifecycle, changing customer demands, and the decrease in lead time increases the need to achieve a responsiveness supply chain. Therefore, an organizational manager's ability to quickly respond to changes in the external environment is a crucial factor in an organization's performance (Singh, 2015). Organizational managers need to control internal operations effectively to enable SC responsiveness to market requirements and changes (Singh, 2015). Singh (2015) identified top management dedication, development of strategies and resources, technology, risk-and-reward sharing as the main drivers for a responsive SC. A manager's ability to control the drivers of the supply chain can be utilized to benefit the organization's inventory management, lead time reduction, and agility (Singh, 2015).

Organizational managers need to effectively deploy coordination strategies to help in managing organization interdependency, reduce uncertainty, and improve performance (Kumar & Kumar Singh, 2017). Singh (2015) explained that top management commitment, strategy development, resource development, technology, and risk-and-reward sharing are the main drivers for a responsive SC. Additionally, collaboration, information sharing, and the involvement of suppliers and customers in decision making can assist in improving the coordination of the supply chain (Kumar & Kumar Singh, 2017). Kumar and Kumar Singh (2017) explained that managers' ability to

effectively coordinate cross business activities is a critical step to prevent productions delays, increase in costs, and quality problems. According to Sahu, Datta, and Mahapatra (2016), there is an increased need for more agility in supply chains to increase the importance and frequency of supplier and partner assessment and benchmarking decision making. Sundram et al. (2016) stated that the association of strategic supply partnerships, information sharing, customer relations management, and SCP assists managers to effectively implement the different modules of supply chain management practices for supply chain integration and performance. In addition, Gunasekaran et al. (2016) acknowledged that information and communication technologies are crucial significant resources for the success of global supply chain networks.

Due to the dynamic environment and the continuous change in customers and market requirements, organizational managers need to maintain a responsive SC, and as a result of a lack of responsiveness in the SC, managers may not be able to sustain competitiveness (Singh, 2015). According to Morita, Machuca, Flynn, & Pérez de Los Ríos, (2015), organizational managers need to improve the four SC strategy plans: shorten lead time, increase JIT control, improve the quality, and stabilize demand, which will allow the organization to maintain high competence over time. Singh (2015) explained supply chain lead time as the time the SC spent to process the raw materials and semi-finished or finished products to arrive at the final products and deliver them to customers, which includes supplier lead time, manufacturing lead time, distribution lead time, and logistics lead time. Researchers highlight the importance of lead time because of its ability to create a competitive advantage in the SC by reducing inventory levels and

costs and enhancing service and product quality delivered to customers (Singh, 2015). Singh (2015) also explained the importance of mutual trust among SC partners and risk-and-reward sharing and how it affects SC coordination, information sharing about inventory, demand, and product quality. According to Li et al. (2015), by utilizing information sharing and risk sharing managers can improve an organization's financial performance. Information sharing effectiveness method result forms the SC partners' relationship length and supplier trust, while risk sharing is strengthened by understanding SCRM (Li et al., 2015).

Singh (2015) identified several factors to maintain a responsive SC: top management commitment, strategy development, resource development, trust development, information sharing between SC partners, risk and reward sharing, collaborative decision making, use of IT technology, coordinated SC, inventory management, lead time reduction, mutual vision and goals and long-term relationships among SC partners. However, Thatte, Dhumal, and Agrawal (2018) stated that SC responsiveness consists of three parts: (1) order construct operations system responsiveness, (2) logistics process responsiveness, (3) and supplier network responsiveness. Researchers describe operations system responsiveness as the organizational manufacturing system's ability to identify changes in customer demand (Thatte et al., 2013), react to changes in product volume, act rapidly in response to unexpected incidents, and effectively accelerate emergency or unexpected customer orders and requests (Thatte et al., 2018). Additionally, researchers identify supplier network responsiveness as the ability of an organization's suppliers to implement

changes in response to the organization's demand (Thatte et al., 2013). Thatte et al. (2018) explained that an organization's ability to quickly respond to customer demand mainly depends on suppliers' reaction time to effect volume changes.

The major factor in maintaining responsiveness in the SC is to acquire responsive and flexible partners upstream and downstream in the SC (Christopher & Peck, 2004). Thatte et al. (2018) explained that to obtain a competitive advantage, managers need to rapidly meet changes in customers' demands and needs regarding product volume and mix, product differences, and the ability to provide a new product. However, to obtain a competitive advantage, managers need to ensure the presence of responsiveness in all stages of the SC, starting from raw material to delivery of the final product to customers. Organizational managers seek to choose suppliers who can provide new products quickly and create the required changes, which will result in a responsive SC. Managers need to understand and acknowledge organizational conditions and environments, which impact the organization's ability to react to environmental change promptly. Additionally, managers utilize SCM to direct SC partners to ensure SC responsiveness (Singh, 2015). Managers with a responsive SC are better able to reduce the organizational lead time and service reliability and ensure a quick and flexible response.

### **Supply Chain Vulnerability**

Vulnerability in supply chains is among the most pressing concerns organizational managers are currently facing (Kurniawan, Zailani, Iranmanesh, & Rajagopal, 2017). Wagner and Neshat (2012) defined supply chain vulnerability as the susceptibility or introduction to a disruptive incident in the supply chain. Managers need to attain

strategies and procedures to understand how unexpected disruptions in the supply chain begin and expand (Blackhurst, Rungtusanatham, Scheibe, & Ambulka, 2018). In addition, organizational managers and supply risk managers are required to recognize the negative impact of supply chain disruption on the flow of goods and services (Blackhurst et al., 2018). According to Ambulkar, Blackhurst, and Grawe (2015), supply chains are vulnerable to disruption, and managers seek to establish a level of resilience to gain the desired level of recovery in the SC quickly. Risks, uncertainty, and disruption exist in all activities required to obtain products and services and deliver them to final customers, which may influence organization ability to provides customers' demands (Kurniawan et al., 2017).

Due to the complexity, unpredictable nature, and largeness of the SC, organizational and supply chain risk managers need to obtain approaches to understand and allocate unexpected disruptions in the supply chain effectively (Blackhurst et al., 2018). Globalization, just in time method, outsourcing increase organization dependence on outside resources were managers obtain less control over, which increase organization vulnerability to disruption and affect SC partners (Neureuther & Kenyon, 2009). Additionally, Global sourcing, lean management, and high level of dependence on suppliers and customers consider the main drivers of SC vulnerability (Kurniawan et al., 2017). Establishing a collaborative relationship with different suppliers assist managers in avoiding sole sourcing as it increases the vulnerability by decreasing flexibility in the SC (Neureuther & Kenyon, 2009). Kurniawan et al. (2017) stated that to lower vulnerability consequences, managers need to develop and embedded vulnerability

mitigation strategies within supply chain development. Organizational managers need to obtain an appropriate mitigation strategy to identify the source of risks, the drivers of supply chain vulnerability, and measuring its results (Kurniawan et al., 2017).

The high level of uncertainty in supply and demand and the complexity and interconnected nature of supply chains reduce managers ability to gain control over vulnerabilities in SC (Mizgier, Jüttner, & Wagner, 2013). Blackhurst et al. (2018) explained that understanding supply chain vulnerability is fundamental for managers to reconfigure SC structure and relationships and relocate capacity and resources to lower the risk and effects of disruptions. Disruption of node failure is a specific type of disruption, which occurs when a node in the SC stops to manufacture, distribute, or deliver products (Blackhurst et al., 2018). Organizational managers need to recognize the influence of risk and uncertainty on SC activities and develop appropriate mitigation strategies to control them and sustain organization stability (Kurniawan et al., 2017). In the occurrence of disruption, managers need to allocate which node in the SC is directly affected, and all the possibilities for disruption spread (Blackhurst et al., 2018). Blackhurst et al. (2018) stated that managers need to visualize the SC and analyze areas of vulnerability.

