EFFECT OF SUPPLIER MANAGEMENT PRACTICES ON SUPPLY CHAIN PERFORMANCE OF COUNTY REFERRAL HOSPITALS IN WESTERN REGION, KENYA

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DECLARATION

This research thesis is my original work and has not been presented for a degree in any other university or any other award.

Signature………………….....   Date……………….…

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CERTIFICATION

The undersigned University supervisors certify that they have read and hereby recommend for the acceptance of Masinde Muliro University of Science and Technology a research thesis entitled, **"Effects of Supplier Management Practices on Supply Chain Performance of County Referral Hospitals in Western Region Kenya".**

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DEDICATION

I dedicate my work to my family who have been my source of inspiration in my academics and really supported me financially. Above all, I thank my God for His strength, protection and grace that has been sufficient to sustain me throughout this period.

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ABSTRACT

According to World Bank, supply chain performance has declined at an alarming rate resulting to a decrease in global GDP. This study sought to investigate effects of supplier management practices on supply chain performance of County Referral Hospitals in Western Region, Kenya. The specific objectives were to determine effect of supply chain collaboration practices on supply chain performance of County Referral Hospital (CRHs) in Western Region, Kenya; to assess effect of supplier selection practices on supply chain performance; to examine effect of supplier risk management practices on supply chain performance and to ascertain effect of lean supply chain practices on supply chain performance of County referral hospitals in Western Region, Kenya. The study was guided by relational theory, grey system theory, game theory and lean supplier competence model. Descriptive survey was used in this study. The study was conducted in Western region focusing on four County Referral Hospitals: Kakamega County Referral hospital, Busia County referral Hospital, Bungoma County Referral Hospitals and Vihiga County Referral Hospital. The study targeted 102 respondent and used Yamane's formula to get a sample size of 81 respondents. Stratified and purposive sampling techniques were used. Primary data was collected using well-designed structured questionnaires and interview schedules. A pilot study was done at TransNzoia county. Reliability was tested using cronbach alpha test and as for validity, it was tested using content validity. Quantitative data was analyzed using descriptive and inferential statistics. Descriptive analysis included; frequencies and percentages while inferential analysis involved Pearsons product moment correlation analysis, simple linear regression and multiple regression analysis. Qualitative data collected from interviews was analyzed using content analysis. The data was presented in form of tables and graphs. Supply chain collaboration practices were found to have a positive and statistically significant effect on supply chain performance of CRHs in Western Region (B=0.641,F=50.417, t=7.101). The supply chain performance of the CRHs, was positively and significantly affected by supplier selection practices of the hospital (B=0.488, F=40.739, t=6.383). The supply chain performance of the CRHs was found to be positively, linearly and significantly impacted by supplier risk management practices (B=0.521, F=52.648, t=7.256).The supply chain performance of the CRHs was found to be positively, linearly and significantly impacted by the adoption of lean supply chain practices (B=0.491, F=29.253, t=5.409). Thus supplier management practices had an effect on County Referral Hospital's supply chain performance in Western Kenya. This study recommends that the County Referral Hospitals should adopt the supplier management practices so as to improve supply chain performance.

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LIST OF ABBREVIATIONS AND ACRONYMS

COVID 19   -   Corona Virus Disease of 2019

CRH   -   County Referral Hospital

EACC   -   Ethics and Anti-Corruption Commission

LSCP   -   Lean supply chain practices

NACOSTI   -   National Commission for Science, Technology and Innovation

OAG   -   Office of Audit General

SCCP   -   Supply Chain Collaboration Practices

SCM   -   Supply Chain Management

SCP   -   Supply Chain Performance

SMP   -   Supplier Management Practices

SPSS   -   Statistical Package for Social Scientists

SRMP   -   Supplier Risk Management Practices

SSP   -   Supplier Selection Practices

OPERATIONAL DEFINITION OF TERMS

Lean Supply chain Practices: Refers to the technique of establishing cost efficiencies in the supply chain by successfully managing inventories and concentrating on increasing supply chain quality, hence avoiding waste.

Supply Chain Collaboration: Involves coordinating operations between customer and supplier so that both parties can improve supply chain performance by, for example, cutting costs, boosting service levels, better utilizing resources, and reacting effectively to market changes.

Supply Chain Performance: Describes the efforts of the entire supply chain to provide what the consumer needs, when they need it. This includes having products available, delivering them on time, and having the supply chain resources to pull it off.

Supplier Management Practices: is a systematic method for overseeing a company's dealings with its vendor partners, which includes the procurement of all necessary goods and services.

Supplier Risk Management: Is the application of procedures based on ongoing risk assessment to the management of routine and unforeseen threats to the supply chain, with the aim of lessening exposure and guaranteeing continuity.

Supplier Selection: It's the way in which businesses seek out potential vendors, assess them, and sign contracts with them. Most of a company's money goes on the supplier selecting procedure. Companies that contract with suppliers who provide great value might anticipate big rewards.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Supply chain management concepts spawned a novel concept called supplier management practices in response to the economy's rapid expansion. This demonstrates the shift in modern company competitiveness from direct opponents to supply networks (Patrucco, Luzzini & Ronchi, 2017). In order to guarantee that links between enterprises in the supply chain exist, it is recommended that businesses make strategic alliance and cooperation the primary subjects in their strategic development plan. Because doing so is crucial to achieving optimal results from supplier management strategies. The goal of supplier management is to help businesses find reliable vendors and secure competitive pricing for the goods and services they need. Executives keep an eye on the company's supply chain to make sure that their partners are learning everything they can about the business's inner workings and production procedures (Arthur, 2009). Good supplier management practices are the efforts made by managers to boost the efficiency of the purchasing process. Others have defined supplier management techniques as a company's methods for improving the efficiency of its supply chain, or the ways in which it integrates, manages, and coordinates its supply, demand, and relationships in order to provide superior service to its customers (Sindiga, Paul & Mbura, 2019).).

As the practice of outsourcing non-core operations and entering into partnership agreements with key suppliers continues to grow in popularity, effective supplier management has

become crucial for extracting maximum value from these strategic partnerships and outsourcing arrangements. Top companies all over the world are adopting supplier management frameworks because they bring much-needed structure, consistency, transparency, and controls to their supplier management operations and management. The supplier management framework provides the basis for the execution and direction of supplier management activities by bringing together strategy, policies, and procedures (Patrucco, Luzzini & Ronchi, 2017).

Xie, Liang and Zhou (2016) reaffirmed that numerous authors in China have emphasized that the management of suppliers is one of the most important aspects of successful international joint venture (IJV) manufacturing in China, as the supply chain plays a crucial role in contributing to the quality of final goods and regulating prices. Xie, Liang and Zhou (2016) investigated the challenges Chinese companies experienced throughout the transition from domestic to international supplier management for joint ventures. They attempted to keep quality at the same level while cutting prices. Researchers stressed the importance of looking at the larger context of supplier management. Since both the Japanese and American car industries outsource significant amounts of component design, production, or assembly, they rely primarily on the engineering, manufacturing, and delivery capabilities of their suppliers. In the United States of America, for instance, a car has around fifteen thousand different parts. Since automakers choose not to produce many of these in house, managers in this business must answer important strategic challenges, such as whether to give preference to long-term partnerships and mutual cooperation with suppliers spanning product

development and manufacture or short-term contracts and competitive bidding in order to reduce final cost (Helper & Sako, 2015).

The manufacturing sector in Germany is quite strong, employing at least 24.8% of the workforce and contributing 25% to GDP. Still an obstacle is the high cost of labor and taxes. Szwejczewski, Goffin, Pfeiffer & Lohmüller (2014) argue that in order for Germany to become more competitive in its manufacturing sector, it should embrace more "best proactive approach" from abroad, with SMPbeing one such example of a best practice.

A study by Opaleye, Ojelade and Aremu (2020) looked at how different supplier relationship management techniques impacted the profitability of publicly traded Nigerian food and beverage companies. The research centered on the evaluation, growth and participation of suppliers. The research, however, was limited to the business world. Waithira (2018) did a similar study, this time looking at how supplier management affected the success of Kenyan manufacturing companies. The study's focus was on supplier assessment and supply risk analysis.The study found that supplier management influenced performance of manufacturing companies.

Salema and Buvik's (2016) study on the Assessment of Challenges of Managing Buyer-Supplier Relationship MC) in Tanzania, Mwanza, found that Bugando Medical Centre (BMC) and their suppliers had a minimal relationship in the procurement process. While several responders and the researcher noted that the productive link was still in its infancy, everyone started operating under the win-win principle after it had matured. According to the data, Bugando Medical Centre had a moderate rate of processing supplier claims on time

due to an unsystematic payment approach. This finding suggested that the facility had a payment policy but failed to put it into practice. Additionally, Bugando Medical Centre provided vendors with detailed specifications to verify that their products and services fulfilled the center's requirements.

Calignano and Vaaland (2017) examined the relationship between buyers and sellers at the National Institute of Medical Research in Mwanza. The research showed that there are a number of ways for buyers and suppliers to stay in touch while carrying out a contract, such as through supplier development and bilateral supplier meetings. However, there are a few issues, such as late payments from suppliers and a general misunderstanding of the buyer-supplier dynamic. Making adjustments to these will require minimum work.

All aspects of a company's supply chain contribute significantly to the company's success. Wanyonyi and Muturi (2015) argued that robust supply chain performance (SCP) is essential for the development of all nations and is a real manifestation of their national commitments to making the greatest use of public resources possible. However, there are many unresolved questions regarding the SCP of public entities in the eyes of their stakeholders. This includes, but is not limited to, SMPthat are too time-consuming, which in turn causes delays in the procurement of goods and services. Delays in procurement and the purchase of inferior or undesirable goods and services have plagued the majority of government organizations for a variety of reasons (Masindano, Makokha & Namusonge, 2018).

Companies in Kenya are looking for ways to gain an edge in the increasingly competitive industry (Ondieki & Oteki, 2015). Purchasing is now widely recognized as a key to a company's success and a strategic role. As companies within an industry continue to merge, effective supplier management strategies will be essential. The company has come to the conclusion that establishing mutually beneficial business connections helps it better adapt to the dynamic marketplace by allowing it to concentrate on its core competencies while cutting expenses elsewhere (Apopa, 2018).

