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Effect of Supply Chain Resilience Strategies on Operational Performance of Manufacturing Firms in Nairobi City County, Kenya

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Abstract: **In Kenya, supply chain resilience is a relatively recent area of supply chain research that focuses on companies' ability to withstand disruptions. Manufacturing firms would be able to survive delays and continuously change their supply chains to satisfy the changing requirements and desires of their customers, shareholders, and other stakeholders thanks to the supply chain's resilience. The study's main goal was to determine was to find out the effect of supply chain resilience strategies on operational performance of Manufacturing firms in Nairobi city county, Kenya with specific objective of the study was to be find out the role of Multisourcing, Near shoring, product harmonization and Inventory management strategies on operational performance of Manufacturing firms in Nairobi city county, Kenya. The study's participants were all workers of Kenyan manufacturing firms in Nairobi city county, Kenya. The study's target population was all 454 manufacturing companies in Nairobi and its environs, drawn from 12 main manufacturing subsectors. The study's sample size was 189 respondents, who were selected using a simple stratified random sampling technique. To achieve this, the study was adopted cross sectional survey design. The researcher used questionnaires to collect data from the respondents. Descriptive and inferential statistics was applied in analyzing the data using SPSS Version 23 software. This study tested the null hypotheses that Multisourcing, near shoring, product harmonization and Inventory management strategies have no significant positive effect on operational performance of manufacturing firms in Nairobi city county, Kenya. The study found out all variables Multisourcing, near shoring, product harmonization and Inventory management strategies have positive significance on operational performance of Manufacturing to improve on the Manufacturing firms in Nairobi city county, Kenya. Firm's operational performance, it was therefore recommended that firms to some extent should adopt some strategies like Multisourcing, Nearshoring, Product harmonization stand Inventory management. The study also recommends that manufacturing firms should advance on the supply chain risk management strategies as mitigation measures. Particularly, they should be careful on the subsequent dimensions of the supply chain risk management, equal risk sharing, quality planning, quality assurance and inspection in production. Enhancement of stated elements of risk management of the supply chain will lead to better supply chain risk mitigation, which will translate into improved performance.**

Keywords: **Multisourcing, near shoring, product harmonization, Inventory management operational performance.**

I. INTRODUCTION

1.1 Background of the study

There is general awareness that organizations cannot compete as isolated entities; it is obvious that working together in networks would be a lot easier (Min & Zhou, 2002). As a network, the supply chain (SC) is supposed to deliver the right goods and services on schedule, according to standards, at the right place, and to the right customer. A supply chain is a mechanism that links various professionals from the retailer to the end customer by service and production in order to keep products and knowledge flowing. This is beneficial in determining how to best fulfill business requirements

(Azevedo, Govindan, Carvalho,& Cruz-Machado, 2013). The business becomes competitive and raises the need for supply chain improvements as business becomes more globalized and companies adopt new tactics such as lean, rapid response systems, and effective customer response (Thatte, Rao, & Ragu-Nathan, 2013). The supply chain has become more complicated as a result of these developments (Carvalho, Barroso, Machado, Azevedo, and Cruz-Machado, 2012).

In the present scenario, supply chain becomes more unstable and unpredictable due to which it faces different challenges. There are various possible reasons for these disruptions in supply chain described by different researchers and practitioners in the literature. Most of companies supply chains (SCs) are facing numerous changes that are contributing to increasing their complexity, such as the globalization of businesses and the adoption of some business philosophies as lean, efficient consumer response, and quick response programs. The implementation of these philosophies or practices may bring other new problems, since SCs may become more vulnerable to disturbances (Christopher & Towill, 2000; Norrman, Sweden, & Jansson, 2004; Tang, 2006). Once an As Supply Chain is disrupted, its success is jeopardized, for example, short-term financial performance is diminished, and competition is lost (Ji & Zhu, 2008). Organizations and their SCs must be adaptive in order to survive; they must develop the capacity to respond rapidly to an unexpected disruption and quickly return to their original state or transition to a new, more favorable one after the disruption (Carvalho & Cruz Machado, 2007; Ji & Zhu, 2008; Peck, 2005). Appropriate design plans representing contingency and mitigation policies must be established to help companies become more robust and, hopefully, less vulnerable to disruptions (Machado, Azevedo, Barroso, Tenera, & Cruz Machado, 2009).

Supply chain of an organization will not be successful, if they have not been able to increase the supply chain performance measures (Jüttner and Maklan 2011). However, there is lack of insight into the development of performance measure which is needed to obtain a fully integrated supply chain (Poon and Lau 2000). Additionally, such measures and measurements are expected to test and uncover the suitability of techniques without which an unmistakable bearing for development and acknowledgment of objectives would be very complicated (Saleheen et al. 2018). The performance of a supply chain exposed to danger when it is affected by a disturbance, e.g., losing competitiveness, reduced short-term financial performance (Ji and Zhu 2008). To continue to exist, organizations must develop the ability to react to an unexpected disturbance and to return quickly to their original state or move to a new (Carvalho and Cruz Machado 2007). In recent years, the idea of SCR has received more attention by researchers and practitioners. Fiksel et al. (2015) suggested that resilience is a significant ability that reduces traditional risk in many companies. The concept of SCR appears to offer a way to avoid the limitations of traditional approaches to risk prevention and protection strategies and to deal with the complexities of global supply chains (Pettit et al. 2013; Shef 2015).

1.2 Statement of the Problem

To protect their business networks in the aftermath of COVID-19 and other disturbances, supply chain leaders must strike a balance between stability and performance (Vanov, & Das, 2020). Many supply chain leaders' interests have shifted as a result of Brexit, the US-China trade war, a broader diplomatic movement toward nationalization, and, most recently, the COVID-19 pandemic. They must now strike a better balance between cost and organizational performance while still increasing their durability. Just 21% of respondents said they have a highly resilient network today, according to Press (2020), which means they have strong visibility and the agility to change procurement, production, and delivery operations across quite quickly. Increased resilience will be a priority for many when they recover from the current crisis, according to Arani, Mukulu, Waiganjo, Wambua, & Wambua, (2016). Within two or three years, more than half of respondents hope to be extremely adaptive. The cost of maintaining several supply sites should be considered a company expense rather than an inefficiency. In addition, most supply chain leaders understand that being more flexible is a must in the current climate, according to Lee Marah and John (2012) in their paper. Alternative factories, dual procurement, and more generous protective supplies, on the other hand, go against the well-established philosophy of lean supply chains that has prevailed. In recent decades.Natural disasters, logistics process architecture, trade union behavior, and production feature mechanics all trigger disturbances in the floriculture industry in Kenya, according to a report by Guyo, Kangongo, Bowen, and Ragui (2013). However, the report fell short of developing a roadmap for how manufacturing companies can create supply chain resilience. Hence, this study sought to find out the effect of supply chain resilience strategies on operational performance of manufacturing firms in Nairobi city county, Kenya.

1.3 General Objective of the Study

The general objective of this study was to find out the effect of supply chain resilience strategies on operational performance of manufacturing firms in Nairobi city county, Kenya.