Managers are required to obtain a deep understanding of SC structure, connectivity and design to gain a better ability to recognizing the vulnerable locations in the SC before a disruption occurs (Pettit, Croxton, & Fiksel, 2013). Understand supply chain structures and points of vulnerability allow managers to make effective decisions on the allocation of resources and SC restructuring (Blackhurst et al., 2018).

Additionally, it is important and essential to understand and be aware of the structure of the supply chain and its vulnerability to disruptions (Mizgier et al., 2013). According to Bode and Wagner (2015), SC design affects organizational supply chain vulnerability to disruption. SC managers face indirect risk because the sources of the risk spread through supply chain partners and managers are often unable to control it (Kurniawan et al., 2017).

### **Transition**

In this study, I intend to discuss the strategies organizational managers can utilize to mitigate the negative results of supply chain disruption. In Section 1, I presented the foundation and background of the study, problem statement, purpose statement, the nature of the study, and the research and interview questions. Other important parts of section 1 include the conceptual framework, operational definitions, the significance of the study, and (e) review of the academic and professional literature. In Section 2, I will state the research purpose, method, and design. I will explain the role of the researcher, participants, population, and sampling procedures, and ethical research concerns. Section 2 also will cover data collection techniques and analysis method and reliability and validity. At the end of Section 2, I will provide a summary of the main issues discussed in this section. In Section 3, I will present and discuss the study findings, explain the implications for social change and professional practice, and finally offer recommendations for future research.

## Section 2: The Project

Section 2 contains the purpose statement, the role of the researcher, participants, research method and design, and the study population and sampling. Additionally, I explain the data collection instruments and techniques, data organization techniques, and analysis. Finally, I explain the research ethical, reliability, and validity, and end with a transition and summary.

### **Purpose Statement**

The purpose of this qualitative multiple case study was to explore the strategies some SC managers in the mining industry use to mitigate the negative results of SC disruption. The target population was four SC managers in the Jordanian mining industry located in Jordan, who successfully developed and implemented effective strategies to mitigate the negative results of SC disruption. There may be contributions to positive social change by mitigating negative results of SC disruptions, which may allow organizations to maintain success, create more jobs, save resources, and support the welfare of their employees, families, and communities.

### **Role of the Researcher**

In qualitative research, the researcher is the key instrument of the study and must remain unbiased (Bryman & Bell, 2015; Dikko, 2016). Yin (2015) stated that quantitative research is the process of collecting, analyzing, and validating qualitative data. My role as the researcher was to design the case study, review the literature, establish an interview framework, conduct the interviews, collect and analyze the responses, and verify and report the findings. In this study, I was the primary data collection instrument; I sought

permission and approval before applying the research. To collect data from the participants, I used semistructured interviews with individuals from two companies in the mining industry in Jordan. I designed the study to match the guidelines of the Walden University Institutional Review Board (IRB).

I interviewed organizational managers and gathered secondary data materials to obtain primary information. McCusker and Gunaydin (2015) explained that researchers use interview protocols to attain conformity and increase the reliability of the study instrument. I used a semistructured interview protocol, following the same steps with each participant, to gather quality data that aligns with the research question. I began each interview with approximately 10 open-ended questions. I interviewed participants from different experience levels and views to increase the validity of the study. I selected participants with the same position and with an international focus. As a researcher, I used the same interview framework to direct the participants to share their knowledge of global SC and to avoid influencing their responses. Edwards (2017) stated that using the same interview framework allows a researcher to avoid influencing the response of participants. Tunarosa and Glynn (2017) stated that researchers use an interview protocol to ensure the consistency of the research and to remain within the designed interview framework. Additionally, researchers create an interview protocol for validity and reliability (Merriam & Tisdell, 2015). Researchers create the interview protocol for a semistructured interview to ensure the interview questions align with the research questions (Castillo-Montoya, 2016).

To ensure an ethical framework for my research, I followed the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). Researchers use the Belmont Report as a guideline to prevent harm and increase positive results and fairness for all participants. Researchers need to treat all research participants with the same ethical considerations regarding their rights, requirements, benefits, and privileges (Brody, Migueles, & Wendler, 2015). Researchers also need to respect participants' requests and views and protect their privacy (Dasgupta, 2015; Hull & Wilson, 2017). Additionally, researchers need to show transparency and trust to increase the quality of the research, which benefits practitioners and society (Hull & Wilson, 2017). I followed the Belmont Report rules by respecting the participants' views, using consent forms with all participants, and maintaining the confidentiality of the participants during the research (Burdon & Harvey, 2016).

When researchers collect and interpret data, they need to ensure that their personal experiences do not bias the process (Smith & Noble, 2014). Biases result from a researcher's experience with the subject under investigation (Berger, 2015). Recording the collected information in a journal and frequently reviewing that information with a peer will assist researchers in identifying and mitigating biases (Berger, 2015). Member checking is another method I used to identify possible bias in the interpretation and results (Madill & Sullivan, 2017). I do not possess any current or past personal or professional experience or relationships with the target population. I have never worked in global SC. However, the increasing challenges I experienced in the industry guided me

to explore this study. Identifying personal experience and opinions helps a researcher recognize personal bias (Noble & Smith, 2015).

### **Participants**

For this study, I planned to choose participants using the purposive sampling approach. Researchers use purposive sampling to ensure that they choose participants with the most appropriate information and knowledge (Saunders, Lewis, & Thornhill, 2015). The measure of suitability for my study was managers who have been using successful strategies to mitigate the negative results of SC disruption. I started by obtaining permission from Walden University IRB and meeting ethical requirements. The IRB approval number is 04-04-19-0639477. After obtaining approval from IRB, I contacted the participants' organizational managers through e-mail to arrange appointments to gain access to the eligible participants (Dasgupta, 2015). The potential participants needed to be SC managers with at least 2 years' experience and full-time employment. All potential participants received information regarding the study's benefits, risks, and confidentiality via a consent form.

To provide and achieve successful qualitative research, researchers need to establish a relationship with participants (Marshall & Rossman, 2016). Researchers develop a relationship with participants to encourage them to participate and complete the study (Saunders et al., 2015). As part of the interview protocol, researchers need to develop an appropriate environment for the interview, including time and location (Skouloudis et al., 2017). Gagnon, Jacob, and McCabe (2015) stated that interview time and location are essential to a successful interview. In addition, researchers need to

provide a flexible interview environment to allow participants to freely express their knowledge and experience (Burdon & Harvey, 2016). Participants should know that they have the right to withdraw from the study at any time (McCusker & Gunaydin, 2015). I secured the gathered data from the interviews in a personal safe and will retain it for 5 years, and then it will be shredded.

## **Research Method and Design**

### **Research Method**

For the study, I used the qualitative research methodology. The qualitative design provides an in-depth analysis of the descriptive questions (Gerring, 2017). Researchers use the qualitative methodology to explain and explore the meaning of social and human behavior and decisions (Bailey, 2014). Therefore, qualitative methodology was the most appropriate design for the study. The quantitative approach was not appropriate for the study because I was not seeking to test a hypothesis or examine variables. Researchers use the quantitative approach to identify, describe, and investigate the relationship between variables (Yin, 2014). In this study, I did not use the quantitative approach because I was not studying relationships between variables. A mixed methodology is used to combine quantitative and qualitative methodology when neither methodology is sufficient alone (Turner et al., 2017). Qualitative methodology alone was most desirable for this study.

Qualitative researchers use this method to observe and understand an experience (Merriam & Tisdell, 2015). Qualitative research merges observation, documentation, and interviews to gather data (Midgley & Wilby, 2015). Additionally, the qualitative method

allows participants to describe their understanding of their experience in their own words (Midgley & Wilby, 2015). The qualitative research method is more appropriate for focusing on human and organizational activities and reflects the individuality of the human experience (Mertens & Hesse-Biber, 2015). Tomos et al. (2015) stated that the qualitative method is an efficient methodology for studying a business problem based on human experiences and observing people in their natural locations (Lach, 2014). Qualitative research provides a better understanding of problems because of its deeper level of discovery and understanding (Bratucu & Bratucu, 2015).

