ARTICLES

RUDIMENTARY CAUSES AND IMPACTS OF SUPPLY CHAIN RISKS IN SUB-SAHARAN AFRICA

ABSTRACT

Identification of the causes of supply chain risks is a logical step towards its effective management. The purpose of this study is to explore the causes of supply chain risks, their impacts, and the mitigating strategies used among the manufacturing firms in Nigeria. An exploratory qualitative multiple case research methodology combined with the quantitative content analysis is used for this study. A sample of ten manufacturing firms cutting across three different sub-sectors (Pharmaceutical & Health, Food & Beverage, and Conglomerate) was chosen for the study. Partial and complete open-ended questions in the interview guide were used for the interviews conducted among the respondents. The study revealed the common causes of supply chain risks in manufacturing firms in Nigeria which include; transportation delays, variation in raw material prices and quantities, unexpected customer demands, and constant power outages.

KEYWORDS | Supply chain risk, manufacturing firms, mitigation strategies, developing country context, case study.

Adenike Aderonke Moradeyo
adenike.moradeyo@augustineuniversity.edu.ng
Augustine University, Epe, Lagos State, Nigeria

INTRODUCTION

Several studies on sources of supply chain risks and risk management have gained popularity among academics over the years (Blackhurst, Craighead, Elkins, & Handsfield, 2005; Craighead, Blackhurst, Rungtusanatham, & Handfield, 2007; Stecke & Kumar, 2009; Kleindorfer & Saad, 2005; Tang, 2006). For the sake of emphasis, the majority of the recent works in operations management especially the supply chain management literatures are focussed on the developed countries such as Germany and USA (Ambulkar, Blackhurst, & Grawe, 2015; Robb, Xie, & Arthanari, 2008; Beske, Land, & Seuring, 2014; Craighead, Blackhurst, Rungtusanatham, & Handfield, 2007; Heckmann, Comes, & Nickel, 2015; Hofman, Busse, Bode, & Henke, 2014; Oke & Gopalakrishnan, 2009; Scheibe & Blackhurst, 2017; Tang, 2006; Wagner & Bode, 2006; 2008; Wiengarten, Humphreys, & Gimenez, 2016).

Notably, there are disparities in the types of supply chain risks experienced in developing and developed countries. Some environment-specific factors are the reasons for the differences in performance of manufacturing firms in developing and developed countries (Luken, Rompaey, & Zigova, 2008). Despite the effects of globalization on aligning the diverse markets in the developing and developed countries, there are still considerable differences in firms' performances (Onwubolu, Haupt, De Clerrcq & Visser, 1999).

Due to some environmental sources of disruptions as a result of geographical, technological, and infrastructural differences, there is the need to identify the causes of supply chain risks, the mitigation strategies used in managing different risks in manufacturing firms in developing countries, especially in the case of Nigeria. Nigeria is chosen as the developing context investigated. This is because Nigeria has become an important part of the global supply chain due to her large market in the Sub-Saharan Africa (Pigato & Tang, 2015).

The need for academic scholars and practitioners in Nigeria to focus on the Nigerian manufacturing sector in order to ensure notable improvement cannot be overemphasized. There is need to take advantage of the recent diversification from oil and the move away from the mono cultural activities in the country (Uzonwanne, 2015). It is also an important step towards attracting more foreign direct investments (FDIs) in the manufacturing sector in Nigeria and creating aware-

ness for investors about potential risk factors in the country. The global interest in Africa at large and particularly, Nigeria has made this research work of great significance. This study focused on identifying and creating awareness about the causes of supply chain risks and supply chain risk management strategies popular to the developing context investigated. Hence, some sources of supply chain risks peculiar to manufacturing firms in Nigeria and the mitigation strategies commonly used in managing different supply chain risks have been identified. In addition, this work also enumerated the impacts of supply chain risks on the manufacturing firms in Nigeria.

As earlier explained, there has been a significant amount of research conducted in the area of supply chain systems among academics but there have been little or none reported on supply chain risk management in relation to the manufacturing sector in Nigeria. Therefore, this work focuses on typical manufacturing-oriented supply chains in Nigeria. The objectives of the study included are three. First, to identify and state the supply chain risks that disrupt the manufacturing operations of firms in a developing context. Second, to identify and state the impacts of supply chain risks on the operations of manufacturing firms in the developing context investigated. Finally, to identify and state the different mitigation strategies used by manufacturing firms in the developing context investigated without considering the fit or matching of supply chain risks with specific mitigation strategies. In this regard, the question answered in this study is " what is the state of the supply chain risks among the Nigerian manufacturing firms". The state of the supply chain risk from this context connotes its causes, impacts, and the different mitigating strategies used to manage the risks with no particular interest in the fit or matching perspectives in this study.

There have been growing research interests in supply chain risk management among scholars in the developed countries with less focus on the developing world's supply chain risk management and manufacturing processes. This gap necessitates the need to account for the developing countries' context in order to examine the peculiar attributes of the environment. Therefore, this study contributes the following to the supply chain risk management literature. First, it explores the phenomenon of supply chain risks emphasizing the root causes and impacts on manufacturing firms from a developing country's context. Second, it investigates and highlights the

different mitigating strategies for managing supply chain risks from a developing country context specifically, Nigeria with no focus on fit or matching dimensions. Hence, the scope of this research study does not include the matching of supply chain risks to their best mitigation strategies for managing them. Third, this study answers the call of making use of content analysis for research which is rarely used in the field of operations management and or supply chain management (Akkermans & Vos, 2013; Chatha, Butt & Tariq, 2015; Flynn, Sakakibara, Schroeder, Bates, Flynn, 1990; Meredith, 1993; Mir, Lu, Cantor, & Hofer, 2018; Turker & Altuntas, 2014).

The rest of this paper contains the following: section two is the literature review of this study. Section three presents the research methodology which comprises the instrument design, sample, data collection and analysis methods. Section four involves the research analysis and discussion and finally, Section five presents the summary of findings, contributions to the literature, areas for future research and limitations.

LITERATURE REVIEW

Supply Chain Risks

Supply chain risks are adverse events that could be anticipated or unanticipated with negative consequences on supply chains (Bode & Wagner, 2015; Hendricks & Singhal, 2003; Svensson, 2000; Tang & Musa, 2011). The utmost outcome of supply chain risk is the shortage of the number of goods produced and or supplied to customers compared to the amount demanded by customers. Moreover, unexpected occurrences that hamper the flow of goods or materials from reaching assigned destinations can also be referred to as supply chain risks (Hendricks & Singhal, 2003; Svensson, 2000). Some negative impacts of supply chain risks have been identified from the developed countries' contexts (Wagner & Bode, 2006). According to Porterfield, MacDonald and Griffis (2012), supply chain risks have negative effects on the stock market and operational performance. On a similar note, supply chain risks can directly affect corporate stock prices by nearly 9 per cent and revenue losses by 20 per cent (Benyoucef & Forzley, 2007). In addition, supply chain risks can have long-term negative effects on a firm's financial performance (Tang, 2006). The significant negative impact of supply chain risk on customers is that the disruption hinders the ability of producing firms from meeting customers' demands as at when due.

