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Supply Chain Strategies to Ensure Delivery of Undamaged Goods

Oluwaseun A. Sanusi
Walden University

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Walden University

College of Management and Technology

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Oluwaseun Sanusi

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Walden University
2018

Abstract

Supply Chain Strategies to Ensure Delivery of Undamaged Goods

by

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MS, University of Bedfordshire, 2010

BS, Babcock University, 2006

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

December 2018

Abstract

Supply chain leaders in the oil and gas industry face significant logistical challenges regarding the efficient and safe delivery of undamaged products to their customers.

Within the conceptual framework of business process orientation theory, the purpose of this multiple case study was to explore the strategies that supply chain leaders used to ensure delivery of undamaged goods to their customers. Four supply chain leaders in the oil and gas industry in Texas were purposefully selected as participants because they had successfully implemented strategies to ensure the delivery of undamaged goods. Data were collected through semistructured interviews and review of publicly published documents from 4 companies. Data were analyzed using Yin's 5-step data analysis process of compiling, disassembling, reassembling, data interpretation, and conclusion. Four themes emerged from the analyzed data: process strategy, inspection strategy, information technology strategy, and employee training strategy. The findings of this study may provide knowledge to business leaders on how to reduce the cost of product delivery and increase profitability. The study's implications for positive social change include the potential for supply chain leaders to reduce material wastage and environmental pollution through the safe delivery of undamaged oil and gas products to customers.

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Dedication

I dedicate this study to my family. My wife (Moni) has been a good support system. My sons, Jesse and Jose. My dad and mum, Pastor and Pastor Mrs. Sanusi. My siblings, Tope Sanusi-Olubowale, Bunmi Sanusi-Kayode, and Tolu Sanusi. My family was my strongest strength in my doctoral journey. I also dedicate this study to all people who have suffered from delivery of damaged products.

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Section 1: Foundation of the Study

Organizational leaders implement strategies to gain competitive advantage, increase revenue, and achieve social and economic sustainability (Khosravi, 2016). To achieve set goals, business leaders focus on process improvement and quality in the supply chain and logistics sector (Chopra & Meindl, 2016). The supply chain and logistics division of an organization is a crucial element through which organizational leaders gain competitive advantage as well as add value for stakeholders (Kulinska, 2014). However, the leaders of the supply chain and logistics division face significant challenges with delivery efficiency and product damage in distribution (Ferne & Sparks, 2014). Douglas (2015) attributed supply chain and logistics challenges to high dependency on logistics activities to convey materials and services for commercial, economic, governmental, and social use. Business leaders in the United States recorded a loss of \$120 billion because of damaged goods during transit, delivery, and return of goods in 2013 (Govindan, Soleimani, & Kannan, 2015). MacAulay and Davies (2015) explained that business leaders suffer decreases in revenue because of customer dissatisfaction resulting from ineffective logistics strategies.

Business process orientation is strategy that business leaders use to promote process improvement and service quality (Thalman & Brettel, 2017). Pulakanam (2012) noted that organizational leaders using the business process management approach save up to \$8 million within 4 years after implementation. Business leaders in the manufacturing sector often use a business process orientation strategy, but leaders in a variety of sectors find value in using the strategy (McCormack & Johnson, 2016). The

success of business process orientation depends on the successful integration of the elements into operational business activities (Rosemann & vom Brocke, 2015). Despite the challenges in logistics operations, some leaders have applied business process strategies to support product delivery and reduce product damage (Rokou & Kirytopoulos, 2014). Nevertheless, significant concerns remain regarding how business leaders can achieve competitive advantage, increase revenue, and improve sustainability through an effective supply chain and logistics operation.

Background of the Problem

Consumers' increased demands for innovative products, product differentiation, and product quality have astounded the business community (Das & Rao, 2017). However, a critical challenge remains in the business community, in that there is a need for assurance that customers will derive maximum satisfaction from product consumption and the safe delivery of ordered products (Ladden, Merians, & Anavim, 2016). Tanai and Guiffrida (2014) noted that companies experience high levels of product rejection and reverse logistics because of damaged goods delivery through an ineffective logistics system. In addition to its importance in delivery to the final consumer, safe delivery has become essential in business-to-business (B2B) trade. B2B trade is an integral part of global business as organizations rely on each other to facilitate their functions successfully (Thalman & Brettel, 2017). In 2013, businesses located in the United States recorded a loss of \$120 billion worth of rejected goods from B2B and business-to-consumer (B2C) trade because of delivery of damaged products (Govindan et al., 2015). Some supply chain leaders lack strategies to ensure delivery of undamaged goods to their

customers (Chopra & Meindl, 2016; Rokou & Kirytopoulos, 2014). Maruchek, Greis, Mena, and Cai (2011) suggested that a need exists for more research regarding strategies to ensure the safe delivery of products to different households and businesses for the survival of global entities. Abousaeidi, Fauzi, and Muhamad (2016) noted the need for additional research regarding the safe delivery of products to various customers. Verheyen (2016) also recommended further research on safe product delivery to fill the gap in the existing body of literature. With the background of the problem provided, the attention now shifts to the problem statement.

Problem Statement

Product rejection and reverse product delivery because of an ineffective delivery system present significant setbacks to business leaders seeking to maximize profitability and secure customer loyalty (Tanai & Guiffrida, 2014). In 2013, businesses located in the United States recorded a loss of \$120 billion worth of rejected goods because of the delivery of damaged products (Govindan et al., 2015). The general business problem was that the delivery of damaged goods resulting from poorly managed logistics operations lowers profitability. The specific business problem was that some supply chain leaders lack strategies to ensure the delivery of undamaged goods to their customers.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the strategies that some supply chain leaders use to ensure the delivery of undamaged goods to their customers. The targeted population was supply chain leaders from four oil and gas companies located in Texas because they had implemented successful strategies to ensure

the delivery of undamaged goods to their customers. The study's implications for positive social change include the potential to promote environmental sustainability through reduction of material and natural resources wastage because of damaged goods.

Nature of the Study

Yin (2018) identified three principal methods of conducting a research study: quantitative, qualitative, and mixed. The qualitative researcher uses open-ended questions through interviews (Bellamy, Ostini, Martini, & Kairuz, 2016). I selected the qualitative research method because I sought to use open-ended questions. The quantitative researcher uses statistical analysis of numeric data to test for relationships or correlations among variables (Cho & Lee, 2014). The mixed-method approach involves a combination of both quantitative and qualitative methods (Pluye & Hong, 2014). To explore supply chain strategies to ensure the delivery of undamaged products, I did not conduct statistical analysis of numeric data, nor did I test for relationships; therefore, I did not use a quantitative or a mixed-method approach. The qualitative approach was the appropriate choice because I sought to present open-ended questions through interviews.

I considered four research designs: phenomenology, ethnography, narrative inquiry, and case study. Conducting a phenomenological study requires exploring the perceptions and feelings of participants in a lived experience of a particular phenomenon (Smith-Forbes et al., 2016). I concluded that the phenomenological design was not my best choice because I was not seeking to explore participants' lived experiences and feelings. Business researchers use the ethnography design to investigate an unfamiliar culture through observation and interpretation of observations (Hohmann & Shear, 2014),

The ethnographic design was not suitable for my study because I was not observing an unfamiliar culture. Robert and Shenhav (2014) described the researcher using the narrative design as concentrating on human knowledge and stories of past events to solve problems. The narrative inquiry design was not appropriate for this study because I was not seeking to explore participants' stories to address the problem. Researchers use the qualitative case study approach to explore real-life experiences and scenarios to investigate and explore complex phenomena (Yin, 2018). The case study research design was suitable for my research because I sought to explore a complex phenomenon through real-life experiences.

Research Question

What strategies do supply chain leaders use to ensure the delivery of undamaged goods to their customers?

Interview Questions

1. What strategies did you use to ensure the delivery of undamaged goods to your customers?
2. What, if any, communication strategies did you use in facilitating the delivery of undamaged goods?
3. What, if any, strategies did you use regarding protection of the product in transit?
4. What, if any, loading and unloading methods did you use to ensure undamaged products?

5. What, if any, strategies did you use regarding product storage and warehousing?
6. What, if any, strategies did you use regarding employee training to ensure the delivery of undamaged goods?
7. What, if any, strategies did you use regarding technology to ensure the safe delivery of goods to customers?
8. What, if any, strategies did you use to dispose of damaged goods, and what is the effect on sustainability?
9. What other information or advice can you offer regarding supply chain strategies to ensure the delivery of undamaged goods?

Conceptual Framework

For this qualitative study, business process orientation theory was the conceptual framework. Business process orientation originates from the work of Porter (1985). Subsequently, other researchers explored business process orientation (Coombs & Hull, 1996; Davenport & Short, 1990; Grover, Jeong, Kettinger, & Teng, 1995; Walton, 1986). The concept of business process orientation became rampant in the 1990s, when some managers adopted the theory to increase performance and quality (Christin Jurisch, Palka, Wolf, & Krcmar, 2014). The ideology behind the process orientation concept, according to Porter, addresses the means by which organizations can enhance service and product performance and quality (McCormack & Johnson, 2016). McCormack (2001) conducted empirical research to examine the link between enhanced business performance and business process orientation. The results of McCormack's research indicated that

business process orientation is an essential means to reduce organizational conflicts and encouragement of work collaboration within the firm while improving service and product performance and quality. Nadarajah and Kadir (2016) conducted research and concluded that business process orientation positively relates to customer satisfaction, product quality, delivery quality, and delivery efficiency. The rationale for choosing the business process orientation theory was that it provided a potential lens for viewing the strategies that the subject organizations employed to improve service and product performance, especially in the product delivery aspect of the logistics operation.

Operational Definitions

Lean: Lean is a management approach to improve manufacturing efficiency and product quality by (a) identifying what the customer values, (b) identifying and streamlining the value stream, and (c) eliminating waste in the business operation (Hu, Mason, Williams, & Found, 2015).

Logistics Performance Index (LPI): The LPI is an interactive benchmark on indicators that identify challenges and opportunities in trade logistics capacity across countries (Arvis, Mustra, Ojala, Shepherd, & Saslavsky, 2014). The logistics performance indicator consists of supply chain infrastructure, logistics services, customs and border procurements, and supply chain reliability (Arvis et al., 2014).

Process improvement: Process improvement is a managerial method for analyzing performance problems and setting up systems to ensure good performance (Yousfi, de Freitas, Dey, & Saidi, 2016). Process improvement is a continuous assessment of quality

and efforts to increase organizational performance, quality, and efficiency (Yousfi et al., 2016).

Assumptions, Limitations, and Delimitations

Assumptions

Leedy and Omrod (2016) described assumptions as practical expectations that researchers expect to be true, but for which they lack a means of verification. Pilcher and Cortazzi (2016) further expressed that acknowledging assumptions is critical in studies to ensure ethical research. An assumption in this study was that the participating supply chain leaders in the oil and gas industry in Texas possessed the knowledge and understanding of the strategies necessary to ensure the delivery of undamaged products to their customers. I assumed that the participants provided accurate, complete, and honest answers to all questions asked during the interview. Lastly, I assumed that the company records and documents reviewed were accurate and complete.

Limitations

Limitations are potential weaknesses in a study that are out of the control of the researcher (Henderson, 2014). Merriam and Tisdell (2015) expressed that limitations can affect the results and findings of a study. A significant limitation in this study was that the legitimacy of the data collected at the interview depended on the opinions and experience of the leaders of four companies in the oil and gas industry and therefore did not account for the views of all supply chain leaders in the oil and gas sector. The sample population's restriction to four supply chain leaders in Texas was a potential weakness in this study because of the limited diversity of data from a small sample population.

Furthermore, because of the limited scope of the study, limited, if any, transferability of the findings to other organizations or industries exists. The possibility of the reluctance of the supply chain leaders to disclose strategic information and documentation was also a limitation; therefore, I relied on the disclosed information and documentation.

Delimitations

Delimitations are boundaries of a study within the researcher's control (Crossman & Kazdin, 2016). Social scientists use delimitations to limit the scope of their studies (Marshall & Rossman, 2014). The geographic location of Texas was a delimiting factor in this study. Additionally, the target population of supply chain leaders in four companies in the oil and gas industry was a delimitation. The criteria for selecting the participants, which indicated that they needed to be leaders who had successfully implemented strategies to ensure the delivery of undamaged goods to their customers, was also a delimitation. The focus of the research question and interview questions, which was on strategies to ensure safe delivery of products, was likewise a delimitation; I did not address other internal or external factors that might affect logistics operations in the organizations.

Significance of the Study

The importance of a study includes the potential benefits that the business and social environment will gain from it (Polcin, Mericle, Callahan, Harvey, & Jason, 2016). The potential value of this study resides in the identification of strategies to ensure the delivery of undamaged products and, in so doing, enhance the wellbeing of the social

community and the soundness of the natural environment. The study may contribute to beneficial business practices and to positive social change.

Contribution to Business Practice

The major priority of a business entity is to gain a competitive advantage over its competitors in its industry (Gouillart, 2014). Researchers indicate that effective logistics management has become an area through which companies reduce costs and promote efficiency within their value chain (Kulinska, 2014). The findings from this study identify potential business operation principles and strategies to reduce the cost of inbound and outbound logistics. The findings may enable business leaders to improve service efficiency, delivery dependability, and service quality while increasing customer loyalty and lowering logistics costs.

Implications for Social Change

Logistics and supply chain management leaders focus on ensuring that the social community's well-being improves through an adequate product transportation and delivery system (Dörnhöfer, Schröder, & Günthner, 2016). The delivery of undamaged products can make goods available for healthy social and economic development (Brown & Guiffrida, 2014; Dörnhöfer et al., 2016). The availability and safe delivery of products of different categories to each separate household or business can contribute to the standard of living of a social community (Catherine, 2015). The implications for social change include the potential to control and reduce natural resources wastage, material wastage, and environmental pollution caused by destroying materials from damaged products. An additional potential societal benefit is the smooth and safe transit of

undamaged commodities to the people in the community. Undamaged goods delivered to people at the time of need potentially foster the well-being of the community regarding health, safety, and nourishment while improving the natural environment.

A Review of the Professional and Academic Literature

Consumers' increased demands for innovative products, product differentiation, and product quality have astounded the business community (Das & Rao, 2017). However, a critical challenge remains in the business community, in that there is a need for assurance that customers derive maximum satisfaction from product consumption and the safe delivery of ordered products (Ladden et al., 2016). The business and social community have experienced significant losses because of damaged products in transit, including oil and gas spillage (Govindan et al., 2015). The purpose of this qualitative multiple case study was to explore the strategies that some supply chain leaders use to ensure the delivery of undamaged goods to their customers.

The review of literature is a section for critical analysis and synthesis of past and current literature, including peer-reviewed articles, textbooks, company documents, and public documents (Yin, 2018). This literature review section includes analysis of the topics of business process orientation, logistics performance and challenges, process and service improvement, packaging for the delivery of undamaged goods, integration of business process orientation in supply chain management, and logistics. The sources used for the research were from reputable university library databases, supply chain and logistics management institutional archives, and professional association databases. The

articles gathered for this review contained information on trends in challenges, problem resolution, theories, and theoretical applications to business practices.

I have organized the review of literature section into three major segments:

(a) theory—business process orientation, (b) supporting theory, and (c) application to business practice. Each category includes various topics. Under the theory segments, I discuss (a) business process orientation, (b) elements of business process orientation, and (c) business process orientation and supply chain management. Under the supporting theory, I include (a) total quality management, (b) total quality management and logistics service, and (c) total quality management, service, and process improvement. Under the application to business practice segment, the topics are (a) logistics performance and challenges, (b) impact of information technology on logistics performance management, (c) product transportation, and (d) transportation of oil and gas products. I conclude this section with a summary and transition statement.

I searched various online professional and academic databases using different phrases and sentence to extract articles, company documents, dissertations, and other literature relevant to this study. The professional and academic databases used included ProQuest, EBSCOhost, Google Scholar, JSTOR, and Sage. Another key source for literature retrieval was the Walden University Library databases, including Business Source Complete, ABI/INFORMS Complete, ProQuest, SAGE Premier, and ScienceDirect. Keywords and phrases used in searching for articles included *delivery of undamaged goods*, *safe delivery of goods*, *product delivery system*, *logistics performance*,

service improvement and performance, business process orientation, process orientation, service improvement, and safe transportation.

I used 279 sources for this study: 246 peer-reviewed sources and 33 nonpeer-reviewed sources, equating to 88% peer-reviewed sources. I used 247 current sources and 31 noncurrent sources, equating to 89% current sources. One hundred and ninety-six sources are unique to the literature review.

Business Process Orientation

McCormack and Johnson (2016) noted that business process orientation is the means by which organizational leaders can enhance the service, product performance, and quality of a company. McCormack (2001) conducted empirical research to examine the link between enhanced business performance and business process orientation. The results of McCormack's research indicated that business process orientation is an essential means to reduce organizational conflicts and encourage collaboration within a firm while improving service, product performance, and quality. Nadarajah and Kadir (2016) concluded that business process orientation positively relates to customer satisfaction, product quality, delivery quality, and delivery efficiency. Business process orientation originates in the work of Porter (1985). Subsequently, other researchers studied business process orientation (Coombs & Hull, 1996; Davenport & Short, 1990; Grover et al., 1995; Walton, 1986). The concept of business process orientation became widespread in the 1990s, when some managers adopted the theory to increase performance and quality (Jurisch et al., 2014).

Organizational leaders in the 21st century realized that one means of enhancing competitive advantage is to adopt the business process orientation concept to achieve operational and strategic excellence (Thalmann & Brettel, 2017). The focus of business process orientation ideology is on documenting, managing, monitoring, and improving process and service performance for better output (Roeser & Kern, 2015). Randelovic, Milojevic, and Radosavljevic (2018) identified process management as a factor of business process orientation that involves documenting measurement results for feedback and reference purposes. Business leaders use process measurement to measure the characteristics of the process output to help identify mistakes and areas for improvement in the process activities (Lahajnar & Rožanec, 2016). Organizational leaders adopting business process orientation are keen on improving process efficiency and performance by breaking down structural barriers, improving communication for solving business issues, and increasing customer value and satisfaction (Dijkman, Lammers, & de Jong, 2016). The primary difference between business-process-orientation-driven organizations and functionally driven organizations is that whereas functionally driven organizational leaders focus on meeting targets, business-process-orientation-driven organizational leaders focus on increasing customer value and meeting customers' needs (Jalali, Ouyang, Wohed, & Johannesson, 2017).

In the traditional functional work system, each department has different specific duties. In contrast, in the business process orientation system, each department has a specific service or product (Kwieciński & Matusz-Protasiewicz, 2017). Roeser and Kern (2015) explained that in the traditional functional work system, the inquiry of a customer

might pass through the entire organization for a solution, whereas the first point of contact may have the solution for a similar inquiry in the business process orientation working environment. Hernaus, Vuksic, and Štemberger (2016) noted that the managers of a functional work system face the problems of lack of agility, lack of responsibility, and poor concern for customer value and expected outcomes. In a process orientation work system, high responsibility exists regarding customer value and expected outcomes, with a sense of efficiency because each department has different sets of products and services (Roeser & Kern, 2015).

Leaders of functionally oriented businesses focus on functional processes, such as purchasing, sales, operations, and production; however, leaders of business process orientation companies focus on the processes of system planning, strategic planning, and order processing (Van Looy, De Backer, & Poels, 2014). Functional operation business leaders organize and coordinate operational functions based organizational hierarchies and job duties (Kwieciński & Matusz-Protasiewicz, 2017). In a functional work system, integration of operational functions occurs away from the actual work area, which leads to poor integration between functions (Glykas, Valiris, Kokkinaki, & Koutsoukou, 2018). An organizational leader using the business process orientation system organizes and coordinates to promote interaction between functions, such as matrix organizations, which leads to high performance in meeting targets (Glykas et al., 2018; Roeser & Kern, 2015; Van Looy et al., 2014).

Optimization in a business process orientation organization affects the entire company, leading to increasing operational efficiency and organizational performance

(Roeser & Kern, 2015). In contrast, optimization in a functional operation work system affects individual functions yet results in poor coordination of all organizational functions (Kwieciński & Matusz-Protasiewicz, 2017). Glykas et al. (2018) explained that planning in functional operation companies involves department managers focusing on their allocated functions and objectives with little concern for other functional departments, yet in a business process orientation company, department managers share common goals. Jalali et al. (2017) continued that leaders who use business process orientation as a strategy achieve a higher level of performance in comparison to functional operation companies.