### **Research Design**

For this study, I reviewed the following qualitative research designs: (a) case study, (b) phenomenology, (c) ethnography, and (d) narrative design. A multiple case study is the best design for the study, given the intricate complexity of the subject under investigation and the use of few participants. Researchers use a multiple case study to gain an in-depth understanding of a problem involving complex subjects and few participants (Park & Park, 2016; Yin, 2014). A phenomenological design was not suitable for the study because the basis of this study was not individual viewpoints. Researchers use the phenomenological design when the research involves studying members for their existing human experience in a major life event (Bentahar & Cameron, 2015). The ethnographic design was also not suitable for the study because researchers use the ethnographic design to focus on the cultures of specific groups, how people within groups interact with each other, and how culture affects the groups' member (Kruth, 2015). The narrative study design was not suitable for the study because this study was not

concentrating on the life experiences of individuals over time or analyzing their experience (Garud, Gehman, & Giuliani, 2016).

The multiple case study is an in-depth investigation of experience or a topic within its natural environment without any restrictions (Cacheche, Santos, Santos, & Akabane, 2015; Merriam & Tisdell, 2015; Runfola et al., 2017). Researchers use multiple case studies to expand their understanding of a subject and capture its individuality (Hyett et al., 2014). Mertens & Hesse-Biber (2015) stated that the case study design is the most appropriate design in business research. Case study research provides in-depth, a general explanation of the phenomenon in its real location (Abro, Khurshid, & Aamir, 2015). Because of this, a multiple case study is the most appropriate design for my study.

In qualitative research, researchers focus on a single topic and ask the study participants the same questions in all interviews (Fusch & Ness, 2015; Hennink, Kaiser, & Marconi, 2017; Saxena, 2017). To achieve data saturation, a researcher will continue asking questions and obtaining information until no new ideas or information appear (Gladwell, Badlan, Cramp, & Palmer, 2015). Member checking is a method that researchers use to ensure the consistency of the study information through the confirmation of the data by the participants (Anderson, 2017; Birt, Scott, Cavers, Campbell, & Walter, 2016; Varpio, Ajjawi, Monrouxe, O'Brien & Rees, 2017). I will use member checking by allowing the participants to confirm my interpretation and understanding of their interview responses. Researchers confirm the interpreted information to obtain accurate information to enhance the reliability and credibility of the study (Fusch & Ness, 2015; Merriam & Tisdell, 2015; Muir, 2014).

### **Population and Sampling**

The target population is SC managers in the Jordanian mining industry. I will purposively choose SC managers based on their experience and knowledge of the global SC and those who have successfully implemented strategies to mitigate the effect of SC disruption. Researchers are required to decide the appropriate number of participants, the specific requirements for those participants, and the proper interview protocol for a study (Etikan, Musa, & Alkassim, 2016). McCusker and Gunaydin (2015) explained that the target of sampling is to identify the appropriate sample that matches the research design. Researchers use purposeful sampling to identify the most appropriate participants who have the required experience and knowledge to answer all the interview questions about the subject under examination (Boddy, 2016; Carman, Clark, Wolf, & Moon, 2015). In purposive sampling, researchers select specific participants who match specific criteria to achieve and deliver the goal of the research (Bryman & Bell, 2015). Gligor, Holcomb, and Stank (2013) defined purposive sampling as a nonprobability sampling method that researchers use to select individuals who can provide useful insights regarding the subject investigated in a study. Participants in a purposive sample provide more data about the subject under investigation (Tunarosa & Glynn, 2017). A purposive sampling includes participants with unique and independence experiences and knowledge. Participants from the purposive sample add more value and richness to the study (Suen, Huang, & Lee, 2014). Suen et al. (2014) considered purposive sampling an appropriate process for a qualitative case study because the researchers can obtain the best information about a

certain topic from participants (Elo et al., 2014). Researchers with purposive sampling need to use their judgment to select the sample (Elo et al., 2014).

Researchers need to address the number of participants in order to obtain all the required information; however, it needs to be limited to allow the researcher to perform a detailed coding process in a limited time (Gheondea-Eladi, 2014; van Rijnsoever, 2017). Malterud, Siersma, and Guassora (2016) stated that researchers need to consider the purpose of the study as the main driver to determine the sample size. According to Gibbs, Shafer, and Dufur (2015), researchers need to be practical when deciding the sample size; a suitable sample considers a central issue and increases the credibility of the study analysis and reporting. Yin (2014) stated that a sample size of three participants might be acceptable to reach data saturation. Researchers in qualitative research attempt to gather a satisfactory amount of information to understand the research subject (Gentles, Charles, Ploeg, & McKibbin, 2015).

Data saturation is a method that researchers use to determine a suitable sample size for the research (van Rijnsoever, 2017). Researchers reach data saturation when they cannot obtain any new information from interviews, member checking, and document reviews (Fusch & Ness, 2015; Hennink et al., 2017; van Rijnsoever, 2017). Data saturation is an instrument researcher employ to ensure the sufficiency and quality of the collected information (Marshall et al., 2013). Researchers consider saturation as an essential element in qualitative research because it ensures a full representation of A study under investigation (Gergen, Josselson, & Freeman, 2015).

To confirm data saturation in the research, I intend to use member checking after conducting my preliminary analysis and interpretation of the interviews. Member checking allows participants to confirm the accuracy of my interpretation of their responses in follow up interviews (Chih-Feng, Ching-Jung, Walters, & Ching-Yieh, 2016; Harvey, 2015; Simpson & Quigley, 2016). During the first interview, researchers obtained in-depth information. The second interview is a follow-up, and the third interview offers a chance for member checking (Abro et al., 2015). When conducting the interview, researchers need to ensure the privacy of the participants and provide a secure location that is also convenient (Yin, 2014). Interview location and space are essential features of the interviewing process (Gagnon et al., 2015; Moore, 2015; Taylor et al., 2015).

### **Ethical Research**

I conducted this study after obtaining approval from the Institutional Review Board and follow Walden University's IRB guidelines. The standards for IRB approval include reducing risks to participants, the validation of risk versus benefit, documentation, voluntary consent of participants and participant confidentiality and an ethical subject (Blackwood et al., 2015). In any research, the safety and confidentiality of the participants is an essential element (Ellis, 2016). The roles and responsibilities of a researcher are to guard the secrecy of the participants by assigning them numbers or different names; this process encouraged them to participate in the study (Edwards, 2017). The university research ethics committees are responsible for the supervision and review of research proposals concerning human participants (Gallagher, McDonald, &

Mccormack, 2014). After obtaining the IRB approval, I asked the participants for their e-mail addresses. Then I sent them an electronic invitation to participate in the study. The e-mail contained a description of the purpose of the research and its benefits (Gibbs et al., 2015). In addition, the email provided extra information on how to maintain the participants' and their employer's privacy. I sent the participants informed consent, which ensures both the protection of the participant and the transparency of the study (Yin, 2014). I informed the participants that their participation is voluntary, and I did not provide any compensation. I also notified the participants that they can withdraw from the study at any time. After obtaining the acceptance of my proposal, I scheduled a face-to-face interview with the participants. Participants are required to sign and return an informed consent form to ensure they agree to participate in the study voluntarily and that their identities will remain confidential and private (Marshall & Rossman, 2016; Dasgupta, 2015; Midgley & Wilby, 56 2015). Researchers need to ensure that they will secure the identity and privacy of the participant (Hiriscau, Stingelin-giles, Stadler, Schmeck, & Reiter-theil, 2014). I notified the participants that I saved all written information in a safe in a secure place for 5 years, and after 5 years, I will destroy all the information. The American Psychological Association guidelines and the law highlight the importance of maintaining confidentiality (Rosales, 2014). Researchers are not allowed to publish the name or any other identifying descriptions of the participants to maintain confidentiality (Adinoff, Conley, Taylor, & Chezem, 2013).