Academic scholars are often interested in risks, risk management strategies and their categorization over the years (Stecke & Kumar, 2009; Jüttner, 2005; Chopra & Sodhi, 2004; Kleindorfer & Saad, 2005; Finch, 2004; Oke & Gopalakrishnan, 2009). According to Guedes, Bittar, Di Serio, and Oliveira (2015), risks are many and most commonly reported supply chain risks from the developed countries' contexts are supplier capacity not meeting demand, raw material price increase or shortages, unexpected changes in customer demand, delayed or damaged or misdirected shipments and fuel price increases or shortages. In addition to those mentioned above, there are terrorist attacks, strikes, devaluation of currencies, transportation delays such as port stoppages, accidents, poor communication, spare part shortages, quality issues, major global economic disruptions, natural hazards and cybersecurity failures (Blackhurst et al., 2005; Chopra & Sodhi, 2004; Finch, 2004; Jüttner, 2005; Kleindorfer & Saad, 2005; Stecke & Kumar, 2009; Tang, 2006; Worthington, Collins, & Hitt, 2009).

Hanna and Skipper (2009) in their work assert that supply chain risks cannot be avoided because all supply chains are exposed to risks. This study deviates from the norm by focussing on investigating the root causes and impacts of supply chain risks from a developing country context. Stecke and Kumar (2009), emphasized the need to pay attention to potential risk factors when moving manufacturing plants to developing countries' contexts in Africa and Asia because of the availability of low labour and materials costs. Tang (2006) classified such developing countries' contexts as turbulent environments. Hence, the importance of this study emanates from the evaluation of the causes of supply chain risks and the potential impacts on manufacturing firms from a developing country context in Africa. This supply chain risks evaluation cannot be underestimated.

Mitigation strategies

The efforts towards the management of supply chain risk involve the use of mitigation strategies. Mitigation strategies are defined as strategies put in place to manage anticipated and unanticipated risks in order to reduce or completely eliminate their negative impacts on supply chains (Norrman & Lindroth, 2004). Therefore, it is essential for firms to adopt risk mitigation strategies for managing supply chain risks in order to ensure smooth supply chain systems. Risk management process could be expensive, challenging,

and complex since there are different tiers in a supply chain cutting across the downstream and upstream stages (Bozarth, Warsing, Flynn & Flynn, 2009; Jüttner, 2005; Onwubolu, Haupt, Clercq, & Visser, 1999; Tang, 2006). However, the costs of not managing risks are higher (Benyoucef & Forzley, 2007; Macdonald & Griffis, 2012; Tang, 2006). The achievement of resilient manufacturing operations, cost minimisation and enhanced customer satisfaction are the outcomes of effective risk management strategies (Tang, 2006).

Extant works of literature have emphasized developed countries' contexts specific mitigation strategies. Several categorizations of risk management strategies and philosophies have been developed such as; robust strategies, proactive strategies, advance warning strategies, supply management strategies, demand management strategies, collaboration and co-operation philosophy, contingency tactics, distributed problem solving philosophy, information management strategies, supply chain agility philosophy, coping strategies, and product management strategies (Braunscheidel & Suresh, 2009; Beske et al., 2014; Chan & Chan, 2004; Stecke & Kumar, 2009; Rudberg & Olhager, 2003; Tang, 2006; Tang & Musa, 2011; Wiengarten et al., 2016; Tomlin, 2006). Specifically, some of these mitigation strategies are; postponement, strategic stock, flexible supply base / multiple sourcing, outsourcing, economic supply incentives, flexible transportation, revenue management, dynamic assortment planning, silent product rollover, safe locations and multiple facilities (Christopher & Lee, 2004; Blackhurst et al., 2005; Hanna & Skipper, 2009; Tang, 2006; Lee & Billington, 199; Johnson, 2001). All these studies were carried out in developed countries. Hence, the need to be aware of the mitigation strategies that are used by firms in the developing countries' contexts. The evaluation of the current mitigation strategies used by the manufacturing firms in Nigeria will establish if the strategies in use are adopted and adapted or created to suit the types of supply chain risks experienced. Therefore, this study hopes to bridge the research gap by concentrating on identifying supply chain risks and various mitigating strategies used to manage them from the Nigerian manufacturing perspective with no specific attention to the fit of risks with mitigation strategies.

Manufacturing in developing countries

According to Bozarth et.al. (2009), it is not the geographical location that influences the performance of a plant when compared with other plants but the suppliers' ability to deliver as at when due. In opposition to this view, Bruun and Mefford (1996) asserted that every production system should be tailored to its environment. For instance, just-in-time (JIT) production system may be inappropriate for developing countries because of certain environmental requirements (Oral, Mistikoglu, & Erdis, 2003). This may be partly because of low connectivity, poor information technology and the limited number of people trained to use such technology (Basu, 2004; Dada, 2006). According to Seuring & Müller (2008), in order to achieve a sustainable supply chain, both environmental and social factors should be put into consideration, albeit the ability to make profit is determined by being able to add value to customers consistently.

Some of the attributes of developing countries such as high inflation rate, high interest rate, high costs of technology, high costs of quality systems, low labour costs, high costs of training, high power distance culture, high uncertainty avoidance culture, few numbers of domestic suppliers among others (Oral, Mistikoglu, & Erdis, 2003). Consequently, these unique attributes of developing countries could have interaction effects with supply chain risks, thereby increasing the degree of severity of supply chain disruptions. Moreover, environmental risk sources are external conditions that impact the supply chains negatively such as political instability, macroeconomic uncertainties, shifts in government policies, social uncertainties and natural uncertainties (Jüttner, 2005; Miller, 1992; Miller, 1993; Rao & Goldsby, 2009). It has been found that political instability, macroeconomic uncertainties, shifts in government policies and social uncertainties are common attributes of most developing countries (Feng, 2001; Serven, 2002). Hence, the need to put these factors into consideration when adopting strategies from the developed country contexts.

 Bruun and Meffford (1996) confirmed that little or no attention is given to the environment's unique attributes in developing countries in strategy adoption rather strategies are made to conform to those of other industrial countries. This depicts that despite the unique attributes of developing countries, strategies are adopted blindly with little or no consideration for the environmental implications. It is important for developing countries to imbibe research and development strategies that are creative and adapted to their specific business environments

(Kumar & Saqib, 1996). Oyelaran-Oyeyinka, Laditan & Esubiyi (1996) emphasized that the Nigerian industries have the adaptive innovation to account for the bulk of technological change processes. Whereas in actual sense, it is better for the Nigerian manufacturing companies to use creative mitigation tactics that are unique to the environment rather than adopting the tactics used for mitigating supply chain disruption in the developed world. This is because generally, the unique attributes of the developing countries (Jüttner, 2005) would have a way of increasing the severity of supply chain disruptions on firms' performance and the manufacturing sector as a whole.