Studies by Ochieng (2018) on the role of supplier development in the effectiveness of procurement function: a case of the National Cereal and Produce Board and Kepher, Shalle, and Oduma (2015) on the role of supplier management on procurement performance in Kenya's manufacturing sector with reference to East African Breweries, Kenya point to the importance of developing and maintaining strong relationships with reliable suppliers. Kivite (2015) on the role of supplier development and operational performance of manufacturing firm support the importance of developing and maintaining strong relationships with reliable suppliers.This study focused on how county referral hospitals in the western region manage their suppliers presently and offered suggestions for how they might enhance their supply chain's performance.

SCP measures how successfully a business provides for its customers by maintaining standards such product availability, on-time delivery and sufficient inventory levels (Arzu & Erkan, 2016). Shepherd and Günter (2015) describe performance measures as "objective indicators of an activity's usefulness in achieving its intended outcomes."

Measures of SCP should be tied to business strategy if they are to be of any use in the management of companies or the advancement of industry standards. This is because management feedback on decisions can't happen without the data provided by performance measurement (Mburu, 2017). In addition to illuminating the direction an organization is headed in, performance measurement can help pinpoint which management tactics are working and which have the most potential. Additionally, it helps in focusing the efforts of upper management, adjusting business objectives, and reworking operational procedures as time passes (Mburu, 2017).

Supply chain measurement is being adopted by many contemporary businesses as a means of determining which tactics have the best chance of helping them reach their goals and objectives. Alignment of management processes, including goal-setting, performance review and decision making, facilitates the organization's ability to reach its goals (Asante, 2016).

1.1.1 Kenya's Public Health Service Sector

The healthcare sector in Kenya is multi-faceted, encompassing public, private, and faith-based/NGO organizations. Approximately 48% are government-run, falling under the purview of the Ministry of Health; 41% are privately-owned businesses; 8% are religiously-affiliated organizations; and 3% are non-governmental organizations. Community services, level 2; dispensaries and clinics, level 3; health centers, maternity and nursing homes; sub-county hospitals, level 4; county referral hospitals, level 5; large private hospitals, level 6; and national referral hospitals, level 6 are the six tiers of the Kenyan health care system (GoK, 2021).

The 202 health facilities in Kakamega County are broken down as follows: one (1) county referral hospital, twelve (12) county hospitals, nine (9) mission hospitals, one (1) private hospital, eight (8) nursing homes, twenty-seven (27) public health centers, one (1) private health center, sixty-six (66) public dispensaries, thirty-one (31) private dispensaries, and one hundred and seventy-eight (107) private clinics. There are a total of 3,949 available beds in the county's public and private healthcare facilities, with the public sector providing 2,338 of those beds and the private sector providing only 197. The nurse-to-patient ratio is 1:2,658 whereas the doctor-to-patient ratio is 1:34,916. (KCIDP, 2018-2022). There are a total of 184 medical institutions in Bungoma County, including 17 hospitals, 14 Health Centers, 102 dispensaries, 20 FBO facilities, and 52 private clinics. Hospitals typically have a bed occupancy rate between 60% and 92%. The only referral hospital in the county, located in Bungoma Town, which serves the entire county, is in the Kanduyi Sub-County (BCIDP, 2018-2022).

Busia County has one major hospital, six smaller hospitals, twelve health centers, forty-nine dispensaries, ten medical clinics and three nursing homes. This publication includes an appendix with a list of these medical centers. There are around 1 physician for every 41,200 people. Only 10.3% of the county's population lives within 1 kilometer of a health care facility; 19.0% live from 1.2 to 4.9 kilometers; and 70.7% live further than 5 kilometers from the nearest health care provider (VCIDP 2018-2022). There is the public Vihiga County Hospital in Mbale, as well as the faith-based Kaimosi Mission Hospital. Sabatia, Hamisi, and Emuhaya each have a level 4 sub-sub-county facility. There are additional 34 private and mission-based clinics and hospitals in addition to the 18 health centers. Five

kilometers is the typical travel time to the closest service. Compared to the national doctor-population ratio of 1:16,521, the doctor-population ratio in this state is 1:85,000. The nurse-population ratio is 1:24,000. (Vihiga County Integrated Development Plan 2018-2022).

1.2 Statement of the Problem

The World Bank reports that a 4.7% drop in global GDP can be attributed to the worrying deterioration in SCP (WB, 2018). Faghih, Dastourian, Sajadi, Henten, and Foroudi (2018) found that businesses are under increasing pressure to innovate how they produce and distribute value to customers in order to boost their supply chain's efficiency. Health care administration in Kenya has been devolved to county governments under the country's new constitution. SCP has been difficult to develop and apply in public health organizations. Few organizations have implemented effective methods of supplier management (Berman, Pallas, Smith, Curry & Bradley, 2015). Half of the costs in public hospitals can be attributed to poor supplier management. SCP declines in government hospitals due to subpar supplier management (Chemoiywo, 2018).

Areri and Gekara (2019) report that the SCP of Kenya's public health institutions has declined sharply over the previous four years, despite a surplus of medical goods. In spite of the fact that public hospitals require medical supplies to function well, these institutions often face challenges in acquiring these items (RoK, 2019). A 2015 AfriCOG analysis found that despite advances in supplier management, service performance in Kenya's public hospitals remains substandard. NACPD(2018) research indicates that despite good supplier management, Kenyan public hospitals are unable to deliver acceptable medical care.

Considering the previous context, it is clear that public referral hospitals require supplier management and effective strategies to maintain an improving SCP.

However the studies were done in different sectors and contexts. For instance, Ochieng (2018) investigated the impact of supplier management on the productivity of large retail firms in Nairobi City County, Kenya. The research, however, was limited to the retail industry and focused on the processes of choosing and working with suppliers, as well as expanding their own capabilities. Kiplangat and Kiarie (2015) intended to analyze how various supplier management methods impacted the efficiency of supply chains at Kenyan government agencies. Supplier evaluation, supplier relationship management, supplier discovery and supplier performance management were all areas of inquiry across a range of industries. Opaleye, Ojelade and Aremu (2020) focused on publicly traded food and beverage companies in Nigeria, Al-doori (2019) focused on automobile industry in Pakistan and Mahulo (2015) focused on Kenya's cement industry. In order to close this informational gap, this research project looked into the effects of supplier management practices on the supply chain performance (SCP) of County referral hospitals in Kenya's Western Region and offer suggestions for how they might enhance their supply chain's performance. The study sought to bring out the effect of supply chain collaboration practices, supplier selection practices, supplier risk management practices and lean supply chain practices on supply chain performance of county referral hospitals in the Western Region of Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

To examine the effects of supplier management practices on supply chain performance of county referral hospitals in western region, Kenya

1.3.2 Specific Objectives

i. To determine effect of supply chain collaboration practices on Supply Chain Practices of County Referral Hospitals in Western Region, Kenya.

ii. To assess effect of supplier selection practices on Supply Chain Practices of County Referral Hospitals in Western Region, Kenya.

iii. To examine effect of supplier risk management practices on Supply Chain Practices of County Referral Hospitals in Western Region, Kenya.

iv. To ascertain effect of lean supply chain practices on Supply Chain Practices of County Referral Hospitals in Western Region, Kenya.

1.4 Research Hypotheses

H_{01}: Supply chain collaboration practices do not significantly affect Supply Chain Practices of County Referral Hospitals in Western Region, Kenya.

H_{02}: Supplier selection practices do not significantly affect Supply Chain Practices of County Referral Hospitals in Western Region, Kenya.

H_{03}: Supplier risk management practices do not significantly affect Supply Chain Practices of County Referral Hospitals in Western Region, Kenya.

H_{04}: Lean supply chain practices do not significantly affect Supply Chain Practices of County Referral Hospitals in Western Region, Kenya.

1.5 Significance of the Study

Findings from this study are critical for the administration of CRH to enhance SCP and ultimately, quality service provision. The findings can be used by management to gain insight into the impact of SMP in their hospital, with the end goal of developing more effective methods to boost SCP. Personnel in the supply chain division would also benefit from the study because it would provide a basis for establishing best practice standards.

The Public Procurement Regulatory Authority (PPRA), Ministry of Finance and National Assembly are just a few of the regulatory bodies that would benefit greatly from this study. The purpose of this research is to examine the impact of different SMP on supply chain performance, with the hope that this knowledge will help policymakers and regulatory bodies create effective guidelines for the future. These guidelines could, for example, make it easier for suppliers to reduce waste, speed up delivery times and maintain competitive pricing.

This research is significant because it will help bridge a knowledge gap and add to what is already known about the public procurement process in Kenya. The research will also prompt procurement professionals to see supply chain performance for what it really is: a failure on the part of procurement to develop suitable supplier selection criteria, supplier risk management, lean supply chain practices and supply chain cooperation practices.

1.6 Scope of the Study

The study focused on the influence of supplier management practices on the supply chain performance of Western Region county referral hospitals. County Referral Hospitals are among the county health facilities and services that are run and managed by the County governments as provided in the Fourth Schedule of the 2010 Constitution. Others include; sub-county health facilities, environmental health services, communicable disease control, nutrition, family planning, maternal and child health plus Health Education.

The focus of the research was on Kakamega County Referral hospital, Busia County Referral hospital, Bungoma County Referral hospital and Vihiga County Referral hospital. The scope of the investigation was limited to the impact of supply chain collaboration methods, supplier selection processes, lean supply chain strategies, and supplier risk.

Among the 102 people who were targeted in the survey were Supply chain officers, Hospital Medical Superintends, Hospital Administrators, County Directors of Health services, County Directors of Public Health, Pharmacists in Charge, Nursing Officers in Charge, Laboratory Managers, Orthopedic in Charge, Physiotherapists, Accountants, Hospital Nutritionists, Hospital Caterers, and Finance Officers. The study was carried out between the months of April and June in the year 2022.

1.7 Limitations of the Study

Due to the sensitivity of the information regarding supply chain performance, there were some non-responses to this survey. In this case the researcher kept encouraging the

respondents of the purpose of the study and the confidentiality of their feedback. In other instances, some respondents were uncertain about the purpose of the study, which affected data gathering. The researcher assured the participants that this study would be strictly academic, that the information they submitted would be treated with strict confidentiality and that their identities would be concealed.Some respondents took a long time to respond.The researcher kept reminding them to fill up the questionnaire.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter examines the literature about the impact of supplier management techniques on supply chain performance (SCP). It includes the conceptual framework, where theories pertinent to this study were studied, the review of variables, empirical investigations, a summary of the reviewed literature and research gaps.