### **Data Collection Instruments**

In a qualitative study, the researcher is the primary data collection tool (O'Sullivan, 2015; Cypress, 2017). For the study, I will be the primary data collection tool. Researchers gathered qualitative information by using open-ended questions and combining it with secondary information (Baillie, 2015; Merriam & Tisdell, 2015; Morse, 2015). I collected information by conducting semi-structured interviews and reviewing organizational materials to obtain general data about the subject. I conducted face-to-face semistructured interviews to gather the research information. I used the same open-ended questions to guarantee the consistency of all interviews. During the study, researchers need to observe their personal biases and win participants' trust during the research process (O'Sullivan, 2015).

Researchers use an interview protocol to improve the trustworthiness of their studies (Amankwaa, 2016; Castillo-Montoya, 2016), by ensuring the alignment between research questions and interview questions and process (Castillo-Montoya, 2016). Interview protocols cover the study information, details for information collection, and the interview process (Yin, 2014). Researchers use interview protocols to ensure the transparency, consistency, and reliability of the interview process (Amankwaa, 2016; Edwards, 2017). Additionally, the researcher needs to have a clear understanding of the purpose of the study and stay aligned during the interview and data collection stage (Abro et al., 2015; Ellis, 2016).

I conducted an individual, face-to-face semistructured interviews to ensure the personal privacy of the participants and to maintain the personal element of the research

(O'Sullivan, 2015). In the semistructured interviews, I asked open-ended questions to allow participants to explain and share their knowledge, the point of view, and experience in their own words. Participants needed to feel important and appreciated during the study (Saunders et al., 2015). Researchers consider semistructured interviews to be the most effective technique to obtain a richer understanding of the participant's experiences and effectively address the research question (Midgley & Wilby, 2015).

Researchers use member checking to ensure the credibility and validity of the collected data; many other researchers utilize member checking in their research for the same reason (Pushnoi, 2015; Hadi & Closs, 2016). Member checking provides an opportunity for the study participants to re-evaluate the interpretation of their data to ensure accurate and effective interpretation (Dasgupta, 2015; Burdon & Harvey, 2016). Triangulation is another process that researchers deploy to validate the study findings through multiple sources of information, entities, theories, or to use a different method for data collection (Dasgupta, 2015). For my study, I used a different source of data triangulation, including observation and semistructured interviews, to increase the study reliability and accuracy of the collected data.

The member checking process starts after the researcher finishes the interviews, the interpretation and summarizing of the collected data (Caretta, 2016; Gledhill & Harwood, 2014; Rieck, 2014; Wiens, Kyngäs, & Pölkki, 2016). Researchers followed up with participants to perform member checking to ensure data saturation and accuracy (Chih-Feng et al., 2016; Harvey, 2015; Simpson & Quigley, 2016). In my study, I used a digital voice recorder with all participants throughout the interviews to confirm the

trustworthiness of the study and coding. Researchers use digital recordings in interviews to obtain a method of auditing and validity (Nordstrom, 2015). For the member checking, I conducted a follow up interviews with the study participants.

### **Data Collection Technique**

In this study, I was the main data collection instrument. I collected information through in-depth and open-ended questions in semistructured interviews. I reviewed organizations documents. The following research question guided the interview questions: What strategies do managers in the mining industry use to mitigate the negative results of SC disruptions? In qualitative research, the researcher decides the data collection techniques that best align with the theoretical framework and the purpose of the study (Merriam & Tisdell, 2015). Data collection involves obtaining permission to conduct the research, establishing a strategy for sampling, identify an appropriate method for recording information, data storage, and the expectation of ethical conduct (McCusker & Gunaydin, 2015). Qualitative researchers must choose the most appropriate data collection techniques that will best describe the subject under investigation (Hammer & Berland, 2014).

In a qualitative study, researchers mainly perform face to face interviews, audio recordings, and recording the collected data (Merriam & Tisdell, 2015; Morgan, Pullon, Macdonald, McKinlay, & Gray, 2017; Setia, 2017). Researchers conduct interviews because they offer more flexibility to direct and rephrase the interview questions for extra information when something different or new appears during the interview process (Bryman & Bell, 2015; Tunarosa & Glynn, 2017). Marshall and Rossman (2016)

explained that interview questions improve the study of human issues and behaviors. Additionally, researchers use interview questions as guidelines and as references (Saunders et al., 2015). Before conducting an interview, researchers need to make sure that the study participants understand the purposes of the study and interview (Merriam & Tisdell, 2015). Researchers need to ensure the participants understand that they are volunteering without any restriction and can withdraw anytime they want (Yin, 2015). Additionally, researchers must acknowledge the participants of the audio recording and obtain their approval (Vincent & Blandford, 2017).

Ibrahim and Edgley (2015) stated that open-ended questions are appropriate for qualitative interviews because they explore participants' experiences, standards, and knowledge, and gathered rich, descriptive data (Yin, 2015). Researchers need to select proper participants who have an adequate amount of information to enhance the richness of the study (Onggo & Hill, 2014). During the interview, researchers need to select exploratory questions where an additional explanation may add richness to the information and study (Merriam & Tisdell, 2015). Researchers need to ask the interview questions within an appropriate time frame, or the participant may feel pressured (Merriam & Tisdell, 2015). Face-to-face and semistructured interviews boost qualitative research's validity and trustworthiness (Deakin & Wakefield, 2014). Semistructured, face to face interviews allow researchers to achieve an in-depth understanding of a topic and provide flexibility with participants to personally exchange information in a secure place (Dong et al., 2016; Merriam & Tisdell, 2015).

Researchers depend on member checking to enhance the credibility of the interview data (Amankwaa, 2016; Connelly, 2016). Researchers utilize member checking to increase the reliability and validity of the collected data (Anderson, 2017; Birt et al., 2016; Malagon-Maldonado, 2014). After performing the interview, researchers give the study participants an interpreted summary of the interview transcripts to review and send back to the researchers, which summarize the member checking (Birt et al., 2016; Kornbluh, 2015; Madill & Sullivan, 2017). For this study and after obtaining the IRB approval, I contacted the study participants, explain the purpose of the study, ensure that they understand their rights and the requirements, then let them sign the informed consent form. After that, I started the questioning process. I informed the study participants that I recorded the interview and that I took notes.

### **Data Organization Technique**

In qualitative research, researchers use different devices to record interviews (Cypress, 2017; Nordstrom, 2015; Scheel-Sailer, Post, Michel, Weidmann-Hügler, & Baumann Hölzle, 2017). Qualitative study information includes audio, transcripts, notes, video, or any documents gathered during the study (Baškarad, 2014; Merriam & Tisdell, 2015; Yin, 2015). Researchers use computer-aided qualitative data analysis software (CAQDAS) to help organize the unstructured qualitative data (Chowdhury, 2015; Merriam & Tisdell, 2015; Yin, 2014). Researchers enhance the research trustworthiness when they are transparent during the research process (Amankwaa, 2016; Connelly, 2016; Cypress, 2017).

In the study, I used NVivo 11 to code the interview transcripts. Ferreira, Moreno, Brandao, and Cerqueira (2016) explained that NVivo and Atlas.ti accomplish the same purpose of qualitative data analysis. Researchers recommended NVivo and Atlas.ti for qualitative analysis (Kaefer, Roper, and Sinha, 2015). NVivo stores and organizes the collected data for easy referencing (Mertens, & HesseBiber, 2015). I also used a voice recorder during the interview. When using the voice recorder, I created one electronic file for each recording, which represents one interview. I provided different names for each participant to ensure privacy, confidentiality, and to track the data. I saved the collected data in printed and written forms in a secure place for five years. I used my personal computer to save all collected data, protected by a password.