Khosravi (2016) noted that to implement business process orientation, leaders should regroup organizational activities to achieve rapid, increased operational improvement and organizational performance. Other researchers have used the word *process* interchangeably with *value activities*, indicating that firms should use the power of modern information technology (IT) to reengineer their business process in a strategy called *business process reengineering* (Davenport & Short, 1990; Khosravi, 2016). Although business process reengineering has potential, a series of arguments has emerged for and against it. AbdEllatif and Farhan (2017) argued that most project leaders who operate using business process reengineering experience project failure. Adkar (2016) confirmed that 60% to 80% of business process reengineering projects fail, resulting in project abandonment. Ghorbanian, Ostadi, and Chaharsooghi (2015) concluded that business process reengineering is a good theoretical approach that lacks practicality. Lacity, Khan, and Yan (2016) contended that leaders are more effective in approaching

process orientation is in a gradual manner than in attempting complete organizational reengineering projects. Roeser and Kern (2015) suggested that after a new structure has been defined, the old structure should remain place and fade out gradually over a period. Ghareeb, Ellatif, and El Bakry (2016) posited that people should prepare for an extended period to practice the change before adopting it. Business leaders use an effective process strategy to promote performance through process improvement (Capodaglio & Callegari, 2018).

Since 1990, business process orientation and business process management have become topics for researchers and business leaders to understand how to increase business performance through process efficiency and improvement (Khosravi, 2016). Although it is widespread in use, no single definition exists for business process orientation (Musa, Othman, & Al-Rahimi, 2013). Daveport and Short (1990) and Movahedi, Miri-Lavassani, and Kumar (2016) described business process orientation as the input that initiates the process and the output as the result of the process. Hussein et al. (2014) and Llewellyn and Armistead (2000) explained that business process orientation is a set of interrelated activities. Mekonnen and Naod (2017) defined business process orientation as the concept that leaders use to focus on the value of the customers as well as the stakeholders of a business. Tobias and Eva-Maria (2015) concluded that business process orientation is a horizontal sequence of activities that transforms an input (need) to an output (result) to meet the needs of customers and stakeholders. Researchers have used several themes or phrases to qualify business process management (Alotaibi, 2016; Faisal & Zillur, 2015; Sanders Jones & Linderman, 2014; Vesna, Vugec, & Lovrić,

2017). Alotaibi (2016) and Vesna, Vugec, and Lovrić (2017) used the theme of *strategic management process* to explain business process orientation. Other scholars have used the phrases *operational delivery processes* and *supportive administrative processes* to describe business process orientation (Faisal & Zillur, 2015; Sanders Jones & Linderman, 2014).

Elements of Business Process Orientation

Gartner (2010) conducted a study with chief information officers on the effectiveness and significance of business process orientation. Gartner identified that despite the effectiveness and significance of business process orientation, the process-centered organizational leader faces pressure to deliver results because of increased expectations from consumers and stakeholders. Researchers should identify a framework of business process management that applies to the organization's project and program management, vendor management, complexity management, standard management, and strategic management (Gartner, 2010; Rosemann & vom Brocke, 2015).

Researchers have used a variety of approaches to study business process orientation that have resulted in the emergence of a set of well-defined elements that constitute a holistic understanding and application of business process management (Mens & Ravesteyn, 2016; Rosemann & vom Brocke, 2015; Schmiedel, vom Brocke, & Recker, 2015). Rosemann and vom Brocke (2015) identified six core elements of business process management that process-centered organizational leaders should focus on for a successful business process orientation culture. The six core elements of business

process orientation are strategic alignment, governance, methods, IT, people, and culture (Rosemann & vom Brocke, 2015; Van Looy et al., 2014).

Strategic alignment is the relationship and link between organizational processes and organizational priorities to foster continuous and effective enterprise performance (Mens & Ravesteyn, 2016). Business process orientation should align with the organizational strategy for leaders to manage, measure, design, and execute organizational priorities at different operational levels (Rosemann & vom Brocke, 2015). The affected areas of capability include process improvement planning, strategy and process capability linkage, enterprise process architecture, process measures, customers, and stakeholders (Van Looy et al., 2014).

Organizational governance under the business process orientation approach depicts appropriate accountability and transparency of functions, roles, and responsibilities (Trkman, 2013). Operations, projects, accounts, or portfolios are subject to adequate accountability and transparency at all levels of operation (Van Looy et al., 2014). Governance under business process orientation also extends to motivation, decision making, and reward to guide process action (Schmiedel et al., 2015). The capability areas of governance include process management decision making, process roles and responsibilities, process metrics linkages, process-related standards, and process management compliance (Trkman, 2013).

Methods under business process orientation are the sets of tools and techniques that leaders and managers use to improve effectiveness, quality, and efficiency of activities related to products' life cycle (De Bruin & Doebeli, 2015). Leaders use tools

that emerged from the concept of business process orientation, such as Six Sigma, to improve product quality and the product life cycle (De Bruin & Doebeli, 2015; Rosemann & vom Brocke, 2015). The capability areas include process design and modeling, process implementation and execution, process monitoring and control, process improvement and innovation, and process program and project management (Van Looy et al., 2014).

IT is a significant element of business process management (Rosemann & vom Brocke, 2015). IT within business process management involves software applications, hardware, and information systems integrated into business process orientation for leaders to use in support of all process activities of a product's life cycle (Mens & Ravesteyn, 2016). Leaders use IT, in relation to business process orientation, to focus on the specific need of each product life cycle from the viewpoint of customization, appropriateness of automated process, and solution (Mens & Ravesteyn, 2016). The capability areas of IT within business process orientation include process design and modeling, process implementation and execution, process monitoring and control, process improvement and innovation, and process program and project management (Rosemann & Vom Brocke, 2015).

People are another vital element of business process management, in that human labor and resources, including skills, knowledge, and abilities as a team or individuals, constitute a needed resource for leaders to enhance process management activities for increased organizational performance (Trkman, 2013). People capture the capabilities that reflect human capital and development of human capital, such as employee

development, training, and collaboration (De Bruin & Doebeli, 2015). Tang, Dawal, and Olugu (2018) noted that effective training programs result in increased performance, specialization, and job satisfaction. Employee training increases employee engagement and improves the safety culture and operational performance in the oil and gas industry (Hamid, Javed, Sarfraz, & Iltaf, 2018). The capabilities area of business process orientation under the element of people includes process skill and expertise, process management and knowledge, process education, process collaboration, and process management leadership (Rosemann & vom Brocke, 2015).

Culture, as related to business process orientation, is the collective beliefs and values incorporated by the process-centered organization (De Bruin & Doebeli, 2015). The culture of the business significantly affects the success of the process-centered organization (De Bruin & Doebeli, 2015). Business leaders use the culture to facilitate an environment that complements business process orientation initiatives and systems to enhance the longevity and commitment to the business process orientation ideology (Chopra & Meindl, 2016; Rosemann & vom Brocke, 2015). The capability area of culture includes responsiveness to process change, values, beliefs, attitudes, behaviors, leadership attention to process, and process management social network (Trkman, 2013).

Business Process Orientation and Supply Chain Management

Researchers defined supply chain management (SCM) as the management of the inflow and outflow of materials and personnel (Badenhorst-Weiss, Biljon, & Ambe, 2017). Other researchers defined SCM as a strategic system (Davenport & Short, 1990; Khosravi, 2016; Mekonnen & Naod, 2017; Rokou & Kirytopoulos, 2014). In essence,

some organization leaders shifted from recognizing the supply chain as a departmental activity to the concentration of supply chain capabilities to ensure efficiency and performance (De Villiers, Nieman, & Niemann, 2017). Therefore, such organizational leaders provide essential management resources in the internal process and within their partners to develop the supply chain capabilities (Badenhorst-Weiss et al., 2017). Hence, a need exists to focus on the supply chain process functions characterized by the detailed and specific attention to value creation, customer satisfaction, continuous improvement relationship, collaboration, and quality performance (Chopra & Meindl, 2016). Business leaders implement business process orientation to focus on improving organizational performance, customer satisfaction, and safety consciousness (Kasim, Haračić, & Haračić 2018). Researchers explained that value creation, customer satisfaction, continuous improvement, relationships, collaboration, and quality performance are key elements of the process function of SCM to ensure organizational performance (Aitken, Stephenson, & Brinkworth, 2014; Badenhorst-Weiss et al., 2017; Chopra & Meindl, 2016; De Villiers et al., 2017). Organizational leaders who developed the internal and external process functions capabilities are in a better situation to lower the cost of production and increase process efficiency (Aitken et al., 2014).

Concerning business process orientation, SCM, and supply chain collaboration, researchers suggested that business process management and SCM are important for improving the performance and competitiveness of an organization (Aitken et al., 2015; Chopra & Meindl, 2016). Liao, Hu, and Ding (2017) described collaboration as a joint initiative by autonomous organizational leaders engaging in strategic planning to enhance

operational performance, and reduce the cost of inventory, distribution, and transportation. Rokou and Kirytopoulos (2014) expressed that organizational leaders who focus on business process orientation practices have an enhanced ability to support collaborative in conjunction with the supply chain partners. Supply chain leaders use a collaboration process to ensure effective product delivery operation, thereby reducing delivery inefficiencies, the large cost of overruns, delays, and the delivery of undamaged products (Ding, Huang, & Tang, 2018; Leon, Ahiaga-Dagbui, Fleming, & Laing, 2017). Green and Jackson (2015) noted the benefits of using business process orientation in the oil and gas sector to improve supply chain functions. A significant positive relationship exists between the internal SCM resources and process management resources, which in turn positively affects the supply chain process and execution (Christin Jurisch et al., 2014; Rokou & Kirytopoulos, 2014). Some researchers argued about the lack of adequate empirical research that categorically links capabilities of business process orientation and SCM (Pradabwong, Braziotis, Pawar, & Tannock, 2015; Ramanathan & Gunasekaran, 2014). Fahimnia, Tangb, Davarzanic, and Sarkis (2015) concurred that a need exists to test for the link between intraorganization development and supply chain collaborative to understand the benefits the two concepts may bring to an organization. However, Ponis et al. (2015) carried out a study to test the interrelationship between SCM and business process orientation. The research by Ponis et al. indicated an evidential interrelationship between SCM and business process orientation.

Total Quality Management

Total quality management (TQM) is one of the strategies that organizational leaders use to ensure quality and to gain a competitive advantage (Tan, Phuah, Phuah, & Tan, 2014). Research on TQM gained attraction since 2008 because of the practical nature and acceptance in the business world (Song, Turson, Ganguly, & Yu, 2017). Despite the popularity and usage of the TQM approach, researchers have difficulty on a uniform definition for the approach (Zeng, Phan, & Matsui, 2014). Rahman and Talib (2015) defined TQM as the systematic approach for promoting organizational performance. Zeng et al. (2014) defined TQM as a holistic management philosophy leaders use to seek continuous improvement in all functions of an organization. TQM is a multidimensional and multidivisional construct as scholars integrate the idea into various business and management activity (Yu et al., 2013). Researchers studied the integration of TQM into the supply chain, discovering that the adoption of TQM in supply chain management promotes process quality and increased organizational performance (Rahman & Talib, 2015; Yu et al., 2013; Zeng et al., 2014).

TQM is a holistic management approach that leaders use to help focus on meeting customers' requirements, service quality, and performance (Talib, Ali, & Idris, 2014). TQM philosophy involves employee engagement and enhancement of internal and external capabilities to promote continuous improvement (Zeng et al., 2014). García-Bernal and García-Casarejos (2014) and Song et al. (2017) described TQM as a science-based approach that leaders use for training of all employees of the organization about the functionality of their jobs, processes, and systems in a scientific method. García-Bernal

and Ramírez-Alesón (2015) explained that TQM is a comprehensive management approach that business leaders use as a source of technological innovation to bring about an increase in productivity and financial performance. Calabrese and Corbò (2015) described TQM as an approach leaders use for improving the effectiveness, flexibility, and performance of an organization, meeting customer requirements, and organizing and involving every department in the process. TQM is the integrated approach that leaders use to emphasize quality management principles, tools, and techniques for efficiency and continuous improvement to achieve customer satisfaction (Aquilani, Silvestri, Ruggieri, & Gatti, 2017).

Researchers conducted many types of studies to explore or examine the link and relationship between TQM and organizational performance (Kaynak & Darling, 2013). Scholars use different performance parameters, including financial, operational, and quality performance, to examine the effectiveness of TQM (Chardine-Baumann & Botta-Genoulaz, 2014). However, some researchers found that the effect of TQM on the different performance parameters remained inconsistent (Aquilani et al., 2017). Other scholars established that a significant relationship exists between TQM and organizational performance (Chardine-Baumann & Botta-Genoulaz, 2014; Kaynak & Darling, 2013; Tan et al., 2014).

Quality is the primary determinant to gain an advantage in the competitive business environment (Akhter, 2014). Quality performance and quality management have become a priority for the global business leaders to gain a competitive advantage (Calabrese & Corbò, 2015). Kaynak and Darling (2013) identified some key indicators of

quality performance to include service quality, product quality, increased productivity, efficient product delivery, and undamaged product delivery to customers (García-Bernal & García-Casarejos, 2015). Akhter (2014) identified employee involvement as a crucial activity in TQM because employee involvement allows the engineering of the human aspect of the quality system. Also, customer value creation, customer focus, and process management are equal components of TQM and business process management (Kaynak & Darling, 2013; Tan et al., 2014). Arunachalam et al. (2017) proclaimed that the implementation of quality performance strategies in TQM must meet the customers' requirements.

Another area of concentration of TQM is process management that involves every internal and external input and output of production and service operation (Akhter, 2014). For example, to ensure quality oil and gas products, engineers conduct inspection for the removal of contaminants and dissolved organic matter within oil and gas (Agarwal, Koch, Sridhar, & Al-Hashem, 2018; Riley, Ahoor, Regnery, & Cath, 2018). Researchers indicated that leaders use process management to promote production, distribution and delivery of quality products, and customer service (Calabrese & Corbò, 2015). Yu et al. (2013) showed that a significant and positive relationship existed between process management on product quality and customer satisfaction.

Scholars in the academic community argued about the similarities and differences in business process orientation and TQM. Aquilani et al. (2017) reported that no significant relationship exists between continual improvement and quality performance. Alternatively, Patil and Wongsurawat (2015) identified that a significant relationship

exists between IT integration, quality data analysis, and TQM. However, the components of business process orientation include integration of IT and statistical analysis (Lacity & Willcocks, 2014; Patil & Wongsurawat, 2015). Spasojevic Brkic and Tomic (2016) confirmed the existence of a significant relationship between process improvement, quality management, and organizational performance. A strong positive correlation exists between process management and TQM (Calvo-Mora, 2015; Can Kutlu & Kadaifci, 2014; Spasojevic Brkic & Tomic, 2016).

Total quality management and logistics service. Chiarini and Vagnoni (2017) noted the application of the principles of TQM by supply chain leaders leads to improved logistics service. The fundamental elements of TQM, which include customer value creation, employee involvement, process orientation, and quality service, are all essential for the effective and enhanced performance of the supply chain and logistics service (Benton 2014; Fu, Chou, Chen, & Wang, 2015; Munir Ahmad & Elhuni, 2014). Leaders who adopt TQM principles into the supply chain and logistics operations promote effectiveness and social recognition (Kumar, 2014).

Leaders apply the philosophy of TQM to logistics service to bring about customer satisfaction through efficiency and the delivery of undamaged products and services (Hietschold, Reinhardt, & Gurtner, 2014; Zimon, 2016). Logistics efficiency through TQM also affects the low cost of logistics activities with increased quality performance (Calvo-Mora et al., 2015). Furthermore, Psomas and Jaca (2016) explained business leaders who integrate TQM into logistics and supply chain activities allow the use of modern quality management instruments, as well as the integration of individual supply

chain functions to improve the competitiveness of the organization. Zimon (2016) also expressed supply chain leaders who integrate the TQM philosophy into logistics operations promote employee involvement. Quality management and process of service are decisive and crucial factors for customer value creation and customer satisfaction (Kopecki, Bakunowicz, & Lis, 2016). Regardless of the initial quality of the product, the transportation and handling process of the product affects the overall quality of the product and affects the perception and satisfaction of the customers (Bellah, Zelbst, & Green, 2013).

Customer value and continuous improvement are emergent elements from the concept of TQM (Calvo-Mora et al., 2015). Customers derive value from the use of products because of effective logistics processes and services (Calvo-Mora et al., 2015). Furthermore, business leaders promote the development of the company regarding the principle of sustainable partnerships through integrating TQM into their logistics services (Titov et al., 2015). Prajogo, Oke, and Olhager (2016) examined the relationship between supply chain collaboration and the application of TQM principles.

Prajogo et al. discovered strengthened relationships between corporate leaders who apply the approach of TQM and their suppliers because of the mutual learning process. Zimon (2017) confirmed a positive relationship exists between logistics operations, quality management, and organizational performance. Leaders apply TQM principles to logistics services to promote the smooth functioning of logistics infrastructures (Danyen & Callychurn, 2015; Zsidisin & Ritchie, 2008). Organizational

leaders could improve internal quality and capabilities by investing in TQM programs (Bellah et al., 2013).

The outbound and inbound logistics are aspects of supply chain management prone to quality and efficiency fluctuations (Tan et al., 2014). Therefore, the application of TQM and ideology can improve logistics processes through staff commitment and involvement, a focus on the customers, effective and longterm collaboration, and continuous process improvement. Effective quality logistics service is possible through the application and integration of TQM to logistics operations (Othman, Kaliani Sundram, Mohamed Sayuti, & Shamsul Bahrin, 2016). Allen (2017) noted the effective implementation of quality management practices is an essential element of the logistics strategy of leaders in the oil and gas industry.

Total quality management, service, and process improvement. Organizational leaders became more customer-centric to meet the ever increasing customer demands and attain customer satisfaction because of operating in a competitive global business environment (Chang, 2016). The 2008 financial recession, rapid economic change, and changing customer expectations caused pressure on business leaders to deliver service with superior quality, low cost, and in alignment with meeting customer expectations (Brown, 2013). Product and service quality emerged as a crucial business strategy that brings about the adoption of concepts, such as TQM and business process management (Calvo-Mora et al., 2015; Dima, Grabara, & Modrak, 2014).

Organizational leaders recognized the value of integrating the philosophy of TQM into their quality management process to improve operational effectiveness

(Brandenburg, Govindan, Sarkis, & Seuring, 2013; Psomas & Jaca, 2016). Consequently, the adoption of TQM at all level of operations has become a good source for organizational leaders to achieve a competitive advantage (Bellah et al., 2013; Titov et al., 2015). Business leaders who adopt the TQM philosophy accelerate the quality of their logistics operations to meet customer expectations (Fu et al., 2015). To address the issues of quality and cost, and to achieve customer satisfaction, organizational leaders allocated substantial efforts and resources for the adoption and implementation of TQM (Brkic, Dondur, Klarin, & Golubovic, 2016; Faisal & Talib, 2016).

The concept of the TQM evolved through four main levels namely (a) quality inspection, (b) quality control, (c) quality assurance, and (d) TQM (Zimon, 2017). In the 21st century, the approach of TQM is a comprehensive concept in which business leaders combine the business ideas and practices of the Western and Eastern global regions to facilitate the three core areas of management, which are process management, human resources management, and strategic management (Chang, 2016; Titov et al., 2015; Zimon, 2017).

Effective implementation of TQM practices by business leaders improves service quality and extends to process improvement in an efficient and cost effective manner (Titov et al., 2015). Researchers revealed that leaders in the service industry implemented TQM to boost process improvement, which resulted in quality improvement, integrity assessment, compliance to regulatory and organizational performance (Dellana & Kros, 2014; Iqbal, Waheed, Tesfamariam, & Sadiq, 2018; Luczak & Wolniak, 2016). Researchers identified that the application of TQM by business leaders is a beneficial

strategy for process improvement in the operational performance, financial performance, employee involvement, and customer satisfaction (Choudhry et al., 2014; Zimon, 2017). Calabrese and Corbò (2015) identified a significant deficiency in the application of TQM in the service sector. Prajogo et al. (2016) agreed that a lag exists in the implementation of TQM practices in the service sector compared to the manufacturing industry. Although the successful implementation of TQM in manufacturing companies brought about an increase in quality, process improvement, and organization performance, leaders in service organizations still need to perfect the tactical and strategic implementation of TQM to gain a competitive advantage (International Monetary Fund [IMF], 2016; IMF, 2017; Zimon, 2017). Since 1990, tremendous growth occurred in the service sector around the globe (IMF, 2016). In 2016, the service sector contributed 69.046% to the world gross domestic product (GDP) compared to 64% in 2000 and 58% in 1995 (IMF, 2016). Most countries experienced more growth in the service sector in the 2000s than in the 1990s (Chang, 2016; Zimon, 2017). Othman et al. (2016) advised that global organizational leaders must take advantage of the growth of the service industry through adopting quality management strategies to achieve a competitive advantage. The rising and fluctuating cost of essential products, such as energy and building materials, is another reason why service company leaders should adopt TQM to facilitate high quality coupled with low service cost to their customers (Chiarini & Vagnoni, 2017; Lacity & Willcocks, 2014).