2.2 Theoretical Background

The research was guided by the grey system theory in terms of supplier selection, the lean supplier competency model in terms of lean supply chain practices, the game theory in terms of supply chain risk management, and the relational theory of supplier chain collaboration.

2.2.1 Relational Theory

This theory proposes that the partners' investment in inter-firm information exchange protocols and relation-specific assets leads to a greater possibility for relational rents. Dyer and Singh (1998) present the relational perspective as a supplement to the industrial structure view and the resource-based view, they provide a theory that explains competitive advantage by concentrating on dyads and networks of firms as units of research. This theory provides an explanation for competitive advantage by utilizing dyads and networks of enterprises as units of study. According to the theory, the potential for relational rents

increases as partners spend more in knowledge-sharing practices between firms and relation-specific assets. Blackhurst, Dunn and Craighead (2011) extrapolated from case study data that resilience is positively connected with relational competencies such as specified communication networks, created supplier relationship management programs, and monitoring systems. This study uses a relational perspective to examine how enhanced robustness and agility might be achieved via the development of superior relational competences. They stated that robust supply chains are associated with well-established programs and monitoring mechanisms for managing relationships with suppliers. Superior relationship competences can enhance supply chain risk management, which is the focus of this study.

Fox (2021) counters that relation theory is concerned only with human theory and hence excludes the topic of employee output. This precludes any possibility of a holistic approach being used with any entity other than humans. Furthermore, relation theory lacks a road map of work, is more theoretical in idea, is harder to analyze and has certain characteristics of loss of subjectivity.

Integration, coordination and collaboration along the whole supply chain—from buyers to sellers—are the foundations of effective supply chain operations (Hudnurkar, Jakhar & Rathod, 2014). Fox (2021) defines collaboration as an arrangement in which parties to a supply chain agree to pool their resources for the good of everyone. Musa, Wei and Tang (2012) argue that in order for businesses to succeed, they must establish rules and procedures that encourage cooperation between coworkers. Trust, openness, and confidence are the backbone of any successful working partnership (Fox, 2021). Sodhi and Tang

(2012) state that supply chain coordination exists when all decisions are in sync to achieve common goals. Demand distortion (the "bullwhip effect"), increased production costs, inventory costs, replenishment lead times, transportation costs, labor costs, decreased efficiency, and skewed data will arise from a lack of coordination (Hudnurkar, Jakhar & Rathod ,2014).

We examine the supply chain's customer value as a lens through which to see the effects of agility and resilience of the relational theory on performance. According to Wieland and Wallenburg (2012), this is the most important performance factor stemming from resilience, and it pertains to the supply chain's worth to individual consumers. It covers a wide range of concepts, including meeting requirements and making clients happy. Focusing on this axis, we redo this study and add crucial features of the relational view to the theoretical underpinnings of the hypotheses put forth by Wieland and Wallenburg (2012). We revisit the concepts of visibility and speed to speculate on how supply chain agility might influence the value provided to customers. Improved visibility has been proposed as a means of mitigating the bullwhip effect (Lee et al., 1997), and visibility is widely acknowledged as essential for any business operating within a supply chain (Barratt & Oke, 2007). However, in order to accomplish the mission of the supply chain and service the client, speed is crucial. Companies like Dell, Compaq, and BMW, which have successfully implemented build-to-order supply chains, are excellent case studies for the latter (Gunasekaran & Ngai, 2005). Thus, speed and transparency are powerful levers to favorably affect consumer value in the supply chain.

It is essential for all parties participating in a collaborative supply chain to be able to communicate with one another and coordinate their activities in order to achieve the best results. The level of transparency between business partners is crucial in reducing both internal and external supply chain risks. It is also important for vendors to have a well-managed stockpile, a responsive customer service department, and lightning-fast response times. It was with this notion in mind that the study set out to investigate the link between supply chain collaboration and performance.

2.2.2. Grey System Theory

Julong Deng initially presented Grey System Theory in 1982. In 2008, Zou refined a seven-stage model of grey correlation analysis (Zhou & Zhu, 2012). Some examples of these processes are grey generation, which entails gathering information about ambiguous topics, grey modeling, which is performed to establish a set of variation and differential equations for such topics, grey prediction, which aims to make a qualitative forecast, grey decision, grey relational analysis, and grey control. Based on Grey System Theory, Liu, Yang, Xie, and Forrest (2016) suggested that in the real world of business, supplier selection typically takes place in an imperfect information environment. Supplier selection selections, therefore, are fraught with a certain amount of risk. This context emphasizes the need for the development of indicators or criteria, either qualitative or quantitative, that can be applied to the provider prior to selection. With a target in mind, we then assign relative importance to each evaluation factor based on the qualities of the resources we'll be needing to source (Zhou & Zhu, 2012).

The theory is relevant to the research since it encompasses the entire supplier selection process by, among other things, outlining criteria and a technique for making that choice. SCP is positively impacted when a good supplier is chosen, which is made easier thanks to the theory's practical and positive benefit of enhancing efficacy in the selection process.

2.2.3 Game Theory

Mathematician John von Neumann and economist Oskar Morgenstern created the groundwork in the 1940s, and in the 1950s, many researchers and scholars expanded upon this work to further develop game theory (Vasnani, Chua, Ocampo & Pacio, 2019). The three fundamental components of Game Theory are the players, the strategy space, and the reward functions (Agi, Faramarzi-Oghani, & Hazr, 2021). Each branch of game theory—non-cooperative and cooperative—focuses on a different type of interaction between players. In non-cooperative game theory models, players focus solely on advancing their own goals, rather than considering how their actions could affect their opponents. However, cooperative game theory assumes that players can reach legally binding agreements. In a Nash equilibrium, all players' actions are optimal in response to the actions of the other players.

With the help of game theory, the leader provider can investigate the repercussions of financial constraints on the distribution of inventory risk. Providers are incentivized to take all of the risk associated with having stock on hand when playing this game (Agi, Faramarzi-Oghani & Hazr, 2021). The buyer or seller may fare better in a cooperative framework than in a non-cooperative one, according to either cooperative or non-

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cooperative game theory (Raj, Biswas, Srivastava, 2018). After an interruption in the manufacturer's production cost, two competing retailers' methods are studied to determine whether they are still in balance (Vasnani, Chua, Ocampo & Pacio, 2019).

Although game theory has many applications, it has also received considerable criticism. It has been noted that game theory has its limitations when it comes to predicting realistic behavior. Any action, good or bad, can be rationalized if it furthers one's self-interest. An continuous difficulty in game theory modeling is identifying and then defining, limiting, isolating, and/or accounting for any set of features and factors that affect strategy and outcome. Something unexpected always seems to be in play (Morgenstern, 2014).

Participants in this study's supply chain could be compared to players in a game with a common board, rules, and risks based on the fact that they share information, resources, channels of communication, and demands from customers as well as logistical networks and common threats such as weather and natural disasters. The main goal of using game theory to supply chain risk management is to analyze potential disruptions and create countermeasures. Using game theory, businesses may prevent catastrophic events in their supply networks. Therefore, supply risk management and SCP are appropriate areas of study for this theory.

2.2.4. The Lean Supplier Competence Model

Marks established the Lean Supplier Competency Model (2007). The model allows for the identification of gaps and the development of strategies to close them. The provider is rated on a scale of 1–5 in each of the five categories that the model uses to promote Lean practices

of 8 Kaizen, or continuous enhancement. The lean Supplier Competency Model details the interplay between companies in five categories of competency, each of which can have varied degrees of performance on the way to achieving lean business operations. Each group contains subheadings that describe distinct "behaviors," or patterns of communication between the buyer and the vendor. These actions are given grades ranging from "1" for "Less Lean" to "5" for "More Lean." Using this metric, a firm can select where to position its operations in accordance with shared values and objectives. By combining the company's and its suppliers' efforts to reduce waste, this strategy drives down costs throughout the supply chain and for the end user (Xu, 2017).

Ghobakhloo, Fathi, Fontes, and Ching (2018) offer a substantial critique of the lean supplier competence model in terms of SCP, arguing that it is not applicable in all scenarios. There's a chance that Asians' perspectives on what makes a lean supplier competency model work will differ from those of people in other areas of the world. Suppliers, in reality, have different advantages and disadvantages that need to be carefully evaluated by buyers before rankings can be offered. Therefore, it is essential to integrate all choices by balancing the relative merits of various providers at each stage of the supply chain (Ho, Xu & Dey, 2010).

The theory's emphasis on using a supplier's performance in five key areas to inform Lean's 8 Kaizen, or continuous improvement, methodologies makes it applicable to lean supply management. For businesses looking to create long-term partnerships with their suppliers, this is crucial. The underlying premise of lean supply chain management is to maximize customer value while decreasing waste, so that a business may provide more value for consumers with the same or fewer resources.

2.3 Conceptual Literature review

2.3.1 Supply Chain Collaboration

For optimal SCP in areas like cost reduction, service enhancement, resource optimization, and rapid adaptation to market shifts, it is important for buyers and sellers to coordinate their efforts (Opaleye, Ojelade & Aremu, 2020). Waithira (2018) defines Supply chain cooperation as two or more chain members working together to establish a competitive advantage by exchanging information, making joint decisions, and sharing advantages, resulting in better profitability when catering to the needs of the end customer than when acting alone.

According to Njagi and Shalle (2016), supply chain collaboration takes place when two or more companies in the supply chain coordinate their efforts to collaboratively plan and carry out supply chain operations. When firms work together, they share risks, benefits, and expenses in an open and trusting relationship (Cao & Zhang, 2015). Perceptions of a supply chain's legitimacy are the driving force behind trust; it does not arise on its own. Partners' efforts to work together increase supply chain efficiency, as seen by more efficient inventory management, lower costs, better customer service, more accurate predictions, and punctual delivery (Ramanathan, 2014). Joint planning and forecasting, shared objectives among supply chain stakeholders, transparent communication, and pooling of resources were all identified as examples of collaborative approaches in this research.