### **Data Analysis**

For this study, I used computer software NVivo to create a coding system and other documentary analyses. Researchers perform data analysis by identifying and assessing the importance of all the collected information (Yin, 2014). The data analysis process includes searching, coding, organizing, and modeling the data interpretation to evaluate its significance (Sinkovics, Penz, & Ghauri, 2008; Xu & Storr, 2012). Researchers use computer software as a tool to assist them in the analysis process. However, researchers need to sustain their creativity, sociological assessments, and common sense during the interpretation process (Klüber, 2014). Researchers use NVivo software to enhance the data analysis process through data management, data entry, visual forms, and reporting (Bazeley & Jackson, 2015).

For this multiple case study, I collected data from open-ended questions in a semistructured interview besides organizational documents, member checking, and research notes. I used the triangulation method as a part of data analysis. McCusker and Gunaydin (2015) defined triangulation as the process of utilizing two known topics to discover an unknown third point. In qualitative research, researchers use the methodological triangulation procedure to assess case study data (Yin, 2014). Researchers validate the results of the data collection process from multiple data sources involving interview responses, personal notes, member checking, and organizational materials, which increase the validity of the study (Dasgupta, 2015; Kern, 2016).

Researchers use methodological triangulation in qualitative multiple case studies because it allows the researcher to verify the study data from a different source (Edwards, 2017). Researchers use methodological triangulation to obtain a complete picture of the topic than use a single type of data (Gibbs et al., 2015). For the methodological triangulation, I will use within-method. Within-method uses two or more data collection techniques for the same study. Researchers can enhance the study results by triangulation obtained from the confirmation of the results using different sources (Abro et al., 2015; Mertens & Hesse-Biber, 2015).

Yin (2015) suggested the five-phase cycle: (1) compiling, (2) disassembling, (3) reassembling, (4) interpreting, and (5) concluding data. For this study, I followed Yin's suggestions to analyze the study data. Compiling is the process of organizing primary data in a meaningful way and is the first step in data analysis (Essary, 2014). In the disassembling step, I grouped and labeled the words and phrases into themes to find

meaning before reassembling it (Bengtsson, 2016). I used Nvivo software to code and produce an emerging theme from the coding process (Essary, 2014). Reassembling is the third phase, which includes placing the data together in related coding categories (Bengtsson, 2016). Yin (2014) stated that researchers need to group the data in order of significance to answer the research question. Researchers attain data saturation once there are no new themes obtained from the data (Hennink et al., 2017). I continued reassembling the data until I reach data saturation. The fourth step is interpreting. After I reassemble the data into themes, I offered a detailed interpretation of the differences and similarities of patterns that will appear. Yin (2015) explained that the interpreting step is the basis of the qualitative study. I used Nvivo software to assist in the interpretation of the data. I used the member checking technique to ensure interpretation accuracy. The final step is concluding data. Researchers in the conclusion step can communicate and display their findings and draw conclusions (Yin, 2014).

In the study, I used NVivo software to code the interview transcripts. I used NVivo to arrange, analyze, and attain themes of the collected data. Mertens and Hesse-Biber (2015) stated that researchers have successfully used NVivo to identify the relations in the data and obtain new understandings, address mutual patterns by examining consistencies, convergences, and differences in data. Woods et al. (2016) stated that researchers utilize NVivo for its ability to evaluate nodes within a complex matrix. Establishing a database of the study data is one of the essential aspects of the study (Yin, 2015). Additionally, Bryman and Bell (2015) stated that there is a need to use an interview procedure to code each interview separately and identify a common coding

framework for all the data. Researchers combine the study data to achieve a better understanding of the topic, which is more appropriate than using each source separately (Abro et al., 2015).

### **Reliability and Validity**

Reliability and validity reflect the accuracy and correctness of the research (Gheondea-Eladi, 2014). Researchers need to ensure that the qualitative research process is consistently reliable and valid (Cypress, 2017; Leung, 2015; Noble & Smith, 2015). Reliability means that data and processes within the study are dependable (Leung, 2015). Validity relates to the suitability of the researcher's selections, including methodology, instruments, processes, and data (Leung, 2015). Researchers use reliability, integrity, transferability, and confirmability to achieve the trustworthiness of a qualitative study (Cope, 2014; Hadi & Closs, 2016; Yin, 2014).

#### **Reliability**

Reliability refers to the consistency of individual researchers (Ellis, 2016). Reliability of research includes an in-depth explanation of the data collection procedures, analysis, and interpretation (Sotiriadou et al., 2014). Dasgupta (2015) and Grossoehme (2014) stated that to enhance reliability, researchers need to record the study data accurately. Researchers need to use the same procedures in all participant interviews without changing any processes (Tunarosa & Glynn, 2017). Using more than one sources to collect data is a standard process in qualitative research. Methodological triangulation can enhance the reliability of the collected data (Eriksson, 2013; Nilsson, Castro, Rivas, & Arts, 2015). Data triangulation involves using various sources of information to

increase the strength of the study (McCusker & Gunaydin, 2015). Researchers collect data from different participants because each participant provides different perceptions and has had different experiences (Gibbs et al., 2015). Member checking and data saturation is another important method to ensure the reliability of THIS study. Data saturation is essential for research quality and improves the reliability of the study (Fusch & Ness, 2015). Furthermore, using software programs helps the investigative process of coding and analyzing the data and make it more accessible to researchers. Therefore, it increases the study credibility, replicability, and importance (Sinkovics et al., 2008).

### **Validity**

Validity indicates that the study is credible, which refers to the realistic and convincing nature of the researching process (Burdon & Harvey, 2016). To ensure research credibility, researchers need to deploy member checking to allows participants to correct mistakes in interview interpretations (Dasgupta, 2015). Member checks provide a chance for the participant to deliver additional information or clarify their responses (Bryman & Bell, 2015). Researchers use dependability, credibility, transferability, and confirmability to report the trustworthiness of qualitative research (Cope, 2014; Hadi & Closs, 2016; Yin, 2014). Cypress (2017) explained that researchers deliver dependability via the clarity of research procedures, analysis, and conclusions. Researchers identify the potential bias and limitations of the study to increase the dependability of the study (Cypress, 2017). Additionally, researchers provide clear and visible procedures in the research methods to enhance the study dependability (Cypress, 2017; Hadi & Closs, 2015; Noble & Smith, 2015). Researchers consider data saturation as another

identification of the validity of the study (Anderson, 2017; Constantinou, Georgiou, Perdikogianni, 2017; Noble & Smith, 2015).

Qualitative researchers focus on ensuring credibility in their research because bias can affect researchers' interpretations (Cypress, 2017; Leung, 2015). Researchers use methodological triangulation, member checking, and continued observation to ensure the study's credibility (Fusch & Ness, 2015; Hadi & Closs, 2016). Additionally, confirmation is another method to ensure reliability by comparing and opposing the data collected from different sources (Dasgupta, 2015). Researchers use methodological triangulation to enhance data confirmability (McCusker & Gunaydin, 2015), and member checking to ensure the accurate interpretation of participant responses (Amankwass, 2016; Connelly, 2016; Hadi & Closs, 2016). Qualitative researchers can increase the transferability of the findings by having a transparent research process, following the study protocols, and ensure data saturation (Cypress, 2017; Goldberg & Allen, 2015; Nickasch et al., 2016). The ability to transfer the study into a different framework allows for its evaluation (Gibbs et al., 2015). Transferability of the research can assist other researchers who use a similar framework to obtain the same results in the future (Dasgupta, 2015).