RESEARCH METHODOLOGY

An exploratory qualitative research methodology, specifically multi-case study is used in this study. There were little or unknown research studies on supply chain risks and management in the developing countries' contexts literature. This necessitates the exploratory nature of the study and it is recommended in production and operations management (POM) research (Akkermans & Vos, 2013; Flynn et al. 1990; Meredith 1993). The case study method is an important research for exploratory qualitative research studies (Yin, 1989; Eisenhardt, 1989). A case study involves comprehensive and exhaustive analysis of respondents in their natural institutional and social work areas (Ghauri & Gronhaug, 2005). The choice of the qualitative research method is based on the purpose of the research, which is to carry out an in-depth study on supply chain risk and its management from the Nigerian manufacturing perspective. This qualitative research method accounted for the choice of a semi-structured interview, a purposive sampling technique and open-ended questions for data collection. Open-ended questions are provided in order to allow the supply chain managers or equivalent managers to express their thoughts without restraints. The use of face-to-face interview as the data gathering tool ensures clarity of responses from respondents through clarifications and detailed explanations (Forza, 2002; Saunders, Lewis, & Thornhill, 2003).

Some previous works on supply chain risks made use of the case study approach (Blackhurst et.al, 2005; Oke & Gopalakrishnan, 2009) where retail and automotive supply chains were the focus respectively. Gimenez (2005), on the other hand, used a multiple-method approach, that is, the survey and the case study methods (as complementary approaches) for investigating the SCM-performance relationship. Jüttner (2005) made use of the explorative quantitative survey method such as postal questionnaires along with a focus group for obtaining data from senior-level supply chain management professionals. Sun, Hsu, and Hwang (2009) conducted a survey method for obtaining data from the manufacturing companies in Taiwan. In addition, Wagner and Bode (2006) made use of the cross-sectional survey for collecting data from top-level executives in logistics and supply chain management positions in Germany. However, because of the need for an in-depth understanding of the supply chain risk phenomenon from the points of view of the participants in their particular social and institutional work settings, the multiple case research methodology is found suitable for this study. This qualitative research method helped in examining the overall picture of the causes, impacts of supply chain risks and the risk management methods among manufacturing firms in Nigeria.

Instrument Design

The research instrument used in this study is an interview guide. The interview guide consists of standardized and pre-arranged open-ended questions that help in data gathering from different respondents (Kotzab, 2005). A brief introduction on the aim of the research and the definition of the key subject "supply chain risk" was given in the guide. This was to ensure that the respondents have the good understanding of the phenomenon under consideration. All the questions in the interview guide were coined from extant studies (Craighead et.al, 2007; Elkins, Handfield, Blackhurst & Craighead, 2009) but rephrased in order to ensure that the uniqueness of the study under consideration is ascertained based on the recommendations from academic and management experts. This prior consultation with academics and managers in the area of supply chain management helped in refining the interview guide to suit the context investigated.

The interview guide in all contains three questions which are divided into three segments. One of the segments is related to identifying the causes and impacts of supply chain risk. The second segment was related to the identification of the mitigation strategies for managing supply chain risks. The third segment is focused on the personal details of the respondents.

Sample, data collection and validation

The manufacturing firms chosen are publicly quoted. The publicly quoted manufacturing firms are chosen because they are regulated by the Security and Exchange Commission (SEC) in Nigeria. This regulatory body requires the firms to observe certain procedures and as such, they are highly monitored. This tends to increase the quality of data obtained for the study. There are 3 different manufacturing sub-sectors among the publicly quoted firms sampled which are Conglomerates, Pharmaceutical & Health and Food & Beverage. A total of ten manufacturing firms were analysed in all which is adequate to give a detailed understanding of the supply chain risk phenomenon. Moreover, qualitative researches emphasize the detailed and in-depth study of small samples because relevance is given priority above representativeness. (Flyvbjerg, 2006).

Most of the firms are major players in their respective sub-sectors. The approximate size of the firms (using employees' size) ranges from 200 to 4000 in number (Table 1). The respondents' designations cut across four major positions which are operations, logistics, supply chain and purchasing departments. This is the case because of the absence of distinct department called supply chain department or properly defined job titles in some of the firms. The years of experience of the respondents in their respective positions ranges from at least 10 months to 10 years.

Table 1. Characteristics of the manufacturing firms and respondents

FIRMS	RESPONDENT'S DESIGNATION	NUMBER OF YEARS IN POSITION	SUB-SECTOR	APPROXIMATE SIZE OF COMPANY (EMPLOYEES SIZE)	OWNERSHIP STRUCTURE OF COMPANY
A	Purchasing Manager	7 years	Food & Beverage	>1000	Joint venture but mainly locally owned
B	Supply chain manager	4 years	Food & Beverage	200	Joint venture
C	Head logistics	7 years	Food & Beverage	1200	Joint venture
D	Head of operations	5 years	Pharmaceutical & Health	465	Joint venture
E	Logistics manager	8 years	Pharmaceutical & Health	500	Joint venture
F	Purchasing manager	3 years	Pharmaceutical & Health	263	Wholly local
G	Logistics manager	10 months	Conglomerate	>1000	Joint venture
H	Supply chain manager	3 years	Conglomerate	>3000	Joint venture but mainly locally owned
I	Supply chain manager	8 years	Conglomerate	1200	Joint venture (51% foreign,49% local)
J	Purchasing manager	10 years	Food & Beverage	4000	Joint venture (70% foreign,30% local)

The manufacturing firms are given pseudonyms in order to maintain their anonymity. The firms are named in alphabetical order based on their real names. They are also named using alphabets from A to J. At least one firm was chosen from the subsectors under consideration. One of the criteria used for choosing the firms is based on the years of operation. Manufacturing firms with long years of existence, that is, at least a decade are the ones selected. Such firms tend to have well-established supply chain process and have a good understanding of the phenomenon under consideration based on experience. Another criterion used in choosing the firms is based on the firms' focus on Fast Moving Consumer Goods (FMCGs). FMCGs are products with an expected high rate of turnover, therefore firms that produce such goods are expected to have well-established supply chain process from suppliers through to end consumers (Ghosh, 2015). In addition, FMCG supply chain is an amalgam of intertwined parties such as suppliers, manufacturers, logistics service providers, warehouses, distributors, wholesalers, retailers and consumers.

An important means of validating the data, that is, ensuring credibility in a qualitative research is through the use of a suitable sampling technique (Long & Johnson, 2000). The study was conducted through ten supply chain managers or equivalents from the manufacturing firms selected. This sample size of respondents is credible as respondents are chosen based on purposive sampling technique which allows for concise information to be obtained which translates to quality data, hence, the credibility of this study (Jette, Grover & Keck, 2003; Jüttner, Peck, & Christopher, 2003; Taps & Steger-Jensen 2007; Morse, 2000). In agreement with the aforementioned, eight or fewer informants provide theoretical saturation in a qualitative study (Strauss & Corbin, 1998).