2.3.2 Supplier Selection

The process of selecting key suppliers is essential to the success of any business, since it directly impacts the competitive advantage of the company. In addition to cost, modern businesses must weigh a variety of other quantitative and qualitative aspects vital to their continued existence and expansion when making their supplier selections (Chemjor, 2015). Supply managers need to carefully pick the proper strategic suppliers as management grows increasingly reliant on them. Their challenge is that, despite a wealth of information available on the topic of supplier selection, experts still can't agree on which factors should be prioritized.

The best supplier in the market who can help accelerate the organization's performance in a better direction can only be selected after the supplier's basic background and bio data has been scanned, analyzed, examined and filtered (Kamenya, 2014). It is impossible to overstate the significance of supplier selection within the purchasing function, as the dynamic nature of the business environment brought on by technological developments and complex market demands has compelled procuring entities to actively seek out new suppliers who will meet their business needs.

2.3.3 Supplier Risk Management

When supply market activity and the organization's interactions with suppliers lead to consequences that damage the firm's reputation, capability, operational integrity, or financial sustainability, the company is subject to supplier risk (Rotich & Ochiri, 2018). According to Ahmad, Hadyait & Rashid (2019), some of the risks associated with purchasing goods

and services include reliance on a single provider, fluctuations in the cost of essential materials, poor product quality from suppliers, interruptions in the supply chain, fluctuations in the value of currencies, supplier insolvency, legal and regulatory concerns, and unexpected costs.

The goal of supplier risk management is to lessen exposure and guarantee continuity in the face of both routine and unforeseen threats to the supply chain, which are assessed and managed in real time. While supply chains are not risk-free, they have been crucial in helping many sectors become more productive (Kiromo, 2015). Such risks include product failure, disruption, regulatory risk, reputational risk, legal risk, supplier size, financial risk, and competitive risk (Oduma & Getuno, 2017). The term "supply risk management methods" refers to the actions done, such as alterations to routines and controls, to eliminate or limit the potential negative outcomes associated with purchasing (Masaku, Ogol & Moronge, 2018). In this analysis, we use risk identification, risk assessment and dual sourcing as indicators of supplier risk management.

2.3.4 Lean Supply Chain

The term "Lean" refers to a systematic method to identifying and eliminating waste (non-added operations) through continuous improvement by following the product at the pull of the consumer in search of excellence (Ghobakhloo, Fathi, Fontes & Ching, 2018). Simply put, the goal of lean is to increase customer value while avoiding waste by producing more with fewer resources. According to Wu and Wee (2009), "lean" refers to a set of measures

used to cut down on non-value-adding tasks while simultaneously boosting the efficiency of those that do produce value.

The goal of the lean supply chain strategy is to reduce supply chain costs by optimizing inventory management and enhancing supply chain quality. In a lean business, the primary focus is on increasing customer value (Mrope, 2017). In a perfect value generation process, there is no waste and the result is maximum customer satisfaction. Supply base rationalization, framework contracting, and supply chain visibility were used as indicators of lean supply management in this research.

2.3.5 Supply Chain Performance (SCP)

SCP is measured by how well the complete supply chain is able to fulfill the demands of its final consumers in terms of product availability and speedy, reliable shipping (Mwanjumwa and Simba, 2015). Njeru, Ngugi, Arasa and Kahiri (2014), define it as the operational excellence that provides a superior customer experience. A supply chain's efficiency is affected by both internal and external variables. The focus of many businesses has shifted from individual companies to their supply chains in an effort to boost profitability for the entire network (Simiyu & Namusonge, 2014).

Weeks and Namusonge (2016) characterize SCP as the capacity of the complete system to meet end-to-end customer expectations through product availability and on-time delivery. The term "Supply Chain Performance Metrics" refers to a broader category of metrics that can be used to assess a supply chain's efficiency and effectiveness (Owuor, Juma & Obura, 2018). In order to remain competitive, businesses must implement comprehensive systems

of succinct performance metrics, particularly in supply chain management. It is critical to establish the measurements for performance that will audit plans and implement remedial actions if actual results diverge from expectations. Effective selection of suppliers directly affects a firm's productivity and credibility (Galankashi, Helmi & Hashemzahi, 2016). Wanzala and Moronge (2018) contended that supplier evaluation was one of the techniques used for selecting the best suppliers. Performance of supply chain was measured by on time delivery of goods/services, satisfaction of user, costs saving and quality of the goods/ services.

2.4 Empirical Review

The performance of the supply chain is affected by supply chaincollaboration practices, supplier selectionpractices, supplier risk management practices and lean supply chain practices. This section discusses research regarding supplier management practices.

2.4.1 Supply Chain Collaboration Practice and Supply Chain Performance

Al-Doori (2019) set out to research the possible gains from supply chain collaboration in order to boost operational performance. Data was obtained from 232 suppliers, manufacturers, and distributors as part of an empirical study of the supply chain function in Pakistan's automotive industry. The study analyzed the data using a mixture of factor analysis and multiple regressions. Information sharing (IS) and joint decision making (JDM) were found to have a considerable impact on operational performance, however Electronic Data Interchange (EDI) was found to have no impact at all in this research. There was no

mention of SCP metrics in the study. In contrast to Al-(2009) Doori's manufacturing-focused research, this study will instead examine SMPin the health sector.

Um and Kim (2019) set out to determine what reasons underpin collaboration and transaction cost advantage, how supply chain collaboration impacts company performance and TCA, and how governance structures moderate these interactions. Information was collected by an online polling of Korean manufacturers. Confirmatory factor analysis was used to assess the undimensionality, reliability, and validity of a large-scale survey, and hierarchical regression analysis was used to test the hypotheses. It was found that when businesses in a supply chain work together, both the businesses' performance and their transaction cost advantage improve. Further investigation into the moderating influence of governance mechanisms revealed that contractual governance improves both company performance and supply chain collaboration in terms of transaction cost advantage. The implications of supplier management techniques on SCP were not revealed, despite the study's helpful insights into business performance.

Njagi and Shalle's (2016) study of East African breweries attempted to assess the impact of supplier management on procurement effectiveness in manufacturing firms. Supplier cooperation and training were two of the specific goals. The study used a descriptive approach, and the sample consisted of workers and suppliers from East African breweries. Information was cleaned, coded, and processed with a social sciences statistics tool before being displayed graphically. It was found by EABL that had a productive working relationship with its vendors and took steps to educate its suppliers. As a result, procurement efficiency was greatly enhanced. Despite this, there was still a lack of successful supplier

integration and more specifically, common technology. The research concluded that EABL should prioritize integration efforts while also keeping and enhancing supplier collaboration and training. Although significant findings were found, the study was limited by its singular method of data collecting and its narrow focus on procurement performance.

Gumboh (2017) looked on how supply chain collaboration affected B2B relationship strength in Kenya's IT and telecommunications SMEs. In this study, a descriptive research survey approach was used. This research aimed to survey ICT SMEs in Kenya (there were 134 total). One hundred medium-sized businesses were chosen as a representative sample. Primary data was collected via a self-administered structured questionnaire. Despite finding a significant correlation between B2B relationships and supply chain collaboration, the study did not reveal the selection criteria utilized to determine the sample of 100 SMEs. What's more, it's unclear what scale of analysis was employed in this study.

Gichuru, Iravo and Arani (2015) investigated the impact of collaborative supply chain methods on Del Monte Kenya Ltd.'s performance. An exploratory case study methodology was used for this research. It was primarily concerned with the 243 workers who participated in the survey. Using a stratified random sample technique, we selected 107 individuals at random from the pool of eligible respondents. The researchers used questionnaires to collect information from the population sample. The data was analyzed using both quantitative and qualitative approaches. The study found that when businesses shared information and resources with their most important vendors, it led to an increase in both productivity and profitability. While this research shed light on supply chain procedures, it was unclear what aspects of operational efficiency were being evaluated.

Barasa, Simiyu and Iravo (2015) aimed to evaluate the effect of supply chain collaboration practice on the performance of Kenyan steel manufacturers. It was decided to adopt a descriptive research method. Primary data was collected via surveys and interviews. Methods of purposeful sampling were employed to locate and select people who met the study's inclusion criteria. The study found that Steel Manufacturing Companies in Kenya with a high level of supply chain collaboration practice had better organizational performance, however it was unclear what kind of performance was being measured.

Mahulo (2015) looked into Kenya's cement industry's supply chain collaboration techniques and company performance. The research strategy adopted for this study was cross-sectional. Primary and secondary resources were used in the investigation. Primary data was collected through the use of a semi-structured questionnaire, while secondary data was gathered from each company's most recent annual financial report. The whole cement sector in Kenya was employed as a sampling frame for a census-style survey. As a result, the study concludes that supply chain collaboration practices are positively related to the organizational performance of Kenya's cement manufacturers. Although the results of the study showed a positive correlation between supply chain collaboration, these results cannot be extrapolated to the entire healthcare sector in Kenya. This prompted researchers to look into the impact of supply chain management practices at a county referral hospital in the country's western region.

2.4.2 Supplier selection and Supply Chain Performance

Pamela (2013) conducted a study on supplier selection and evaluation determinants in Pakistan's Telecommunication firms and found that supplier financial capacity as an aspect of supplier selection and evaluation enhanced procurement performance. A study done in Nigerian quoted food and beverage firms by Opaleye, Ojelade and Aremu (2020) confirmed that supplier appraisal positively and significantly influenced performance. The study was done in Nigeria thus providing contextual gap and focused on organization performance as the dependent variables unlike the current study which focused on supply chain performance.

Odhiambo (2015) explored supplier selection criteria, supplier selection principles, and the connection between supplier selection and procurement success. In order to understand how Nairobi County chooses its vendors, this study used a descriptive survey approach. From a total of 500, a random sample of 150 people was selected. Questionnaires were used to collect the bulk of the data. According to the results, most participants agreed with the selection standards used in Nairobi County. The research also showed that when it came to all of the different variables used, price was by far the most considered. In addition, the results demonstrated a causal connection between supplier selection criteria and procurement outcomes. Data was collected using only questionnaires while the current study used both questionnaires and interviews for triangulation purposes thus enriching the research.