### **Transition and Summary**

In Section 2 of the study, I explained the purpose statement, the role of the researcher, and the study participants. Next, I started the research method and design, population, sampling, ethical research, data collection instruments, data collection technique, data organization techniques, and data analysis. I did not start gathering data until I obtained IRB approval. After receiving IRB approval, I followed an interview

protocol to collect data through interviews and the evaluation of organizations documents. I concluded Section 2 by explaining how I ensured the study reliability and validity.

Section 3 will summarize the data analysis process, the interpretation of the interviews and documents review data and explain how the conceptual framework is correlated to the findings. In Section 3, I will present the study's findings, deliver an application to professional practice, state the implication for social change, study recommendations, recommendations for further research, study reflections, and my conclusion.

### Section 3: Application to Professional Practice and Implications for Change

#### **Introduction**

The purpose of this qualitative multiple case study was to explore the strategies SC managers in the mining industry use to mitigate the negative results of SC disruption. The conceptual framework and the underlying theory for this qualitative multiple case study was RDT. The data came from manager interviews and company documentation. Using purposeful sampling and semistructured interviews, I collected data from four SC managers from a global manufacturing company located in Jordan. Each study participant provided answers to 10 interview questions, along with documentation related to the study topic. The main question of this study was: What strategies do managers in the mining industry use to mitigate the negative results of SC disruptions? The findings showed the methods and strategies the organizational managers used to mitigate the negative result of SC disruption successfully.

All four managers interviewed had global SC experience of at least 3 years. I selected the participants based on their managerial status and work experience and the location of the businesses. One of the central responsibilities of managers is to compete effectively by overcoming the many challenges of the global environment (Ibrahim, Zailani, & Tan, 2015). Complexity in the global SC causes more difficulties for organizational managers to organize their supply chains and adjust to changes in the markets (Hearnshaw & Wilson, 2013). I analyzed the data using NVivo. Researchers use NVivo to organize, analyze, and code different data types from different sources to categorize data in themes (Castleberry, 2014). Using the software and my notes, I was

able to identify two main themes: (a) developing relationships and collaboration, and (b) sourcing strategy. To ensure the accuracy of my transcript, I conducted follow-up member checking with participants. I used triangulation as a part of data analysis. Researchers use methodological triangulation to obtain a more complete picture of the topic than using a single type of data resources (Gibbs et al., 2015).

### **Presentation of the Findings**

In this qualitative multiple case study, I conducted face-to-face, semistructured interviews with four organizational managers to answer the research question: What strategies do managers in the mining industry use to mitigate the negative results of SC in disruptions? Organizational managers chose the interview location, interviews did not exceed 50 minutes, and member-checking discussions did not last more than 20 minutes. I used a purposive sampling approach to collect information from four organizational managers regarding their experiences with strategies used to mitigate the negative results of SC disruptions. After conducting each interview, I transcribed the data to a transcript and conducted a follow-up interview to validate the information through member checking until I reached data saturation. After conducting member checking and reaching data saturation, I started analyzing data and developing themes, which related to the research question and the conceptual framework.

The findings from organizational manager interviews revealed two themes. The first theme that emerged was collaborations and building relationships between organizations and vendors and suppliers. Retaining a long-term secure relationship is essential to the success of an organization because it produces effective communication,

improved information sharing and trust, decreased cost and cycle time, and enhanced customer satisfaction (Yang, 2013). Organizational managers need to create business relationships with vendors and suppliers while ensuring customer satisfaction. The second theme of the data was the strategies organizational managers use in the outsourcing process, supply process, and demand process and the strategic sourcing process to identify SC disruption. Esfahbodi et al. (2016) stated that during a disruption, organizational managers need to continuously use strategies to help with communicating and maintaining relationships with vendors and suppliers.

### **Theme 1: Developing Relationships and Collaboration**

Developing relationships and maintaining collaboration among SC members may decrease SC disruptions based on responses to Question 5. The four participants explained that establishing relationships with suppliers and vendors is beneficial in maintaining productivity and increasing profits during a SC disruption. Four organizational managers stated that maintaining long-term relationships with multiple suppliers and vendors may provide a secure source of organizational resources. Trust was another essential aspect between suppliers and vendors and the organization.

Managers 1 and 2 focused on the idea of having mutual benefits between suppliers, vendors, and organization. The study participants explained that the mutual benefits between supplier and organization result from long-term contracts that maintain suppliers' resources from equipment and human resources for a long time. Additionally, both managers explained that building relationships and signing long-term contracts with vendors and suppliers protect the company from SC disruption and lessen their effect.

Managers are required to obtain solutions for a recovery process, which can decrease the influence of a SC disruption (Carbonara & Pellegrino, 2018). Datta (2017) suggested that SC managers can manage inventory effectively and attain competitive advantage by using strategies that include information sharing and collaboration.

**Subtheme 1: Partnership and alliances.** One of the main strategies Manager 1 explained was including one of the major customers as a partner in the organization, which secured more than 50% of the organization production. According to Belkadi, Messaadia, Bernard, and Baudry (2017), organizational managers need to develop partnerships within the SC to combine their core competencies and resources to deal with market competitiveness and diversity. Managers may use a collaborative SC to suggest innovative solutions for a specific market, with the opportunity to transfer these solutions to another market with small adjustments (Belkadi et al., 2017). Study participants explained that the role of suppliers and vendors is crucial for an organization's success. Browne, Sackett, and Wortmann (1995) stated that organizational managers need to create collaborative value chains as a part of the organizational structure to encounter the needs of the market. According to the four managers, obtaining a high level of collaboration within the SC increases the level of flexibility in the communication between partners, which improves collaboration between partners to increase productivity and profit and decrease the impact of disruption.

Study participants stated that in supply chains, establishing mutually beneficial relationships results in long-term relationships. According to the study participants, forming long-term relationships within a SC is advantageous. Belkadi et al. (2017)

explained that obtaining a group of implicit or contractual agreements among partners assists managers in avoiding conflicts of interest at the managerial level and conflicts between resources and processes at the operational level. Manager A2 and A4 explained that obtaining contracts and agreements between organization and suppliers and customers increase the level of trust between partners, which increases productivity and profit. Establishing contracts and agreements can provide flexibility for organization processes when they encounter changes and disruption in the economic environment and can allow all partners to collaborate effectively (Belkadi et al., 2017). Maintaining a long-term secure relationship is critical to the success of an organization while facilitating effective communication, improved information sharing and trust, decreased cost and cycle time, and enhanced customer satisfaction (Yang, 2013). Alliance in a collaborative system is an effective method of developing a long-term relationship between buyer and supplier (Yang, 2013). Collaborative alliances in a SC influence partners within the SC and helps collaborate the information and product flow through buyer and supplier interactions (Caridi, Cigolini, & DeMarco, 2005; Green & Inman, 2005).

**Subtheme 2: Trust.** One of the subthemes that emerge from collecting data was trust. Four study participants focus on the concept of trust within SC partners. Participants A2, A3, and A4 explained that trust is the foundation of organizations relationship among SC partners, which facilitate their work and increase their productivity and maintain a level of security to the organization. Brinkhoff, Özer, and Sargut (2015) stated that organizational managers need to create trust between SC partners. Obtaining trust among SC partners allow each partner to share their information

and resources without losing control of their critical resources (Brinkhoff, Özer, & Sargut, 2015). All study participants considered trust as an essential key to the development of long term relationships among SC partners. Additionally, four organizational managers indicated that obtaining long term relationships can enhance organizational performance.

According to manager A1 and A3, trust influences the level of commitment and encourages collaboration between SC partners. Chen et al. (2014) highlight the significance of trust and commitment to an organization through collaboration within the supply chain. Belkadi et al. (2017) explained collaboration as the ability to work together to accomplish mutual goals through sharing resources, skills, and information. Trust reflects the level of confidence in a partner's reliability and integrity of work (Rindfleisch, 2000). Four study participants explained that obtaining a good relationship with supply chain partners may result in building trust among partners and increase the level of reliability, which lessens the influence of supply chain disruption. Trust improves collaboration between partners (Manu, Ankrah, Chinyio, & Proverbs, 2015) and increases operational performance (Shi & Liao, 2015) and knowledge sharing (Choi, Kang, & Lee, 2008), which assist managers in obtaining a competitive advantage in a changing business environment (Myers & Cheung, 2008). Obtaining a relationship built on trust may reduce the uncertainty surrounding the partner's actions (Belkadi et al., 2017).