The interviews began with some sets of open-ended questions from the interview guide. Respondents were probed and encouraged to provide detailed explanations and clarifications where necessary (Harris & Brown, 2010). The idea at the outset was to tape the interview sessions but because of the firms' refusal of the audio recording method, the text documenting method was resorted to. Most of the respondents explained that the interview questions were strategic. Due to this consistent claim, the respondents were assured of using the data for research purpose only, the confidentiality of their personal details and that of their firms in order to

ensure trust. This made the respondents more comfortable with the research and thus, helped in getting better responses from them. An average interview session lasted for about 2.5 hours.

RESEARCH ANALYSIS AND DISCUSSION

For the research analysis, the manual method is used for coding and analyzing the data collected through the interviews conducted. The use of the manual method is justified since the researcher is responsible for choosing the codes, themes and concepts based on the available data from outset (Bernard, 2013). This is necessary since the researcher is familiar with the data and is responsible for selecting the appropriate codes. Hence, personal involvement of the researcher is key to ensuring good analysis at the different phases from data collection through to analysis (Ghuari & Grønhaug, 2005; Kotzab, Seuring, & Müller & Reiner, 2005).

Four basic stages are followed in this study. Stage one involves transcribing of the semi-structured interview by summarizing the transcripts. In stage two, texts were coded by breaking down, examining, comparing, conceptualizing of data that yielded concepts that were further categorised. In stage three, three themes were established for each category of data collated by linking similar concepts after comparison. The final stage is composed of linking themes with some important quotations from respondents that were selected to support points for presentation in clear, coherent and concise manner (Eisenhardt & Graebner, 2007; Eisenhardt, 1991). In this study, the coding process is based on the themes established (Irvine, Warber, Devine-Wright, & Gaston, 2013). There are three established themes from the work which are particularly related to the important concepts in this research work which are: first, the causes of supply chain risk; second, mitigating strategies for managing supply chain risks and third, impacts of supply chain risks.

Thematic Analysis and Findings

In this study, quasi-statistics as a content analysis technique is used (Hsieh & Shannon, 2005). The quantitative content analysis approach involves analyzing texts in quantifiable forms and this method has been used in several studies (Cho & Lee, 2014; Harwood & Garry, 2003; Krippendorf, 2013; Lock & Seele, 2016; Priest, Roberts & Woods, 2002). This

method of analyzing qualitative research involves examining the frequency of repetition of concepts or terms from the different responses of the respondents (Becker, 1970; Holder-Webb, Cohen, Nath & Wood, 2009; Wu, 2008). Word counts as a quasi-statistics and a summative content analysis technique bring out the number of times of occurrence of ideas and their patterns in field notes and responses to open-ended questions (Denzin, 2005; Hsieh & Shannon, 2005). In this study, "word count" is used to analyse the responses under the three major themes.

Theme 1: Causes of Supply Chain Risks

A proactive investigation and examination of potential supply chain risks in an environment is a justifiable step towards their effective supply chain risk management. This is based on the logical perspective that there is no need waiting for occurrences of disastrous events before preventive mechanisms can be put in place. Hence, using the information obtained from the interviews conducted in the ten manufacturing firms, there are a number of supply chain risks that are predominant in the developing country context investigated, which are; variation in raw material prices and quantities, transportation delays such as port delays, unexpected changes in customer demand, constant power outage and related variation in fuel price and quantity, poor communication and poor visibility of the supply chain, quality issues, accidents, political instability, seasonality of inputs, devaluation of currencies that negatively affects the price and schedule of imported raw materials, natural disasters, strikes and major global economic disruptions such as recession.

Table 2. Manufacturing Firms Responses to Causes of Supply Chain Risk

Supply Chain risks	SUB-SECTORS			
	Pharmaceutical & Health (%)	Conglomerate (%)	Food & Beverage	Total in Agreement (%)
a .supplier capacity not meeting demand	20	20	0	40
b. variation in raw material prices and quantities	30	10	20	60
c. unexpected changes in customer demand	20	20	10	50
d. incessant power outage	15	15	40	70
e. variation in fuel price and quantity	0	0	30	30
f. terrorist attack	0	10	0	10
g. strikes	0	0	10	10
h. devaluation of currencies	20	0	0	20
i. transportation delays	15	15	40	70
j. accidents	0	0	10	10
k. natural disasters	10	0	0	10
l. poor communication	10	0	10	20

m. theft	0	0	0	0
n. quality issues	10	20	10	40
o.major global economic disruptions	10	0	10	20
p .political instability	20	0	20	40
q. fire	0	0	0	*0*
r. seasonality of inputs	10	0	0	*10*
s. hoarding of inputs	0	0	0	*0*

Based on the frequency of occurrence, among the causes of supply chain risks identified, transportation delays, constant power outages, variation in raw material prices and quantities, and unexpected changes in customer's demand have the leading counts of 70%, 70%, 60% and 50% respectively based on the informants' responses. These are followed by supplier's capacity not meeting demand and political instability based on the manufacturing firms analysed (Table 2). Some of the key respondents asserted the following: respondent A from firm A explained that "transportation delays are caused by bad roads and poor road networks and that raw materials are delayed because of transportation issues". Respondent C from firm C also puts forward that "poor power supply leads to increase in the use of diesel for generating sets coupled with exorbitant bills from the institution in charge of public electricity supply in Nigeria". Respondent F from company F stated that "transportation of raw materials from Lagos port takes a whole day because of bad roads and poor road networks." Respondent G from firm G said that "we experience a sudden surge in demand and incorrect information about orders leading to stock-outs" Respondent J from firm J mentioned that "seasonal availability of raw materials and frequent changes in prices are disruptive to production as a manufacturing firm."

This exposition also revealed that transportation delays and incessant power outages (Table 2) are the major causes of supply chain risks among the Nigerian manufacturing firms considered followed by variations in raw material prices and quantities and unexpected changes in customers' demand. Terrorist attack, strikes, accidents and the seasonality of inputs are the least causes of supply chain risk respec-

tively. Some of the specific kinds of transportation delays accounted for involve shipment delays due to trans-shipment, poor road network nationwide, unnecessary delays at the port such as port clearance delay, long distances of sources of raw materials among others. The type of transportation delays with the highest prominence among the listed are the port delays according to the respondents. Inadequate power generation and vandalism are some of the factors responsible for the poor power supply in the country. Some of the respondents opined the following: respondent B from firm B stated that "port delays caused by poor documentation and bureaucracy result in demurrage, delayed production and disgruntled customers". Also, respondent G from firm G explained that "transportation delays and constant poor power supply are the major factors that affect production in the firm"

Theme 2: Impacts of supply chain risks

The attention to impacts of risks on performance is gaining prominence among academics and professionals (Hanna & Skipper, 2009: Hendrick & Singhal, 2003; Hendrick & Singhal, 2008; Hendrick, Singhal, & Zhang, 2009). This serves as a motivating factor towards employing prompt responses to supply chain risks by making use of effective supply chain risk management strategies. Based on the interviews conducted in this study, the impacts of supply chain risks in Nigeria are:production delays, inability to meet customer's demand, forfeited opportunities in markets, negative stock market responses and reduction in shares value, increased production costs, stock out, quality compromised goods, and vulnerability/exposure of the supply chain.