Business scholars conducted studies to examine what constitutes TQM, challenges of TQM, and critical factors for successful implementation of TQM (Christin

Jurisch et al., 2014; Mellat-Parast & Spillan, 2014). However, different researchers offered a variety of opinions regarding the critical success factors of TQM (Hayati Habibah, Mohd Ali, & Idris, 2014; Movahedi et al., 2016). Ahmed and Yusof (2016) defined critical success factors as concepts leaders use to promote increased competitiveness. Antony and Douglas (2015) identified eight critical success factors for both service and manufacturing organization to include the role of management, quality, leadership policy, the role of quality department, training, product or service design, supplier quality management, process management, quality data and reporting, and employee relations. Matsoso and Benedict (2015) identified eight critical success factors of TQM for the service industry to include customer focus, management support, employee involvement, employee empowerment, employee training, process improvement, service design, quality improvement reward, benchmarking, and organizational clinginess. Mellat-Parast and Spillan (2014) suggested additional critical success factors, such as human resources management, design and management of processes, management commitment and visionary leadership, information analysis, benchmarking, continuous improvement, employee satisfaction, and customer satisfaction. Some supply chain managers use inspections, maintenance, and monitoring to facilitate quality logistics operations (Naevestad, Hesjevoll, & Phillips, 2018)

Logistics Performance and Challenges

Logistics performance has become the center of competitiveness for both local and international organizations as well as for global economic growth (Kamukama, Tumwine, Opiso, & Korutaro Nkundabanyanga, 2014). Supply chain leaders in the oil

and gas industry face significant logistics challenges regarding the assurance of the safe delivery of products to the customer (Klass & Meinhardt, 2014). Supply chain leaders classify logistics capabilities as one of the pillars of organizational performance and economic development (Dubey, Singh, & Gupta, 2015). Business leaders and policymakers identified the need to enforce and enhance sustainable logistics infrastructures and capabilities in developed countries, while the developing and underdeveloped countries' business leaders strive to implement policies to foster logistics performance domestically and internationally (De Villiers et al., 2017). Efficient and effective logistics connects organizations to the domestic and international markets through supply chain networks (Fernie & Sparks, 2014). Organizations identified as low logistics performance companies incur a higher cost because of transportation cost and unreliable supply chain networks; however, organizations with high logistics performance rankings enjoy low cost and competitive advantage (Khan et al., 2017; McIvor, 2016).

Jhavar, Garg, and Khera (2017) suggested that logistics performance depends on the firm's strategy, culture, and capabilities. In contrast, Arvis et al. (2016) explained that logistics performance depends on the environmental infrastructure, such as the road and rail system. Arvis et al. continued that developed countries enjoy higher quality logistics service than the underdeveloped countries because of the better road network and reliable railways system. However, a clear distinction exists between infrastructure and the quality of logistics service (Bensassi et al., 2015). Jhavar et al. (2017) noted quality

logistics service remains achievable regardless of the availability or quality of a country or region's infrastructure.

Researchers agreed on the prominent need for effective logistics management to increase organizational performance (Burlando, Cristea, & Lee, 2015; Zawawi, Wahab, & Al Mamun, 2017). The growth in the e-commerce market has also been a driving factor for the prominent role of logistics in organizations (Zawawi et al., 2017). Logistics management is a catalyst for the development of industrialization of many countries, such as Germany, China, United Kingdom, and Netherlands (Kamukama et al., 2014). Global organizational leaders invest significant resources in enhancing logistics operations for sustainable global competitiveness in the international trade. Martí, Martín, and Puertas (2017) identified many emerging e-businesses and traditional businesses struggle because of neglect of the logistics management. Logistics management includes transportation of goods, movement of documents, financing, distribution, and delivery of goods (Hübner, Kuhn, & Wollenburg, 2016; Jhavar et al., 2017).

The logistics market is a service market that spans from the point of raw materials extraction, production, storage, distribution, delivery, and aftersales service (Kazimírová, Busa, & Puskás, 2015). The logistics sector of most developed countries, such as United States, Germany, China, and the United Kingdom, operates nonstop because their economies rely on the logistics sector (Jazairy, Lenhardt, & von Haartman, 2017). Business leaders rely on effective logistics for operational efficiency and organizational success (Martí et al., 2017; McIvor, 2016). In the United Kingdom, the logistics sector contributes over \$90 billion gross value added to the economy (Office of National

Statistics, 2017). Millions of people enjoy gainful employment in the logistics section, with over 2.2 million individuals in the United Kingdom (Albino, Berardi, & Dangelico, 2014).

Zinn and Goldsby (2017) described the supply chain as sets of operations directly involved in the upstream and downstream flow of commodities, service, finance, documents, and information from the extraction point to final usage by consumers. Logistics is an integral component of supply chain management (Dubey et al., 2013). The Council of Supply Chain Management Professionals (2014) noted that logistics management is an element of the supply chain defined by efficient and effective planning, implementing, storage, distribution, and delivery of goods, services, and information from extraction point to consumption point to achieve customer satisfaction. Researchers identified logistics as the most expensive element of the supply chain in the domestic and international trade arena (Parola, Satta, & Panayides, 2015).

In the academic world, scholars defined logistics as the systematic flow of goods and services from the origin to the end user (Dubey et al., 2013; Jazairy et al., 2017; Martí et al., 2017). The term *logistics* first emerge from a military context (Karagöz & Akgün, 2015). The European Committee for Standardization defined logistics as the systematic approach for the planning, execution, and control that involves movement and placement of people and goods, and other supportive activities related to such movement within a system to achieve specific objectives (Wang, Jie, & Abareshi, 2015). Gleissner and Femerling (2013) described the purpose of logistics is to plan, organize, coordinate,

and implement the bridging of distance and time within a system; defining *system* as a dynamic unit of interconnected elements connected for a specific purpose.

Business leaders use the primary functions of logistics in production and distribution of goods; however, the functions of logistics changed since the mid-1950s (Leonzuk, 2016). Since the 1960s, the function of logistics significantly increased from a unidimensional operational support system to a multidimensional operational and process support system leaders use for value creation and the optimization of economic activities (Kazimírová et al., 2015). Yu et al. (2013) identified characteristics of effective logistics functions to include customer focus, cost benefit, efficiency, product value, quality, and placement. The widened scope of logistics comprises a series of activities including transportation (Ferne & Sparks, 2014). Supply chain managers use logistics functions to add value to the goods and service delivered to customers (Gleissner & Femerling, 2013). Douglas (2015) explained that business managers recognize logistics as a performance component that is relevant for business competitiveness and increased organizational performance.

A logistics service system consists of different components ranging from order processing, storage and warehousing, and transportation (Marchesini & Alcântara, 2016). Supply chain managers use each component of logistics to support the information and other services needed for the effective logistics operation (Brekalo, Albers, & Delfmann, 2013). An order process is a significant component of logistics service (Sakai, Kawamura, & Hyodo, 2017). Order processing involves processing and monitoring the order from origination to final delivery (Kamukama et al., 2014). Order processing also

includes reverse logistics, processing of shipping documents, and processing packing slips and invoices (Sakai et al., 2017). Logistics experts make extensive use of storage and warehousing within the supply chain (Amaral & Aghezzaf, 2015). Transportation is the logistics component that supply chain managers use to bridge the distance between storage and the final customer (Marchesini & Alcântara, 2016; Puertas, Martí, & García, 2014).

Logistics performance. Chow, Heaver, Henriksson (1994) indicated the difficulty in defining logistics performance because of how different organizational leaders measure performance. Logistics performance is a subset of the larger organizational performance framework (Yang, 2015). Some researchers used organizational efficiency and effectiveness as the measure of performance (Arvis et al., 2014; Puertas et al., 2014). Yang (2015) noted that many organizational leaders measure efficiency, effectiveness, quality, productivity, quality of work life, innovation, and profitability as the means to measure performance. Vaisová (2017) suggested that a relationship exists between logistics management and customer value creation; therefore, defining logistics performance occurs through measuring customer satisfaction. Vaisová further identified that other factors aside customer satisfaction may also constitute the definition of logistics performance. A definition of logistics performance is when organizational leaders meet the set goals which may include cost efficiency, sales growth, profitability, keeping promises, working conditions, social responsibility, fair pricing, customer satisfaction, on-time delivery, flexibility, product availability, and safe delivery (Marti et al., 2017; Martí & Puertas, 2017; Sahu et al., 2017; Vaisová, 2017).

Sahu et al. (2017) argued that logistics performance is a multidimensional concept. Zhang, Linderman, and Schroeder (2014) noted organizational leaders measure logistics performance by employee satisfaction, customer satisfaction, and the company's rate of return. Kromer and Overbeck (2014) identified performance measures, such as net income and return on investment, are useful means of measuring logistics performance regarding profitability if the organization categorizes logistics as a profit center. Yang (2015) attested that profitability is an effective measurement of logistics performance. However, Zhang et al. (2014) argued that using accounting elements to measure logistics performance is good in the short run, but may not be sufficient for a long-term gauge. Bühler, Wallenburg, and Wieland (2016) indicated that accounting data might not be comparable between organizations as firms use different accounting practices and procedures. Takele and Reddy (2017) suggested that accounting firms classify financial data as confidential, which may lead to reluctance in releasing the financial data on the performance measurement's purpose.

A common measure used for measuring logistics performance is the input-output ratio commonly known as productivity and performance indicator (Karagöz & Akgün, 2015). Business leaders and academicians claim the input-output ratio as a useful means of measuring logistics performance (Brekalo et al., 2013). Logistics experts use the input-output ratio to measure productivity factors in the supply chain, such as the rate and number of shipments per vehicle mile (Karagöz & Akgün, 2015).

Another measuring tool used for measuring logistics performance is the order cycle or lead-time variability (Gleissner & Femerling, 2013). One common issue in

identifying a perfect means of measuring logistics performances is the difficulty in measuring customer satisfaction (Douglas, 2015). The difficulty in capturing customer satisfaction is the primary reason why logistics performance remains difficult to measure (Jhawar et al., 2017). Mittal et al. (2017) suggested that to understand customer satisfaction, a need exists to combine the *hard* and *soft* means of measuring logistics performance because customer satisfaction is the optimum indicator of effective logistics performance.

Despite the difficulty in identifying the best way to measure logistics performance, researchers indicated a significant relationship exists between logistics performance and organizational performance (Sahu et al., 2017). Sari and Yanginlar (2015), in their research to test the relationship between green logistics performance and organizational performance, found that logistics performance directly relates to organizational performance. Leuschner, Carter, Goldsby, and Rogers (2014) analyzed the effect of logistics on organizational performance and discovered the existence of a positive, significant relationship between logistics performance and organizational performance.

Logistics performance challenges. Despite the potential benefit of implementing logistics management practices, leaders of supply chains face challenges (Sahu et al., 2017). A need exists for organizational leaders to realize the productivity, performance, and service enhancements that result from implementing effective logistics practices (Brekalo & Albers, 2016). Logistics performance management is about the *seven Rs* of logistics, which are getting the right product to the right customer, in the right quantity, in

the right condition, at the right place, at the right time, and at the right amount (Coyle, Thomchick, & Ruamsook, 2015). Logistics performance management covers a wide range of logistics processes that includes inbound and outbound transportation, fleet management, warehousing, inventory management, material handling, order fulfillment, supply and demand planning, third-party logistics management, and logistics network management (Brekalo et al., 2013).

Gleissner and Femerling (2013) described that business leaders use logistics performance management to promote effectiveness and efficiency in the logistics operation by identifying performance metrics and variables to improve organizational performance. Ivan Su, Cui, and Hertz (2017) argued that challenges in logistics performance management vary according to the size of the business, the environment of the operation, and the available infrastructure in the region. Regardless of type of business, location of the business, or availability of suitable infrastructure, three common challenges for effective logistics performance exists: (a) ineffective strategy, (b) unclear definition of performance metrics, and (c) lack of technology (Ahi & Searcy, 2013; Sari & Yanginlar, 2015).

Ineffective strategy. The lack of a proficient and accurate logistics performance strategy is a crucial challenge to effective and efficient logistics operations (Sari & Yanginlar, 2015). Bakar, Azlan, Jaafar, Faisal, and Muhammad (2014) noted that some organizational leaders set a performance goal, but fail to attain the goal because of an ineffective logistics strategy. To ensure superior logistics performance, business leaders must ensure a proper layout of logistics performance processes (Zimon, 2017).

The Center for Transportation and Logistics (CTL) indicated that effective logistics performance management depends on the consistent flow of events that includes measurement, decision-making, and action (CTL, 2014). Once a proper logistics strategy is in place, supply chain and logistics leaders should identify deficient areas, set goals to mitigate the issues, and set processes to take action (Sahu et al., 2017). Business leaders use business process management applications to ensure accuracy and improvement in logistics processes (Leuschner et al., 2014). For example, issues with product damage at delivery could be because of poor packaging strategy, labeling issues, or negligence on the part of the transporter (Jafari, 2015). The integration of business process management in logistics performance management would allow supply chain leaders to measure the causes, set new goals for product delivery improvement, and set process functions which may include training of transport drivers, safe packaging, and accurate labeling measures (Singh, Singh, Antle, Topper, & Grewal, 2014).

Ambiguous definitions of performance metrics is another challenge that supply chain leaders face in implementing a logistics strategy (Hwang, Myung, & Sun, 2017). Although many performance metrics exist, leaders use each metric to provide a different view of the logistics operation (Dörnhöfer & Günthner, 2017). Prioritizing and properly defining the metric becomes vital for effective and efficient logistics operation (Hwang et al., 2017). Ashenbaum and Maltz (2017) encouraged supply chain leaders to use metrics that align with the logistics and the organizational strategy. Dubey, Singh, and Gupta (2015) outlined some characteristics of logistics performance metrics, including easy to understand, easy to define, quantitative in nature, relevant and aligned with performance,

motivational, and easy for data collection, analysis, and interpretation. Kamukama et al. (2014) identified three basic logistics performance metrics to include time of delivery, cost of delivery, and quality of delivery. Other logistics performance metrics may include total order per period, shipment per hour, customer service components, service reliability (Dubey et al., 2015). Dubey et al. emphasized the importance for an organizational leader to understand and choose which logistics performance metrics would accurately reflect the set goals and desired performance level. However, firms may not achieve customer satisfaction, cost reduction, increased shareholders value, and improved organizational performance if accurate performance metrics are not well-defined (Kamukama et al., 2014). In the absence of defined performance metrics regarding logistics, implementing an effective logistics strategy is not possible (Kamukama et al., 2014).

Lack of technology. Some organizational leaders face challenges regarding the lack of technology within the supply chain infrastructure (Ahi & Searcy, 2013). Supply chain leaders struggle to keep pace with the rapid change and development in information and communication technology (Lin et al., 2014). Business leaders need an effective IT infrastructure to support their logistics operations (Coyle et al., 2015). Patil and Wongsurawat (2015) indicated that organizational leaders struggle to integrate existing technologies with newly introduced technology. As a result, some leaders deem a complete change of IT infrastructure as the only viable option, which adds significant costs to the supply chain operation (Coyle et al., 2015; Patil & Wongsurawat, 2015). Although large companies might have adequate capital to afford new technologies and

customized logistics systems, small business leaders tend to suffer because of a lack of technology (Wiengarten, Pagell, Ahmed, & Gimenez, 2014). IT has a significant effect on logistics performance (Karagöz & Akgün, 2015; Lin & Lin, 2014). In the absence of up-to-date IT within the supply chain, business performance diminishes (Lin & Lin, 2014).

Impact of Information Technology on Logistics Performance Management

As the global community became more interdependent and interconnected, leaders of the supply chain and logistics industry sought strategies in IT to bridge the gap(s) between the flow of information, goods, and services to enhance an effective supply chain network (Lin, Choy, Ho, Chung, & Lam, 2014). Furthermore, researchers investigated the benefit of IT in logistics operations, concluding that the integration of technology into the logistics functions fosters efficiency of logistics processes and promotes the utilization of supply chain resources while reducing operational costs (Krstic & Kahrovic, 2015). Leaders must integrate IT and other related technologies into the business operation to attain a sustainable competitive advantage (Lin et al., 2014).

The application of information communication technology alongside other new technologies becomes a critical factor for logistics companies. Gunasekaran, Subramanian, and Papadopoulos (2017) emphasized that through the integration of informatics into logistics management practices, supply chain leaders could better coordinate and synchronize the upstream and downstream logistics operation. Lin et al. (2014) described that the benefits of IT in logistics management include improved efficiency, cost reduction, service quality, flexibility, and customer satisfaction. Business

leaders use the application of IT to business operation to promote efficiency and increase productivity (Quwaider & Jararweh, 2016).

Karagöz and Akgün (2015) explained that IT capabilities have a significant effect on logistics capabilities and the performance of logistics providers. Supply chain leaders use IT to improve their capabilities in the creation of technical and market knowledge to facilitate internal and external information flow (Zhao et al., 2009). Because of the activities in logistics operations, such as customer service, order processing, inventory management, transportation, distribution, warehouse management, packaging, production planning, purchasing, and procurement, the requirement for a high rate of information and communication flow exists (Karagöz & Akgün, 2015). Pinzariu (2014) discovered that IT has a significant effect on financial performance and logistics performance. According to Zhou and Wang (2016), in a turbulent and competitive market, IT is a crucial variable for differentiation of logistics services, and a catalyst for mitigating failure in the supply chain management. Karagöz and Akgün (2015) concluded that technological innovation and logistics capabilities positively relate to the use of IT facilitates logistics performance by improving delivery performance, service quality, and cost reduction.

Supply chain leaders use IT to create an avenue for electronic commerce, transactions with suppliers, inventory management, real-time tracking of shipments, order placement, and the exchange of payments through the Internet (Zhou & Wang, 2016). Prokopovic, Prokopovic, and Jelic (2016) divided IT into two segments: (a) externally focused application, and (b) internally focused application. Prokopovic et al. defined the

internal applications to include firm-level planning systems for improved internal efficiencies, order management, and logistics operations. The external applications include information sharing technologies, supply chain visibility, and linking suppliers to customers (Prokopovic et al., 2016). Lin et al. (2014) described that supply chain leaders enhance their capabilities through IT to improve customer loyalty and commitment, financial performance, delivery quality and efficiency, collaborative relationships, and corporate branding.

Service quality. Service quality improves when supply chain leaders make effective use of IT. Supply chain leaders use IT to improve service quality in the different support functions, such as orders, deliveries, shipment, and inventory management (Zhou & Wang, 2016). Logistics experts improve the ordering process, delivery process, supply chain visibility, real-time tracking and monitoring, and the coordination between supply chain partners using IT (Lin et al., 2014). Service quality improves because of enhanced visibility, tracing and tracking of shipments, and up-to-date supply chain information (Lin et al., 2014). The Internet of Things, such as the use of drone technology, is a means for supply chain manager to offer safe and reliable transportation of undamaged products because of the ability to operate at a granular level and provide rich information (Thibaud, Chi, Zhou, & Piramuthu, 2018). Maintaining customer satisfaction is an essential function of supply chain leaders (Zhou & Wang, 2016). Logistics providers measure service quality through key performance indicators, such as customer satisfaction rate, customer acceptance and rejection rates, delivery time, and delivery quality (Lin et al., 2014).

Competitive advantage. Wagner and Hollenbeck (2014) described a competitive advantage exists when a company possesses capabilities to create value that exceed the capabilities of the competitors. Binti Mohd, Wahab, Mamun, Ahmad, and Fazal (2017) classified competitive advantage into two classes, namely internal and external capabilities. Morgan, Richey, and Autry (2016) defined the internal capabilities as variables, such as management resources, research and development resources, and financial resources. External capabilities involve the mutual relationship between the organization and the suppliers, and between the organization and the customers (Morgan et al., 2016). Business leaders use IT to enhance competitive advantage in three primary ways, which are cost control, customer relationship management, and corporate branding (Lin et al., 2014). With the adoption of IT into logistics service, supply chain leaders enjoy increased operational efficiency and cost reductions (Karagöz & Akgün, 2015). Business leaders improve their potential to gain and maintain a competitive advantage through increased operational efficiency, lowering costs, and increasing customer value through effective logistics services (Wagner & Hollenbeck, 2014).

Product Transportation

Transportation of goods constitutes the major activity in logistics operations for economic, social, and business sectors (Amaral & Aghezzaf, 2015). Business, government, and social leaders use transportation as a means of dispatching and delivering products to the end user (Cascetta, Carteni, Pagliara, & Montanino, 2015; Jacyna, 2013). Logistics providers depend on the transportation system of their operation to convey products from the supplier to the warehousing and from the warehouse to the

consumers (Dodgson, Gann, MacAulay, & Davies, 2015). Transportation is a vital component of every supply chain (Cascetta et al., 2015; Erkul, Yitmen, & Çelik, 2016). Supply chain leaders use transportation as a means to reduce cost, promote customer satisfaction, and increase a competitive advantage (Dodgson et al., 2015; MacAulay & Davies, 2015). Transportation service providers can significantly increase supply chain cost as well as cause product damage (Cascetta et al., 2015). The impact of transportation on supply chain performance has received attention from the academic researchers and business leaders (Amaral & Aghezzaf, 2015; Cascetta et al., 2015).