1.3.1 Specific Objectives of the study

The study was guided by the following specific objectives

i. To find out the effect of Multi sourcing on operational performance of Manufacturing firms in Nairobi city county, Kenya.

ii. To determine the effect of near shoring on operational performance of manufacturing firms in Nairobi city county, Kenya.

iii. To establish the effect of product harmonization on operational performance of Manufacturing firms in Nairobi city county, Kenya.

iv. To find out effect of Inventory management on operational performance of Manufacturing firms in Nairobi city county, Kenya.

1.4 Research Questions of the Study

i. What is the effect of Multi sourcing on operational performance in manufacturing firms in Nairobi city county, Kenya?

ii. What is the effect of near shoring on operational performance of manufacturing firms in Nairobi city county, Kenya?

iii. What is the effect of product harmonization on operational performance of manufacturing firms in Nairobi city county, Kenya? What is the effect Inventory management on operational performance of manufacturing firms in Nairobi city county, Kenya?

1.5 Significance of the study

The study was significant to the Academicians, Management of manufacturing firms , Government and researcher.

1.6 Scope of the Study

The study looked at 189 manufacturing companies that are part of the Kenya Manufacturers Association (KAM). KAM is an industry member organization that represents Kenya's manufacturing value-added market. The research was restricted to manufacturing companies based in Nairobi and its environs. The fact that 80 percent of manufacturing companies are clustered within Nairobi and its environs influenced this decision (KAM, 2020). The sector is also one of the six focus sectors identified in Kenya's Vision 2030 as having the potential to boost GDP growth rates to about 10% in the next few years. Moreover, the sector is one of the key economic pillars and is aspired to create jobs, generate foreign exchange and attract foreign direct investment for the country.

2. LITERATURE REVIEW

2.1 Theoretical Review

A theoretical review refers to the theory that a researcher chooses to guide him/her in his/her research (Cooper and Schindler, 2014). In this study, the theoretical review will consist of theories, which exhibit the dynamism of supply chain resilience strategies on operational performance of Manufacturing Firms in Nairobi city county, Kenya using four theories namely: Resource based view theory, Strategic choice theory, Network theory and Stakeholder theory were explored to give a basic understanding of the phenomenon

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2.2 Conceptual Framework

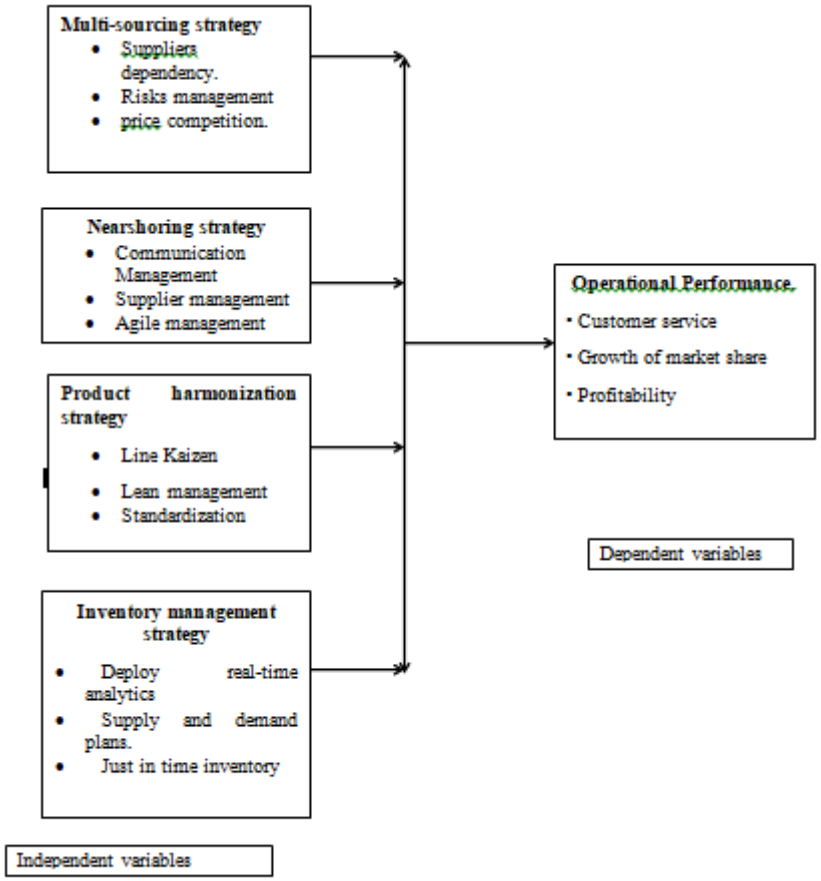

Figure 2.1 Conceptual Framework

2.3 Empirical Review

Previous research also explored the organizations ' ability to recover from or easily respond to supply chain disturbance. Researchers use the word ' resilience' to illustrate the capacity of organizations to adjust and respond rapidly to supply chain disturbances. A research by Hohenstein *et al.,* (2015) showed the main SCRES rudiments covering agility, flexibility, visibility and cooperation. Golgeci and Ponomarov, (2013) pointed out precursors of SCRES. Further, they recognized a number of drivers to a stronger supply linkages including: flexibility, distinguishability, resourcefulness and usefulness. They established that companies that are creative, versatile, transparent and agile are more likely to build optimal levels of SCRES that is a main capacity to withstand disturbances. Golgeci and Ponomarov (2013), in their study, recommended that organizations ought to invest in inventory versatility, efficiency, responsiveness, versatility, creative capacity to develop resilience and protect competitive advantage, and increase market share.

Mohammaddust *et al.,* (2017) denoted SCRM is critical for supply chain operations due to natural disasters and the risks associated with the process uncertainties. Rafisah *et al*, (2015) undertaken a study on Overcoming Supply Chain Obstacles in Malaysia. They deliberated a case study on Japanese Companies. Their findings indicated that the information technology enables greater collaboration among supply chain allies and their internal operations. This study showed the effective usage of technology and forming good relationships with suppliers over a number of years' leads to uniformly maintaining of high quality final product. This study further showed that successful manufacturing supply chain is mainly derived from information technology, and close relationships with suppliers. Pournader *et al.* (2016) assert that, supply chains are fundamentally risky and firms' managers should create adequate risk management practices in order to decrease supply chain distractions.

Wieland and Wallenburg, (2012) conducted an investigation concerning how SCRM influences organizational performance. Survey data were collected via structural equation modeling from 271 firms for testing hypotheses. They

identified that control of material risk, knowledge risk and financial risk has a compact desirable influence on customer's value in nets of supply as it controls organizational productivity necessitated by customer's need throughout the linkages of supply and is therefore only indirect. By comparison, achieving robustness has a robust positive direct impact on both the consumer satisfaction and the company results (Wieland & Wallenburg, 2012). Therefore, the execution of SCRM, which entails the identification, assessment, and controlling of risks, allows organizations to better muddle through changes both proactively and reactively. According to Wieland and Wallenburg (2012), cooperation, remuneration and postponement are more potential SCRM enablers.

Ongisa, (2016) investigated how SCRM tactics affects output in Kenya. From the research it was configured that SCRM together with the organizational performance are directly related, and asserted that supply chain risks affect organization performance in the event they materialize (Ongisa, 2016) Hence, there is a call for organization to identify risk exposure, analyze the risk exposure and have in place risk reduction plans that impact the organization's productivity. Ongisa, (2016) further recommended that organization should develop a proactive risk management culture for increasing employee awareness of tactics in managing threat in order to mitigate supply bond peril to ensure contingency arrangements are placed in place in the event of adverse organizational performance.