Table 3. Manufacturing Firms Responses to Impacts of Supply Chain Risk

Impacts of Supply Chain Risks	SUB-SECTORS			Total in agreement (%)
	Pharmaceutical & Health (%) (%)	Conglomerate (%)	Food & Beverage (%)	
a. production delays	15	25	50	90
b. corporate and network wide risk exposure	10	0	0	10
c. reduction in shares value	20	0	10	30
d. influx production of quality compromised goods	20	30	20	70
e. increase in costs	20	20	20	60
f. inability to meet customer's demands	35	30	35	100
g. stock outs	30	20	10	60
h. ineffective decisions	0	0	0	0
i. forfeited market opportunities to competition	20	35	35	90

Using the word counts method, the impacts of supply chain risks in the Nigerian manufacturing firms based on the study at hand revealed that production delays, influx of quality compromised goods, inability to meet customer's demand and forfeited opportunities in the market to competition with 90%, 70%, 100% and 90% frequency in percentages are the major impacts of supply chain risks respectively (Table 3). Quality compromised goods are goods that do not meet the stipulated quality standards.

The impacts of supply chain risks with the least counts are entire supply chain risk exposure, negative stock market responses and the reduction in shares value. The problem of unavailability of raw materials for production will result in production delay and inability to meet customers demands as at when due. This results in the loss of market share to counterfeit products because of porous borders. Some respondents put forward the following views: respondent F from firm F explained that "power issues increase their production costs since the firm relies on generators most of the time as an alternative source of power". Respondent I from firm I stated that " constant fluctuating and low voltage of power damaged the expensive, major production machinery that was imported from Germany causing outright production delay and inability to meet orders". In addition, respondent E opined that " the use of an independent source of power by the firm for an average of 8-10 hours a day adds to the overhead costs"

Theme 3: Mitigation strategies for managing supply chain risks

Mitigation strategies help firms to reduce costs, improve customer satisfaction and ensure sustainable manufacturing operations (Tang, 2006). Based on the face to face interview conducted with respondents, the mitigation strategies for managing supply chain risks in manufacturing firms in Nigeria are:the use of control systems, multiple sourcing strategy, the use of strategic stocks, flexible transportation, monitoring trends, outsourced manufacturing, collaborative planning with supply chain partners, supply chain redesigning, secured communication links, increasing transportation viability,choice of safe locations, enhanced visibility and communications, and the use of multiple facilities.

Table 4. Manufacturing Firms Responses to Mitigation Strategies for Managing Supply Chain Risks

Mitigation Strategies	SUB-SECTORS			Total in agreement (%)
	Pharmaceutical & Health (%)	Conglomerate (%)	Food & Beverage (%)	
a. control systems	20	10	20	50
b. supply chain redesign	10	10	20	40
c. awareness, prevention, remediation and knowledge management	20	0	20	40
d. Multiple sourcing strategy	30	35	35	100
e. postponement	0	0	0	0
f. strategic stock	20	20	30	70
g.flexible transportation	20	0	40	60
h. silent product rollover	0	0	0	0
i.safe locations	10	0	0	10
j.secured communication links	10	0	10	20
k. enhanced visibility and coordination	10	0	10	20
l.increase transportation viability	10	10	20	40
m.monitoring trends	15	15	40	70
n.multiple facilities	0	0	10	10
o.outsourced manufacturing	15	30	20	*65*
p.influence customers' choices	0	0	0	*0*
q.product variety	0	0	0	*0*
r. collaborative planning	0	20	20	*40*

Using the quasi-statistics, among the mitigating strategies employed in the Nigerian manufacturing firms, both multiple sourcing strategy and outsourced manufacturing are most prominent with 100% and 75% counts in agreement with these strategies respectively. These are followed by the use of strategic stock, monitoring of trends and flexible transportation respectively (Table 4). On the other hand, the use of postponement, silent products rollover, influencing customers' choices and product variety strategies are the least adopted strategies among the Nigerian manufacturing firms. The prevalence in the use of multiple sourcing strategy among the manufacturing firms is because of unavailability of locally sourced raw materials. Outsourced manufacturing is also becoming common as a risk management strategy to reduce the negative impacts of constant power outage and transportation issues associated with inbound logistics. Some of the respondents stated the following: respondent D from firm D explained that " as a firm, they encourage the use of many suppliers because they do not want to depend on only one supplier in order to prevent stock out and raw materials are rationed among the suppliers based on availability" Also, respondent E from firm E mentioned that "they outsource production to a Chinese firm and

import the finished products back in the country because it was realized that it is cheaper for to manage instead of experiencing incessant power outages and poor local supplies of raw materials locally". Respondent G from firm G explained that "in their firm, they hold up to 1-3months stocks of raw materials in the warehouse on a constant basis to ensure continuous production".

SUMMARY OF FINDINGS AND CONCLUSIONS

In this qualitative study, the causes of the supply chain risks have been enumerated based on the sampled manufacturing firms in Nigeria. In addition, the impacts of the supply chain risks and the mitigating strategies used to manage these risks have been investigated. In concluding the study, the findings from the work are summarized in order to indicate the areas of contribution to existing literature, limitations, practical implications and finally, the areas for further research are stated.

Summary of Findings and Contributions

This research study has investigated the causes, impacts and the strategies adopted to manage supply chain risks from a developing country context especially in Nigeria. The need for this study arose from the fact that most of the studies addressing supply chain risks are concentrated on the developed countries' contexts (Bode & Wagner, 2006; Bode & Wagner, 2008; Oke & Gopalakrishnan, 2009). This study is carried out in order to fill this gap by concentrating on a developing country, that is, Nigeria. Therefore, this study investigated and enumerated the main causes of supply chain risks, their impacts and the mitigation strategies for managing supply chain risks.

From extant literatures, causes of supply chain risks are vast ranging from man-made, natural, firm internally generated and externally generated risks such as supplier capacity not meeting demand, unexpected changes in customer demand, terrorist attack, strikes and natural disasters and excess machine downtime (Blackhurst et al., 2005; Kleindorfer & Saad, 2005; Tang, 2006; Stecke & Kumar, 2009; Worthington et al., 2009).

Consequently, in a bid to contribute to extant literature and the need to focus study on the developing countries in the area of supply chain risk, an in-

depth qualitative study of ten manufacturing firms in Nigeria produced the following findings; that the causes of supply chain risks common to the Nigerian manufacturing firms are not different from those experienced in developed countries except for transportation delays emanating from port delays, bad roads, poor road networks and poor power supply. Among the supply chain risks in this developing country context, transportation delays, variations in raw material prices and quantities, constant power outage and unexpected changes in customers' demand are the major causes of supply chain risks among manufacturing firms. In comparison with the extant literature from developed countries contexts, transportation delays and incessant power outage are the peculiar causes of supply chain risks in this developing context.