Effective transportation service providers help business leaders gain market share, yet transporting goods remains a challenge for supply chain leaders (Jie, Subramanian, Ning, & Edwards, 2015). Kaewunruen, Sussman, and Matsumoto (2016) described that transportation and transit systems face significant challenges at the intersection of social, technical, and economic systems, in conjunction with their adaptive and sustainable integration to natural and built environments. Kaewunruen et al. continued that to meet the economic, social, and business needs; the need exists for rapid development, improvement, restoration, and renewal of mixed transportation modes for business leaders to focus on customer satisfaction in the transportation and transit system around the world. Wang et al. (2015) described that the effective transportation of information and materials is a critical element of a business leader's ability to create a sustainable competitive advantage.

Jie et al. (2015) identified that maintaining efficient transportation systems is a key component of customer relationship strategies and necessary for business leaders to

promote customer loyalty and maintain customer satisfaction. Babu, Tabassum, and Hassan (2016) confirmed that the safe and timely transportation of goods to the customers is an effective means of achieving a competitive advantage through customer satisfaction. Badu et al. examined how to uphold safe transportation of goods through transportation risk management, noting that managing supply chain risk requires leaders to manage transportation risk. Advancements in IT, such as the real-time data, resulted in improved safety performance in monitoring, maintenance, and transportation of hazardous products (Schuster, 2018).

Battarra, Cordeau, and Iori (2014) researched to examine the different categories of the problems in the pick-up and delivery of products to and from customers, commenting that poor transportation service equates to poor customer service. Supply chain leaders place more emphasis on product transportation because of globalization and the rapid growth in technology (Paraskevas & Hatzigayos, 2016). Yang (2016) noted the importance of the Internet and technology for supply chain leaders to engage in forward and reverse logistics. Felemban and Sheikh (2014) explained that the integration growth of mobile technologies, data acquisition, and big data analytics into the supply chain and logistics channels increased the potential to provide efficiency and safe transportation infrastructure. Ensuring quality in product delivery service remains achievable with the use of wireless sensor networks, mobile phones, crowdsourcing, radio-frequency identification, and Bluetooth technologies (Felemban & Sheikh, 2014; Huo, Zao, & Lai, 2014).

As transportation and transit system providers continue to take a significant role in the supply chain and logistics operations, researchers discovered a series of challenges logistics providers encounter (Felemban & Sheikh, 2014; Kaewunruen et al., 2016; Wang, Jie, & Abareshi, 2015). Felemban and Sheikh (2014) argued that integration of intelligent transport systems through the application of IT is a vital means of mitigating logistics challenges. Wang et al. (2015) suggested that enhancing the logistics capabilities through technology could reduce the challenges faced by logistics operators. The movement of goods from suppliers or distribution center to a customer's location is a crucial process for business leaders to secure customer loyalty, goodwill, cost reduction, and a marketplace advantage (Jie et al., 2015; Kim & Lee, 2014). Badu et al. (2016) demonstrated that the problems in transportation of goods go beyond the internal operations of the business. Badu et al. identified external issues, such as traffic congestion, political crises, and natural disasters, as challenges faced by logistics providers. Batterra et al. (2014) argued that issues in the transportation of products are of three categories: (a) many-to-many, (b) one-to-many-to-one, and (c) one-to-one transportation problems. Batterra et al. concluded that with the availability of information and communication technology, business leaders have tools available to overcome the challenges. Hubner, Kuhn, and Wollenburg (2016) explained that the growth of online sales prompted the creation of new logistics models for supply chain managers, such as integrated fulfillment centers. Developing and maintaining safe and efficient product delivery systems remain a vital means for business leaders to improve performance,

ensure customer satisfaction, and increased the sustainability of their business (Kolinski & Sliwczynski, 2016).

Boyer, Prud'homme, and Chung (2009) noted the increase in direct shipment of products to the end use customer because on online ordering as well as the logistics challenges of ensuring the delivery of undamaged goods. Shipping products to consumers' homes pose a different logistics challenge to delivering vast quality products to a retail location (Kim & Lee, 2014). Boyer et al. evaluated the challenges logistics experts face regarding direct-to-consumer product delivery, such as vehicle routing, scheduling, and consumer density. Boyer et al. noted that greater consumer density improved routing efficiency.

Zhang, Saito, and Nagaoka (2016) described that protecting products from shock and vibration damage remains a challenge for transportation providers. Logistics managers identified vibration as a major cause of product damage, such as resonance damage, abrasion damage, leaks, and breakage during transportation of goods to end users (Kim & Less, 2014). The consequences of such damage include consumer dissatisfaction, increase cost, wastage, and potential environmental pollution (Kim & Lee, 2014; Zhang et al., 2016). Zhang et al. proposed a new package design method called the *hybrid damping package design*, which supply chain leaders could use to analyze and improve the results of a vibration test through digital simulation. Improving the cushioning and antivibration of the packaging design is a means for a supply chain manager to reduce product damage during handling, loading, transport, and unloading (Zhang et al., 2016). Singh et al. (2014) explained deficiencies in product packaging of

items, such as appliances, furniture, televisions, doors, windows, paints, and chemicals. With the increased shipment of products directly to the end use customer, business leaders must evaluate the packaging design to ensure that products arrive without damage (Boyer et al., 2009). Ensuring the delivery of undamaged goods to end users remains a vital means of reducing transportation and production cost and achieving customer satisfaction (Felemban & Sheikh, 2014).

Transportation of Oil and Gas Products

Researchers gave little attention to the safe transportation of oil and gas products before the 1990s (Cascetta et al., 2015; Erkul et al., 2016). However, the 2010 crisis of oil spillage and oil truck accidents resulted in researchers conducting studies on the safe transportation of oil and gas products (Klass & Meinhardt, 2014). Ahmad, Rezaei, Tavasszy, and de Brito (2016) described the need for research on the logistics operations in the oil and gas industry because of the vital importance of the industry for economic development and social activities. Business leaders in the oil and gas industry not only transport oil and gas, but a wide variety of oil and gas field parts, components, and supplies (Ahmad et al., 2016).

Ahmad et al. (2016) identified that leaders in the oil and gas industry need to implement sustainable, supply chain and logistics strategies to remain viable. Furthermore, Ahmad et al. discussed the commitment and readiness of business leaders to implement sustainability strategies in the upstream and downstream supply chains within the industry. The internal factors that affect sustainability and supply chain functions include supplier management, production management, product stewardship, and

logistics management (Ahmad et al., 2016). Ahmad et al. examined the relationship between internal organizational factors of commitment to sustainability, management readiness, and supply chain sustainability strategies. Ahmad et al. discovered weaknesses among the readiness measures, noting the need for improvement. Ahmad et al. also highlighted the primary importance of supplier and logistics management to the achievement of sustainable oil and gas supply chains.

Singh et al. (2015) conducted a study to determine cost effective means of transporting oil and gas, considering the different methods of carrying the products, which includes pipelines and tankers. In determining the most cost effective means of transporting oil and gas, a need exists to evaluate the economic impact of oil and gas transportation infrastructure and the impact of refinery flow on the economy (Cascetta et al., 2015). Singh et al. identified the oil and gas industry as a major contributor to the global economy. Leaders in the oil and gas industry significantly contribute the profitability of their companies through the safe movement of oil and gas products (Singh et al., 2015). Business leaders evaluated the various means of transporting oil and gas to determine which mode of transport is cost effective in regards to safe transportation of delivery of the energy products (Singh et al., 2015). Singh et al. ascertained that the pipeline is the most cost effective means of transporting oil and gas with a reasonable measure of safety and security.

Green and Jackson (2015) reviewed past literature to determine the safest means of transporting oil and gas, considering pipeline and rail. Green and Jackson described that different modes of oil and gas transportation pose different risks, even though all

means of oil and gas transport have very profound safe delivery rates. More spills occurred when transporting oil by rail and truck than by pipeline; therefore, pipeline delivery is the safest mode of transportation (Kim, Chung, Kim, & Lee, 2015). Green and Jackson concluded that the rising oil and natural gas production in the United States and Canada outpaces the transportation capacity of the pipeline infrastructure. The lack of pipeline capacity caused leader in the oil and gas industry to revert to higher risk transportation modes, such as rail and truck transport (Green & Jackson, 2015).

Supply chain leaders in the oil and gas industry facilitate delivery of a vast variety of products to their customers for industrial use, commercial use, and retail sale to consumers (Ahmad et al., 2016). Business leaders must ensure the safe delivery of undamaged oil and gas products to their customers to sustain their businesses, meet customer expectations, and protect the environment (Allen, 2017). Leaders not only have a responsibility to their shareholders, but also to society regarding protecting the natural environment and maintaining safe living conditions in the communities they operate and transport oil and gas products (Allen, 2017). O'Connell (2018) described how leaders use employee training to promote employee confidence and motivation and foster operational performance in the distribution of transportation of hazardous materials. Educating employees on safety matters promotes safety, the climate of the work environment, and safety consciousness in the drivers (Dahl & Kongsvik, 2018).

The challenge of how to ensure safe and cost effective transportation of oil and gas products is an opportunity for additional research on the topic and an opportunity for

industry leaders to recognize effective strategies to ensure the safe delivery of undamaged products (Kim et al., 2015).

Transition

In Section 1, I described the background of the problem and presented the problem statement, purpose statement, nature of the study, research question, and interview questions. I introduced the conceptual framework, the definition of terms, assumptions, limitations, and delimitations, the significance of the study, and included a review of the professional and academic literature. The conceptual framework for this study is business process orientation. In the review of the professional and academic literature, I described the concepts of business process orientation, TQM, SCM, and logistics management in the oil and gas industry.

In Section 2, I described the research methodology, process, and procedures. I restated the purpose of the study, described my role as the researcher, and discussed the sampling method. Furthermore, I explained the participants' eligibility criteria, research method and design, population and sampling, and research ethics. I described the data collection instruments and techniques, data analysis procedures, and the means to ensure dependability, credibility, and confirmability of the data as well as the findings. I explained the proposed procedures to reach data saturation.

In Section 3, I restated the purpose statement and continued with a summary of the findings. I discussed the application of the findings to professional practices and presented the implications for social change. I concluded with recommendations for further research, some personal reflections, and a concluding statement.

Section 2: The Project

In Section 2, I discuss the processes, techniques, and method of the research. I restate the purpose of this study, address my role as the researcher, and explain the eligibility criteria and sampling method for participants. I explain the ethical standards for this study as well as data organization and analytical techniques. I conclude with a description of the **proposed** plan to achieve dependability of the data and credibility of the findings. I end Section 2 with a brief introduction to Section 3.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the strategies that some supply chain leaders used to ensure the delivery of undamaged goods to their customers. The targeted population was four supply chain leaders from four oil and gas companies located in Texas because they had implemented successful strategies to ensure the delivery of undamaged goods to their customers. The study's implications for positive social change include the potential to promote environmental sustainability through reduction of materials and natural resources wastage because of damaged goods.

Role of the Researcher

Yin (2018) described the researcher as the primary person responsible for developing and executing a study. In a qualitative study, the role of the researcher is important, as the researcher engages in initiating, investigating, and critically analyzing theories and phenomena (Bamu, Schauwer, & Hove, 2016). My duty, as the sole architect of this study, was to prepare, coordinate, and conduct the research. I was the primary instrument of data collection, and my role included collecting, analyzing, interpreting,

and reporting the data used for the study. My role started with constructing the research question, which emerged from recommendations for further research by previous researchers. My role extended to coordinating and conducting the data collection process, in which I was the primary instrument with minimal bias. Bamu et al. (2016) indicated that a researcher's decisions should be intelligent and logical for a study to be successful. Furthermore, the accuracy of a qualitative research study depends on the experience and ability of the researcher to conduct critical analysis and draw comprehensible conclusions from the results of gathered data (Takyi, 2015). Yin (2018) identified four key roles of the researcher as (a) asking relevant questions, (b) interpreting responses, (c) understanding the research problem, and (d) presenting unbiased results.

My role as the researcher also extended to identifying and selecting the participants for the research. Willis and Templeton (2016) explained that to mitigate bias and enable accurate results in a study, a researcher should avoid participants with whom a current or prior personal or professional relationship exists. I had no current or prior professional or personal relationship with the participants chosen for the study. I chose participants based on their experience and successful application of strategies to ensure the delivery of undamaged goods. I observed a significant difference in logistics operations in Africa, Europe, and the United States. This observation triggered my interest in exploring strategies that supply chain leaders in the United States used to achieve delivery of undamaged goods. From my experience residing in different environments with diverse cultures and logistics infrastructures, as well as in my 4 years of employment as a supply chain analyst, I had observed the impact of logistics service

on the business and social community in various countries. I became interested in understanding the role of logistics in environmental development, social well-being, and business profitability. Texas is known for high oil production, producing an average of 3,638,000 barrels of crude oil per day, more than one-third of the total output in the United States (Chiroma, Abdulkareem, & Herawan, 2015). Therefore, I chose Texas because of the numerous oil and gas companies and the presence of oil and natural gas logistics services. Fusch and Ness (2015) suggested that a researcher should be familiar with the geographical location of a study. I had visited Texas on occasions to attend conferences on oil and gas extraction, production, and distribution. Hence, I was familiar with the areas of Texas.

The Belmont Report (1979) provides codes of conduct for carrying out research. Its guidelines include the following: (a) researchers must minimize risk while maximizing benefits, (b) researchers must respect participants, and (c) researchers must be fair in distributing risks and benefits (Cugini, 2015). One of my crucial roles as the researcher was ensuring that I observed the codes of conduct included in the Belmont Report. I ensured that the participants were not exposed to any more than minimal risk while I gained the benefits of information from them. Moreover, I respected the participants regardless of gender, race, and culture, and I observed all privacy and confidentiality rules. I observed the maximum ethical standards in conducting this research study, recruiting and interviewing participants, and mitigating my personal biases. Jerolmack and Khan (2014) explained that researchers obtain informed consent from participants to uphold moral and ethical research standards. I ensured ethical

interviews by obtaining informed consent from the participants prior to their commencement.

Yin (2018) described the difficulty of remaining unbiased throughout the data collection process. Bias is a critical concern in research because of the possibility of collecting data that reflect the researcher's view (Harvey, 2015). Yin (2018) highlighted the importance of ensuring that the data interpretation reflects the opinion of the participants and not that of the researcher. I conducted the data collection process in fairness, remaining nonjudgmental, ensuring that the views of the participants remained apparent, and avoiding the expression of my own opinion in favor of the participants' views. Researchers often use member checking, interview protocols, and transcript validation to check bias in studies (Harvey, 2015). To mitigate bias in the data collection process, I audio recorded the interviews to ensure an accurate transcript of the participants' responses, followed a set interview protocol (see Appendix A), and used member checking to allow the participants an opportunity to validate my interpretations of their interview responses.

Researchers use interview protocols for accurate and effective interviewing (Leedy & Ormrod, 2013). The purpose of a researcher using an interview protocol is to maintain a consistent process across all interviews conducted (Yin, 2018). During interviews, participants tend to provide information outside the context of a study; using an interview protocol helps to build a boundary to avoid collecting ambiguous information (Spencer, Basualdo-Delmonico, Walsh, & Drew, 2017). I used the interview protocol shown in Appendix B, which I adapted from Yin (2018), to ensure consistency

throughout all interviews, provide guidelines during the interview process, and screen for ambiguous information.

Participants

Hem, Pedersen, Norvoll, and Molewijk (2015) contended that the eligibility requirement for participation in a qualitative research study is thorough understanding of the phenomenon of interest. For this study, the participants were supply chain leaders with a valuable understanding of the phenomenon. Hyett, Kenny, and Dickson-Swift (2014) emphasized the importance of ensuring that participants possess the knowledge that a researcher needs to answer the research question. Research participants should possess in-depth knowledge, understanding, and experience of the phenomenon for the researcher to attain data saturation and develop credible findings (Hyett et al., 2014). The chosen participants met these eligibility requirements: (a) served as supply chain leaders in the oil and gas industry in Texas, (b) possessed an understanding of the phenomenon, and (c) had applied a strategy to ensure the delivery of undamaged goods to their customers. Researchers should verify that the eligibility requirements for participants align with the research question (Yin, 2018). The eligibility criteria for participants aligned with the research question for this study.

Researchers in an academic setting must meet the ethical standards and requirements set forth by their university's Institutional Review Board (IRB) to gain access to participants (Hyett et al., 2014). For this study, the Walden University IRB set ethical requirements and granted approval to proceed with the participants. Yin (2018) noted that the appropriate standard in research is to preinform participants of the purpose,

goal, risk, impacts, and confidentiality of research. Researchers use different means to gain access to participants, such as social media, blogs, e-mail, fax, and telephone calls (Mealer & Jones, 2014). Bunn et al. (2014) suggested the use of Facebook, LinkedIn, and other web-based social networking applications as ways to recruit participants. I adopted the use of LinkedIn, Facebook, public directories, and trade magazines to identify potential participants. I contacted the business owner, chief executive officer, managing director, or authorized representative of each company for permission to speak to the supply chain leaders. Furthermore, I conducted face-to-face interviews unless participants preferred a virtual interview.

Researchers use various methods to establish relationships and trust with participants. Mealer and Jones (2014) identified methods of building professional relationships with participants as including personal and professional networking. Ertürk and Vurgun (2014) proposed that the way to build trust and establish a relationship with a participant is to make an appointment to explain the purpose of the study. One benefit of briefing participants on the purpose of a study is that it creates a relaxed, open environment and conveys trustworthiness, which may enable the participants to provide quality information regarding the phenomenon (Ertürk & Vurgun, 2014; Mealer & Jones, 2014). In this research, I used personal and professional networking as a way of establishing relationships. I used Facebook and LinkedIn as well as e-mail to seek out potential participants. I used private e-mail to make contact with participants. Additionally, I made appointments to brief participants on the purpose of the study, the interview process, and the interview questions.

To align participants with the overarching research question, researchers ensure that the chosen participants have experience in the phenomenon (Yin, 2018). Etikan (2016) proposed that researchers should choose participants with explicit knowledge and understanding of the area of study to ensure alignment between the participants and the research questions. To ensure alignment between the research question and the participants, I chose four supply chain leaders by reviewing their roles and responsibilities in their organizations.

Research Method and Design

A researcher chooses a research method based on the study's purpose, problem statement, and research question (Petrescu & Lauer, 2017). Yin (2018) identified the three main research methods as qualitative, quantitative, and mixed method. The qualitative research method was the most appropriate for this research because I sought to explore strategies based on supply chain leaders' experience and knowledge.

Research Method

The chosen research method for the study was the qualitative method. Researchers using the qualitative method gain in-depth and rich understandings of phenomena (Petrescu & Lauer, 2017). Furthermore, researchers adopt the qualitative method to ask open-ended questions to explore the knowledge and experience of participants on particular phenomena (Yin, 2018). Researchers often use the qualitative method as an analytical technique and a structured approach for examining and building on existing theories and literature (Henry & Foss, 2015). Yin (2012) commented that the qualitative method is appropriate for exploring complex phenomena and unknown

variables. Henry and Foss (2015) commented that the qualitative method is suitable for researchers gathering information from participants regarding their attitudes, experiences, knowledge, understanding, and feelings. Researchers use open-ended questions for exploring strategies based on participants' experience and knowledge (De Ceunynck, Kusumastuti, Hannes, Janssens, & Wets, 2013). De Ceunynck et al. (2013) confirmed that the qualitative method with the use of open-ended questions is a suitable approach for researchers seeking to illustrate and describe participants' experiences and knowledge on topics of interest. I used a qualitative study to explore the strategies that supply chain leaders used to achieve delivery of undamaged products to their customers. The qualitative method was the appropriate approach because I sought to collect rich data from the participants and gain an in-depth understanding of the phenomenon.

Quantitative researchers identify variables, collect data, and conduct statistical analysis of numeric data to discover social and cultural relationships between variables (Goertzen, 2017). The quantitative researcher focuses on determining relationships, association, and trends between dependent and independent variables (Siddiqui & Fitzgerald, 2014). Siddiqui and Fitzgerald (2014) noted that answering the research question in a quantitative research study occurs through testing null and alternate hypotheses to establish relationships and trends between variables. Goertzen (2017) confirmed that the quantitative method is suitable for statistically analyzing information to answer research questions. The quantitative method was not appropriate for this study because I was not testing for relationships, association, or trends among variables using statistical analysis to answer the research question.