Hasan *et al.*, (2018) investigated how agile supply nets influences firm efficiency in Turkey. They established that in competitive environmental setting, the companies need to use their resources in the most accurate agile manner in order to survive. Companies achieve a competitive advantage by responding as quickly as possible to varying consumer demands in different markets. They can also achieve this by focusing on the agility element of the delivery channel. Delivery channel should be flexible in terms of volatility for businesses to achieve a competitive edge (Hasan *et al.*, 2018). Manufacturing firms therefore need to adapt the versatility inside and outside the business to their systems in order to participate in this global market system and to sustain their position in the prevailing markets (Hasan *et al.*, 2018).

Blome *et al.*, (2013) conducted a research on antecedents as well as enhancers of agile supply links and its influence on firm performance. They found out that supply chain agility has beneficial effects on operating efficiency and cost efficiency. Moreover, developed supply chain agility influences positively to the firm's financial performance (DeGroote & Marx, 2013). Ghatari *et al.*, (2013) Agility is the key element which supply chain requires for surviving environmental uncertainties when supply chain managements situation is at risk, and helps firms deliver right products at just-in-time. Supply chain agility is central for firms to gain strategic advantage (Gligor & Holcomb, 2012). In addition to this, organizational agility is a pro-active management strategy that targets to prompt response to different markets, safeguarding the organization's resources successfully and attaining the requirements of customers in a suitable manner that influences on firm's financial performance (Gligor *et al.*, 2015). Consequently, agility intends to alert recognizing opportunities and challenges, required to have a capability to use organizations resources in responding proactive and reactive manner. Further, it represents a fast moving, adaptable and resilient organization to the changes in the market conditions and customer requirements (Gligor *et al.*, 2013).

SCC is an important tool for companies to reduce uncertainty and achieve competitive advantage and success (Aggarwal & Srivastava, 2016). Farhad *et al.*, (2018) researched on supply chain collaboration (SCC) and firms' success in Thailand. They clarified that customer focus and more supplier specific relationships contribute to greater cooperation between firms, customers and suppliers. The study indicated a robust positive correlation between the consumer satisfaction and organizational recital. They established that firms benefit the most from a supplier's collaboration efforts in dissemination of information. As a result, frontrunners in organizations should use SCC more strategically and create more new revenue opportunities. Soosay and Hyland (2015) assert that, supply chain collaboration (SCC) can lead to superior performance in firms due to asset capitalization and competences in supply chain cohorts.

Cai *et al.*, (2013) supply chain allies' work together to optimize learning opportunities and acquire new skills, improve market position, and raise dexterity and supply chain considerations. Aggarwal and Srivastava (2016), conducted detailed interviews with upstream supply chain adherents in the Indian agro industry to understand the partnership mechanism, collaborative practices and acuities of buyers and suppliers. The study established that supplier selection and exchange of knowledge are the key precursors of SCC while supply chain efficiency and waste reduction are the major outcomes of collaboration. Similarly, Kache and Seuring, (2014) examined the correlation between cooperation with supply nets triumph that led to recognition of explicit consensus association amidst collaboration rate and general productivity of firm's supply bonds. They found out that the creation of collaborative practices would lead not only to benefits for buyers

and sellers but also to better and sustainable practices for the industry. McDowell *et al.* (2013) adds that, improved knowledge sharing between supply chain members may lead to improved confidence levels among supply chain partners and improved working relationships. Therefore, sharing knowledge as well as information amongst cronies within manacle of supply would result to effective plan for increasing organizational performance.

A study carried out by Scholten and Schilder (2015), examining how teamwork impacts supply chain resilience. Collaborative approaches and the processes behind them are analyzed in terms of visibility, speed and flexibility. The study established that key specific collaboration activities such as information exchange, collective communication, knowledge collectively produced and joint partnership efforts improve SCRES through increased visibility, speed and flexibility. The study shows that communicating with rivals, which may be counterintuitive for some managers, may improve resilience by permitting flexibility. In fact, the longer the businesses have operated together, the more robust they are due to improved visibility and speed (Scholten & Schilder, 2015). This theoretical insight is especially applicable for managers, as it provides valuable guidance on questions relating to sourcing: another supplier may provide better value; nevertheless, resilience will be reduced even when participating in the same degree of joint activities with the new supplier. This will potentially reduce the original value the new supplier has promised (Scholten & Schilder, 2015).

A study by Ongisa *et al.,* (2016) examined the effect of supply base rationalization strategies on the productivity of 188 firms' in production in Kenya. Research findings revealed that supplier base risk rationalization approaches influence firm performance in regard to customer satisfaction. Nevertheless, some manufacturers do not consider SCRM as good practice. Most firms consider risk mitigation as a non-management function. Others know about risk but do nothing about it while others are ignorant about it (Ongisa *et al.,* 2016). The study therefore proposed that the management of the food & beverages manufacturing firms should embrace risk management at different levels in their organizations including strategic, financial and operational risk management as they are likely to uplift the performance of their organizations. Ongisa *et al.* (2016) moreover endorsed control in information proficiency by firms' administration when managing peril by installing information systems that can carry out risk assessment and measurement more accurately and for monitoring their risk management programs for effectiveness through reducing supply-failure exposure and market volatility by constructive supply chain risk management.

A study carried out by Msimangira and Venkatraman (2014), on the emerging supply chain integration aimed at defining supply chain integration challenges and potential solutions. The study applied an exploratory design where data was collected using open discussions and brainstorming among supply chain personnel in New Zealand. The research recognized that SCI required a holistic approach; two-way communication; written service level agreements; relationship management; use of new technologies and integrated software systems of SCM. The study recognized investing in exploration of supply manacle analytics to hearten information management thereby improves integrated supply chain. Miguel and Ledur (2011) affirm that, integrated supply chain enhances value creation through improved customer service levels, operational performance and reduced costs. According to Getahun (2012), as cited by Wube *et al.,* (2016) nonexistence of integrated supply chain operations may have an impact to the organization's value and strategic advantage.

Wright, (2016) similarly investigated on the SCI linkage and overall firm's performance in Romania. Secondary information of 203 firms processing food as well as beverages in Romania was use incorporated. The study used logical regression method to determine if vertical integration increased the probability of superior performance. The study found a strong relationship between high operating profit margins and superior firm's performance. The study proved that it was valuable for companies to develop competences through vertical integration so as to protect it from turbulent environment. Therefore supporting development of competences is a basis for improving organizational performance (Wright, 2016). Georgise *et al.* (2012) assert that, to a greater or lesser extent, the productivity of a firm is determined by organization's activities that manage the standards of products and services.

Cheruiyot, (2013) explored how SCI impacts supply networks productivity of KTDA. Direct responses obtained from 199 employees in purchasing and supplies sections drawn from 165 KTDA Kenyan managed tea factories were used. The findings suggested that supply chain integration involving functional, consumer and supplier integration positively influenced supply chain effectiveness in line with raw material purchasing cost, transport cost, distribution cost, asset turnover and inventory holding cost. According to Nyamoko (2013), as cited by Mideva, (2019) looked at how SCI impacts efficiency in processing firms. The study acknowledged that SCI heightens exchange of information concerning

demand of the products with main partners. The study determined that information sharing has a greater influence to performance of the organization.