The impacts of supply chain risks from developing countries' contexts are in congruence with those from the Nigerian manufacturing context such as the inability to match the demand of the market to that supplied by a manufacturing firm, stockouts and quality issues (Benyoucef & Forzley, 2007; Hendricks & Singhal, 2008; Porterfield et al., 2012; Tang, 2006). However, our findings showed a certain deviation from the developing countries' context which is the influx of quality compromised goods or counterfeit brands as the unique impact of supply chain disruptions because of the country's porous borders. Furthermore, the influx of quality compromised goods, production delay and inability to meet customer's demands are the major negative effects of supply chain risks in Nigeria.

An exhaustive research on mitigation strategies revealed that the mitigation strategies employed to manage supply chain risks from extant literature and mostly from the developed contexts are similar to those used in the developing country investigated such as multiple sourcing strategy, safety stock, postponement and strategic stock (Choi & Liker,1995; Craighead et al., 2007; Lee & Billington, 1993; Lee & Christopher, 2004; Stecke & Kumar, 2009; Tang, 2006). However, among the mitigation strategies, the most popular mitigation strategies employed in the Nigerian manufacturing firms, include; multiple sourcing strategy and outsourced manufacturing whereas the least employed strategies are postponement, silent products rollover and influencing customers' choices. In comparison to the developed contexts, outsourced manufacturing is now trending in the manufacturing sector

because of the prevalent issues of transportation delays, constant power outages and the associated costs. Interestingly, the use of multiple sourcing strategy and outsourced manufacturing is common to all the manufacturing sub-sectors selected.

It has been confirmed in extant researches that the occurrence of supply chain risks is inevitable (Hanna & Skipper, 2009). Thus, this study has created more insights and awareness for incumbent manufacturing firms to know the causes of supply chain risks, the possible impacts and the mitigating strategies that can be used in managing the supply chain risks in Nigeria. On the other hand, it has also created an eye-opening information for potential entrants into manufacturing businesses to be aware of the possible supply chain risks that are prevalent among manufacturing firms in Nigeria. Therefore, this study will help manufacturing firms to be proactive in combating supply chain risks in Nigeria.

In general, this study contributes to the literature by concentrating on a developing country context and by examining the phenomenon 'supply chain risk' in the following ways: First, this study elaborates the causes of supply chain risk, the impacts of supply chain risks and the mitigating strategies in the Nigerian manufacturing firms. Second, this study shows some similarities between the developing and developed countries' contexts on the causes of supply chain risks, their impacts and the mitigating strategies for managing risks. Third, some peculiar causes and impacts of supply chain risks are highlighted in the study. To elaborate further, the occurrence of transportation delays are prominent in Nigeria because of excessive focus on road transportation, bad roads and associated inadequate road networks. Also, the problem of incessant power outages is common. Hence, these two factors contribute to the increased trend in the use of outsourced manufacturing as a mitigation strategy among the manufacturing firms. Since outsourced manufacturing allows firms to contract production to other firms who have expertise in managing the supply chain issues efficiently locally or in a geographical location where the supply chain risks are not existing. This is because the high cost of truck maintenance due to bad roads and independent power supply will increase the overhead costs of production. In addition, the influx of quality compromised goods that are imported or find their way in through the porous borders or those internally produced from poor quality raw materials in the

country is a unique impact of supply chain risks in Nigeria. It was also confirmed that the mitigation strategies used by manufacturing firms considered in this study to manage supply chain risks are adopted from the developed countries. This confirms the assertion by Bruun and Meffford (1996) that developing countries do not create strategies but mostly adopt and conform strategies used in developed countries to their environments.

In this study, we had certain limitations common to other research studies. First, the number of manufacturing firms interviewed was just ten. This is a small number compared to the number of manufacturing firms in Nigeria. On the other hand, the number is justified in that a qualitative study is about an in-depth study of a phenomenon (in this case, supply chain risk). Second, only one respondent was interviewed per manufacturing firm. This is sufficient in so much that the purposive sampling technique is used in this study. This is because the best informants that are knowledgeable with the valid assessment of the supply chain risk phenomenon are the supply chain managers or their equivalent managers in this regard (Jüttner, Peck & Christopher, 2003; Jette, Grover & Keck, 2003). Third, all the manufacturing companies selected are situated in Lagos State, Nigeria. This is justifiable because most of the vibrant manufacturing firms in Nigeria have their Head Offices in Lagos because of its commercial inclination. Therefore, the manufacturing firms in Lagos are good representatives of the firms in Nigeria. Fourth, the data collection via interview mode was the only method used beacause archival data on the phenomenon investigated were not available. Also, the generalizability of this study is limited since the developing country context investigated is only Nigeria.

Finally, this study puts forward possible areas for further research. First, this qualitative study could be analysed by using other quantitative techniques. Similar studies could also be carried out in other developing countries' contexts for the basis of comparison. Second, the unique supply chain risks to the manufacturing sub-sectors could be analysed. Third, it could be interesting to find out which industry is more prone to supply chain risks. Fourth, the effects of the mitigating strategies could be quantified in terms of the benefits and costs. Also, the fit of the mitigation strategies to specific supply chain disruptions could be analysed in this context.

REFERENCES

Ambulkar, S., Blackhurst, J., & Grawe, S. (2015). Firm's resilience to supply chain disruptions: scale development and empirical examination. *Journal of Operations Management*, *33*(34), 111-122.

Akkermans, H. A., & Vos, G. C. J. M. (2003). Amplification in service supply chains: an exploratory case study from the telecom industry. *Production and Operations Management*, *12*(2), 204-223.

Basu, S. (2004) E-Government and developing countries: An overview. *International Review of Law Computers & Technology*, *18*(1), 109–132.

Benyoucef, M., & Forzley, S. (2007). Business continuity planning and supply chain management. *Supply Chain Forum: An International Journal*, *8*(2), 14-22 .

Becker, H. S. (1970). *Sociological work: Method and substance*. New Brunswick, NJ: Transaction.

Benard, H. R. (2013). *Social research methods*. Qualitative and quantitative approaches. Second Edition. Thousand Oaks, CA: Sage Publications, Inc.

Beske, P., Land, A. & Seuring, S. (2014). Sustainable supply chain management practices and dynamic capabilities in the food industry: A critical analysis of the literature. *International Journal of a Production Economics*,*152*(2):131-143.

Blackhurst, J., Craighead, C.W., Elkins, D., & Handfield, R. B. (2005).An empirically derived agenda of critical research issues for managing supply-chain disruptions. *International Journal of Production Research*, *43*(19), 4067-4081.

Bode, C., & Wagner S. M. (2015). Structural drivers of upstream supply chain complexity and the frequency of supply chain disruptions. *Journal of Operations Management*, *36*, 215-228

Bozarth, C. C., Warsing D. P, Flynn B. B., & Flynn E. J. (2009). Impact of supply chain complexity on manufacturing plant performance. *Journal of Operations Management*, *27,* 78-93.

Braunscheidel, M. J., & Suresh, N. C. (2009).The organisational antecedents of a firm's supply chain agility for risk mitigation and response. *Journal of Operations Management*, *27*(2), 119-140.