A mixed-method researcher combines the use of qualitative and quantitative approaches in a single study (Nguyen, 2013). Venkatesh, Brown, and Sullivan (2016) described the researcher within a mixed method approach as using open-ended questions to explore strategies and statistical analysis to test for correlation and relationships. Marshall and Rossman (2014) explained that researchers often use the mixed method approach to combine qualitative and quantitative methods to test for relationships and to explore participants' experience and knowledge. For this study, no need existed for the use of statistical analysis, in that I did not seek to examine relationships, associations, or correlations to answer the research question. I used deep and rich understanding gathered from participants' experience and knowledge of the phenomenon, coupled with literature and company information, to respond to the research question. Morse and Cheek (2014) explained that using mixed methods may consume more time than conducting a single-method study. Because of limited time availability, I did not use a combination of quantitative and qualitative methods for this research.

Research Design

Research designs receiving consideration for this study were ethnographic, phenomenological, narrative inquiry, and case study. The case study design was the best fit for this study due to its attributes. Yin (2012) described case study design as suitable for a study when the researcher seeks to understand a phenomenon in a business operation or organizational process. A case study researcher places a distinctive focus on a particular population or system to extract accurate information on the phenomenon (Kratochwill et al., 2013). Furthermore, researchers often use case study design to

explore solutions to business problems (Yin, 2018). The case study design was the most appropriate for this study. Yin (2018) described researchers using the case study design to explore information based on participants' experience and knowledge. A case study researcher conducts an in-depth investigation of issues with one participant at a given time (Yin, 2018). Gremyr and Raharjo (2013) explained that case study design is appropriate when the researcher seeks to explore strategies based on the knowledge and experience of participants. Case study was best for my study because I sought to explore strategies that supply chain leaders use to ensure the delivery of undamaged products to their customers.

Researchers use ethnographic design to study the entire culture of a group of people to explore their behaviors, beliefs, experiences, and norms (Hammersley, 2015). Hammersley (2015) explained that researchers use ethnographic design to study the culture of a group in the field of anthropology. Gaggiotti, Kostera, and Krzyworzeka (2017) noted that social scientists often use ethnographic design to focus on the construction and maintenance of culture. Ethnographic researchers used multiple means of data collection and lengthened contact with members of a culture (Gaggiotti et al., 2017). Consequently, ethnographic design was not suitable for exploring strategies that supply chain leaders use to ensure the delivery of undamaged goods to customers. I was not seeking to study culture in the field of anthropology or to explore the culture of a group.

I considered a phenomenological design but rejected this option because of its lack of suitability and alignment with the research question. Kruth (2014) explained that

researchers use phenomenological design to explore and understand lived experiences through the views of people. Researchers conducting phenomenological-design studies collect rich data from participants' lived experiences over an extended period to gain a thorough understanding of a phenomenon (Kruth, 2014). Participants are often interviewed multiple times for the researcher to gain a complete understanding of the phenomenon (Kruth, 2014). The use of the phenomenological design involves the researcher gathering information from the perspectives of participants, which may pose additional challenges compared to other positivist-oriented designs (Nguyen 2013). The phenomenological design was not suitable for this research study because I was not seeking to explore the lived experiences of participants. I sought to gain insight into strategies used by supply chain leaders, not the perspectives and views of people experiencing a phenomenon.

De Loo, Cooper, and Manochin (2015) described that narrative inquirers focus on storytelling by participants, interpretation, and discussion of events to understand the life of an individual, group, or system. Researchers use the narrative design to explore a series of personal, past events of the participant and extract information from the participant's story to solve a problem (Paschen & Ison, 2014). The purpose of using a narrative research design is to focus on an individual's story (Bellamy et al., 2016). The narrative research design was not appropriate for this research study because I was not using the participants' events or storytelling as a means of collecting data or answering the research question.

Researchers conducting a qualitative case study must attain data saturation (Fusch & Ness, 2015; Yin, 2018). Data saturation is the means for a researcher to ensure dependability, credibility, and confirmability of the data as well as the quality of the entire study (Yu, Abdullah, & Saat, 2014). Fusch and Ness (2015) identified some attributes of data saturation to include no new ideas, no new information, no new themes, no new coding, and the ability to replicate the study. Yin (2018) explained that data saturation occurs when information collected is at the saturation point in which no new themes or information emerges. Fusch and Ness further identified the different methods of reaching data saturation in the data collection process to include member checking and triangulation. I used methodological triangulation and member checking as the means of achieving data saturation. Methodological triangulation occurs when a researcher is using multiple sources of data to validate the information gathered from the interviews (Fusch & Ness, 2015). Yin (2012) confirmed that researchers affirm the dependability, credibility, and confirmability of the study through collecting data from multiple sources and reaching data saturation.

Population and Sampling

Sampling Method

Sampling is the process of selecting the population for the research (Yin, 2018). Sampling can vary depending on the research design and method (Nicholas, Raufdeen, & Reza, 2016). For this study, I used the purposeful sampling method. Purposeful sampling is a technique widely used in qualitative research for the identification and selection of participants with rich information (Nicholas et al., 2015). Purposeful sampling involves

identifying and selecting individuals or groups of individuals who are knowledgeable and experienced about the phenomenon of interest (Gill, 2014). Wilson (2014) referred to the purposeful sampling method as nonprobability in nature, in which the researcher specifically choose the population to uncover knowledge, experience, and understanding of the phenomenon. Researchers commonly use the purposeful sampling method in a case study research study to explore strategies and discover the fundamental truth about a phenomenon (Cypress, 2015). Purposeful sampling is an appropriate sampling method when the targeted population exceeds the number of participants required for the minimum sample size (Brandenburg et al., 2015; Etikan, 2016). Researchers use purposeful sampling when the participants must meet strict eligibility requirements (Benoot, Hannes, & Bilsen, 2016; Demerouti & Rispens, 2014; Duan, Chen, Jaroniec, & Qiao, 2015). Furthermore, researchers use purposeful sampling to select a population that aligns with the research question (Benoot et al., 2016). The purposeful sampling method is the most suitable sampling method for my research study because I targeted an appropriate population who possessed an in-depth understanding of strategies to ensure the delivery of undamaged products to customers. Also, I used the purposeful sampling method to narrow the targeted population to a sample population who aligns with my overarching research question.

Population

A research population is a collection of a large group of individuals with similar characteristics that constitute the focus of the research query (Nicholas et al., 2015). The targeted population is the selected group of individuals that the researcher identifies as

people who potentially possess the knowledge needed to answer the research question (Venkatesh et al., 2016). For this study, the targeted population is 15 supply chain leaders in the oil and gas industry; consisting of directors, chief executive officers, chief operating officers, and managers. Because of the number of people in the targeted population, time constraint, diverse experience, and understanding of the researched phenomenon, I adopted the purposeful sampling method to narrow the targeted population to a final sample population of four participants.

Eligibility Criteria

The eligibility criteria for choosing the participants were supply chain leaders in the oil and gas industry located in Texas who successfully used a strategy to ensure the delivery of undamaged products to their customers. Yin (2018) emphasized how research participants are vital elements of a qualitative study. The accuracy of the research findings depends on the information provided by the participants (Yin, 2018). Researchers must ensure that the criteria for selecting the participants include knowledge and familiarity with the area and environment of study (Hyett et al., 2014). To ensure research dependability and authenticity, researchers use participants who possess the in-depth knowledge, experience, and understanding of the phenomenon (Hyett et al., 2014; Patton 2015). In conducting business research to solve a business issue, researchers investigated and interviewed business professionals who have successfully solved a similar problem using a particular strategy or model (Etikan, 2016). To ensure the selected participants meet the eligibility criteria, I identified supply chain leaders who

successfully implemented strategies to ensure the delivery of undamaged products to the customers.

Sample Size

Researchers use different sampling sizes based on the research question, purpose, and design (Kruth, 2015). In conducting a qualitative case study, researchers use a small sample size ranging from one to 10 participants (Gremyr & Raharjo, 2013). Yin (2018) explained that a researcher using case study design might require only one participant, based on the research question and purpose of the study. Andersson, Hilletoft, Manfredsson, and Hilmola (2014) used a sample size of three to explore strategies and functionalities in the production line. Gremyr and Raharjo (2013) used a sample size of seven in a multiple case study to explore knowledge and experience of healthcare leaders. Opata (2015) used a sample size of 10 to explore how supply chain and logistics managers mitigate risk in the supply chain industry. Yin (2018) argued that sample size in a qualitative study is not as essential as the sampling procedure that the researcher uses to ensure the collection of rich, in-depth data from the participants. For this study, I used a sample size of four supply chain leaders in the oil and gas industry who successfully implemented strategies to ensure the delivery of undamaged products to their customers.

Interview Setting

Researchers should choose an appropriate interview setting to facilitate an environment conducive to providing participants with comfort and confidentiality (Yin, 2018). Recognizing that the participants might reveal proprietary information during the interview, the setting should be private (Patton, 2015). I set up interview appointments

with each of the four participants based on their availability and preference to allow their comfort and no obstruction of personal plans. To set up the appointments, I made initial contact through a telephone call to enhance familiarity with the participants and followed up with e-mails for confirmation and reminders. Researchers should consider conducting the interviews in an off-site setting to reduce office distractions (Patton, 2015). I conducted the interviews in the conference room of a public library to avoid office distractions. Yin (2018) suggested that researchers use an interview protocol to guide the construct of the interview and maintain the discussion within the context of the research question and research phenomenon. Researchers use an interview protocol to help build boundaries and avoid collecting ambiguous information (Leedy & Ormrod, 2013; Spencer et al., 2017). I used the interview protocol as a guideline for the interviews and kept the conversation within the context of the research question (see Appendix A).

Data Saturation

Data saturation occurs when no new themes, concepts, or findings emerge during the data analysis process (Cypress, 2015). Fusch and Ness (2015) described data saturation as the point in which the researcher discovers no new concepts during the interview process. Data saturation is a vital milestone in a qualitative study for the researcher to ensure dependable and credible findings (Fusch & Ness, 2015). Researchers use member checking as a means of validating data collected during the interview (Yin, 2012). During the member checking process, the participants can determine if the researcher accurately recorded and reported their responses to the interview questions (Fusch & Ness, 2015). Cypress (2017) described member checking as an optimal means

of assessing the validity of a qualitative study because the first step of many researchers is to understand the participants' worldview. Researchers use member checking to obtain rich, in-depth data, and enhance the academic rigor of the research study (Yin, 2018). Furthermore, the researcher often uses triangulation and member checking to reach data saturation in the research (Fusch & Ness, 2015; Yu et al., 2014). To reach data saturation in my research, I used member checking and methodological triangulation to validate the information and ensure accuracy, allowed the participants to validate an interpreted summary of the interview transcripts, offer corrections if needed, and gathered additional data until no new themes occur. Using member checking, I understood the participants' worldview about the phenomenon. I used member checking and methodological triangulation to enhance the quality of the data collection process as well as data rigor and saturation.

Ethical Research

Informed consent is a crucial principle to ensure ethical research (Oroya, Stromskag, & Gjengedala, 2013). The consent form should contain a description regarding the mitigation of risks, the expected commitment from the participants, and the purpose of the study (Corbin & Strauss, 2015; Hem et al., 2015). The informed consent form is also used to inform the participants about their rights (Hem et al., 2015). The informed consent form contains an explanation of the nature of the research, the expected commitment from the participants, the participants' rights, and the minimal risk associated with the study. The participants' rights include refusing to answer questions they find uncomfortable, terminate the interview, or withdraw from research study (Hays,

Wood, Dahl, & Kirk-Jenkins, 2016; Hem et al., 2015; Hyett et al., 2014). Researchers should seek voluntary participants and offer no incentives for participation (Ekekwe, 2014; Ellegood, 2014). I obtained informed consent from the participants to communicate their rights to them, provided an estimated time commitment, and explained the purpose of the study. I used voluntary participants, offering no incentives as inducements for participation in this study. I used the informed consent form to inform the participants of the risk involved in the research, noting that participation involves minimal risk.

Ethics are norms for conduct that distinguish between acceptable and unacceptable behavior (Resnik, Rasmussen, & Kissling, 2015). Because researchers collect data, interview people, and analyze data, a vital responsibility exists for researchers to protect the research participants and guard against any misconduct, misrepresentation, or privacy violation (Ekuma & Akobo, 2015; Tormo-carbó, Seguí-mas, & Oltra, 2016). Researchers must maintain ethical standards to protect the safety, dignity, rights, and confidentiality of the participants (U.S. Department of Health and Human Services, 1979). The construct of ethical research consists of principles and protocols that include privacy and confidentiality, data storage, prevention of conflict of interest, aversion of harm, participants' rights, and informed consent (Jordan & Gray, 2014). The IRB approves the research before allowing a researcher to collect data to ensure the safety and protection of participants (Ekuma & Akobo, 2015; Patton, 2015). My research was subject to review and approval by the Walden University IRB before data collection to ensure the study was safe and protective for participants. The Walden IRB approval number is 07-03-18-0639490.

Privacy, confidentiality, data storage, and protection are important principles of ethical research (Patton, 2015). Researchers should store the informed consent forms, interview recordings, and interview transcripts on a password protected Universal Serial Bus (USB) drive or in a lockable file storage cabinet (Corbin & Strauss, 2015). I used a password protected USB drive to store the informed consent forms, interview recordings, and interview transcripts, and keep the USB drive safe in a lockable file cabinet in my home office. I will later destroy the USB drive with all information 5 years after completing the study by deleting each file. I will mechanically shred all paper documents and erase all audio recordings of the interviews 5 years after the completion of the study. To ensure privacy and confidentiality protection of the participants, researchers use one-on-one interviews in a private setting (Patton, 2015). Excluding names and coding are other ways of protecting the participants to ensure the privacy and confidentiality of the participants' identity and information (Corbin & Strauss, 2015; Jordan & Gray, 2014). I excluded the names, addresses, and personal data of the participants from the published study and used the coding of P1, P2, P3, P4, and P5 to identify the participants in a way to protect their privacy and confidentiality.

Data Collection Instrument

The researcher is the primary instrument of data collection and is responsible for executing and developing the study (Yin, 2018). As the researcher, I was the primary instrument of data collection. However, academics and business leaders use multiple instruments of data collection to ensure validity, reliability, and dependability of study (Corbin & Strauss, 2015; Merriam & Tidsell, 2015). Researchers often use the multiple

instruments of data collection, such as company's records, company's newsletters, employees' handbooks, archived public records, peer-reviewed articles, and semistructured interviews to explore and gain more understanding of a phenomenon (Merriam & Tisdell, 2015; Spencer et al., 2017). Bolineni (2016) used semistructured interviews and a second instrument of data collection, including peer-reviewed articles, company newsletters, and company handbooks to explore the management strategies that leaders in the India pharmaceutical industry use. The semistructured interview is a standard instrument of data collection used in a qualitative case study (Yin, 2018). Researchers use the semistructured interview as an instrument of data collection to focus on a particular theme and explore knowledge, understanding, and experience of the participants regarding the phenomenon (Nguyen, 2013; Spencer et al., 2017). In addition to myself as the primary instrument of data collection, I used semistructured interviews as a data collection instrument.

In addition to semistructured interviews, I used document review as a data collection instrument, collected secondary data from peer-reviewed articles, publicly available company records, such as quarterly or annual reports, company website data, publications, and other information posted on the Internet to gain more understanding and knowledge about strategies supply chain leaders use to ensure the delivery of undamaged products to their customers.

The primary objective of using documents, such as a company's newsletters, company's handbooks, archived public records, and articles, as secondary sources of data is to understand the perception and idea of the participant (Merriam & Tisdell, 2015;

Spencer et al., 2017). Semistructured interviews, as an instrument of data collection, are appropriate when a researcher seeks to explore detail understanding of a phenomenon through the knowledge and experience of the participants (Bolineni, 2016; Leedy & Ormrod, 2013; Yin, 2018). I used the semistructured interview as a data collection instrument to gather detailed knowledge from the participants to understand the phenomenon under study. The interview protocol is a guideline for the interview process that researchers use to coordinate a smooth, efficient, and accurate interview (De Ceunynck et al., 2013; Gremyr & Raharjo, 2013; Leedy & Ormrod, 2013). Researchers use an interview protocol as a boundary as they seek to identify the known and the unknown issues in the research context (Leedy & Ormrod, 2013). However, as participants could provide information out of the research setting, researchers use the interview protocol as an instrument of the boundary to avoid collecting ambiguous information (Bolineni, 2016; Corbin & Strauss, 2015). I used an interview protocol to ensure a smooth, efficient, and accurate interview process (see Appendix A). The interview protocol was my instrument of the boundary to avoid collecting ambiguous information from the participants.

Dependability, credibility, confirmability, and transferability are important objectives a researcher should meet to ensure the reliability and validity of the study (Birt et al., 2016). Researchers enhance the dependability of the study by ensuring that the design of the interview questions is appropriate to answer the research question (Jap, 2012; Marshall & Rossman, 2014). Researchers use open-ended questions to explore the experience of the participants in a way to enhance the dependability of the research

(Falchikov, 2013; Sattari, Serwint, Neal, Chen, & Levine 2013). Furthermore, Yin (2018) suggested that researchers enhance the dependability of the study by documenting the research process, including the interview process, data collection instrument, techniques, and data analysis technique. I used open-end questions to explore the experience and understanding of the participants in regards to the phenomenon. Furthermore, I documented all research processes and procedures, including the interview process, data collection instrument and techniques, and data analysis procedures to enhance the dependability of the study.

Another crucial objective that researchers need to ensure is the credibility of the study (Yin, 2018). Scholars use methodological triangulation, which involves the use of multiple sources of data, to gain insight into the topic (Fusch & Ness, 2015; Hem et al., 2015; Yin, 2018). Researchers use methodological triangulation to provide evidence for the data collected at the interview and other secondary data in a way to enhance the credibility of the study (Birt et al., 2016; Fusch & Ness, 2015). I used methodological triangulation to improve the credibility of the study. Researchers use member checking to ensure confirmability of the study (Fusch & Ness, 2015; Yu et al., 2014). Researchers use member checking to allow the participants an opportunity to review a summary of the interview transcripts, confirm that the researcher accurately interpreted their responses during the interview, and provide additional information not gathered during the initial interview (Fusch & Ness, 2015; Gill, 2014; Nguyen, 2013). I used member checking to ensure confirmability of the study.

Data Collection Technique

Researchers use multiple techniques in the data collection process of a qualitative case study (Hem et al., 2015; Nicholas et al., 2016; Yin, 2012). In a case study, researchers use data collection techniques, such as interviewing, multiple source documents, and audio recordings to ensure reliable, efficient, and effective data collection (Gremyr & Raharjo, 2013; Hyett et al., 2014). The interview is a primary technique used by researchers conducting a case study (Sinden et al., 2013). The interview technique involves setting up a meeting to question the participants and explore their knowledge, understanding, and experience of a phenomenon (Brandenburg et al., 2015; Patton, 2015). Researchers often use the semistructured interview technique to allow flexibility, improved dialog with participants, and the ability to ask to follow up questions to gain an in-depth understanding of the researcher topic (Brandenburg et al., 2015; Patton, 2015; Yin, 2018). Scholars construct the interview protocol to serve as a guide and boundary during the interview to enable an efficient and accurate interview process without ambiguous information (Bolineni, 2016; Spencer et al., 2017). The semistructured interview was my primary technique for collecting data. I contacted the potential participants through telephone calls and e-mails to introduce myself, provided the purpose of the study, and asked them to participate in this study. I e-mailed each person who agreed to participate an informed consent form, which contained information regarding participants' rights, the risks involved with participating in the study, confidentiality, sample interview questions, time commitment, and the purpose of the study. I conducted a face-to-face interview with the participant in the participant's

preferred office using an interview protocol (see Appendix A). During the interviews, I asked open-ended questions and took reflective notes. I audio recorded each interview.

An audio recording is another important technique for use in the data collection process (Oroya et al., 2013). Researchers use an audio recording to ensure transcript accuracy and to remember all shared information by the participants (Oroya et al., 2013; Patton, 2015). The audio recording is the means by which the researcher relistens to the information to ensure data credibility and rigor (Oroya et al., 2013). Documenting the data collection process and keeping a reflective journal is another technique for data collection (Hyett et al., 2014). Researchers use documentation to record and describe nonverbal communication, such as gestures, expressions, and other behavioral observations (Hyett et al., 2014). Also, researchers use documenting and journalizing for tracking the pre-data, data collection, and post data collection periods (Bellamy et al., 2016; Hem et al., 2015). Qualitative case study researchers often request and use company documents as another source of information and a technique of data collection (Rohde et al., 2014). Researchers use company documents to qualify the information collected from interviews, and enhance the dependability, credibility, and confirmability of the data (Daker-White, Donovan, & Campbell, 2014; Rohde et al., 2014). I used a Samsung phone voice recorder to record the interviews. Recording the interview facilitates transcription accuracy and repetitive listening. I documented the nonverbal communication and kept a reflective journal of the data collection process to enhance data credibility and rigor. Furthermore, I reviewed supporting, publicly available company documents, such as company quarterly or annual reports, company website

data, company publications, and other information posted on the Internet to engage in methodological triangulation.