Food and Beverages Manufacturing sector is an important sector for the Kenyan economy like many other developing countries since it employs about workforce (Luper & Kwanum, 2012). In Kenya, Manufacturing industries play an important role in Kenya's economic growth, it accounts for approximately 50% of manufacturing production turnover which is about 2.8% of Kenyans' GDP (KAM, 2015). Firms involved in processing food as well as beverages accounted for more than a third of 33.4% of overall production and 33.5% of manufacturing employment (KNBS, 2016). Food and Beverages production sector face risk that affect them stems from both the market related risk as well as business or operation risks. A study done by Mohamed & Omwenga (2015) found out that, the growing complexity of supply chains, along with incentives to continually develop new products and reduce business costs, has created firms' product safety. The capacity of the firms' to carefully identify the risks that their business could face and take actions accordingly to counter them will certainly lead to successful and profitable ventures and contribute to economic growth of the nation (Mohamed & Omwenga, 2015). Performance measures may be in terms of profit, growth in sales, stake holders' satisfaction, reliability and competitive position (Christopher *et al.,* 2011).

Efendioglu and Karabulut, (2010) asserted that the indicator for firm's performance is financial expansion which was assessed by; overall sales volume and total profit margin. The study by Imeokparia (2015), concerning operational resources administration and recital of industries involved in foods as well as beverages production in Nigeria established that working capital was directly related to the firm's productivity. The study recognized that functional asset administration enhances firm's production efficacy. Equally, Raheman *et al.,* (2010) studied managing of operative investment besides processing sector effectiveness in Pakistan. The research equilibrated panel data of 204 manufacturing companies. The study acknowledged net trade cycle and financial flexibility affects the recital of Food & beverage companies significantly. Consequently, the study proposed formulating appropriate supervision policies for operational resources. Additionally, investing in working capital should be incorporated to increase the firms' operating productivity.

A study conducted by Vikas *et al.* (2011), on the influence of operations performance on customer loyalty. Developed longitudinal research based on preceding findings that service delivery operations can have an absolute effect on customer contentment, extending this inference to highlight operational success as a direct basis for customer fidelity. Thus the study endorses that, creating reliability value as a primary factor of customer fidelity. Promptness of service provision can help in the acquirement of customers but in the long-term retention of customers is primarily influenced by dependability and reliable quality (Vikas *et al.,* 2011). Likewise, Walter *et al.,* (2015) examined the relationship between consumer engagement and marketing triumph in the food & beverage companies. The research surveyed eighty-seven (87) managers from 34 food & beverages firms in Nigeria, through designed quantitative self-administered questionnaires. The study recognized that customer involvement management is a viable strategy for driving Food and beverage product efficiency manufacturing companies. Therefore, customer focus leads to firm's effectiveness as well as ensures consumer satisfaction is first put in all aspects of the organization (Walter *et al.,* 2015).

2.4 Critique of Existing Literature Relevant to the Study

Supply chain resilience practices assessed within literatures reflected was accorded a substantial attention in the arena of resilient supply chain. Besides the highlighted four crucial SCRES practices, previous studies on development of a resilient supply networks hazards or turbulences is broad but partial in depth. Furthermore, nevertheless, the SCRES literature has recognized many practices for establishing supply chain resilience; few studies have gone beyond this to concentrate on how firms can actually adopt or enforce such practices (Blackhurst *et al.,* 2011). However, supply chain resilience study should focus not just on defining approaches but also on understanding how they can be applied effectively. For example, it is clear that supply chain resilience practices have financial implications that may hinder their implementation. Other issues, such as global price fluctuation, import regulations and political uncertainties, which are common sources of business risks, may also pose a challenge to the execution of a strategy of SCRES (Wieland & Wallenburg, 2012).

The study by Giunipero *et al.* (2015), on the phenomenon of SCRES gathered and synthesized the diverse terms into a pro-active supply chain resilience strategy for the ex-ante disruption process, which comprises the essentials of cooperation, human resource management, inventory management, continuity and promptness building. The study also showed that the total resilience of supply chain can be assessed by three main performance metrics such as customer

satisfaction, market share and financial performance that can calculate the capacity to handle supply chain disruption (Giunipero *et al*., 2015). The study lacked theories to backing and reveal relationships among the variables. Also its findings were also focused on literature review and therefore lack quantitative methods for validating and proving theoretical concepts. Likewise, Constantin, (2016) studied on the SCRES with respect to inventory management by means of safety stocks to mitigate unanticipated occurrences of stock outs and sales lost. The research revealed that supply chain resilience can be attained through inventory management and can be measured using probability of not being stock-out and not losing sales by keeping safety stock level high as a buffer against demand variability. The study also lacked theories to support and illustrate relations among the variables, and its findings were based on review of literature and consequently lack quantitative methods for validating and proving theoretical concepts.

A study by Rafisah *et al.,* (2015) on delivery chain of Japanese Food & Beverage Companies in Malaysia, showed that the most significant factors leading to supply chain disruption in Malaysia are consistency of finished goods, restricted storage space and facilities, price volatility of imported raw materials and shortages of manufacturing labor. To discourse supply chain disturbances, the study endorses: execution of information technology, close relationships with suppliers, improvement of logistical process redundancies, and investment in research to establish resilient and scalable mechanics of production function. The research lacked theories to endorse and explain relationships between the variables and its findings were focused on literature review and thus lack quantitative methods to authenticate and demonstrate theoretical concepts. Also, the study suggests that firms invest in resilient growth but does not include specifics of the resilient to be built. Krishnan and Raja, (2017) examined the influence of SCRES strategies on integration of exploration and exploitation of supply chain as vibrant efficiency in Food and Beverages firms. They established that the fundamental component of attaining ambidexterity is the strategic integration and configuration ability to use current competencies and improve new ones thus reducing unnecessary influences of disturbances in supply chain and improving firm efficiency. The study incorporated the electronic questionnaire send via e-mail to participants that was considered as suitable technique to collect the data, commonly, for this kind of technique the responses are typically low due to lack of adequate information to justify the validity of feedback from the respondents.

2.5 Research Gaps

Several studies have been carried out in the attempt to achieve a more resilient supply chain. A case in point; Osaro *et al.* (2014), premeditated a basis for intensification of resilient chain of supply in the Pharmaceutical sector, Ngera *et al.* (2018), researched on influence of supply chain resilience on the performance of Categorized Hospitals in Kenya, more stress was on Pharmaceuticals and Medical Equipment firms in Kenya, Amemba (2013), investigated the effect of supply chain productivity on implementation of risk reduction strategies for which it concentrated on the Pharmaceutical Industry and Medical Equipment firms, Aigbogun (2012), studied the Framework to enhance supply chain resilience (SCRES) which was primarily centered on Pharmaceutical industry and Mutua, (2013) examined the factors affecting resiliency in supply of pharmaceutical products in government hospitals in Kenya. Therefore, it's eminent from the different studies done locally; supply chain resilience aspect have been skewed on the Pharmaceuticals and Medical Equipment sector without focusing on the manufacturing sector as well. This formed the gap for which this study sought to fill by studying supply chain resilience practices and the role they play on the performance of Manufaturing firms in Nairobi city county, Kenya.