Krop and Iravo (2016) studied the case of the West Pokot County Government to see how the selection of suppliers affected the efficiency of the public sector procurement process. A descriptive research strategy was used for this investigation. Due to a census, 25 procurement workers from the West Pokot County Government were selected as the study's sample population. Secondary and primary sources were used to compile the study's research data. Supplier chain collaboration, supplier selection, supplier risk management, and lean supply management were all found to positively correlate with the efficiency of the procurement department. However, the study was done in a different sector unlike the current which was done in the health sector.

Obinda and Gichure (2017) aimed to determine the impact of supplier selection on the performance of the supply chain in Nairobi City County. A descriptive study approach was taken to examine how Supplier selection affects SCP. There are eleven separate county governments providing services to the public. The research showed that the effectiveness of the procurement department was impacted by the quality of communication between procurement staff members regarding supplier selection and supplier selection.

Nyakoe and Muturi's (2017) research aimed to determine whether or not price structure affected the efficiency of the purchasing process. Researchers used a case study research strategy to interview county procurements officers in Nyamira and members of the management teams of companies providing goods and services to the county. Another intended victim was the County's top buyer. Workers from the county and contractor firms were selected using a simple random sample method, while the chief procurement officer was selected using a purposive sampling method. Both a questionnaire survey and a

document checklist were utilized to get this information from the workforce. The research indicated that in Nyamira County, Kenya, the procurement function performed better when more care was taken in selecting suppliers. The study was done in a different sector.

Nyaberi (2020) looked into how manufacturing companies' organizational performance changed as a result of changes in their supplier development management techniques. Both qualitative and quantitative methods were used in the descriptive research design of this study. This survey polled 500 senior officials in Kenya's manufacturing sector, specifically those working in procurement, finance, and production. The 399 participants in the sample were selected using a stratified random selection method. Researchers in this study employed both fully and partially structured questionnaires to gather information from their study's participants. Findings indicated that supplier development might benefit from the application of supplier evaluation, technical competency and information exchange.

2.4.3 Supplier Risk Management practices and Supply Chain Performance

Javaids and Siddiqui (2018) studied the impact of supply chain risk management factors on the responsiveness and performance of Pakistani businesses' supply chains. The information was collected by survey. According to the results of this study, there was a positive, statistically significant connection between supply risk management, operational risk management, supply chain responsiveness and SCP.

Mburu (2017) surveyed Kenyan manufacturers to assess their risk management strategies and supply chain effectiveness. The research method used was a descriptive cross-sectional survey. The 412 Nairobi County manufacturing enterprises that are KAM members were the

intended audience. Based on the p value of 0.000, the study found that when the constructs of risk identification management plan were integrated, they had an effect on SCP. In addition, a systematic approach to risk appraisal and analysis was in place at the vast majority of these businesses. The study focused on supply chain effectiveness unlike the current study which focused on supply chain performance.

Munyuko (2015) conducted research into the impact of Supply chain risk management on business outcomes. Andy forwarders and logistics service employees made up the study's population. The questionnaire was the major instrument of data collection, however interviews and other primary sources were also employed. The findings demonstrated a causal relationship between effective management of supply chain risks and enhanced organizational effectiveness. It was determined that supply chain risks have an impact on organizational performance if they materialize, and that as a result, organizations need to be aware of the risks in their supply chains, assess those risks, and put contingency plans in place to deal with the ones that are most serious.

Rotich and Ochiri (2018) aimed to analyze the effect of Procurement Risk Management on the success of large-scale energy projects in Kenya. The research included a tally of all 47 megaprojects in the energy industry that were procured by the various public procuring agencies. Managers in charge of purchasing for organizations working on large-scale projects served as the study's units of analysis. Primary data was gathered with the help of questionnaires that were created in an unbiased manner. The research indicates that the procurement performance of major projects in Kenya's energy industry is greatly affected by procurement risk management. Inadequate information collection for contractor evaluation

was also identified as a problem in the procurement processes of Mega projects, which the report suggests could lead to the hiring of unqualified contractors.The study was done in the energy sector unlike the current study which was done in the health sector.

Nyagechanga (2017) aimed to determine if and how procurement risk management techniques impact SCP for businesses. This study used a descriptive research strategy. The information was gathered with the help of a questionnaire that was left for people to pick up whenever they were free. The research indicated that the company's managements should continue to undertake regular risk assessments in their supply chains to avoid the negative consequences of uncertainty. Researchers concluded that management should prioritize procurement risk management because of the growing recognition that threats can originate from previously unanticipated sources. Based on the findings, procurement risk management techniques may be responsible for or explain SCP.

Okonjo, Magutu and Nyaoga (2016) investigated the relationship between procurement risk management strategies and SCP among Kenyan mobile phone service providers. This research employed a descriptive approach. Data was obtained using a questionnaire. Results revealed that practices of procurement risk management influenced Supply chain performance.

Apopa (2018) set out to research how different supply chain management strategies impact the output of Kenyan government agencies. The researchers used a cross-sectional approach. Twenty federal ministries served as the unit of analysis, and all 1,372 people employed in supply chain management were included in the study. Questionnaires were used to gather

first-hand information for the study. The study found that the performance of government ministries in Kenya was positively and significantly impacted by supplier selection methods, supply chain rules, supplier collaboration practices, and risk management approaches, with the latter being the most significant predictors.

Waithira (2018) did a similar study, analyzing the impact of supplier management on the productivity of Kenyan manufacturers. They found that supplier evaluation and supply risk analysis had significant effects on productivity.This study only focused on two aspects of supplier management practices.However the current study will focus on supply chain collaboration, supplier selection procedures, supply risk management, and lean supply management will be carried out in a Western region CRH.

2.4.4 Lean supply chain practices and Supply Chain Performance

Kumar Singh and Modgil (2020) investigated the influence of lean techniques on performance measurements in the automobile industry and found the lean criteria that might have a substantial impact on the Indian automotive supply chain. Practices in quality management, information management, and customer management were determined to have the most impact on the key performance indicators among the lean criteria evaluated.

Nimeh, Abdallah and Sweis(2018) looked at the effects of LSCM techniques on SCP and market performance for Jordanian manufacturers. Everything from the just-in-time system to data transfer to customer-supplier ties to waste minimization are the five LSCM practices that emerged from the in-depth literature review. The study's goals were accomplished by the development and distribution of a questionnaire to the top executives of 400

manufacturing enterprises of varying sizes and sectors. Three LSCM strategies were identified as having a positive and statistically significant effect on market performance. These strategies included just in time inventory management, information flow and customer relationship. In addition, all LSCM strategies improved supply chain efficiency in a positive way that was statistically significant. And SCP did correlate favorably and statistically significantly with market performance. The study was done in Jordanian manufacturing firms unlike the current study which was done in the Kenyan health sector.Further,the study focused on market performance as the dependent variable unlike the current study which focuses on supply chain performance.

Macharia's (2014) research at Safaricom Limited aimed to determine if there was a connection between lean procurement and SCP. Case study approach was employed in this particular study. Employees at Safaricom's corporate headquarters were the primary population for this research. The investigators utilized a stratified random sampling technique to choose their group of 37 team leaders. Primary and secondary data were used to complete the analysis. Conclusions from the research indicate a positive, statistically significant connection between lean procurement and supply chain efficiency. In addition, the research found that Safaricom implemented a number of lean procurement strategies, such as employee empowerment, supplier-firm relationships, pull systems, comprehensive quality management, continuous improvement, and e-procurement.

Mwangangi and Achuora (2019) aimed to investigate the impact of lean supply chain on the performance of Kenyan public universities. The method used to describe this study is descriptive. Employees in public university administration, accounting, and purchasing roles

were surveyed for this study. Each of Kenya's state universities was included in this analysis. The method of the census was utilized. Because of the reliability of census data. The results of the study showed a statistically significant positive correlation between Lean Supply chain and Business Outcomes. This suggests that implementation of Lean Supply chain initiatives in Kenyan public universities is likely to increase on organizational performance. This study provides a sectoral gap as it was done in public universities.

Thuranira (2016) investigated the impact of lean supply chain management elements on productivity in Kenya's tea industry. The study used a descriptive research approach, with questionnaires sent out to different Kenya Tea Development Agency plants, to accomplish its goals.. Regression and correlation analysis were used to analyze data. The study found that when it comes to lean supply chain management, different factories take different approaches at different times. The majority of the manufacturing facilities used lean practices in all three stages of the supply chain, as measured by the study's metrics for procurement, production, and storage. The research showed that if companies want to boost their operational performance in the long run, they should make lean supply chain management a part of their overall strategy. The study focused on productivity unlike the current study which was done on supply chain performance as the dependent variable. Further, the study was done in a different sector.

Ambet (2017) investigated the impact of lean methods on the efficiency of the Kenyan government's operations in the county of Vihiga. The research used both correlation and descriptive methods. Eighty workers from the operations and procurement divisions made up the study population. Questions were used to glean the primary data. The study's validity

was determined by consulting an expert, and its reliability was determined using the split-half approach. The results of the research show that lean practice correlates positively with productivity in the workplace. The study concluded that lean practice has a favorable correlation with operational performance and hence should be adopted by county governments. The study focussed on operational performance unlike the current study which focused on supply chain performance

Omwoyo, Wanyoike and Mbeche (2019) set out to research how lean procurement programs affect manufacturing companies' supply chain responsiveness. The survey polled 96 procurement, finance and operation managers from the sample of 34 Nakuru County manufacturing enterprises. A questionnaire was used to compile the data. Lean procurement initiatives' impact on supply chain responsiveness was evaluated using a regression model. Some, but not all, of the manufacturing companies examined have implemented lean procurement practices. According to the research, lean procurement greatly improves the flexibility of the supply chain. The study concluded that, due to the beneficial effects of lean procurement initiatives, government backing for the widespread implementation of such initiatives within the industrial sector was essential. This study focused on supply chain responsiveness unlike the current study which focused on supply chain performance.

2.5 Summary of Reviewed Literature

The government of Kenya established regulatory entities to oversee the nation's logistical operations. Noncompliance with the Act, overpricing, bad planning and contract management, a lack of transparency and accountability, wasteful effort duplication, and

corruption all contribute to Kenya's persistently low performance. In this chapter, we also addressed empirical review, which involves the analysis of past literatures. The research then creates a theoretical framework demonstrating the relationship between the two variables. The focus of the study was on four independent variables: supply chain collaboration, supplier selection, lean supply chain and supply risk management practics.