A significant advantage of the semistructured interview as a data collection technique is that the researcher collects rich and in-depth information from the participants' experience and understanding of a phenomenon (Malone, Nicholl & Tracey, 2014). The semistructured interview as data collection technique is a means for the investigator to enhance the quality of the research (Elo et al., 2014; Nicholas et al., 2016). Furthermore, researchers used semistructured interviews to allow participants to feel comfortable, with no pressure or tension, but with freedom of expression as they provide rich information to answer the research question (Corbin & Strauss, 2015). Conversely, one common disadvantage of using the semistructured interview as a data collection technique is the vulnerability to bias (Merriam & Tisdell, 2015; Yin, 2012). In a semistructured interview, both the participants and the researcher remain vulnerable to bias in the data collection process because of personal opinions, worldviews, or perceptions (Corbin & Strauss, 2015; Merriam & Tisdell, 2015). To avoid bias in a study, researchers use member checking to allow participants the opportunity to review an interpretative summary of their interview responses, validate or refute the interpretation, and ensure the information does not contain the personal opinions of the researcher (Darawsheh, 2014; Sinden et al., 2013). I used member checking to mitigate the bias disadvantage that emerged from using the semistructured interview as a data collection technique.

The advantage of using a voice recorder as a data collection technique is that recording the interview is a means for the researcher to listen to the interview and accurately transcribe the interview (Oroya et al., 2013). However, the disadvantage of using a voice recorder as a data collection technique is that a voice recording is vulnerable to damage or loss if not properly handled and stored (Oroya et al., 2013). The advantage of using data documentation and journalizing as a data collection technique is the researcher maintains documented evidence of the nonverbal communication of the participants as well as documentation of the process before data collection, during data collection, and after data collection (Nguyen, 2013). Keeping a journal and documenting the research process is a technique that makes tracking changes easy and cost-effective (Yin, 2012). Interviewing and taking notes at the same time may lead to omissions by the researcher (Oroya et al., 2013).

An advantage of using company documents as a data collection technique is the researcher can use the data to triangulate the interview data (Rohde et al., 2014). Reviewing company documents is a means for researchers to confirm or refute the information gathered from participants during interviews (Yin, 2018). Disadvantages of reviewing company documents include inaccurate, incomplete, or inaccessible documents (Rohde et al., 2014; Daker-White et al., 2014).

Member checking is an approach that researchers use to ensure the credibility, dependability, and confirmability of the data in qualitative research (Fusch & Ness, 2015; Sinden et al., 2013). To use member checking, the researcher provides the participants an interpreted summary of the transcribed interview to correct, amend, confirm, or include

further information (Corbin & Strauss, 2015; Sinden et al., 2013). I used member checking to ensure the credibility, dependability, and confirmability of the data. I engaged the participant in member checking in 30-45 minutes sessions to allow the participants make corrections, amendments, or additions, and confirm the accuracy of the data collected during the interviews.

A pilot study is a small-scale study conducted before the main study to evaluate the procedures, instruments, and methods that the researcher intends to use for the main or larger study (Hazzi & Maldaon, 2015; Yin, 2018). The primary purpose of conducting a pilot study is to check the feasibility of proposed plan to conduct a larger study and determine the perfect data collection instrument needed for the larger study (Hazzi & Maldaon, 2015). Researchers deploy a pilot study when conducting an unlimited scope case study or when a large number of participants are required (Elliott & Drummond, 2017). I was not conducting a pilot study because I was conducting a limited scope case study. Researchers need not conduct a pilot or preliminary study to test methods and procedures when conducting a limited scope case study (Elliott & Drummond, 2017; Ingham-Broomfield, 2015; Yin, 2018). Since I was conducting a limited scope case study, I did not need a preliminary study to test the method and procedures in preparation for a larger study.

Data Organization Technique

Researchers conducting a qualitative research study gather volumes of data; therefore, data organization is a paramount process (Yin, 2018). Yin (2012) emphasized the importance of creating mediums, methods, and techniques for organizing and

documenting data. Researchers use a variety of data organization techniques, such as digital voice recorder, NVivo software, journal logging, electronic files in Microsoft Word and Excel, and paper files (Gill, 2014; Jap, 2012; Mealer & Jones, 2014).

Researchers use password-protected accounts in Google Drive, Dropbox, or Zotero library to house and organize the data (Hyett et al., 2014). NVivo software is a useful application for storing and cataloging data files for safe storage and easy access (Gill, 2014). Researchers use Microsoft Word and Excel for an easy filing of documents by folder (Kelly & McAllister, 2013). Scholars should keep all physical copies of organized data stored in a secured location for safeguarding, while all electronic data should remain in password-protected files (Kelly & McAllister, 2013). I used journal logging, Microsoft Word, Microsoft Excel, and NVivo 11 to organize the collected data. I housed the data using a secured Dropbox account and a password-protected USB drive. I organized the data in Microsoft Word and Excel using dedicated folders and labeled files. I used the NVivo 11 software for organizing the interview data into nodes in preparation for data analysis. I kept all physical data organized and stored in a locked cabinet in my home office for 5 years. All electronic files remained on a password-protected USB drive stored in a locked cabinet in my home office for 5 years. After 5 years, I will shred all paper research documents and delete all electronic files.

Reflective journalizing and research logs are useful techniques that researchers use to track the data collection process, collected data, data organization, and data analysis (Musa et al., 2014). Researchers use the journalizing method to keep and maintain an audit trail and annotate rich detail of the data (Mealer & Jones, 2014; Patton,

2015). I used reflective journalizing and a research log to keep and maintain an audit trail as well as to annotate the important details of the data. Data documentation and organization are vital in the research process to ensure credibility and transferability of the study (Marshall & Rossman, 2016).

Data Analysis

Data analysis is the systematic review of the data collected, interpretation of the data, and the unveiling of underlying meanings from the data (Nguyen, 2013).

Researchers use data analysis techniques to search for patterns and relationships within the data (Yin, 2012). In a qualitative case study, researchers use data analysis to provide explanation, understanding, and interpretation of data regarding the phenomenon (Corbin & Strauss, 2015). Data analysis techniques involve preparing, organizing, analyzing, interpreting, and identifying themes from collected information (Sattari et al., 2013). Commonly, researchers use methodological triangulation, coding, and thematic analysis as data analysis techniques (Duc, Mockus, Hackbarth, & Palframan, 2014).

Methodological triangulation is a process researchers use during data analysis when conducting a qualitative case study (Fusch & Ness, 2015). Methodological triangulation involves reviewing another source of data to validate the information collected from primary data regarding the researched phenomenon (Bhattacharya, Bhattacharyya, Minwalla, & Yarom, 2014; Duc et al., 2014; Fusch & Ness, 2015). Researchers use methodological triangulation to reference and validate the data collected from the participants as well as to promote the credibility of the data collection process (Birt et al., 2016; Fusch & Ness, 2015). I used methodological triangulation during the

analyzing of data by reviewing data from various sources to validate and promote the credibility of the data collected and the data collection process. I followed Yin's (2018) five-step data analysis process of compiling, disassembling, reassembling, interpreting, and concluding the data.

Compiling Data

The compiling phase involves organizing the data to create a database (Kelly & McAlister, 2013). Researchers collect data from multiple sources to use methodological triangulation as a means of data analysis and data compilation (Darawsheh, 2014). Researchers use different sources of data for data compilation, including company records, public records, peer-reviewed articles, and information gathered from interviews (Stone, 2013; Yin, 2018). I compiled data collected from semistructured interviews, member checking, company's documents, journal logging, and observations. I used Microsoft File Explorer to create an offline file database and One Drive to create an online database. I created folders and files in the databases to compile data.

Disassembling Data

The disassembling phase involves dividing the compiled data into fragments and labels (Bengtsson, 2016). After proper compilation of data to create a database, researchers categorize and label data in different parameters, such as date, time, source of information, and themes (Brandenburg et al., 2015; Cypress, 2015). Researchers disassemble data manually and electronically (Hem et al., 2015). I used both manual and electronic measures to separate data into groups and segments. I reviewed and compiled all data collected from the interviews, organizational documents, and archive. I used

bracketing to set aside predisposition and biases in the collected data. Kelly and McAlister (2013) explained that bracketing, a crucial tool in the coding process to ensure rigor, is a way by which researchers mitigate predispositions and biases. I used bracketing in the data review to mitigate bias and to enhance the rigor of this study. Business researchers use manual disassembling as coding means to identify themes (Birt et al., 2016). I identified themes from the bracketed data by highlighting statements that possess similarities. To reduce confusion and use proper organization techniques, researchers use color-coding to identify different emerging themes (Moore & Prentice, 2013). I used different color-coding to identify the emerging themes and to organize the data. Researchers use tables from Microsoft Word and NVivo software to categorize and label the compiled data (Birt et al., 2016). I used Microsoft Word and NVivo 11 to classify and label the organized data.

Reassembling Data

The reassembling process involves clustering and categorizing the labels into sequences and groups (Moore & Prentice, 2013). During the reassembling phase, the researcher can classify the information into different segments and clusters to identify links, alignments, and relationships within the data (Bengtsson, 2016). Researchers use NVivo 11 software to reassemble data to determine links and alignment in the disassembled data (Brandenburg et al., 2015; Corbin & Strauss, 2015). NVivo 11 is a computer application that researchers use for grouping data in clusters and automatic coding of the data (Stomki et al., 2014). Researchers upload data into the NVivo 11 application to allow automatic processing of the data to identify alignments, trends, and

emerging themes (Woods, Paulus, Atkins, & Macklin, 2016). I used NVivo 11 to reassemble data to identify the connections, patterns, and alignments in the data. I uploaded the raw data from the USB drive into the NVivo 11 application to automatically process the data to detect trends and patterns, and to establish key themes.

Interpreting Data

In the interpretation stage of data analysis, the researcher creates narratives from the sequences and groups to form conclusions (Chowdhury, 2015). Interpretation in data analysis is the process of assigning meaning to the reassembled data and determining conclusions, significance, and the implications of the findings (Woods et al., 2016).

Researchers use critical thinking to find meaning from the reassembled data (Brandenburg et al., 2015). Furthermore, researchers collect data from multiple sources and use methodological triangulation to confirm the interpretation of the reassembled data (Lin et al., 2014). The focus of data interpretation is to relate the established themes to the conceptual framework and the literature review as well as to generate new ideas and knowledge (Yin, 2108). I used methodological triangulation and critical thinking to determine, validate, conduct a narrative analysis, and interpret the reassembled data. I focused on the emerging themes and new ideas that align with the literature review and business process orientation theory.

Software Plan

NVivo 11 is an electronic application used for grouping raw qualitative data into clusters, categories, and themes (Chowdhury, 2015). Researchers use NVivo 11 to code data, perform structural analysis, retrieve and compare data, and display data for

interpretation in an automated mode (Chowdhury, 2015; Musa et al., 2013; Woods et al., 2016). I used the NVivo 11 software application to categorize the collected data, perform structural data analysis, retrieve, compare, and visualize data for interpretation. First, I uploaded the interview transcripts into the NVivo 11 application to obtain computerized results for data disassembling and reassembling. Secondly, I used the NVivo 11 to compare and contrast the automated result to identify emerging patterns and themes. Finally, I used the NVivo 11 application to group the themes and tracked the ideas from the findings. Researchers use NVivo 11 application to organize data, analyze volumes of information into segments, and identify themes (Chodhury et al., 2014; Yin, 2018). Using NVivo 11 provides efficiency and quality data analysis (Oliveira, Bitencourt, Zanardo dos Santos, & Teixeira, 2016). Brandenburg et al. (2015) selected NVivo 11 software in the data analysis process for organizing and coding the data. NVivo 11 software is a means to organize, store, code, and manage collected data, which improves research dependability (Merriam & Tisdell, 2015). Researcher preferred using NVivo 11 in a qualitative study because of the compatibility with Microsoft Office application (Chowdhury, 2015). NVivo 11 is suitable for analyzing large data generated from qualitative research (Woods et al., 2016). Researchers also prefer the NVivo 11 application because of the low cost (Woods et al., 2016). I used NVivo 11 to organize, analyze, and identify themes from the data collected. I chose NVivo 11 because of the low cost and compatibility with Microsoft Office software.

Key Themes

Researchers using the qualitative approach conduct data analysis to identify key themes, develop the findings of the study, and relate the key themes to the conceptual framework and the existing body of literature (Lin et al., 2014). Noting how the key themes and findings confirm or refute the findings of previous researchers is an important activity of a researcher (Cho & Lee, 2014; Lin et al., 2014). Detecting and classifying reoccurring words, phrases, and ideas drawn from the interview and secondary data are ways researchers identify key themes (Cho & Lee, 2014). I identified key themes through detecting and classifying the reoccurring ideas, phrases, and words drawn from the participants' interview responses, additional information gathered in member-checking sessions and secondary data sources. I compared and contrasted the emergent themes to the published findings of other researchers through the lens of the business process orientation theory.

Reliability and Validity

Researchers conducting a qualitative case study strive for dependability, credibility, and confirmability of the data and the findings of the study (Yin, 2018). Whereas a researcher conducting a quantitative research study seeks the concepts of reliability and validity, the researcher using a qualitative approach seeks trustworthy, accurate, rich data to develop credible findings of the study (Yin, 2018). Collecting dependable, credible, saturated data is means for researchers to enhance the ability of readers and future researchers in transferring the findings to other context, settings, or cases (Birt et al., 2016).

Dependability

One primary objective of a researcher conducting a qualitative case study is to ensure the dependability of the data (Yin, 2018). Dependability in a qualitative study is the stability and trustworthiness of research (Elo et al., 2014). Dependability is an evaluation of the quality of the integrated processes of data collection, data analysis, and the entire research process (Elo et al., 2014; Peyrovi & Hadjmohammadi, 2015).

Researchers use methodological triangulation and member checking as a method of strengthening the dependability of the study (Cypress, 2017; White, Oelke, & Friesen, 2012). In the use of member checking, the researcher provides the participants with an interpreted summary of the interview transcript (Li et al., 2013). The researchers provide participants an opportunity to validate the accuracy of the interpretation and asks the participants if they have any additional information (Li et al., 2013; Moore & Prentice 2013; Peyrovi & Hadjmohammadi, 2015). Researchers use methodological triangulation to validate and reference the collected information as a means of ensuring the dependability of the data as well as the findings of the study (Fusch & Ness, 2015; Prion & Adamson, 2014). I used member checking and methodological triangulation to strengthen the dependability of this research.

Credibility

Credibility in qualitative research refers to the overall believability of a study or the degree to which research outcomes are accurate (Hays et al., 2016). Credibility is the truthfulness of the data and believability of the findings of the study (Prion & Adamson, 2014). Cypress (2017) noted that the credibility of a study is the confidence in the

findings. Researchers strengthen credibility by providing an accurate description and interpretation of the information gathered from the participants (Moore & Prentice, 2013; Nicholas et al., 2016). Methodological triangulation of multiple data sources and member checking are means of ensuring credibility in a study (Hyett et al., 2014; Jap, 2012; Yin, 2018). Researchers also use purposive sampling and an audit trail to strengthen the credibility of a qualitative study (Etikan, 2016; Kelly & McAllister 2013). I used purposive sampling, member checking, and methodological triangulation to enhance the credibility of my study.

Confirmability

Confirmability of a qualitative research project is the degree of accuracy of the study as corroborated by future researchers (Darawsheh, 2014). The concept of confirmability in a qualitative study depicts the accuracy and genuineness of the study's processes and findings (Moore & Prentice, 2013). To strengthen confirmability of the study, researchers document the procedures and processes of data collection and analysis to ensure objectivity and accuracy (Elo et al., 2014; Moore & Prentice, 2013). Researchers also use an audit trail to enhance the confirmability of the study through documented inspection of the data, documenting all data collection and analysis procedures, and documenting the procedures used to mitigate personal biases (Peyrovi & Hadjmohammadi, 2015). Detailed documentation of research processes and procedures is a means of improving the confirmability of the findings (Darawsheh, 2014). For this study, I documented all the research processes and procedures, including data collection,

analysis, and interpretation to maintain an audit trail as a means of ensuring confirmability.

Transferability

Transferability in qualitative research is the degree to which the findings apply or transfer to other cases or settings (Birt et al., 2016). A researcher might improve the opportunity for transferability of the findings by collecting dependable and credible data (Kihn & Ihantola, 2015). Future researchers determine how applicable the findings are to other cases or studies (Kihn & Ihantola, 2015; Marshall & Rossman, 2016). Morse (2015) argued that rigor in a qualitative study is the concern of external evaluators who judge the quality of the research. Researchers enhance the transferability of the finding by strictly adhering to the data collection and analysis technique for the research design (Kihn & Ihantola, 2015; Morse, 2015; Teusner, 2016). Researchers use an interview protocol to curb bias in the interview process and to collect rich information as a means to improve the dependability, credibility, confirmability of the data; therefore, enhancing the ability of future researchers to transfer the findings to other cases (Teusner, 2016). To enhance the transferability of this study, I adhered to the proposed data collection and analysis techniques to collect in-depth and rich data. I used the interview protocol as a guide during the interview process to curb bias and enable collecting rich information without ambiguity (see Appendix A).

Data Saturation

Researchers conducting a qualitative case study must reach data saturation to ensure dependable, credible data (Yin, 2018). Characteristics of data saturation in a

qualitative research study include no new themes, no new data, no new coding, and the ability to replicate the study (Fusch & Ness, 2015). Researchers attain data saturation when no new data or themes emerge from additional data collection efforts (Yu et al., 2014). Researchers use methodological triangulation and member checking to reach data saturation in a qualitative case study (Fusch & Ness, 2015). Methodological triangulation involves the use of multiple sources of data, including semistructured interviews, peer-reviewed articles, company documents, and nonintrusive participant observations for the researcher to compare and validate collected data (Suarez-Barraza & Miguel-Davila, 2013; Yu et al., 2014). Researchers use member checking to acquire rich and in-depth information to reach data saturation (Fusch & Ness, 2015; Yin, 2018). Researchers use member checking to allow participants an opportunity to review a summary of the interview transcript, check the summary for accuracy, make corrections, and confirm the researcher's interpretation of their interview responses (Cypress, 2015; Nicholas et al., 2016). I used methodological triangulation and member checking to reach data saturation in this study. I used semistructured interviews, publicly available company documents, peer-reviewed articles, and nonintrusive participant observations as data sources for comparison and validation. I engaged participants in member checking to correct, amend, and confirm the accuracy of the interview data as a way of reaching data saturation.

Transition and Summary

In Section 2, I described the research methodology, process, and procedures. I restated the purpose of the study, described my role as the researcher, and discussed the sampling method. I explained the participants' eligibility criteria, research method and

design, population and sampling, and research ethics. I described the data collection instruments and techniques, data analysis procedures, and the means to ensure dependability, credibility, and confirmability of the data as well as the findings. I explained the proposed procedures to reach data saturation.

In Section 3, I discussed the findings and results of this research study in the application to business practices and implications for social change. I described personal reflections and make recommendations for business practices and future research.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative multiple case study was to explore the strategies that some supply chain leaders use in ensuring the delivery of undamaged goods to their customers. I collected data from interviews with supply chain and logistics leaders, as well as from publicly published company documents including periodic bulletins, newsletters, safety reports, and journals. I interviewed four supply chain leaders from Houston, Texas who had implemented strategies to ensure delivery of undamaged products, particularly oil and gas. I engaged the participants in member checking to ensure the credibility of the interview data. I engaged in methodological triangulation to crosscheck the interview data with company documents. I reached data saturation when no new themes or patterns emerged. Four themes emerged from the analyzed data: (a) process strategy, (b) inspection strategy, (c) employee training strategy, and (d) IT strategy. Significant alignment existed between the findings of this study and the elements of business process orientation.

Presentation of the Findings

The overarching research question was the following: What strategies do supply chain leaders use to ensure delivery of undamaged goods? I used semistructured interviews to explore the experience, knowledge, and understanding of the participants regarding the delivery of undamaged oil and gas to customers. Each participant had over 30 years of experience in the logistics and supply chain of the oil and gas sector and had adopted strategies to ensure the safe delivery of undamaged oil and gas products from

exploration fields to refineries, depots, industrial customers, and gas stations for commercial and domestic use. Each participant also had knowledge and experience in the means of transporting undamaged oil and gas products. To ensure participants' privacy and confidentiality, I used alphanumeric codes P1, P2, P3, and P4 to represent the participants. Table 1 below shows a list of themes, along with the number of occurrences per participant.

Table 1

Emerging Themes and Number of Occurrences per Participant

Themes	P1	P2	P3	P4	Total
Process strategy	39	36	41	31	147
Inspection strategy	27	22	16	19	84
IT strategy	16	9	15	15	55
Employee training strategy	6	13	8	13	40
					326

Table 2 displays the key themes and the percentage of use among the companies.