3. RESEARCH METHODOLOGY

3.1 Research Design

A research design is a systematic strategy for how a research project is performed according to the data needed in order to investigate the research questions in an economical way, and it is a structure that directs the collection and analysis of data. This research used a cross-sectional research design methodology that combines quantitative and qualitative methods. The quantitative approach places a strong emphasis on calculation, and data can be interpreted numerically to provide a precise definition

3.2 Target Population

The target population, according to Berg (2001), is the community to which the researcher plans to apply the study's findings. The 454 manufacturing companies in Nairobi and its environs would be the study's focus population. The target

population was chosen based on the fact that Nairobi and its environs are home to 80% of all manufacturing companies, resulting in a high concentration of manufacturing firms and easy access to them.

The sector is also one of Kenya's six focus sectors, which, according to Kenya's Vision 2030, are projected to boost GDP growth rates to about 10% in a few years. Since manufacturing is Kenya's third largest contributor to GDP, it has a lot of potential to boost economic growth and productivity in a developing country like Kenya. Furthermore, the sector has tracked and registered formal procedures with the Kenya Association of Manufacturers, allowing for easy access to details.

3.3 Sampling Frame

A sampling frame is a list of all the objects from which a representative sample would be taken for the analysis (Nachmias & Nachmias, 2008). The 454 manufacturing firms in the 12 main industrial sub-sectors obtained from the Kenya Association of Manufacturers directory served as the study's sampling frame (2020). Building, mining, and manufacturing, chemical and allied industries, energy, electrical and electronics, food and beverages, leather and footwear, metal and allied industries, motor vehicle and accessories, paper and board, pharmacy and medical devices, plastics and rubber, garment and apparels, timber, wood, and furniture are some of the sub-sectors.

3.4 Sample and Sampling Technique

A multi-stage sampling technique was used to identify the study's sample. This methodology was adopted because it is claimed to minimize within-stratum variances (Kothari, 2007). The researcher used a stratified sampling technique to separate manufacturing firms into 12 strata based on sub-sectors, with each sub-sector forming a stratum. The researcher was able to represent not just the total population but also main sub-groups of the population using stratified random sampling, which was considered to be sufficient. By giving some leverage over variance, stratification has helped reduce standard error.

The technique also provided a better comparison across strata (Saunders, et. al., 2007). In the second stage, the researcher used simple random sampling technique to determine the sample size. This allowed equal representation of all individuals in the defined population to be selected as a member of the sample (Kombo & Tromp, 2006). This is important as it helps reduce biases that may arise. The study assumed that 70% of manufacturing firms adopted supply chain resilience. Sample size determination formula is recommended by Kothari (2004) will be used to select 189 firms for intensive study. The sample size represents more than the 10% of the accessible population that is generally recommended by social researchers required for statistical data analysis (Gay, 1981) and at least 100 cases as suggested by Orodho (2005). Table 3.1 shows the sample size of the study.

The following formula was used to calculate the sample size.

$$n = \frac{(z^2 \times p \times q \times N)}{(e^2 (N-1) + z^2 x p x q)}$$

where:

n = sample size

z = confidence level at 95% (Standard value of 1.96)

p = proportion in the target population estimated to have adopted supply chain resilience strategies

q = proportion in the target population estimated not to have adopted supply chain resilience strategies

N = size of target population

e = margin of error in the 95% confidence interval

Table 3.1: Sample Size

Sub-sector	Population	Sample Size
Energy, Electrical & Electronics	33	14
Building, Mining & Construction	13	5
Food & Beverages	88	37

Leather & Footwear	5	2
Metal & Allied	46	19
Chemical & Allied	66	27
Motor vehicle & accessories	31	13
Paper & Board	57	24
Pharmaceutical & Medical Equipment	23	10
Textile and Apparel	27	11
Timber, Wood & Furniture	14	6
Plastics & Rubber	51	21
Total	**454**	**189**

3.5 Data Collection Instrument

Since this study seek out to examine how owners or managers of manufacturing firms in Kenya view dynamism of supply chain resilience strategies on operational performance of Manufacturing Companies in Kenya manufacturing firms in Kenya. A research instrument which could investigate and measure their perception is required. In this study, a questionnaire was seen as the most appropriate tool. A questionnaire was perceived as the most accurate tool for measuring self-sufficiency existing relationship, objects or events as well as self-reported beliefs and behavior (Newman, 1997). Further, the questionnaire was seen to be appropriate as it allow data to be collected in a quick and efficient manner. The use of questionnaire also makes it possible for descriptive, correlation and inferential statistical analysis (Saunders et al., 2007).

3.6 Data Collection Procedures

The primary data was collected from respondents (source) using drop and pick later method, while the secondary data was collected from published materials and Journals. The questionnaires was self-administered.

3.7 Pilot Study

To test the validity of the questionnaire was used for this study, the researcher pilot-tested the questionnaire. According to Mugenda (2003), pilot test is necessary for the validity of a study. Orodho (2003) posits that a pilot study is necessary for testing the reliability of data collection instruments. The data collection in this study was spread over two stages where a pilot study was conducted in the first stage before the actual survey with the respondents. The pilot study was conducted to refine the questionnaire, identify loopholes in the questionnaire and anticipate any logistical problems during the actual survey. This was done by administering the questionnaires to identified pilot unit. According to Mugenda and Mugenda (2003), one tenth of the sample size is sufficient for pilot testing. Therefore, 19 sample questionnaires was tested on 19 manufacturing firms that will be selected randomly from the target population. Appropriate corrections was then made based on the results of the pilot study. For instance, some of the managers was expressed concern about the confidentiality of their information but their concerns was allayed after they was explained the steps taken to protect their information.

3.7.1 Reliability

Regardless of the research procedure that was used and the method was employed, researchers needed to critically assess to what extent it is likely to consistently measure what it ought to accurately. According to Orodho (2003), reliability is the extent to which results are consistent over time and an accurate representation of the total population under study is said to be reliable if the results of a study can be reproduced under a similar methodology then the research instrument is considered to be reliable.

3.7.2 Validity

During questionnaire development, various validity checks will be conducted to ensure the instrument measure what it is supposed to measure. Validity is the extent to which a construct measures what it is supposed to measure (Hair et al., 2007).

3.8 Data Processing and Analysis

In this study, the quantitative data was collected and analyzed by calculating response rate with descriptive statistics such as mean, median, standard deviation and proportions using Statistical Package for Social Sciences (SPSS) version 24 and

Microsoft Excel. Quantative data analysis was carried out by the use of factor analysis and correlation analysis to determine the strength and the direction of the relationship between the dependent variable and the independent variables.

4. RESEARCH FINDINGS AND DISCUSSION

4.1 Response Rate

A total of 189 manufacturing companies were included in the report. One hundred and seventy (170) questionnaires were circulated by the researcher. 130 of the 170 questionnaires sent out were returned. The response rate was 76 percent overall. A response rate of 50% is considered average, 60-70 percent is considered adequate, and anything above 70% is considered exceptional, according to Kothari (2004).

4.2 Pilot test result

4.2.1 Reliability Analysis

A reliability test was used to evaluate the survey constructs. The degree to which individual objects used in a build are compatible with their measures is said to be examined by a reliability test (Nunnally, 1978). According to Zikmund (2003), a minimum Cronbach alpha of 0.60 is sufficient.