According to the literature review, there appears to be a shortage of empirical research exploring the relationship between SCP and the proposed study variables (supply chain collaboration, supplier selection, lean supply chain and supply risk management practices).

Table 2. 1: Summary of Research Gaps

Authors(s)(Year)	Title	Variable	Methodology	Findings	Knowledge Gaps
Njagi and Shalle (2016)	Role of supplier management on procurement performance in manufacturing companies a case of East African breweries	Supply Chain Collaboration Practice	descriptive survey design.	EABL maintains a strong working relationship with its suppliers and trains them.	The study was carried out in the public sector.
Gumboh (2017)	Effect of supply chain collaboration on strength of business-to-business relationship among information and communication technology small and medium enterprises in Kenya	Supply Chain Collaboration Practice	Design of descriptive research surveys	The research revealed a positive correlation between supply chain coordination and business-to-business ties.	The study concentrated on procurement efficiency
Gichuru, Iravo and Arani (2015)	Collaborative supply chain practices in the performance of Del Monte Kenya Ltd	Supply Chain Collaboration Practice	descriptive case study design.	The study concluded that sharing knowledge and resources has a favorable impact on a company's performance. Companies should exchange resources with their	Both suppliers and staff utilized the same tool.

				most important suppliers in order to maximize capabilities.	
Barasa, Simiyu and Iravo (2014)	Impact of supply chain collaboration practice on the performance of Steel Manufacturing Companies in Kenya.	Supply Chain Collaboration Practice	Descriptive survey.	The study found that supply chain collaboration practice substantially predicted the success of Kenyan steel manufacturers.	The study does not specify the selection criteria for 100 SMEs.
Odhiambo (2015)	Supplier selection criteria, Principles of supplier selection plus the relationship between supplier selection and procurement performance	Supply selection	Design of a descriptive case study.	Results also showed a correlation between the independent factors of quality evaluation, service levels, organizational and supplier profile, and cost, and the dependent variable of procurement performance.	The study did not specify the unit of inquiry employed.

Krop and Iravo (2016)	Effects of supplier selection on performance of procurement function in Public Sector: A case of West Pokot County Government	Supply selection	Descriptive research design.	Researchers discovered a favorable correlation between supplier performance across all four criteria of supplier selection.	The study did not specify the type of organizational performance that was evaluated.
Obinda and Gichure (2017)	Effects of supplier selection on SCP in Nairobi City County	Supply selection	Design of descriptive research	According to the findings, the effectiveness of the procurement department is impacted by the quality of communication between procurement staff members during the supplier selection process.	Despite employing a mixed methodology, no triangulation was present.

Nyaberi (2020)	Effect of supplier development management practices on organizational performance of manufacturing firms	Supplier development	Descriptive research design	According to the results, supplier development can benefit from careful supplier selection. If put into practice, the four variables account for 65.3% of organizational development's total performance.	The study did not specify the type of organizational performance that was evaluated.
Mburu (2017)	Risk management strategy and SCP among manufacturing companies in Kenya	Supply Risk Management	Both qualitative and quantitative research methods were utilized in a descriptive study design.	The combination of risk identification management approach and SCP was validated by a p-value of 0.000.	The research was limited on risk identification and management strategy
Munyuko (2015)	Effects of Supply chain risk management on organization performance	Supply Risk Management	descriptive research design using a case study.	The acquired data demonstrated a direct correlation between supply chain risk management	The research did not specify which component of performance was

				and organizational performance.	evaluated.
Rotich and Ochiri (2018)	influence of Procurement Risk Management on the procurement performance of Mega projects in the energy sector in Kenya	Supply Risk Management	exploratory approach using a descriptive research design.	The study discovered that procurement risk management has a substantial impact on the procurement performance of major projects in Kenya's energy sector.	There was no triangulation of findings from several sources.
Nyagechanga (2017)	Relationship between procurement risk management practices and SCP among companies	Supply Risk Management	a cross sectional and quantitative study design	In addition, the study found that procurement risk management strategies may account for or explain SCP. The study found a favorable and statistically significant correlation between lean procurement and SCP.	The analysis fails to distinguish between supply risk management and procurement risk management.

Macharia (2014)	Relationship between lean procurement and SCP at Safaricom Limited	Lean Supply chain management	Case study design.	The research showed a substantial positive correlation between Lean Supply chain and Organizational Performance.	The study did not specify a method for measuring SCP.
Mwangangi and Achuora (2019)	Influence of lean supply chain on performance of Public Universities in Kenya	Lean Supply chain management	Descriptive research design	The combination of risk identification management approach and SCP was validated by a p-value of 0.000.	The study does not specify which secondary sources were acquired and where.
Thuranira (2016)	Effect of lean supply chain management components on operational performance in the tea factories in Kenya	Lean Supply chain management	descriptive cross-sectional survey	The study stated that the adoption of lean supply chain management components into an organization's operations should be part of its long-term plan for improving operational performance.	The study did not specify a method for measuring lean supply chain management.
Omwoyo, Wanyoike and Mbeche (2019)	Influence of lean procurement initiatives on supply chain agility of	Lean Supply chain management	survey research	Diverse levels of lean procurement activities were	The conclusions were based on descriptive data, making

manufacturing firms	design	seen among the manufacturing companies surveyed. It was shown that lean procurement considerably increases supply chain agility.	generalization challenging.

Source: Researcher (2021)

2.6 Conceptual Framework

A conceptual framework is a set of interconnected ideas that illustrates how one set of variables is related to another set of variables; this allows the researcher to more easily draw conclusions about the nature of the relationships among the many factors under study (Mugenda & Mugenda, 2008). The research examined the relationship between the independent variable of supply chain collaboration practices and the dependent variable of SCP.

The study conceptualized independent variables – Supply chain collaboration practices which was actualized through measurable like joint planning and forecasting, mutual goals, clear coordination and resource sharing. Supplier selection practices was measured using supplier evaluation, supplier certification and supplier comparison. Supplier risk management practices – risk identification, risk assessment and dual sourcing while Lean supply management practices was measured using supply base rationalization, framework contracting and supply chain visibility. Dependent variable for the study was supply chain performance which was measured using timely delivery of good/ services, user satisfaction, cost savings and quality of goods and services.

The study's conceptual framework is depicted in Figure 2.1.

Independent Variables

Dependent Variable

Supply chain collaboration practices
- Joint planning and forecasting
- Mutual goals with clients
- Clear coordination
- Resource sharing

Ho1

Supplier Selection Practices
- Supplier evaluation
- Supplier certification
- Supplier comparison

Ho2

Supplier Risk Management Practices
- Risk identification
- Risk assessment
- Dual sourcing

Ho3

Lean Supply Management Practices
- Supply base rationalization
- Framework contracting
- Supply chain visibility

Ho4

Supply Chain Performance
- Timely delivery of goods/services
- User satisfaction
- Cost savings
- Quality of goods/ services

Figure 2. 1: Conceptual Framework

Source: Adapted from other studies (Aldori, 2019; Krop & Iravo, 2011,Mburu ,2017 & Thuranira,2016)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter highlights research design, population, sampling methodology, data collection procedures and instruments, data processing, data analysis and ethical consideration

3.2 Research design

A research design is a systematic plan for conducting a study (Kothari, 2011). The study used a descriptive survey research design since its primary purpose was to gather data for the purpose of describing a phenomena or condition in detail. Kothari (2004) argues that the goal of a descriptive study is to collect accurate data on the current state of a problem or phenomenon and, if possible, to extrapolate meaningful conclusions from those data. It is concerned with the concept and provides a description of the population being studied. The study's research design was appropriate because it used a structured questionnaire to collect primary data and then looked into the impact of the independent variable on the dependent variable.

3.3 Study Area

The research was done at county referral hospitals run by the government that are located in western Kenya. The region includes the four counties of Kakamega, Busia, Vihiga, and Bungoma. Location: between 20°N and 30°S and 330°E and 350°E in the equator. The main economic activity is farming, and the average elevation is about 1800 meters above sea level.

The Kenya National Bureau of Statistics (2019) estimated a total population of 5.02 million for the area (Bungoma, 1.671 million; Kakamega 1.867 million, Busia 0.893 million and Vihiga 0.590 million). There has been an uptick in economic activity in the western part of

Kenya, and with that has come a rise in the number of hospitals and other medical centers serving the area. Referral hospitals serving public populations in several counties were the focus of the study. It's important for the people of western Kenya to have access to quality medical treatment, and recently, a number of hospitals in the region have been promoted to referral hospital status (GoK, 2021).

3.4 Study Population

The term "population" refers to the entire set of entities whose characteristics the researcher hopes to learn more about, while "sampling" refers to the procedure through which representative samples from the population are collected (Rahi, 2017). The term "population" was coined by Kothari (2011) to refer to all the things in the cosmos, which includes all areas of study. The term "target population" refers to the entire group of individuals or events, actual or imagined, to which the researcher plans to apply their findings (Kothari, 2004). There were 102 participants drawn from the four referral institutions listed in Table 3.1. The responders included supply chain managers, hospital medical directors, hospital administrators, county directors of health services, in-charge pharmacists, in-charge nurses, in-charge laboratory managers, in-charge orthopedics, physiotherapists, accountants, hospital nutritionists, in-charge hospital caterers, and finance officers.

Table 3. 1: Target Population

Officers in respective position	Target population			
	Busia	Bungoma	Kakamega	Vihiga
Supply chain officers	9	9	9	9
Hospital Medical Superintents	1	1	1	1
Hospital Administrators	1	1	1	1
County Directors of Health services	1	1	1	1
Pharmacist In charge	1	1	1	1
Nursing Officer in charge	1	1	1	1
Laboratory managers	1	1	1	1
Orthopediatric in Charge	1	1	1	1
Physiotherapists	1	1	1	1
Accountants	3	3	4	3
Hospital Nutritionist	1	1	1	1
Hospital Caterers	2	2	2	2
Finance Officers	2	2	3	2
Total	25	25	27	25

Source: County Human Resource Department (2021)

3.5 Sample and Sampling Techniques

3.5.1 Sample Size

According to Williams (2017), a sample size is the total number of participants in a study. A sample is a randomly selected portion of the population that is thought to be representative of the overall population. Taro Yamane's proportional sampling method was utilized to estimate the sample size for this inquiry. This statement is helpful since it specifies the sample size required to accurately reflect a particular group. A sample size has been

determined using the formula for the proportional sampling approach proposed by Taro Yamane; Sample

$n = N/(1+(e)^2)$

Where n = Sample size

      N = population under study

      E = margin error (0.05)

      I = constant

Therefore;

      $n=102/(1+102 (0.05)^{2)}$

      n=102/ (1+102(0.0025)

      n=102/ (1+0.37)

      n=102/1.37

      n=81.2749004 rounded off to 81

The study arrived at 81 as the sample size.