Four organizational managers in the study stated that developing relationships with supply chain partners is a critical key to organizational success. Sampson and Money (2015) stated that managers need to build relationships continuously between

their organization and suppliers, which may increase customer satisfaction. Creating effective long relationships with suppliers may lead to competitive advantage for organizations (Wiengarten, Humphreys, Gimenez, & McIvor, 2016). Managers A1, A2, and A4 explained that building a secure relationship with suppliers and customers has increased loyalty and decreased mitigation resulting from supply chain disruption. Organizational managers in the mining industry have reduced mitigation and improved relationships with suppliers and customers. The RDT principle applied within Theme 1 was correlated to managers building relationships when reacting to a supply chain disruption.

Developing long-term relationships built on trust have enabled supply chain partners to work more effectively to maintain productively during supply chain disruptions. Carbonara and Pellegrino (2018) explained that managers need to develop strategies before disruptions occur. Obtaining quality relationships with consumers have provided positive results (Kache & Seuring, 2017; Rao et al., 2017) and decreased the negative influence of supply chain disruption. Managers A2 and A3 explained that one cause of disruption could be a result of delays in delivery days and delays in vendors responsiveness. Supply chain disruption must be anticipated and managed with a supply chain (Zhen, Li, Cai, & Shi, 2016). Additionally, obtaining long term, quality relationships can restore production processes more effectively (Fernandes, Sampaio, Sameiro, & Truong, 2017; Schmitt, Kumar, Stecke, Glover, Ehlen, 2017). Four organizational managers who participated in this study have successfully developed collaborative relationships within their supply chains. A key to adding value to supply

chain effectiveness can be gained through more effective communication and information sharing and result in more collaborative relationships.

### **Theme 2: Strategy**

Four study participants stated that developing proactive planning strategies to identify supply chain disruption before an occurrence is very important. According to manager three and four, design recovery plans may help to minimize negative supply chain effects. Manager A3 explained that obtaining alternative suppliers was a critical key to the success of the organization and its survival. Manager A3 stated that pre-planning supply chain disruption is essential to gaining quick and effective responses from within the organization and the employees. According to manager A3, deploying preplanning strategies provides a clearer understanding of each partner during a supply chain disruption. Manager A3 explained by obtaining a clear understanding among supply chain partners during a disruption allows the organizational managers to lessen the risk of supply chain disruption. Hill, Jones, and Schilling (2014) stated that obtaining a proactive plan for supply chain disruptions should focus on the readiness of organizational managers to deal effectively with a crisis. Wisner, Tan, and Leong (2016) stated that obtaining qualified, trained, and empowered employees are more effective when dealing with supply chain disruption. In addition, manager A3 stated that establishing well-trained supplier and vendor networks does support a recovery system for the organization in case of any supply chain disruption. Snyder et al. (2016) and Wisner et al. (2016) explained that obtaining a proactive plan as a management method with backup plans can enhance supply chain disruption management. According to

McNeil, Frey, and Embrechts (2015) and Naidu and Patel (2013), managers who develop a plan for potential disruptions obtain a better understanding of supply chain management and how to mitigate disruption risk. Managers A3 and A4 explained that managing product demand and having different suppliers can help to reduce supply chain disruptions. Chong, Ch'ng, Liu, and Li (2017) explained that organizational managers could gain a competitive advantage over its competitors by obtaining an effective supply chain, which can be accomplished by a better understanding of the demands of products. Organizational managers can overcome market challenges by obtaining a better understanding and forecasting of customer demands (Chong et al., 2017). Organizational managers can utilize information technology (IT) and Data Sciences to understand and calculate customer demands more accurately using quantitative approaches (Chong et al., 2017). Suominen (2014) explained that the use of information technology could assist managers in understanding the real-time demand and trends of the products. Chong et al., (2017) stated that understand the product demand and the swing in demand in real-time can assist managers in obtaining an effective supply chain and overcoming any challenges managers can encounter.

Another strategy mentioned by four study participants was the use of software and innovated processes. Manager A1 and A3 explained that it is helpful to utilize different software programs in developing and assessing the effectiveness and efficiency of supply chain activities and approaches. Several researchers stated that supply chain managers need to infuse technology and innovation into a supply chain to enhance supply chain processes (Sekip-Altug & Van Ryzin, 2014; Narayana, Pati, & Vrat, 2014; Schönsleben,

2016; Wagner & Neshat, 2012). Manager A2 explained that including software and innovative methods assist managers in gaining a better understanding of supply chain disruption and the associated risks.

Organizational managers stated that establishing procedures and plans, developing relationships and effective communication, and deploying a clear strategy, assist managers to lessen the influence of supply chain disruption. Building stable long term relationship with suppliers and customers may increase commitment and desire of all parties to maintain secure relationships. Maintain a secure relationship among supply chain partners increases partners abilities to make some sacrifices to maintain a stable production environment during supply chain disruption.

The finding of the study aligns with the conceptual framework. According to the RDT, managers attempt to manage their resource dependencies by establishing several forms of interorganizational arrangements to direct organizations toward their benefits (Klein & Diniz Pereira, 2016). Organizational managers utilize different procedures to reduce uncertainty in the flow of resources (Klein & Diniz Pereira, 2016), and according to RDT, establishing interorganizational relationships is an appropriate procedure to attain organization resources, maintain dependence, and reduce uncertainty (Pfeffer & Salancik, 2003). Birkie, Trucco, and Campos (2017) stated that obtaining different strategies can control and reduce the possible effects during a supply chain disruption. The study participants tried to provide effective strategies to mitigate the negative result of supply chain disruption in the mining industry, and generously recommend views and

helpful criticism to the supply chain managers and other members who want to enhance entire supply chain performance.

### **Applications to Professional Practice**

In this qualitative multiple case study, I explored the strategies organizational managers in the mining industry use to mitigate the negative effects caused by supply chain disruption. The population included four supply chain managers from two international organizations located in Jordan who have successfully deployed effective strategies to mitigate supply chain disruptions. I recruited organizational and supply chain managers as they are the most appropriate population who could provide answers in determining and implementing strategies to mitigate the negative results of supply chain disruptions. I purposely selected the population from organizations located in Jordan as cases of the reduction of profitability and lack of strategies to mitigate supply chain disruption risk are major concerns. My intention in exploring this research problem was to create a social change for society and communities through the most effective management of organizations resources, which can enable more effective utilization of resources, and reduce costs for business and consumers. The finding of this study may be significant to professional supply chain managers as they attempt to mitigate negative results caused by disruption. New supply chain managers or organizational managers who seek to improve supply chain performance may be able to use the finding of the study to develop and deploy more effective strategic plans to mitigate supply chain disruption and enhance organization performance.

Recognizing the strategies organizational managers utilize to avoid and mitigate the negative effects of disruptions may improve business performance (Parihar & Rahul, 2014). The findings from this study may enhance organizational practice through the information that can lessen the negative effects of disruptions in mining supply chains. The findings from this study may increase managers' knowledge and understanding of strategies for preventing and mitigating the negative result of disruptions in supply chains. Supply chain disruptions negatively influence operations, product quality, and customer loyalty, and reduced brand value and revenue (Chakravarty, 2013). Wright and Datskovska (2012) stated that utilizing successful mitigation strategies results in decreasing organizations costs and may increase profitability. The four organizational managers I interviewed suggested these themes as strategies to mitigate the negative result of supply chain disruption. Strategies used to mitigate supply chain disruption commonly start with building long-term relationships based on trust with suppliers and customers.