Table 4.1: Reliability Analysis

Variable	Number of items	Reliability Cronbach's Alpha	Comments
Multi-sourcing strategy	5	0.78	Accepted
Near shoring strategy	6	0.70	Accepted
Product Harmonization Strategy	6	0.80	Accepted
Inventory management strategy	7	0.86	Accepted
Operational Performance	12	0.72	Accepted

4.2.2 Validity Results

As shown in Table, Kaiser-Mayor-Oklin tests of sampling adequacy (KMO) and Bartlett's test of sphericity were used to see whether there was a correlation between the sample variables.

Table 4.2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.634
Bartlett's Test of Sphericity	Approx. Chi-Square	9606.959
	df	24
	Sig.	.000

4.3 Demographic Information

The study sought the background information of the respondents which included gender, age, highest level of education and number of years in business.

4.3.1 Industry sector to which the firms belongs

The respondents were asked to indicate the sub-sector they belonged to. 20.8% of the manufacturing firms sampled were drawn from food and beverages sub sector, followed by 15.4% in building and construction sector, while 13.8% were operating in motor vehicle and accessories. It is important to note that only 1.5% of the manufacturing firms were operating in textile and apparel sector, leather and footwear sub-sectors respectively. Since the study was soliciting responses from all the sub-sectors, the findings implied that the respondents were well-spread across the 12 key sub-sectors hence representative of the population thus enhancing accuracy of the responses. The sub-sector distributions of the manufacturing firms are as shown in Table 4.3

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Table 4.3: Industry sector to which the firms belongs

Sub-sector	Respondents	Percentage
Building, Mining & Construction	20	15.4
Chemical & Allied	10	7.7
Energy, Electrical & Electronics	8	6.2
Food & Beverages	27	20.8
Leather & Footwear	2	1.5
Metal & Allied	6	4.6
Motor vehicle & accessories	18	13.8
Paper & Board	10	7.7
Pharmaceutical & Medical Equipment	5	3.8
Textile and Apparel	2	1.5
Timber, Wood & Furniture	10	7.7
Plastics & Rubber	12	9.2
Total	**130**	**100%**

4.3.2 Position of the Respondents

Table 4.4 below indicates the respondent's position.

Table 4.4: Position of the Respondents

Position	Frequency	Percent
Direct managers	36	27.69
Procurement officers	50	38.46
Production managers	20	15.38
Risk managers	24	18.46
Total	**130**	**100.0**

4.4 Descriptive Analysis for Study Variables on the Likert-Type Scale

The accuracy of the analyses is determined by the analysis of test observations using the Likert Scale. Four of the parts of the self-administered questionnaire in this sample included elements on a Likert style scale using Alan's suggested scale of SD – Strongly Disagree; D – Disagree; N – Neutral; A – Accept; and SA – Strongly Agree (2001). The comments on the Likert Scale were all positive. There were six elements in each of the four divisions of the Likert style scale format.

4.4.1 Descriptive analysis of the effect of Multi sourcing strategy on operational performance of Manufacturing firms in Nairobi city county, Kenya.

Multisourcing strategy Statements	SA	A	N	D	SD	Mean	STD
I am familiar with Multi sourcing strategy in this business	22.2	68.4	7	2.5	0	4.4	0.6
The firm know their supplier networks in detail as risk management strategies	25	51.6	18.5	4	0.8	4.8	0.8
The firm is able to categorize suppliers not just by spend	21	50.8	22.6	4.8	0.8	3.9	0.8
The firm are much more proactive about managing your relationships with vendors so that you can avoid frequent disruptions of your supply chain	20	50.4	22.4	3.2	4	3.8	0.9
Multi-sourcing strategy always lower the risks of supply disruption and make sure that the firm is not dependent on one vendor	24.8	45.6	21.6	4.8	3.2	3.8	1.0
The firm obtaining the same type of product, component or service from more than one supplier in order to maintain market bargaining power and continuity on supply	25	45.2	25	3.2	1.6	3.9	0.9

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4.4.2 Descriptive analysis of the effect of near shoring strategy on operational performance of Manufacturing firms in Nairobi city county, Kenya.

Nearshoring strategy Statements	S A	A	N	D	SD	mean	Std
I am familiar with Nearshoring strategy in this business	38	56.3	5.7	0	0	4.2	0.6
The company want to reduce geographic dependence in their global networks and shorten cycle times for finished products	48.9	44.3	4.6	1.5	0.8	4.4	0.7
Regional or local supply chains can be more expensive, because they add more players and complexity to the ecosystem	22.7	58.6	15.6	2.3	0.8	4.0	0.7
The company allow for more control over inventory and move the product closer to the end consumer	24.4	38.9	36.7	0.0	0.0	3.9	1.1
Diversification can be achieved by awarding business to additional suppliers or working with an existing single- or sole-source supplier that is able to produce out of several locations	21.8	34.8	30.4	13.0	0.0	4.3	1.3
Company decides to transfer work to companies that are less expensive and geographically closer.	10.8	60.1	19.0	10.0	0.0	4.4	0.9
Nearshoring allows you to choose a partner that will not only deliver the solution on time, but also increase cost-effectiveness of the project in comparison to doing the same job internally	4.1	30.4	31.0	27.2	7.3	4..1	1.1

4.4.3 Descriptive analysis of the effect of Product harmonization strategy on operational performance of Manufacturing firms in Nairobi city county Kenya.

Product harmonization strategy Statements	SA	A	N	D	SD	Mean	STD
I am familiar with Product harmonization strategy in this business	35.1	60.8	2.8	1.3	0.0	4.3	0.8
The more regionalized the network, the more harmonized plant technology has to be to allow products to move seamlessly across the network	22.3	47.7	17.7	10.8	1.5	3.8	1.0
Regional or local supply chains can be more expensive, because they add more players and complexity to the ecosystem	21.7	27.1	32.6	14.7	3.9	3.5	1.1
Standardizing components across multiple products particularly those that are not visible or important to the customer	30.8	50.8	14.6	3.1	0.8	4.1	0.8
Product harmonization strategies simplifies sourcing policies and creates opportunities to place higher volumes among multiple suppliers, which in turn enhances resiliency	31.8	48.1	8.5	6.2	5.4	3.9	1.1
Company decides to transfer work to companies that are less expensive and geographically closer.	31.5	49.2	15.4	3.1	0.8	4.1	0.8
Product harmonization strategies allows you to choose a partner that will not only deliver the solution on time, but also increase cost-effectiveness of the project in comparison to doing the same job internally	21.7	27.1	32.6	14.7	3.9	3.5	1.1

4.5 Descriptive analysis of the effect of Inventory management strategy on operational performance of Manufacturing firms in Nairobi city county, Kenya.