Table 2

Strategies Used to Deliver Undamaged Oil and Gas Products

Strategy	Percentage of use by companies
Process strategy	100%
Inspection strategy	100%
IT strategy	100%
Employee training strategy	100%

Theme 1: Process Strategy

Process strategy was a key theme that emerged from the analyzed data. The process strategy appeared as a significant aspect in most operations that involves transportation, distribution, and storage of oil and gas. All participants emphasized the processes involved in the transportation and distribution of oil and gas. Table 3 displays the subthemes under the theme of process strategy.

Table 3

Subthemes of Process Strategy

Subtheme	Percentage of use by companies
Operational efficiency	100%
Adherence to government regulations	100%
Safety	100%
Collaboration	100%

P3 noted that because of the volatility, combustibility, and flammability of oil and gas products, supply chain leaders lay significant emphasis on the processes of storage, loading and offloading, and transportation. The process theme was also evident under other themes. For example, P1 spoke about the process in relation to inspection strategy and IT strategy. P2 commented that the process under the inspection strategy and training strategy. P3 explained that because of the features of oil and gas as highly flammable products,

We had designed a process for laying the pipelines and transporting oil through the pipelines. We ensure all measurement is accurate, use the right clamps and

rings, and ensure the pipelines have accurate distance from each other. Failure to do any of this right can lead to a disaster, such as oil spillage or explosion.

I confirmed P3's statement about process strategy by reviewing company newsletters that contained information indicating that to ensure safe oil transportation through the pipeline, the pipeline diameter must be large enough to allow the maximum volume to pass with minimal resistance for optimal efficiency. There is a need for high velocity to keep the pipe free of corrosion or debris that can plug it. The pipes are usually made of high-quality carbon steel, produced to specific standards, tested, and quality checked from the raw steel state to the finished product. Additionally, the pipes' joints are designed in approximately 40-foot lengths to ensure the easy flow of gas. Pipes transporting certain types of fluids must contain special corrosion-resistant alloys. Heavier (thicker) oil may need heating to maintain a consistent flow. Depending on the distance that the fluid needs to travel, the pipeline may need to be insulated or equipped with additional pumps or heating stations to keep the product flowing (as indicated in P3's company newsletter). This finding confirms the research of Capodaglio and Callegari (2018), who noted that leaders use an effective process strategy to promote performance through process improvement. All participants noted the need to pay close attention to the operational process details to ensure the delivery of undamaged oil and gas products.

Aside from the organizational processes implemented for the accurate transportation and distribution of oil and gas, the government has defined some processes that oil and gas companies must follow. P4 described processes stipulated by government

agents to follow in moving, storing, or disposing of oil and gas, regardless of the means of transportation used. Government agencies determining these processes include the Texas Department of Transportation (DOT), Occupational Safety and Health Administration (OSHA), and Environmental Protection Agency (EPA); these agencies have standardized processes for storage and transportation of oil and gas through either vessel tanker, pipeline, train tanker, or truck tanker. Some government agencies have also outlined processes to follow in case of spillage or leakage of oil pipelines and tankers. P1 emphasized the processes involved in the disposal of caroused or spilled oil, either at the plant or during transportation. P2 identified that government-regulated processes exist that must take effect in the event of an oil spill or gas leak, including notifying the controlling government agency, such as the EPA. The process also includes documentation of the event, reporting of the event to the necessary department, and the disposal of the actual damaged product. P3 noted, “We document all incidents and accidents that occur on the work field and during transportation. The EPA manual stipulates the systematic procedure for notifying, documenting, and disposal of caroused and spilled oil.” The annual report published by P1’s company described the process of safeguarding the oil pipelines with the use of IT and collaboration with third-party companies.

These findings confirm the research of Roeser and Kern (2015), who noted that process orientation ideology involves monitoring, documentation, managing, and process and service improvement to enable quality output. This finding also aligns with the work of Nadarajah and Kadir (2016), who contended that a focus on the process of operation

promotes product quality, delivery quality, and environmental safety, thereby bringing about competitive advantage through customer satisfaction and environmental sustainability.

Collaboration was a subtheme that emerged under the process strategy theme. Collaboration may take the form of a joint initiative by autonomous organizations engaging in strategic planning to enhance operational performance and reduce the cost of inventory, distribution, and transportation (Liao et al., 2017). Collaboration goes beyond daily business operations, in that it has the aim of delivering a significant improvement over a long period. Collaboration is a common process in the oil and gas industry because supply chain collaboration fosters low costs for transportation, operations, and distribution. P1 described collaboration as a crucial strategy to ensure monitoring and maintenance of oil pipelines. P1 stated, “Our organization uses a trusted third party company; we follow a well-defined process in choosing the best company to award the monitoring and maintenance contract.” I confirmed P1’s statement regarding collaboration by reviewing the company’s safety newsletter and noting that the pipeline design contractor must take into consideration a number of issues, including the volume of oil or gas transported, the soil strength and stability of the seafloor, and environmental conditions such as water depth, temperatures, marine life, and shipping activities in the area. P1 noted, “We must ensure the integrity of the pipeline to avoid product as well as environmental contamination.” The contracting companies are responsible for the safety and reliability of their pipeline systems. The pipeline undergoes rigorous audit and inspection by a host of agencies (as noted in P1’s company safety newsletter). P3

described the organization as relying on a third-party logistics company to provide safe product delivery to service stations and gas stations. P3 noted that the personnel of the third-party company understood the safety culture and policy of the organization and adhered to policies to promote accident-free delivery. P3 stated, “We believe they are professional in what they do. Therefore we trust them to have a standardized policy in accordance with the DOT regulation.”

Organizations may use different processes in selecting a third-party company, depending on their needs. P4 commented,

We have been using the same company in building, installing and maintaining our pipelines for over 15 years, the collaboration synergy has become a virtuous circle, they understand us and know what we want, and we allow them to use their professionalism and expertise in doing the job.

Oil and gas leaders also use a collaboration process in managing assets such as technology infrastructure. P3 described the organization as using a third-party company to facilitate IT infrastructures. P3 gave an example of a technology called *C-Link*, which was used for tracking and monitoring trucks and tankers in transit. According to P3, “C-Link is manufactured, installed, and facilitated by a third party company; however, our company has been using the technology for years to ensure safe transportation of high quality oil and gas products.”

These findings confirm the research of Ding et al. (2018), in that oil and gas companies use collaboration processes to ensure effective product delivery, thereby reducing delivery inefficiencies, the large cost of overruns, delays, and delivery of

damaged products. These findings confirm the research of Liao et al. (2017), who, in their study to determine the relationship between collaboration innovation and supply chain effectiveness, noted that the collaboration process promotes competitive advantage through effective product delivery by moderating the supply chain echelons. Moreover, these findings agree with the research of Leon et al. (2017), in that collaboration is a vital instrument for effective and efficient product delivery operation as business leaders use a collaboration strategy to enhance the monitoring of the oil and gas delivery system.

The use of business process orientation involves a focus change from business functionality to business process with emphasis on creating added value for stakeholders and the social environment (Ding et al., 2018). The idea of business process orientation represents the understanding of the details in the flow of the business, which is the first step in building an organizational process structure (De Villiers et al., 2017). The participants noted the understanding involved in the daily flow of operation in transportation and distribution of oil and gas, with a focus on the safety of the product, employees, and the social environment. The use of business process orientation also involves constant analyses and improvement of processes to achieve an increase in production quality, efficiency, and overall business performance (Mekonnen & Naod, 2017). The participants indicated the systematic process analyses and pursuit of process improvement through various rigorous processes involved the integration of third party inspectors, IT integration, and employee training. Documentation and record keeping in relation to business process activities constituted a critical factor in process orientation

(Leon et al., 2017). All participants emphasized the importance of keeping up-to-date documentation and accurate record keeping of business process activities.

Organizational leaders who place priority on the safe delivery of products align their business process with their strategy (Badenhorst-Weiss et al., 2017). All participants indicated that a major goal of their organizations was to ensure the delivery of undamaged oil and gas products and the safety of the social environment, the workers, and the product, which aligns with business process orientation. Process standardization is also an element of business process management that leaders use to ensure a reliable delivery process (Prajogo et al., 2016). The idea of business process orientation entails the organization developing a standardized process to produce quality output. All participants indicated the use of business-process strategies such as collaboration to promote standardization and the capability to produce quality output of safe storage, transportation, and distribution of oil and gas products.

Theme 2: Inspection Strategy

All participants used an inspection strategy to ensure the delivery of undamaged products. All the participants emphasized the impact of conducting inspections to promote the delivery of undamaged oil and gas products in an environmentally safe manner. Table 4 displays the subthemes of the inspection strategy.

Table 4

Subthemes of Inspection Strategy

Subtheme	Percentage of use by companies
Internal inspectors	100%
Third-party inspectors	25%
Tanker inspections	100%
Storage and pipeline inspections	100%

According to all participants, an inspection takes place in every aspect of the transportation and distribution of oil and gas products, through either external inspectors, such as government agents, or internal inspectors, which involve the use of technology or human effort. All participants noted that inspections are essential to the oil and gas industry as well as to individual organizations because the use of an effective inspection process helps to reduce occurrences of accidents, damaged goods, and environmental contamination. All participants also emphasized that some supply chain leaders use regular inspections to note and correct incidents before they develop into accidents or hazards.

Inspection involves periodic checks of equipment and staff to ensure safety compliance. Experts certified in a particular line of duty commonly do inspections depending on their specialization. P4 commented, “We have specialized internal experts that carry out periodic inspections on oil tankers on both the parking tarmac and loading tarmac.” Equipment such as tanker trucks undergo inspection to ensure the safety of the products, the equipment, and the driver(s). P2 explained that an inspection officer records all inspections on an inspection sheet and submits it to the safety department for

evaluation and record keeping. P4 continued by noting that the inspection team inspects the oil tankers, the tractors, the tires, and the load in the tankers. Every inspection must meet certain criteria as stipulated by the Texas DOT and OSHA. P1 indicated that the organization used third-party experts alongside its internal safety department to inspect the pipelines and other equipment used in securing the pipelines. P1 stated,

We promote a healthy culture, our goal is to ensure the safety of the public and the workers, and the products we transport. This is why we use third-party experts to help with the inspection, we have been using them for long, and they are responsible for keeping the equipment in good order.

P2 noted, “If we find out any incident, we document, report, and suggest a plan or solution to rectify the incident.” P1 stated that the third-party team documented every noticed incident, made a report, and provided a solution plan.

The participants also use inspection in the case of oil spillage or leakage to determine the cause and provide a stoppage solution. P1 commented that in case of leakages or spillage, the third party company provides plans and suggestions on how to fix the accident; they contact the occupation safety and health administration and other interested government agents of the accidents. P3 indicated that they conduct regular inspection through their internal safety department and use an external company to conduct a periodic inspection of the entire plants to avoid leakage or spillage. P3 stated, “We emphasize on accurate and regular inspection to our safety department; we try to avoid creating any form of attention to the OSHA, as well as the Texas DOT. P2 noted, “We conduct a detailed inspection of the oil and gas storage tanker, the truck tankers, and

all other equipment to ensure there is no leak or blunt bolt that can cause spillage.” P4 noted, “In case of spillage or leakage up to a particular volume, we call on the EPA.”

Aside from the tankers and pipelines, periodic inspection extends to the storage tanks and the products to ensure the undamaged products. P3 continued, “We also test the oil in the storage tankers periodically to check for corrosions as well during loading or offloading of the gas in the truck tankers.” We ensure and encourage all our workers to adhere to the safety policy, complete all necessary inspection, document the inspection, and report any incidents. P2 explained that periodic and up-to-date inspection is crucial to ensuring the safety of the tankers and the product while on transit and in storage. P2 stated, “We engage in different nondestructive testing from loading of the consignment to the delivery station, which includes visual inspection, acoustic emissions inspection, thermography inspection, radiography inspection, and ultrasonic inspection.”

The personnel involved in the transportation of oil and gas also undergo inspections, which is a requirement by the Texas DOT. P2 commented, “We ensure our drivers are healthy enough to drive the trucks; they undergo periodic drug and alcohol testing and we provide the results to the DOT.” Similar to P2’s comment, P4 indicated that drivers undergo various test to ensure drivers comply with the rules and regulation of drivers’ health as stipulated by the Texas DOT. P3 described that to ensure drivers comply with the policies regarding alcohol or drug use, the organization’s safety and compliance agent uses random medical test selection to encourage drivers to abstain from using alcohol and drug. P3 continued that with the help of government agents, a third-party company, and the organizational safety inspection policy is a vital process in the

daily operation of transporting and distribution of oil and gas. I validated the participants' responses through a review of operational safety handbooks and employee safety handbooks. Supply chain managers use inspections, maintenance, and monitoring of oil and gas equipment either within the plant or in transit help to promote a safe environment as well as delivery of undamaged oil and gas products (Naevestad et al., 2018).

The safety or inspection officer record and document the inspections for audit, compliance, and reference purposes. P2 noted, "Every inspection is either recorded manually by our workers or stored on the system. However, the safety team pulls this electronically stored data on regular basis to ensure the equipment is in good working order." The inspection forms include vital information, such as the date, time, and reason for the inspection. The inspection form also indicates the positive and negative aspects of the specific inspections. P4 stated. "Our safety team keeps a detailed log of time and date of inspection to ensure that all inspection and maintenance are in due time." Some organizational safety teams use technology for inspection purpose. P3 stated, "We use drone technology to monitor the storage tankers, the pipelines, and the trucks. The drone has been very helpful because now we can detect any upcoming problem as the machine keeps an accurate record of time, date, and due time for maintenance." The increase in IT has helped with accurate and efficient inspection process even from a far distance. P3 commented, "We use the drone to monitor the tankers in transit. The drone lets us know the location of the tanker, the route, and delivery time. This way we can monitor the driver all the way from loading to delivery to the station and advice of the prefer route or

alert any foreseen issue.” Supply chain leaders encourage a safe environment, personnel, and equipment since the government agents can inspect the facilities at any time.

The findings of this study align with the research of Iqbal et al. (2018) in that inspection is an instrument of integrity assessment to ensure compliance with specific regulatory requirements. Iqbal et al. attributed inspection strategy to integrity management program and described that inspection ensure deminimum risks to the product, public, and the environment. These findings also confirm the findings of Agarwal et al. (2018), who noted in their study of life cycle costing analysis that an inspection strategy is a means of minimizing damaged oil and gas through corrosion. The findings of this study also align with the research of Riley et al. (2018), who noted that the removal of contaminates and dissolved organic matter within oil products occurs because of the results obtained from the inspections. Riley et al. confirmed that supply chain leaders use an inspection strategy to help ensure product quality and safe transportation of oil and gas products.

Process measurement is a significant element of business process orientation that defined the importance of critical control point (Mekonnen & Naod, 2017). The idea of process measurement is to measure the characteristics of the process output during process realization to help identify mistakes and areas of improvement in the process activities (Lahajnar & Rožanec, 2016). Inspection strategy involves measuring the characteristics of the business process to correct mistakes, curb disasters, and indicate the area of improvement. Participants emphasized the importance of inspections in the processes of transporting and distributing oil and gas products as a means of correcting

errors, identifying maintenance needed, enhance monitoring, and reduce hazards. Process measurement also involves documenting of measurement results for feedback and reference purposes (Randelović et al., 2018). Participants indicated that inspection officers collate and document inspection results for feedback and reference purposes. All participants described that they select qualified candidates, such as the inspection officer or safety leader, to manage the internal inspection process.

Theme 3: Information Technology Strategy

IT strategy was another significant emergent theme from the data. The oil and gas industry benefited immensely from the advancement of IT. All participants emphasized that the use technology promoted the efficiency and effectiveness in the day-to-day operations of the oil and gas industry. Table 5 displays the primary subthemes of the technology strategy.

Table 5

Subthemes of Information Technology Strategy

Subtheme	Percentage of use by companies
Drone technology	50%
Hifi technology	25%
RFID technology	25%
Monitoring technology	100%

P1 used the word “awesome” to describe the impact of IT in ensuring the delivery of undamaged oil and gas products. P1 described that technology has always been good since the introduction of the computer system, but the drone technology has been “awesome.” All participants noted how advancements in IT had a positive effect on

operational performance, delivery systems, maintaining safety, and monitoring. P1 commented, “I remember when our people use to drive hundreds of miles to manually check on the pipeline for leaks, loose clamps, or anything that could contaminate the oil in the pipeline. Now the with the drone technology, we have efficiency in monitoring and maintenance.” In agreement with P1’s statement, P4 noted, “We use IT in most areas of operation. Some years ago, most of our work was done manually, but now with the help of IT, we are advancing to automation in many areas of operation.” P1 and P4 noted how IT and advanced drone technology has had a positive effect on the cost and the effectiveness of monitoring.

P1 identified an ultrasound technology used called the Hifi, which is an ultrasound and fiber optic technology to detect vandalism, cracks, or burning. The participants used technology, such as the ultrasound and drone technology, to help ensure the safety of the transportation equipment regardless of the distance to the plant. The participants’ use of IT also helps in documenting, recording, and updating records effectively and efficiently. P4 described that the use of radio-frequency identification (RFID) has helped in keeping inspection and maintenance log. Rather than keeping an inspection log manually, logisticians use RFID to keep an accurate, clear inspection and maintenance log.

The advancement in information communication technology is a positive factor for transportation quality as logisticians can easily track deliveries, monitor trucks, tankers, and pipelines, and receive real-time information. P3 stated, “IT has made life much easy when tracking the trucks for location, and estimating the time of delivery,

routing, and general logistics operation.” P3 noted how the use of IT has helped the company maintain compliance with the routing policy as stipulated by the DOT. Supply chain leaders use technology to enhance communication between the truck drivers and the logisticians with issues, such as re-routing and re-direction. P2 and P3 noted that they not only must ensure delivery of uncontaminated products, they must also ensure the safety of the environment. P2 stated, “With IT application, we can monitor the drivers, help the drivers with the route. For example, the DOT does not allow hazardous products transported through the main city, and in the past, we had difficulty finding the safest route for the truck drivers to avoid any fines.” P3 described that the use of C-Link improved safe routing, “because now we can re-route the truck drivers easily, we can send messages to truck drivers, and it also makes investigation easy.” The C-Link is an application installed in the truck through which the logisticians can track, monitor, check for maintenance updates for the truck, and communicate with the driver. The use of drone technology also helps in monitoring the transportation equipment. P3 highlighted the use of drone technology in ensuring no damage or contamination occurs to the products or the environment during transit. P2 also indicated that using IT for tracking and monitoring equipment is helpful in ensuring the delivery of oil and gas products. P2 stated, “With the use of our IT application intercom, we can easily track and monitor our equipment.” P4 commented, “We use an automated tracking device RFID to monitor all means of transportation. The tanker, for example, goes on the offshore for many weeks, and we only hope it arrives safely. With the help of the tracking device, we know where the tanker is, and when it is arriving the shore.” I reviewed the company’s annual report

provided by P4 and confirmed that the use of RFID enhanced the effective communication between transporters and the operational center. P4 stated, “Using RFID enables us to communicate with the crew, which is a good thing.” P1 indicated the prospect of blockchain technology to help in a safe, efficient, and low cost logistics operation.

Although, all the participants proclaimed the positive aspects of implementing an IT strategy, P1, P2, and P4 noted that IT could not replace the need for capable employees. P1 stated,

I cannot say the IT is at the peak when it comes to depending on it for safety and the delivery of uncontaminated products; I think companies are still researching and investing in IT development. We cannot say we are there yet, but the prospect is encouraging.

P4 described that the use of IT in the delivery of oil and gas products is essential, yet noted that product delivery in good condition remains contingent on qualified people. P2 noted that the use of IT could advance the human effort in ensuring transportation of uncontaminated oil and gas products; however, IT cannot replace the human effort when dealing with hazardous and flammable products, such as oil and gas.

These findings align with the research of Thibaud et al. (2018), who confirmed that the rise of the Internet of Things, such as the use of drone technology to offer safe and reliable transportation of undamaged oil and gas products because of the ability to operate at a granular level and provide rich information. Thibaud et al. continued that the increase of IT brought about transportation intelligence, which resulted in the safe

transportation of undamaged oil and gas products. These findings also confirm the research of Schuster (2018) who described that advancements in IT, such as the real-time data, resulted in improved safety performance in monitoring, maintenance, and transportation of hazardous products. Schuster also confirmed that the use of Internet of Things helps identify the driver's compliance with the policies and regulation described by the organization. Supply chain leaders receiving real-time data also help in tracking drives route, delivery time, and rest time, resulting in reduced damage to oil and gas products (Schuster, 2018). These findings also align with the study of Perisic et al. (2018) in that the use of IT, such as master meter system used in some oil and gas companies, helps in monitoring and disposition of asphaltic material in oil or liquids in the natural gas.

Effective business leaders adopt up-to-date IT systems into their business operations to implement business process orientation (Badenhorst-Weiss et al., 2017; Prajogo et al., 2016). Supply chain leaders' adoption of IT will enhance operational efficiency, reduce workers' fatigue, and promote quality output (Randelović et al., 2018). IT adoption includes the use of software packages related to business process and the Internet of Things. Participants identified the use of IT, including Internet of Things, in the daily operation of transportation and distribution of oil and gas to ensure delivery of undamaged goods. Participants identified the use of IT in the monitoring, tracking, inspection, and documenting the delivery of oil and gas products.