Bruun, P., & Mefford, R. N. (1996). A framework for selecting and introducing appropriate production technology in developing countries. *International Journal of Production Economics*, *46-47*, 197-209.

Chan, F. T. S., & Chan, H. K. (2004). A new model for manufacturing supply chain networks: a multiagent approach. Proceedings of the *Institute of Mechanical Engineers, Part B: Journal of Engineering Manufacture, 218*(4), 443-454.

Chatha, K. A., Butt, I., & Tariq, A. (2015). Research methodologies and publication trends in manufacturing strategy: A content analysis based literature review. *International Journal of Operations & Production Management*, *35*(4), 487-546.

Cho, J. Y., & Lee, E. (2014). Reducing Confusion about Grounded Theory and Qualitative Content Analysis: Similarities and Differences.*The Qualitative Report*, *19*(32), 1-20.

Choi, T. Y., & Liker, J. K. (1995). Bringing Japanese continuous improvement approaches to the U.S. manufacturing. The roles of process orientation and communications. *Decision Sciences*, *26*(5), 589-620.

Chopra, S., & Sodhi, M.S., 2004. Managing risk to avoid supply chain breakdown. *Sloan Management Review*, *46*(1), 63-71.

Christopher, M., & Lee, H. (2004). Mitigating supply chain through improved confidence. *International Journal of Physical Distribution and Logistics Management*, *34*(5), 388-396.

Craighead, C. W, Blackhurst, J., Rungtusanatham, M. J., & Handfield, R. B. (2007). The severity of supply chain risks: Design characteristics and mitigating capacities. *Decision Sciences, 38*(1), 131-156.

Dada, D. (2006). The failure of e-government in developing countries: A literature review. *The Electronic Journal of Information Systems in Developing Countries*, *26*(1), 1-10.

Denzin, N. K. (2005). *Handbook of qualitative research*. International Educational and Professional publisher. London, UK: Thousands Oaks.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, *14*(4), 532-550.

Eisenhardt, K. M. (1991). Better Stories and better constructs: The case for rigour and comparative logic. *Academy of Management Review*, *16*(3), 620-627.

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building for *cases*: Opportunities and challenges. *Academy of Management Review, 50*(1), 25-32.

Elkins, D., Handfield, R., Blackhurst, J., & Craighead, C. (2009). A "to-do" list to improve supply chain risk management capabilities. In R. Handfield, & K. McCormack (Hisg.), *Supply chain risk management- minimizing disruptions in global sourcing,* (p. 136). New York, NY: Auerbach Publication.

Feng, Y. (2001). Political freedom, political instability, and policy uncertainty: A study of political institutions and private investment in developing countries. *International Studies Quarterly*, *45*(2), 271-294.

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry, 12*(2), 219-245.

Flynn, B. B., Sakakibara, S., Schroeder, R. G., Bates, K. A. & Flynn, E. J. (1990). Empirical research methods in operations management. *Journal of Operations Management*, *9*(2), 250-283

Finch, P. (2004). Supply chain management. *Supply Chain Management: An International Journal*, *9*(2), 183-196.

Forza, C. (2002). Survey research in operations management: A process-based approach. *International Journals of Operations and Production Management*, *22*(2), 152-194.

Ghosh, D. (2015). Supply chain length estimation: A study on FMCG companies. *International Journal of Applied Research, 1*(13), 726-730.

Ghuari, P., & Grφnhaug, K. (2005). *Research Methods in Business Studies*. Third edition. A practical guide. Harlow-Essex. UK: Pearson Education limited.

Gimenez, C. (2005). *Case studies and surveys in supply chain management research* — Two Complementary Methodologies. In H. Kotzab, S. Seuring, M. Müller, & G. Reiner, *Research methodologies in supply chain management* (pp. 315-330). Heidelberg, Germany: Physica-Verlag HD.

Guedes, E. J. G., Bittar, A. V., Di Serio, L. C., & Oliveira, L. H. (2015). Risk management in the supply chain of the Brazilian automotive industry. *Journal of Operations and Supply Chain Management*, *8*(1), 72-87.

Hanna, J. B., & Skipper, J. B. (2009). Minimizing supply chain risk risk through enhanced flexibility. *International Journal of Physical Distribution and Logistic Management*, *39*(5), 404-427.

Harris, L. R., & Brown, G. (2010). Mixing interview and questionnaire methods. Practical problems aligning data. *Practical Assessment Research and Evaluation*, *15*(1), 1-19.

Harwood, T. G., & Garry, T. (2003). An overview of content analysis. *Marketing Review*, *3*(4), 479-498.

Heckmann, I., Comes, T., & Nickel, S. (2015). A critical review on supply chain risk-definition, measure and modeling. *Omega*, *52*,119-132.

Hendricks, K. B., & Singhal, V. R. (2003). The effect of supply chain glitches on shareholder value. *Journal of operations Management*, *21*(5), 501-522.

Hendricks, K. B., & Singhal, V. R. (2008). The effect of supply chain risks on shareholder value. *Total Quality Management*, *19*(7-8), 777-791.

Hendricks, K. B, Singhal, V. R., & Zhang, R. (2009). The effect of operational slack, diversification, and vertical relatedness on the stock market reaction to supply chain risks. *Journal of Operations Management*, *27*(3), 233-246.

Hofman, H., Busse, C., Bode, C., & Henke, M. (2014). *Business Strategy and the Environment*, *23*(3), 160-172.

Holder-Webb, L., Cohen, J. R., Nath, L., & Wood, D. (2009). The supply of corporate social responsibility disclosures among U.S. firms. *Journal of Business Ethics*, *84*(4), 497-527.

Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9),1277-1288.

Irvine, K. N., Warber, S. L., Devine-Wright, P., & Gaston, K.J. (2013). Understanding urban green space as a health resource: A qualitative comparison of visit motivation and derived effects among park users in Sheffield, UK. *International Journal of Environmental Research and Public Health*, *10*(1), 417-442

Jette, D. J., Grover, L., & Keck, C. P.(2003). A qualitative study of clinical decision making in recommending discharge placement from the acute care setting. *Physical Therapy*, *83*(3), 224-236.

Johnson, M. E. (2001). Learning from toys: Lessons in managing supply chain risk from the toy industry. *California Management Review*, *43*(3), 106-124.

Jüttner, U. (2005). Supply chain risk management. Understanding the business requirements from a practitioner perspective. *International Journal of Logistic Management*, *16*(4), 120-141.

Jüttner, U., Peck, H. & Christopher, M. (2003). Supply Chain Risk Management: Outlining an Agenda for Future Research. *International Journal of Logistics: Research & Applications*, *6*(4), 197-210.

Kleindorfer, P. R., & Saad, G. H. (2005). Managing disruption Risks in Supply Chains. *Production and Operations Management*, *14*(1), 53-68.

Kotzab, H. (2005). The Role and importance of survey research in the field of supply chain management. In H. Kotzab, S. Seuring, M. Müller, & G. Reiner, *Research methodologies in supply chain management* (pp. 126-137). Heidelberg, Germany: Physica-Verlag HD.