Inventory management strategy Statements	S A	A	N	D	SD	Mean	STD
I am familiar with Inventory management strategy in this business	26.3	41.1	24.1	8.5	0.0	4.3	0.8
Our firm stock holding policies are dynamic	27.0	16.9	27.4	28.7	0.0	3.8	1.0
Our firms' supply base is able to absorb abrupt changes in demand	13.6	75.9	10.4	0.0	0.0	3.5	1.1
Our firm always conducts stock taking	31.6	65.8	2.6	0.0	0.0	4.1	0.8
Our firm always maintain accurate inventory records	37.0	57.9	5.1	0.0	0.0	3.9	1.1
Our firm always standardizes inputs specification	26.3	41.1	24.1	8.5	0.0	4.1	0.8

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4.6 Inferential Statistics

4.6.1 Correlation matrix between Study Variables

Before running the regression analysis, the researcher run the correlation matrix in order to check whether there was association between variables and also checked whether there was a multicollinearity within the variable. Pearson product moment correlation coefficient (r) was used to aid in establishing correlation between the study variables of interest. The Pearson product-moment correlation coefficient (Pearson's correlation, for short) is a measure of the strength and direction of association that exists between two variables measured on at least an interval scale. Correlation coefficient shows the magnitude and direction of the relationship between the study variables. The correlation coefficient varies over a range of +1 through 0 to -1. When r is positive, the regression line has a positive slope and when r is negative, the regression line has a negative slope. Table 4. Shows bivariate linear relationship between the study variables. The study findings depicted in Table 4.20 indicated that there was a significant positive effect of Multisourcing strategies on operational performance (rho=0.6530, p-value <0.05). This implies that a unit change in Multisourcing strategies increases operational performance by 65.3%. Secondly there was a positive and significant effect of near shoring strategies on operational performance (rho =0.608, P value <0.05). This implies that a unit change in near shoring strategies increases operational performance by 60.8%.

Thirdly, there was a positive and significant effect of Product harmonization strategies on operational performance (rho = 0.514, p value <0.05). This implies that a unit change in Product harmonization increases operational performance by 51.4%. Finally, there was a positive and significant effect of Inventory management strategies on operational performance (rho = 0.521, p value <0.05). This implies that a unit change in Inventory management strategies increases operational performance by 52.1%.

Correlations

		Multisourcing	Nearshoring	Product harmonization	Inventory management	Operational performance
Multisourcing	Pearson Correlation	1	0.441	0.403	0.303	.653**
	Sig. (2-tailed)		.454	.779	.085	.375
	N	130	130	130	130	130
Nearshoring	Pearson Correlation	0.441	1	-0.508	0.305	.608**
	Sig. (2-tailed)	.454		.453	.167	.546
	N	130	130	130	130	130
Product harmonization	Pearson Correlation	0.403	-0.508	1	0.280	.514**
	Sig. (2-tailed)	.779	.453		.389	.304
	N	130	130	130	130	130
Inventory management	Pearson Correlation	0.303	0.305	0.280	1	.521**
	Sig. (2-tailed)	.085	.167	.389		.201
	N	130	130	130	130	130
Operational performance	Pearson Correlation	.653**	.608**	.514**	.521**	1
	Sig. (2-tailed)	.375	.546	.304	.201	
	N	130	130	130	130	130

4.6.2. Regression Analysis of the Overall Model

Sekaran (2003) argued that if the study seeks to analyse the data beyond means and standard deviations for example if there is need to examine the relationship between variables then bivariate analysis such as correlation and regression analysis are the most appropriate. Thus, the researcher applied Pearson correlation analysis to examine the strength of the effect of supply chain resilience strategies on operational performance of Manufacturing Companies in Kenya manufacturing firms in Kenya. Moreover, regression analysis was used to examine the nature of the relationship as well

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as test the hypothesis of the study. The level of significance was tested at 5% and according to Oso and Onen (2009) with this significance level then the researcher has 95% chances of making the correct decision that there exists a significant relationship between dependent and independent variable. The overall model shows that 66.3% of the variation in operational performance of Manufacturing firms in Nairobi city county, Kenya. can be jointly explained by Multi-sourcing strategies, Nearshoring strategies, product harmonization strategies and Inventory management strategies jointly. The remaining percentage can be explained by other factors which are excluded from the model. Summary is as shown in Table 4.34.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.814a	0.663	0.639	0.845	0.639	11.238	4	125	.000	2.013

a. Predictors: (Constant), Inventory management, Nearshoring, harmonization, Multisourcing

b. Dependent Variable: operational performance

The ANOVA results in Table 4.35 shows that Inventory management, Nearshoring, harmonization, and Multisourcing strategies all jointly have a significant influence on operational performance, and at least one of the slope coefficient is none zero. (F = 11.238 and p value <0.05).

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	905.087	4	226.2718	11.238	.000[b]
	Residual	2516.922	125	20.13538		
	Total	3422.009	129			

a. Dependent Variable: operational performance

b. Predictors: (Constant), Inventory management, Nearshoring, Product harmonization, Multisourcing

Results in Table 4.36 shows that Multisourcing strategy has positive significant effect on operational performance of manufacturing firms in Kenya (β = 1.06, p-value <0.05). This implies that a unit change in Multi sourcing strategy increases operational performance by 1.02 units. Secondly, Nearshoring strategy has positive significant effect on operational performance of manufacturing firms in Kenya (β =1.06, p value <0.05). This implies that a unit change in Nearshoring strategy increases operational performance by 1.06 units. Thirdly, there was a positive and significant relationship between Product harmonization strategy and operational performance of manufacturing firms in Kenya (β = 0.41, p value <0.05). This implies that a unit change in Product harmonization strategy increases operational performance of manufacturing firms in Kenya by 0.41 units. Finally, Inventory management strategy has a positive and significant effect on operational performance of manufacturing firms in Kenya (β = 0.71, p-value < 0.05). This implies that a unit change in Inventory management strategy increases operational performance of manufacturing firms in Kenya by 0.71 units.

Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	4.87	0.16		30.39	.000
	Multi sourcing strategy	1.06	0.16	0.32	6.60	.000
	Near shoring strategy	1.02	0.125	0.31	6.35	.000
	Product harmonization strategy	0.41	0.18	0.38	4.39	.000
	Inventory management strategy	0.075	0.16	0.22	4.42	.000

Operational Performance=1.06Multi sourcing strategy+ 1.02Near shoring strategy+0.41Product harmonization strategy+ 0.075Inventory management strategy

This study hypothesized: -

$H0_1$: Multisourcing strategy has no significant effect on operational performance of manufacturing firms in Nairobi city county Kenya. ($Ho=\beta_1=0$ vs $Ho=\beta_1\neq0$)

$H0_2$: Near shoring strategy has no significant effect on operational performance of manufacturing firms in Nairobi city county, Kenya. ($Ho=\beta_2=0$ vs $Ho=\beta_2\neq0$)

$H0_3$: Product harmonization strategy has no significant effect on operational performance of manufacturing firms in Nairobi city county, Kenya. ($Ho=\beta_3=0$ vs $Ho=\beta_3\neq0$)

$H0_4$: Inventory management strategy has no significant effect on operational performance of manufacturing firms in Nairobi city county, Kenya. ($Ho=\beta_4=0$ vs $Ho=\beta_4\neq0$)

The hypothesis of the study which were tested and the results also indicates all the hypotheses were rejected.