Organizational and supply chain managers can deploy the provided themes to assist them in improving supply chain performance while mitigating negative results of supply chain disruption. Obtaining collaborative partnerships in supply chains assist managers in identifying strategies to mitigate the negative result of supply chain disruption. According to the experience of the four study participants, the participants provided the best methods organizational managers can use to mitigate the negative result of supply chain disruption and sustain organizational productivity during a disruption.

This information may fill gaps in knowledge about effective supply chain strategies to mitigate supply chain disruption in the mining industry.

Obtaining a supply network built on trust and collaboration can provide a secure source of supply and distribution point. Chopra and Sodhi (2014) and Park, Hong, and Roh (2013) stated that obtaining different suppliers and establishing new supplier networks may improve organizational supply chain processes. According to four study participants, collaboration within supply chain partners is the essential business practice managers in the mining industry should use to avoid and mitigate the negative effects of supply disruptions. According to MacCarthy et al. (2016), supply chain collaboration, and coordination among supply chain partners may lead to more effective supply chain competitiveness. Organizational managers explained that collaboration within the supply chain simplifies information sharing, decision making, and recovery process. The study findings might close gaps in business practice regarding strategies organizational managers deploy to effectively avoid and mitigate the negative result of supply chain disruptions in the mining industry.

### **Implications for Social Change**

The growing complexity of managing a supply chain has resulted in supply chain disruptions that negatively impact organizational performance and lead to increased cost (Kamalahmadi & Parast, 2017). Organizational managers who control disruption risk can enhance organizational performance and competitiveness and add value to customers (Tse et al., 2016). Successful organizational managers positively improve human and social conditions by founding jobs, contributing to environmental sustainability, and the

promotion of economic growth (Polonsky et al., 2016). Deploying effective supply chain management strategies can save organizational resources and enhance customer value and customer satisfaction (Omar et al., 2012). Gaining knowledge about the proper strategies to mitigate negative results of supply chain disruption may enhance organizational supply chain outcomes and increase employment in the community. Effectively deploy a supply chain risk plan can support organizational profitability and sustainability. The outcomes of this study can help supply chain managers in the mining industry to improve supply chain performance during a disruption, sustain organizational growth, and increase job creation, which supports economic stability and improve social conditions.

The findings of this study may promote positive social change by presenting information on strategies to mitigate the negative result of supply chain disruption. Mitigating the negative result of supply chain disruption may maintain and enhance the performance of organizations and sustain employees jobs and conditions and lower the cost of the product, which could lead to an improvement in the lives of employees and consumers. According to Ellinger et al. (2012), the leading supply chain performer organizations reveal higher degrees of customer satisfaction and produce higher levels of shareholder value. Successful organizations and managers positively and productively impact individual lives and social conditions by founding jobs, contributing to environmental sustainability plans, and promote economic growth (Polonsky et al., 2016). Organizational managers can also enhance the standard of living for customers with smaller incomes because of the decrease in costs. Improved the knowledge and

understanding of mitigation strategies can benefit customers through the delivery of better services and right quality products. By providing products which satisfy market demand, organizational managers maintain a sustainable business where individuals and community may gain from the stable employment opportunities, and customers can gain from a dependable supply of products which meet their requirements. The study findings can also influence policy and decision makers in the mining industry in Jordan.

Successful organizations and the engaged community partners provide governments and local authorities with revenues through taxes, which can be used to create plans to improve social and economic presence, which can enhance social conditions for individuals, organizations, and the community.

### **Recommendations for Action**

The growing complexity of managing a supply chain (SC) has resulted in supply chain disruptions that negatively impact organizational performance and increase costs (Kamalahmadi & Parast, 2017). Alcantara (2015) stated that according to the Supply Chain Resilience Survey of over 519 organizations from 71 countries, 75% of these organizations encountered at least one supply chain disruption, 15% faced disruptions that cost more than one million euros, and 9% addressed a single disruption that cost above one million euros. The business problem stated in this study was that some managers lack strategies to mitigate the negative results of supply chain disruptions. According to the study findings, I realized that organizational managers could use a variety of strategies successfully to prevent and mitigate the outcomes of disruptions in mining supply chains. Based on the study findings, I recommend that organizational

managers adopt a systematic approach to mitigating disruption risk in mining supply chains. The approach should involve an effective collaboration built on long-term relationships based on trust that is mutually beneficial for all supply chain partners. Effective communication and information sharing within the supply chain are essential factors for successful collaborative relationships. Four study participants in this study stated that the level of information sharing within a supply chain depends on the level of trust among partners. I recommend that organizational managers should build a secure connection of communication among supply chain partners to simplify information flow and maintain transparent buyer-supplier relationships. Additionally, I recommend that organizational managers invest in more mutually beneficial relationships with supply chain partners. Four study participants explained that they provide a competitive price for customers, and sign long term contracts to increase loyalty and commitment. Additionally, obtaining a long term relationship with suppliers may improve terms of price, quality, delivery promises, and increased loyalty.

The findings and recommendations of this study are relevant to organizational managers, mining managers, supply chain specialists, researchers, and scholars. I will publish the research results for organizational managers, different participant groups, and professional development workshops. I will also share the study findings through an academic business journal.

### **Recommendations for Further Research**

The purpose of this qualitative study was to explore the strategies organizational managers utilize to mitigate the negative result of supply chain disruptions in the mining

industry. I used a qualitative multiple case study design, including semi-structured interviews. The research was specific to organizational managers in the mining industry located in Jordan. Future researchers may investigate other research methods, quantitative or mixed methods. Researchers can use the mixed methods approach which combines statistical analyses of numerical data and thematic data (Turner et al., 2017). Researchers may utilize a quantitative correlation design to study the performance rate of each strategy in preventing and minimizing the effects of supply disruptions in the mining industry. An additional area of research is examining the relationship between the different mitigation strategies and supply chain performance. Supply chain disruptions influence many industries; however, in this study, I focused on the mining industry only. Future researchers can focus on other geographic areas and other industries. An additional limitation of this study was the use of a small sample of four organizational managers in the mining industry. According to Boddy (2016), the deployment of a larger sample could have a different result. Researchers may consider a larger sample. Performing further research on mitigation strategies may add to the knowledge base of strategies for mitigating the negative result of disruptions in the mining industry.

### **Reflections**

Finishing this qualitative multiple case study has been one of the most meaningful challenges of my life. I started working on my doctoral study with limited understanding of the difficulty and discipline required to complete the journey. My goal was to develop skills in qualitative research while searching for solutions that address a specific business problem. Despite the required hard work, discipline, and time to finish this journey, the

prestige associated with the degree, personal satisfaction, and sense of accomplishment fade any other feelings. I am honored to say that I have accomplished my dream and goal. Getting through this study, I developed my knowledge of supply chain strategies and enhanced my researching skills. Writing the literature review was very challenging; however, I was able to develop a rational framework for my research by applying the rubric. During this study, I obtained a detailed and in-depth understanding of the research problem. Overall, the DBA journey was an enriching process for me.

### **Conclusion**

The findings from this qualitative, multiple case study revealed that organizational managers could mitigate the effects of supply chains disruption by an efficient collaboration among supply chain partners based on long term relationships built on trust. Organizational managers need to understand the sources of disruption, assess the potential impact, and develop the most appropriate strategies. In addition, the finding of this study revealed that by utilizing the strategies that emerged from the participants' responses, organizational managers could enhance supply chain sustainability and performance.

The disruption risks in supply chains and the related costs are of concern to several organizational leaders. By mitigating the negative results of disruption effectively, managers can enhance the performance and competitiveness of their organizations. I recommend that organizational managers, supply chain managers, researchers, and scholars use the findings and recommendations of this study to obtain

new insights on strategies for mitigating the negative result of supply chain disruption in the mining industry.

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