Kotzab, H., Seuring, S., Müller, M. & Reiner, G. (2005). *Research Methodologies in Supply Chain Management*. Heidelberg, Germany: Physica-Verlag HD.

Krippendorf, K. (2013). *Content analysis: An introduction to its methodology* (3rd ed.). Los Angeles, CA: Sage.

Kumar, N., & Saqib, M. (1996). Firm size, opportunities for adaptation and in-house R & D activity in developing countries: The case of Indian manufacturing. *Research Policy*, *25*(5), 713-722.

Lee, H. L., & Billington C. (1993). Materials management in decentralised supply chains. *Operations Research*, *41*(5), 835-847.

Lock, I., & Seele, P. (2016). The credibility of CSR (corporate social responsibility) reports in Europe. Evidence from a quantitative content analysis in 11 countries. *Journal of Cleaner Production*, *122*, 186-200.

Long, T., & Johnson, M. (2000). Rigour, reliability and validity in qualitative research. *Clinical Effectiveness in Nursing, 4*(1), 30-37.

Luken, R., Rompaey, F. V., & Zigova, K. (2008). The determinants of EST adoption by manufacturing plants in developing countries. *Ecological Economics, 66*(1), 141-152.

Meredith, J. (1993). Theory Building through Conceptual Methods. *International Journal of Operations and Production Management*, *13*(5), 3-11.

Miller, K. D. (1992). A framework for integrated risk management in international business. *Journal of international business studies*, *23*(2), 311-331.

Miller, K. D. (1993). Industry and country effects on managers' perceptions of environmental uncertainties. *Journal of International Business Studies*, *24*(4), 693-714.

Mir, S., Lu, S. H., Cantor, D., & Hofer, C. (2018). Content analysis in SCM research: past uses and future research op-

portunities. *The International Journal of Logistics Management*, *29*(1), 152-190.

Morse, J. (2000). Determining sample size. *Qualitative Health Research*, *10*(1), 3-5.

Oyelaran-Oyeyinka, B., Laditan, G. O. A., & Esubiyi, A. O. (1996). Industrial innovation in Sub-Saharan Africa: The manufacturing sector in Nigeria. *Research Policy*, *25*(7), 1081-1096.

Rao, S., & Goldsby, T. J. (2009). Supply chain risks: A review and typology. *The International Journal of Logistics Management*, *20*(1), 97-123.

Robb, D. J., Xie, B., & Arthanari, T. (2008). Supply chain and operations practice and performance in Chinese furniture manufacturing. *International Journal of Production Economics*, *112*(2), 683-699.

Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of cleaner production*, *16*(15), 1699-1710.

Norrman, A., & Lindroth R. (2004). Categorization of supply chain risk and risk management. In C. Brindley (Ed.), *Supply chain risk* (pp. 14-27). Aldershot, UK: Ashgate.

Oke, A., & Gopalakrishnan, M. (2009). Managing disruptions in supply chains. *International Journal of Production Economics*, *118*(1), 168-174.

Onwubolu, C. G., Haupt, W., De Clercq, G., & Visser, J. (1999). Production management issues in developing nations. *Production planning and Control*, *10*(2), 110-117.

Oral, E. L., Mıstıkoglu, G., & Erdis, E. (2003). JIT in developing countries—a case study of the Turkish prefabrication sector. *Building and Environment*, *38*(6), 853-860.

Pigato, M. A., & Tang, W. (2015). *China and Africa: Expanding economic ties in an evolving global context*. Washington, DC: World Bank Group.

Porterfield, T. E., MacDonald J. R. & Griffis, S. E. (2012). The relational effects of supply chain risks. *Transportation Journal, 51*(4), 399-427.

Priest, H., Roberts, P., & Woods, L. (2002). An overview of three different approaches to the interpretation of qualitative data. Part 1: Theoretical issues. *Nurse Researcher*, *10*(1), 30-42.

Rudberg, M. & Olhager, J.(2003). Manufacturing networks and Supply Chains: An operations strategy perspective. *Omega*, *31*(1), 29-39.

Saunders, M., Lewis, P., & Thornhill, A. (2003). *Research methods for business studies*. Harlow-Essex, UK: Pearson Education limited.

Scheibe, K. P., & Blackhurst, J. (2017). Supply chain disruption propagation: a systemic risk and normal accident theory perspective. *International Journal of Production Economics*, *56*(1-2), 43-59.

Serven, L. (2002). *Real exchange rate uncertainty and private investment in developing countries* (Vol. 2823). Washington, D.C.: World Bank Publications.

Stecke, K. E, & Kumar S. (2009). Sources of supply chain risks, factors that breed vulnerability and mitigating strategies. *Journal of Marketing Channels, 16*(3), 193-226.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.

Sun, S. Hsu, M., & Hwang, W. (2009).The impact of alignment between supply chain strategy and the environmental uncertainty on SCM performance. *International Journal of Supply Chain Management*, *14*(3), 201-212.

Svensson, G. (2000). A conceptual framework for the analysis of vulnerability in supply chain. *International Journal of Physical Distribution and Logistics Management*, *30*(9), 731-749.

Tang, S. (2006). Robust Strategies for Mitigating Supply chain risks. *International Journal of Logistic: Research and Applications*, *9*(1), 33-45.

Tang, O., & Musa, S.N. (2011). Identifying risk issues and research advancements in supply chain risk management. *International Journal of Production Economics*, *133*(1), 25-34.

Taps, S. B., & Steger-Jensen, K. (2007). Aligning supply chain design with manufacturing strategies in developing countries. *Production Planning and Control,18*(6), 475-486.

Tomlin, B. (2006). On the value of mitigation and contingency strategies for managing supply chain risk risks. *Management Science*, *52*(5), 639-657.

Turker, D., & Altuntas, C. (2014). Sustainable supply chain management in the fast fashion industry: An analysis of corporate reports. *European Management Journal*, *32*(5), 837-849.

Uzonwanne, M. C. (2015). Economic diversification in Nigeria in the face of dwindling oil revenue. *Journal of Economics and Sustainable Development*, *6*(4), 61-67.

Wagner, S. M., & Bode, C. (2006). An empirical investigation into supply chain vulnerability. *Journal of Purchasing and Supply Management*, *12*(6), 301-312.

Wagner, S. M., & Bode, C. (2008). An empirical examination of supply chain performance along several dimensions of risk. *Journal of Business Logistics*, *29*(1), 307-325.

Wiengarten, F., Humphreys, P., & Gimenez, C. (2016). Risk, risk management practices and the success of supply chain integration. *International Journal of Production Economics*, *171*(3), 361-370.

Worthington, W. J. Collins, J. D. & Hitt, M. A. (2009). Beyond risk mitigation: Enhancing corporate innovation with scenario planning. *Business Horizons*, *52*(5), 441-450.

Wu, C. (2008). Knowledge creation in supply chain. *Supply Chain Management:An International Journal*, *13*(3), 241-250.

Yin, R. K. (1989). *Case Study Research: Design and Methods*. London, UK: Sage.