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3.5.2 Sample Techniques

The term "sampling technique" refers to the method used to pick a subset of a population to research in a way that is statistically representative of the entire population (Sharma, 2017). The referral hospitals within each county were divided up into different categories. In addition, the respondents were divided into groups based on their occupation. The study targeted supply chain officers, medical superintendents, hospital administrator, count directors of health, pharmacist in charge, nursing officers, laboratory managers, orthopaedicians, physiotherapists, accountants, nutritionist, and hospital caterers. Four (4) suppliers were selected from each hospital's list of regular suppliers using a purposive sampling method.

3.6 Data Instruments

A questionnaire and interview schedules were utilized to acquire primary data. For many, questionnaires offer a more economical and time-saving alternative (Wekesa, Namusonge & Nambuswa, 2017). Zohrabi (2013) identifies three distinct sorts of questionnaires: those that invite only yes/no responses, those that encourage free-form comments, and those that invite both. The questionnaires utilized in the research were closed-ended. There were 3 distinct parts of the questionnaire. The first section contained background information. Part1 of Section B outlined best practices for supplier management through proclamations on how the supply chain collaboration. Statements about Supplier selection practices were included in Part 2. Statements on supplier risk management were found in Part 3, and statements on lean supply chain practices were found in Part 4. The supply chain performance was detailed in Section C. The questionnaires were a 5-point scale. The likert scale ranged from 1-5 where 1=strongly disagree, 2=disagree, 3=fairly agree, 4=Agree and 5=strongly agree. Cooper and Schindler (2008) claim that asking respondents to indicate their level of agreement with a particular statement using a likert scale is preferable since it allows for more nuanced responses.

Schedules for interviews with important suppliers of each county's referral hospitals were established. Some of the prequalified providers were chosen using purposive sampling and were interviewed.

3.7 Data Collection Procedures

Masinde Muliro University of Science and Technology provided the researcher with a letter of introduction. The cover letter was used to apply for a NACOSTI license and other permissions. To aid in data collection, the researcher hired two(2) research assistants. The assistants were enlightened on how they should explain technical terms to the respondents. The research assistants provided respondents with questionnaires and a notice on the

confidentiality of their responses. Two weeks after the questionnaires were sent out, 81 respondents were randomly selected to fill them out.

3.8 Pilot Test

According to Ismail, Kinchin and Edwards (2018), a pilot study is a preliminary investigation that takes place on a smaller size than the ultimate, larger-scale research endeavor. By putting the feasibility of the research procedure to the test in the actual world, the researcher may better decide how to carry out the whole study. In other words, it is made up entirely of trial runs of a selected survey. In this pilot study, eight (8) participants were recruited from County Referral Hospital in Trans Nzoia County. A pilot study is recommended and it should account for 10% of the total research effort (Cooper & Schinder, 2008).

3.8.1 Validity of Instruments

Zahrabi (2013) explains that the issue of validity is around determining if the research actually analyzes the target construct. It refers to how well research tools capture the variables of interest (Orodho, 2003). Research will ensure the content is valid. Mohajan (2017), referencing Hanson, Creswell and Creswell (2005), defines content validity as the extent to which the questions on the instrument and the scores derived from these questions represent all feasible queries about the material or skill. Experts in procurement and the study's supervisor ensured the questionnaires' content validity by reading through each question and making sure it was clear, comprehensive and relevant.

3.8.2 Reliability of Instruments

Mohajan (2017) defines reliability as the degree to which a measurement remains constant over time despite changes in either testing conditions or the respondent themselves. Therefore, we utilize reliability to assess the consistency of measurements given to the same people at different points in time and the comparability of subsamples on the same test (Kimberlin & Winterstein, 2008). The researcher used Cronbach's alpha to test reliability.

Cronbach's alpha, which indicates the extent to which a set of items may be interpreted as measuring a single latent variable, was used to check for internal consistency in this study's reliability testing. To be reliable, the cronbach alpha for the entire sample needed to be at least 0.70 (Mugenda & Mugenda, 2008).

3.9 Data Processing and Analysis

Sharma (2018) defines data analysis as the methodical use of statistical and/or logical methods to explain and demonstrate, condense and summarize and assess data. Once the data collection process is over, it will be cleaned, coded, and edited to make sure everything is correct and comprehensive. Descriptive statistics, such as percentages and frequencies, were employed to examine numerical data. Additionally, Karl Pearson's correlation analysis was used to establish a link between the variables. In addition, both simple regression and multiple linear regressions were used to analyze the information. The information was then displayed in tabular and graphical formats. In order to summarize and compare quantitative information across variables, the researcher made use of tabular form, which more correctly presents data that would otherwise be lost in a graphical representation. Bar graphs were used to visually represent and compare frequency-based values.

Simple regression analysis was used in interpretation of data

$$Y=\beta_0+\beta_1 X_{1+e} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(i)$$

$$Y=\beta_0+\beta_{2+}X_2+e \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.(ii)$$

$$Y=\beta_0+\beta_{3}+X_3+e \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(iii)$$

$$Y=\beta_0+\beta_{4}+X_4+e \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.\dots(iv)$$

Additionally, discussion was provided for interpretation of data. Multiple regression model;

$$Y=\beta_0+\beta_1 X_1+\beta_2 X_2+\beta_3 X_3+\beta_4 X_4 +\varepsilon$$

Where;

Y= Supply chain Performance

β_0= Constant of Regression which is the value of the dependent variable when the independent variable is 0.

X_1= Supply chain collaborations

X_2= Supplier selection practices

X_3= Supplier risk management practices

X_4= Lean supply chain practices

$\beta_1 \beta_2 \beta_3 \beta_4$ = Regression co-efficient

ε=Error term

3.9.1 Diagnostic Tests

Multiple regression model of analysis was considered, along with the following summarized assumptions from Hair, Halle, Terry-Humen and Calkins (2006).

i) **Normality** is the presumption that the values for a continuous variable are distributed normally around the mean. Regular Q-Q plots will be used to verify the assumption of normality.

ii) **Multi-collinearity**. It is a statistical test of the degree of coherence between two or more conceptually independent variables. As a result, there are technical difficulties in computing a multiple regression model and confusion over which independent variable contributes to the variance explained in the dependent variable. The assumption of no correlation between independent variables will be verified by looking at the Variance Inflation Factor (VIF), the value of which must be less than 10 to pass the test.

iii) **Auto-corellation** Test: it was tested using Durbin Watson test.

3.10 Ethical consideration

The research was conducted in accordance with established ethical criteria, which are of the utmost significance whenever human participants are involved. Because of these moral issues, all research projects were conducted in a professional manner. It ensured that everyone's confidentiality and safety in the study was protected. The privacy and security of the information collected were protected by concealing its source.

The participation of research subjects was prearranged after obtaining their informed consent. No one was forced to participate in a study unless they were informed about it in advance and gave their consent. No coercion or inducement of any kind was used to get people to participate as research subjects. Study permission from NACOSTI will be obtained after consultation with relevant parties and bodies. Before becoming a research subject, volunteers were informed of the study's rationale, procedures and potential outcomes.

Respondents' rights to privacy and intellectual property were upheld throughout the study process, and all work properly cited its sources. Plagiarism, fraud, fabrication, inaccuracies in data collection, and misrepresenting authorship were avoided at all costs. The Study was conducted as a professional, unbiased scientific endeavor in all respects, from its conception to its interpretation to its analysis and methodology.

CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.1 Introduction

The purpose of this study was to examine the influence of SMPon the SCP of a CPRH in Kenya's Western Region. This chapter provides an analysis of data collected and discusses the findings on the subject of the study.

4.2 Response Rate

Among the 81 questionnaires sent out for data collection, 59 were returned with all required information (a response rate of 72.8%), which bodes well for extrapolating the study's results to the larger population at large. Table 4.1 below displays the overall response rate from the questionnaire.

Table 4. 1: Return Rate

		Frequency	Percent
Valid	Returned	59	72.8
	Not Returned	22	27.2
	Total	81	100.0

Source: (Field data, 2022)

Richard (2015) suggested that a response rate of at least 70% is both desirable and realizable. The study's 72.8% response rate is respectable because it's higher than the threshold of 60% considered necessary for statistical significance.

4.3 Reliability and validity tests

Reliability tests were performed using the Cronbach alpha test to determine the validity of the dataset. All indicators had loadings over.707, suggesting that the constructs accounted for more than 50% of the variance in their indicators, which is indicative of adequate item dependability.

Table 4. 2: Results of Reliability test

Variables	Cronbach Alpha	No. of Items
Supply chain collaboration practices	0.736	5
Supplier selection practices	0.820	5
Supplier risk management practices	0.755	5
Lean supply chain practices	0.752	5
Supply chain performance	0.849	5

Source: (Pilot data, 2022)

When alpha is more than 0.7, as Sanchez (2013) claims it is, composite dependability is attained. Results from the construct reliability analysis are summarized in Table 4.2. Cronbach's Alpha for all retrieved variables was greater than 0.7, as shown in Table 4.2, meeting the minimum threshold for reliable data (Mugenda & Mugenda, 2008).

4.4 Regression Analysis Assumption Tests

Several statistical conditions must hold true before a regression analysis can be performed. Below are descriptions of the analyses performed and results given in this study for Normality, autocorrelation and Multi-Collinearity Test.