To implement business process orientation, organizational leaders should invest in IT to remain competitive in a dynamic business environment (Thibaud et al., 2018). All

participants indicated their organizations' willingness to make significant investments in IT to promote the safe delivery of undamaged products. Participants highlighted their involvement in integrated IT infrastructure and asset management with third-party organizations to enhance delivery of uncontaminated oil and gas products.

Theme 4: Employee Training Strategy

The fourth theme that emerged was employee training. All the participants stressed the importance of employee training in ensuring delivery of undamaged products. All participants also highlighted that employees, such as the truck drivers or any worker that has direct contact with the product, must undergo training and certification according to the Texas DOT and OSHA. Table 6 displays the subthemes of employee training strategy.

Table 6

Subthemes of Employee Training Strategy

Subtheme	Percentage of use by companies
Texas DOT training	100%
OSHA training	100%
Hazardous material training	100%

According to P1,

We ensure all staff is well trained and certified before they are allowed on the field of operation. Some supply chain leaders ensure workers training starts from the employee orientation, and after that, there are mandatory periodic training for each employee to work in the field.

P2 stated, “We train all truck drivers according to the DOT.” P2 continued that during the training, drivers get copies of the policies and regulations they must carry with them in the truck at all time. P4 described that all employees undergo periodic up-to-date training on new policies introduced by the Texas DOT. Aside from training, drivers receive a copy of the policies and documents associated with transportation, handling, and disposal of hazardous material. P3 also emphasized that every truck driver must carry the Texas DOT policy, the OSHA booklet, the hazardous material compliance pocketbook, the safety regulation pocketbook, and the cargo securement handbook.

The Texas DOT mandates specific period of rest for truck drivers transporting hazardous materials. P4 commented, “We train staff on company’s standard of operation, hours of duty for the drivers, and other training as directed by the DOT or the management.” Participants also indicated that the employers are also responsible for complying with the training to remain certified. According to P3, all truck drivers must be Hazmat and tanker endorsed on their commercial driver’s license and each driver is responsible for staying in compliance with the training, and a crucial factor in employee training is self-development. Drivers are required to know and understand the basic rules and regulation for transporting oil and gas. P2 indicated that OSHA officials expect all workers to be familiar with the basic rules of logging, handling, disposal, or use of the hazardous material. P2 noted, “We ensure that we provide periodic training to staff.” P1 continued that the staff training is important in ensuring safety. The drivers and plant engineers undergo training on how to handle situations, such as spillage and fire

breakout. The use of safety training helps the drivers to make the right judgment in every situation; the training is for the protection of the drivers and the environment.

These findings align with the findings of O'Connell (2018) in that effective employee training promotes employee confidence and motivation, and fosters operation performance in the distribution of transportation of hazardous materials. These findings also confirm the research of Dahl and Kongsvik (2018) in that the use of proactive education of employees on safety matters promotes safety, climate of the work environment, and safety consciousness in the drivers. In addition, these findings confirm the research of Hamid et al. (2018), who noted that the use of employee training increases employee engagement, improves the safety culture and operational performance in the oil and gas industry, and facilitates the delivery of undamaged oil and gas products.

Business process orientation theorists noted that employee management is crucial to increase business performance and productivity (Naevestad et al., 2018). Employee management involves empowering the employee through training which would trigger employee specialization. Under the concept of business process orientation, the employee appears as a significant factor that determines the success or failure of the organization (Hamid et al., 2018). Participants emphasized employee training as a means of ensuring transportation and delivery of undamaged oil and gas products. In addition, participants indicated that safety professionals train specific teams to specialize in inspection, monitoring, and maintenance of the oil and gas operations and the equipment involved in the operations. Despite the importance of IT advancement, such as robotic and drone

technology, human effort as employed for business operations, especially in the oil and gas industry, is vital to business success.

Alignment of the Findings With Business Process Orientation

In this study, through the lens of business process orientation, I explored the strategies that supply chain leaders use to ensure delivery of undamaged goods to the customers. The four themes that emerged from the data analysis were (a) process strategy, (b) inspection strategy, (c) IT strategy, and (d) employee training strategy. All four strategies align with the elements of business process orientation. Randelović et al. (2018) described the elements of business process orientation as critical factors that business leaders must initiate for successful implementation of process orientation. Randelović et al. identified elements of business process orientation to include strategic process alignment and process measurement, IT and IT investment, employee training and management, and standardization of processes that involve strategies to monitor and maintain business operations, such as inspection strategy. Kasim et al. (2018) described that business leaders implement business process orientation to focus on improving organization performance, customer satisfaction, and safety consciousness. Kasim et al. identified that the factors of process orientation include adequate IT resources, employee awareness, process focus, and systems for continuous improvement. Other researchers identified various factors that supply chain leaders need for successful implementation of business process orientation to include process strategy, process measurement, governance, IT, and employee management (Mens & Ravesteyn, 2016; Rosemann & vom Brocke, 2015; Schmiedel et al., 2015). Rosemann and vom Brooke (2015) described

the six core elements of business process orientation are strategic alignment, governance, methods, IT, people, and culture.

Applications to Professional Practice

Business leaders seek for different means of achieving and sustaining competitive advantage and increased profitability. Ensuring delivery of undamaged products to the customer has become a significant way through which business leaders can achieve these organizational goals. From this study, I identified four strategies that supply chain leaders use to ensure delivery of undamaged oil and gas to the customers. Application of the four strategies may increase customers satisfaction and loyalty, reduce the cost of logistics, and increase overall supply chain performance.

Adoption of process strategy may help supply chain managers to focus on business processes and procedure rather than functionality by position. Randelović et al. (2018) indicated that organizational leaders who focus on the processes of business operations provide much value to the stakeholders, especially the customers. Application of process strategy to the business operation may facilitate attention to the details of the business activity, which may result into increase in service and product quality. Attentive focus on every detail of business operation may eradicate waste and promote quality (Randelović et al., 2018). Supply chain leaders might use the findings of this study to define and realign the objectives of the organization, which should include ensuring the safe transportation of undamaged products. Adoption of process strategy in supply chain operations might also help in promoting customer value through employee performance improvement and specialization. Business leaders use process orientation strategy to

promote safety and security measures through documentation of processes, procedures, and facilitating compliance (Capodaglio & Callegari, 2018).

The use of an inspection strategy involves periodic monitoring and maintenance of the plant and the equipment used for supply chain and logistics operations. Supply chain leaders might use the inspection strategy to promote the organizational safety culture. Effective inspections can reduce the occurrences of hazard and accidents (Riley et al., 2018). Periodic inspections through monitoring and maintenance might mitigate equipment failure, human error, and damaged products while promoting a safe, social environment. Business leaders might also use inspection strategy to reduce cost. Some business leaders suffer high cost because of fines, damages, court cases, and restitution fees due to oil spillages, truck accidents, or industrial and mechanical damage. The application of an inspection strategy within supply chain operations might help mitigate the high cost of operations, promote a safe working environment, a cleaner natural environment, and the delivery of undamaged products (Dahl & Kongsvik, 2018). In addition, supply chain leaders might implement an inspection strategy to promote service and product quality that may facilitate customer satisfaction and loyalty.

The application of IT to the business operation has proven to promote efficiency and increase productivity (Quwaider & Jararweh, 2016). Other benefits that come with the integration of IT, such as Internet of Things include cost reductions and enhancement of other business operations. The application of IT strategy by business leaders might enhance other business operations by facilitating operation efficiency, process improvement, service quality, and effective operations. Supply chain leaders might apply

the findings regarding an IT strategy to enhance the communication network of logistics infrastructure. Supply chain leaders might apply the IT strategy to enhance monitoring, tracking, and maintenance of equipment regardless of the location. The application of an IT strategy might enhance a safe working environment, promote process standardization, transparency, and agility, and overall organizational performance (Thibaud et al., 2018).

Employee training is crucial for smooth business operations. Effective employee training and development could improve the employee's performance (Capodaglio & Callegari, 2018). Employee training is the bridging gap between the current performance and the standard desired performance (Radosavljevic, 2015). Supply chain leaders can provide training through coaching, mentoring, peer cooperation, and subordination (Hamid et al., 2018). Supply chain leaders might apply the employee training strategy to improve the employees' skills as well as to direct the attention of the employees to safety consciousness. Business leaders might use the employee training strategy to encourage, motivate, and provide needed knowledge and understanding for improved performance. Adoption of an employee training strategy might increase employee performance that could promote increase performance. Tang et al. (2018) noted that employees of organizations with effective training programs show higher performance than employees of companies that fail to provide adequate training. Supply chain leaders might also apply the employee training strategy as means of intervention, correction, and assessment, which could facilitate increased efficiencies in process, curb mistakes, enhance quick thinking to solve problems, promote safe business operations, and facilitate the delivery of undamaged goods.

Implications for Social Change

Safeguarding the wellbeing of the social community and the environment has become a significant goal in some organizations. Some organizational leaders aligned the structure and design of their operations with a commitment to sustainability (Epstein, 2018). Supply chain leaders might use the findings of this study to gain practical and crucial knowledge on the societal benefit of ensuring the delivery of undamaged products.

The delivery of undamaged oil and gas products to industrial, commercial, and residential customers might result in a safer environment, improved living conditions, and a healthier society. The application of the findings of this study by supply chain leaders in the oil and gas industry might reduce the contamination of products, reduce the environmental damage caused by oil or gas spills or leaks, and improve transportation and storage facilities. Protecting the environment and people from contaminated oil and gas products is an essential function of leaders in the oil and gas industry.

The delivery of undamaged oil and gas products through a proper tracking process, appropriate inspections, and a consciousness of the logistics providers to protect the oil and gas from corrosion, spillage, pollution, might result in a healthier natural environment. The application of this study by business leaders may provide knowledge and understanding on how to safeguard the human natural habitat from the disposition of spilled and damaged oil and gas products.

The use of IT provided by logistics providers to the customers to track the condition of oil and gas products during transit is also a means to foster the standard of

living of the social community as customers can plan based on the awareness of the delivery of their undamaged products. The application of IT to the transportation and delivery of oil and gas products might also help in safeguarding the social and natural environment from hazards, accidents, or disasters through efficient and effective monitoring, tracking and maintenance of the different means of transporting the oil and gas.

Recommendations for Action

Leaders in the competitive and demanding business environment seek increased operational performance to enhance competitiveness. In most industries, business leaders use logistics and the supply chain for improved performance and competitiveness. As customers remain a vital stakeholder to achieve competitiveness, there comes the need to ensure customer satisfaction through delivery of undamaged products to the customers. The inadequate management of a business process systematic approach results in inefficiency, low productivity, unnecessary processes, and customer dissatisfaction. From this case study research, some recommendations emerged that supply chain leaders might use to ensure delivery of undamaged goods to the customers to promote customer satisfaction and competitiveness.

I recommend to the supply chain leaders to adopt the process orientation strategy in the logistics operation to facilitate effectiveness, efficiency, and safety culture in storage, transportation, and distribution of products. I recommend that business leaders integrate an inspection strategy in the daily operational processes to encourage the efficient and accurate monitoring and maintenance of the business facilities and

equipment. The use of daily inspection practices might result in a minimization of risks, reduce the probability of an environmental disaster, and improve the delivery of undamaged products. I recommend to the business leaders to invest in up-to-date IT infrastructure to mitigate inefficiency, mitigate location and distance barriers, promote efficient and accurate communications to increase productivity. I recommend supply chain leaders empower their employees with accurate and up-to-date training and information as introduced by different government agents to facilitate compliance with state and federal laws as well as promote a culture of safety, customer satisfaction, and delivery of products in good condition.

The findings of this research are beneficial to business leaders, supply chain managers, and logistics leaders in different industries, such as the agriculture, pharmaceutical, transportation, and manufacturing industry. The application of the findings of this study might help to reduce the cost of logistics operations, promote a safe working environment as well the social and natural environment, and increase customer satisfaction through the delivery of undamaged goods.

I will submit this study for publication within the ProQuest database. I intend to present the findings of this study at conferences, such as the oil and gas supply chain and procurement summit, SCOPE supply chain conference, and supply chain management conferences. I intend to submit articles for publication with scholarly journals, such as the Journal of Supply Chain Management, the Journal of Business Logistics, and the Oil and Gas Journal.

Recommendations for Further Research

The purpose of this study was to explore strategies that supply chain leaders use to ensure delivery of undamaged products to customers. I used a qualitative multiple case study to explore the phenomenon from the perspective of participants in the oil and gas industry. The sample population restricted to four supply chain leaders in Texas was limitation of this study. To overcome this limitation, I recommend future researchers use a larger sample size of supply chain leaders to conduct qualitative research in other oil and gas producing regions regarding the delivery of undamaged products. In this study, I reviewed publicly available company documents to engage in methodological triangulation. I recommend future researchers seek proprietary company documents from business owners and leaders to overcome this limitation. Future researchers might use select business owners in the oil and gas industry as participants to expand the scope of this study. A recommendation for further case study research is to extend the research to other industries, such the agriculture, perishable foods, and pharmaceutical industry. The possibility of broadening the scope of this study and using a larger sample size might promote transferability.

I recommend future researchers conduct quantitative, correlational research to examine the relationships between variables, such as the quality of oil and gas products delivered, the type of transportation mode, the distance traveled in the supply chain, and the number of accidents resulting in product and environmental contamination. This study was of limited scope and sample size. Researchers conducting a quantitative

method study might expand the scope and sample size; therefore, overcoming some of the limitations of this study.

In this study, I used business process orientation as the conceptual framework to understand the strategies supply chain leaders used to ensure delivery of undamaged products. A recommendation for further research is to explore the delivery of undamaged goods through the lens of the resource-based view, strategic choice theory, or transactional cost analysis theory. I recommend further researchers explore the organizational, societal, and consumer cost implications of the delivery of damaged goods.

Reflections

My lived experiences in Africa, Europe, and the United States triggered my interest to understand how some business leaders ensure the delivery of undamaged goods through the safe operation of the supply chain and logistics operations while upholding performance and customer satisfaction. The numerous accidents and incidents of oil and gas transportation I witnessed were also factors for my desire to understand how business leaders strive to deliver oil and gas products in good condition in an environmentally safe manner. Furthermore, numerous instances of delivery of damaged goods crowned my intention to seek and understand the strategies business leaders use to ensure delivery of undamaged goods.

I began the research with an open mind and a mindset of acquiring knowledge and gaining an understanding from successful business leaders who used a strategy in promoting safe product delivery, especially in the oil and gas industry. I approached the

research with little to no bias, and I had no presumed thoughts or experienced any surprises about the emerging themes. The overall experience of the doctoral research was exciting, voluminous, and momentous. I used four participants in a qualitative multiple case study to explore strategies some supply chain leader use to ensure the delivery of undamaged goods in the oil and gas industry. I intend to use the findings to promote the delivery of undamaged goods, especially oil and gas products, in a safe, reliable manner.

Conclusion

Some business leaders experienced low profitability and customer dissatisfaction because of product rejection from delivery of damaged products to customers. Delivery of damaged good to customers posed a significant threat to organizational competitiveness and performance. However, some business leaders used the integration of business process orientation to supply chain and logistics operations to refocus the organizational goal of ensuring the delivery of undamaged goods, and the safe storage, transportation, and distribution of oil and gas products. The accurate application of business process orientation to supply chain and logistics operation might promote logistics performance through process view, adequate and accurate inspection, employment education, and investment in up-to-date IT.

For this qualitative multiple case study, I collected data from four participants from the oil and gas industry in Houston, Texas. I explored the participants' knowledge and understanding of delivery of undamaged oil and gas products through semistructured interviews and publicly published company documents. I used the Yin's (2018) five-step process of data analysis and used NVivo 11 for data transcription and organization. I used

an audit trail to ensure data saturation and used methodological triangulation to ensure the credibility of the findings.

Supply chain leaders in the oil and gas industry face significant logistical challenges regarding the efficient and safe delivery of undamaged products to their customers. From the finding of the study, four themes emerged: process strategy, inspection strategy, employee training strategy, and IT strategy. Business and supply chain leaders might use the findings and recommendations from this study to promote competitiveness, customer loyalty, delivery dependability, logistics performance, service quality, and profitability. The implications for positive social change include the potential for supply chain leaders to reduce material wastage and environmental pollution through the safe delivery of undamaged oil and gas products to customers.

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Appendix A: Interview Protocol

Interview preparation.

- I will search for potential participants through LinkedIn and the Institute of Supply Chain Management website.
- I will contact the potential participants by email with an invitation to participate (see Appendix B)
- I will attach in the invitation email a copy of the informed consent with my contact information
- I will propose the interview settings subject the participants' conveniences and approval, such as a conference room in a local public library.

Opening the interview.

- I will greet the participants with a firm warm hand shake
- I will thank the participant for agreeing to participate in the interview
- The interview will begin with a brief overview of the research, the purpose, and the time required for the interview
- I will present a copy of the informed consent form and review the contents of the form with the participant. The items included in the consent form are: (a) the expected length of time to participate in the interview; (b) the interview will be audio recorded and if a participant chooses not to be recorded, handwritten notes will be taken; and (c) a summary of the interview will be presented to each participant to validate my interpretations of their responses to each interview question

- I will explain that their participation is voluntary, and they can withdraw from the study at any time without prior notice and through a verbal or email request, even after the completion of data collection.

Informed consent.

- I will send the participants a copy of the informed consent form for review through the email attached to the invitation to participate email, and carry a copy to the interview
- I will provide my contact information to each participant in case he or she decides to withdraw from the study
- I will obtain informed consent through the participants replying, "I consent" the Invitation to Participate email with the informed consent form attached.
Participants may also choose to sign the informed consent form just prior to the start of the interview.
- I will provide the participant a copy of the consent form for his or her records.

Conducting the interview.

- I will ask the interview questions in an open-ended format. I have designed the interview question in an open-ended format for all participants to share their experience and knowledge on the phenomenon
- I will ask nine interview questions with each question beginning with "what" or "how"
- I will ask one question and allow the participants to respond. I record their response and take reflective notes. Based on the participant's response to the

question, I will ask a further probing question to allow in-depth understanding and clarification

Follow up with probing questions.

- Following the response to each interview question, I will ask one or two further probing question to allow in-depth understanding and for clarification

Theme verification.

- I will ask the participant about the major themes discussed in the interview to ensure that I understand the intent of the participant.

Coding.

- I will use a sequential coding system to identify the participants during the interview, recording without using their names. For example, I will assign each participant an identifying pseudonym, such as P1, P2, and P3.
- I will also explain to the participants that only I will have access to the name of each participant associated with each pseudonym and the database will also show their assigned pseudonym.

Recording reflexive notes.

- In addition to recording the interview, I will take notes to document any reflexive thoughts and observation might have while the interview is proceeding.

Ending the interview.

- I will thank the participants to show appreciation and gratitude for the time and information given during the interview

- I will contact the participants at a later date to verify the accuracy of the transcript and to engage in member checking to obtain any additional information they might offer.

Appendix B: Invitation to Participant E-Mail Script

Hello,

My name is Oluwaseun Sanusi, a doctoral student at Walden University. I am preparing to conduct a research study on strategies to ensure delivery of undamaged goods to customers. I identified you as a potential participant from your profile on LinkedIn and the Institute of Supply Chain Management website.

You are invited to take part in a research study about what strategies supply chain leaders use to ensure the delivery of undamaged goods to their customers. I am inviting supply chain leaders who have successfully implemented a strategy to ensure the delivery of undamaged goods in the oil and gas industry.

The potential benefits of my study are to:

- Improve service efficiency, delivery dependability, service quality, lower logistics costs, and customer loyalty.
- Control and reduce natural and mineral resources wastage, material wastage, and environmental pollution through destroying materials from damaged products.

The eligibility criteria for participating in this study are: (a) serve as a supply chain leader in the oil and gas industry in Texas, (b) possess an understanding of the phenomenon, and (c) have applied a strategy to ensure the delivery of undamaged goods to their customers. If you meet the eligibility criteria, I will request for an interview session lasting for 30-45 minutes, and a 30-45 minute follow up meeting for you to review my interpretation of your responses during the interview. I will also be reviewing publicly available documents related to the delivery of undamaged goods, such as company quarterly or annual reports, company website data, company publications, and other information posted on the Internet.

I have attached an informed consent form to this email to further explain the interview process and address confidentiality and privacy concerns before the interview. Please read the informed consent form carefully and ask any questions you may have before making a decision to participate. You can contact me via email at [REDACTED] or by telephone at [REDACTED] if you have questions. If you meet the eligibility criteria, would you be willing to participate? After reading the informed consent form, and you may provide your agreement to participate in this study by replying, "I consent" to this email.

Sincerely,

Oluwaseun Sanusi