Discussion of the Optimal Model

Discussion of the Optimal Model The overall objective of this study was to determine the effect of supply chain resilience strategies on operational performance of Manufacturing Companies in Kenya manufacturing firms in Kenya. The expectation was that if a firm chooses to implement supply chain resilience strategies of Multi-sourcing strategies, Nearshoring strategies, product harmonization strategies and Inventory management strategies, it will achieve superior performance and stay ahead of competition. The results of regression analysis showed that c Multi-sourcing strategies, Nearshoring strategies, product harmonization strategies and Inventory management strategies combined had insignificant positive relationship with manufacturing operational performance X1 (β = 1.06 , p-value 0.000), X2 (β = 1.02 , p-value = 0.000) X3 (β 0.41 , p-value 0.000) and X4 (β 0.075 , p-value 0.000). The result of this study concurred with the study of Jüttner and Maklan (2011) which reported, that tracking supply risks had a positive effect on the supply chain visibility and resilience. Therefore, to be effective organisations need to implement effective management strategies and practices that measure risk constantly and align the activities of their supply network (Kleindorfer & Saad, 2005). (Kleindorfer & Saad, 2005). Partners in the supply chain must have a shared knowledge and perception of the threats that could arise in their activities (Faisal et al., 2006). One of the most important characteristics of resilience is the ability to benefit from previous disturbances in order to improve preparedness for upcoming disasters (Ponomarov & Holcom). As a result, leading companies provide compliance and supply network vulnerability preparation to staff, vendors, and consumers, raising awareness and emphasizing the value of supply chain stability (Blackhurst et al., 2011; Rice & Caniato, 2003).

5. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary of Major Finding

The current study arose from the recognition of a research problem in the literature: the effect of supply chain resilience strategies on operational performance of manufacturing firms in Kenya. Most empirical studies on supply chain resilience have leaned heavily on primary data, with only basic supply chain resilience being assessed. The majority of studies conducted in Kenya have not investigated the causal joint effect of supply chain resilience strategies on operational performance of manufacturing companies in Kenya. As a result, the researcher's main goal was to look into the impact of supply chain resilience techniques on the operating efficiency of manufacturing companies in Kenya. The thesis also aimed to test four hypotheses: Multisourcing strategy has no significant impact on the operational performance of manufacturing firms in Kenya, Nearshoring strategy has no significant effect on the production performance of manufacturing firms in Kenya, Product harmonization strategy has no significant impact on the operational performance of manufacturing firms in Kenya, and Inventory management strategy has no significant impact on the operational performance of manufacturing firms in Nairobi city county, Kenya.

5.2 Conclusions of study

This section presents the conclusions made in the current study. Research objective one in this study was to find out the effect of Multi sourcing strategy on operational performance of manufacturing firms in Nairobi city county, Kenya. The indicators of Multi sourcing strategy were Suppliers dependency, Risks management, price competition the indicators for operational performance of manufacturing firms in Nairobi city county, Kenya. g in this case were number of products, market share, profitability and number of customers. Suppliers dependency, Risks management, price competition had a positive significant effect with the operational performance of Manufacturing Companies in Kenya. It was therefore

concluded that the Multisourcing strategy has positive and significant effect on operational performance of manufacturing firms in Kenya. To improve on the operational performance of manufacturing firms in Nairobi city county, Kenya.

Research objective two in the current study was to determine the effect of Nearshoring strategy on operational performance of Manufacturing Companies in Kenya. The pointers for Nearshoring strategy were Supply chain Communication, Supplier management and agile management. The pointers for operational performance of Manufacturing firms in Nairobi city county, Kenya. in this case were the Customer service, Growth of market share and Profitability. Supply chain Communication, Supplier management and agile management had a positive and significant effect with operational performance of Manufacturing Companies in Kenya. It was therefore concluded that there was a positive and significant relationship between near shoring strategy and operational performance of Manufacturing firms in Nairobi city county, Kenya. To improve on performance, it was concluded that Manufacturing firms in Kenya should focus more on Supply chain Communication, Supplier management and agile management to enhance the knowledge. Further, near shoring strategy chosen must be designed to improve on the operational performance of Manufacturing firms in Nairobi city county, Kenya. In addition, when Near shoring strategy implemented the organization should strive to achieve this goal with a reduced number of employees that will not compromise the quality of services delivered and help to have an increased efficiency in cost of operation.

Research objective three in the current study was to establish the effect of product harmonization strategy on operational performance of Manufacturing Companies in Kenya. The indicators for product harmonization strategy were Line Kaizen, Lean management and Standardization. In this case, the indicators for operational performance were profitability, market share, and number of employees, of the operational performance. Line Kaizen, Lean management and Standardization had a significant positive relationship with the operational performance of Manufacturing Companies in Kenya. It was therefore concluded that there was a positive and significant effect of product harmonization strategy on operational performance of Manufacturing Companies in Kenya. To improve on the operational performance, it was concluded that Manufacturing Companies need to change supply chain resilience like product harmonization strategies like Line Kaizen, Lean management and Standardization to improve it is operational performance .

The last objective of this study was to find out effect of Inventory management strategy on operational performance of manufacturing firms in Nairobi city county, Kenya. The indicators for Inventory management strategy were deploy real-time analytics, supply and demand plans and just in time inventory while the pointers for operational performance were profitability, market share, and number of employees. Deploy real-time analytics, supply and demand plans and just in time inventory had a significant and positive effect with operational performance. It was therefore concluded that there was a positive and significant effect of Inventory management strategy on operational performance of manufacturing firms in Nairobi city county, Kenya. To improve on operational performance of Manufacturing Companies, it was concluded that Manufacturing firms need to come up with new products or an improved version of the existing products to impact positively on the profits and also to improve the customer base. It was also concluded that, to improve on the operational performance, the Inventory management strategy chosen must impact on the profitability and number of customers.

5.3 Recommendations

With reference to the objectives of the study, the following recommendations were arrived at: Findings from the study depicted that supply chain resilience is necessary for manufacturing firm's operational performance. To improve on the Manufacturing firms operational performance, it was therefore recommended that that to some extent, some strategies like Multi sourcing strategy, Near shoring strategy, Product harmonization strategy and Inventory management strategy.

The study also suggests that manufacturing companies should focus on supply chain risk control techniques as a form of risk reduction. They should be particularly cautious about the supply chain risk management aspects of fair risk sharing, quality preparation, quality assurance, and production inspection. Better supply chain risk assessment can lead to increased results as specified elements of supply chain risk management are improved. This research further suggests that businesses expand reliable market forecasts and improve supply chain risk control. And sustains long-term executing of standard operating procedures as this would positively impact performance.

Besides that, according to the study's policy guideline, manufacturers should improve their versatility in order to satisfy consumer demands. Further, agility is one of the key elements of a firm's win in the market and so manufacturers should

be measured on the basis of this criterion. Degree of technology, which involves an overall evaluation of a firm's potential in terms of technology and creativity, is one of the criteria that companies may use to measure their agility. The study further recommends that manufacturing firms ensure that all of their supply chain systems are modernized, as this will increase their profitability and help them avoid customer response delays.

5.4 Areas for Further Study

From the findings, the R^2 was 66.3% which means that the independent variables (Inventory management strategy, Nearshoring strategy, Product harmonization strategy, Multisourcing strategy) explained operational performance to an extent of 66.3% there are other factors which are not captured by the proposed model in this study which are captured by 32.9% which is not explained. Another study can be carried out to determine other supply chain resilience strategies explaining 33.7% of operational performance in view of the study context and scope. This research did not address all the issues around the supply chain resilience strategies in any way and for that reason it is recommended that alternative study be done in other institutions for instance in the Kenyan private sector perhaps applying the same factors used in this study so as to find out whether the outcomes will be consistent in an unlike setting.

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