4.4.1 Tests of Normality

Ghasemi and Zahedias (2012) suggest a visual inspection for normalcy. Figure 4.1 depicts a normal Q-Q plot of supply chain collaboration practices, suggesting that the observed non-normality is not as extreme as may be expected from an approximation to the line of best fit. As a result, the information was sufficiently close to normal for use in a regression analysis.
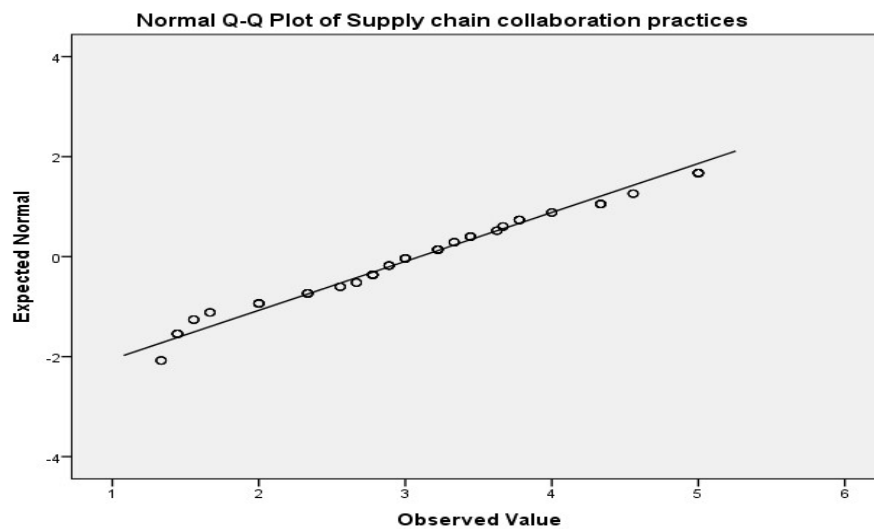
Figure 4. 1: Normal Q-Q plot of Supply chain collaboration practices

A close approximation to the line of best fit in Figure 4.2, a normal Q-Q plot of supplier selection methods, suggests that the departure from normalcy is not statistically significant. As a result, tests requiring a normal distribution, like linear regression, may be performed with reasonable accuracy on the data.
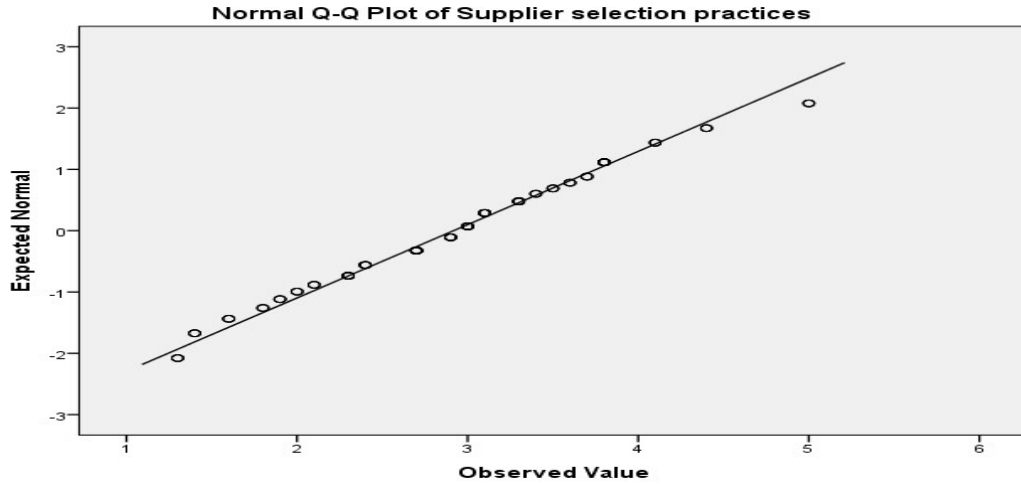
Figure 4. 2: Normal Q-Q plot of Supplier selection practices

Figure 4.3 shows that the deviation from normalcy in the Q-Q plot of supplier risk management methods is not as large as would be expected from an approximation to the line of best fit. Therefore, parametric tests, including linear regression, could be performed because the data nearly followed a normal distribution.
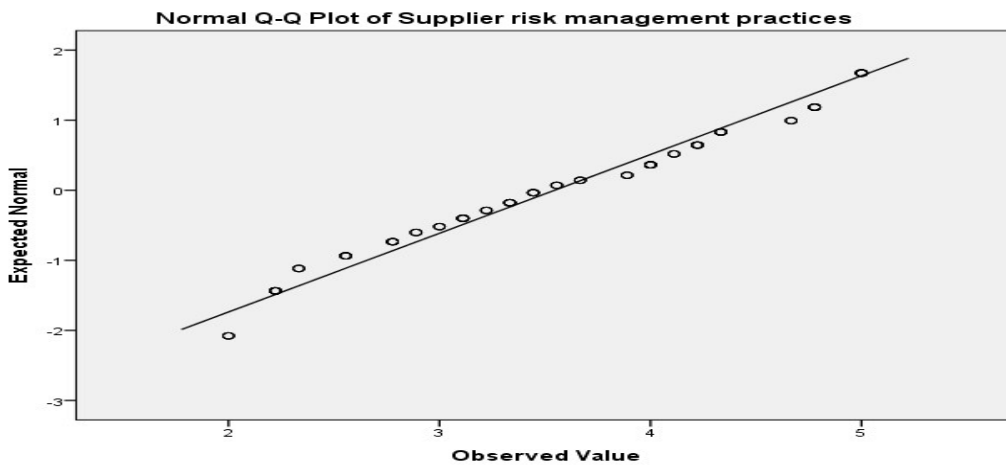
Figure 4. 3: Normal Q-Q plot of Supplier risk management practices

As can be seen in Figure 4.4, the deviation from normalcy in the Q-Q plot of lean supply chain techniques is not as large as the deviation from the approximate line of fit. Because of its closeness to a normal distribution, the data might be employed in parametric testing.
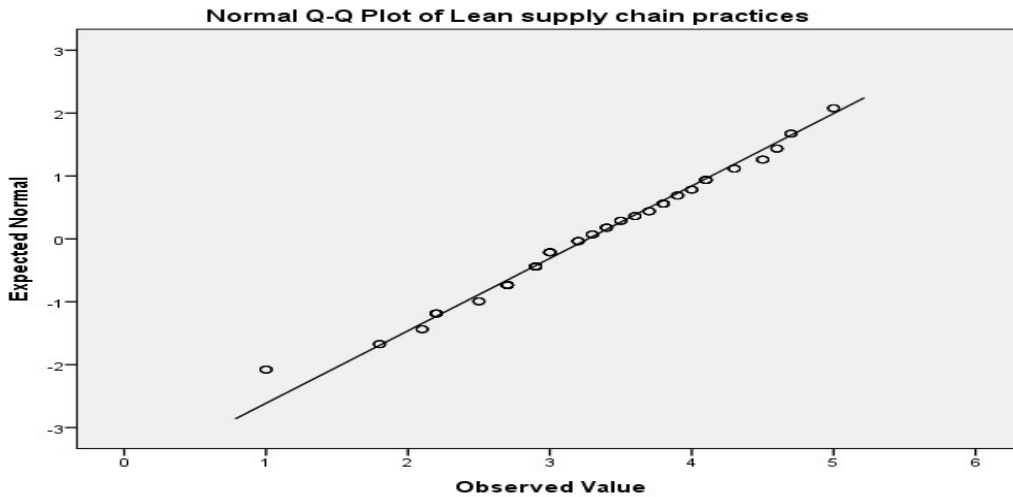
Figure 4. 4: Normal Q-Q plot of Lean supply chain practices

The deviation from normality in the performance Q-Q plot (Figure 4.5) was not as large as the deviation from the approximate line of fit. Since the data followed a nearly normal distribution, it could be employed in a regression analysis.
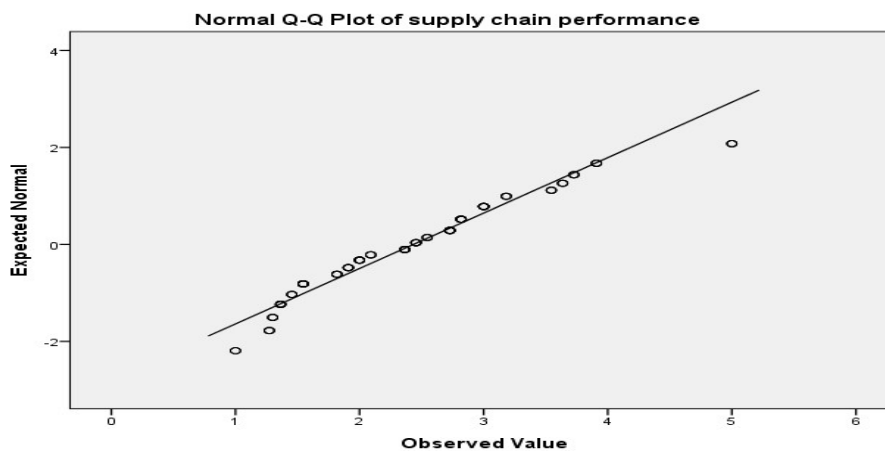
Figure 4. 5: Normal Q-Q plot of Procurement Performance

4.4.2 Auto-correlation Test

The Durbin-Watson test was utilized to assess independence. It determines whether or not the residuals of a linear or multiple regression are independent.

Table 4. 3: Autocorrelation Test for Regression

Std. Error of the Estimate	Durbin-Watson
.6580	1.736

Source: (Field data, 2022)

According to table 4.5, the Durbin-Watson factor is between 1.5 and 2.5, which means that autocorrelation was not an issue. This is in line with the findings of Alsaeed (2005), who found that there was no autocorrelation when the factor was between these values.

4.4.3 Multi-Collinearity

As a result of their correlation, multicollinearity weakens our ability to characterize any individual variable. According to Besley (1980), cited in Jingyu li (2003), researchers have used VIF= 10 as a rule of thumb to establish whether there is an excessive amount of association.

Table 4. 4: Multi-Collinearity

Independent variable	Tolerance	VIF
Supply chain collaboration practices	.573	1.745
Supplier selection practices	.724	1.381
Supplier risk management practices	.576	1.735
Lean supply chain practices	.877	1.140

Source: (Field data, 2022)

The VIF value in the table 4.6, are less than 10 so there is no multi-Collinearity problem in study variab

4.5 Demographic Characteristics of the Respondents

The study intended to determine the respondent's background information. Gender, years in the workforce, and level of education were among the categories covered. The respondents were required to specify their gender on the questionnaires so that gender distribution could be determined. Those that participated designated themselves as either females or males. Table 4.6 indicates that 54.2% of respondents were male and 45.8% were female. The gender ratio appears to be relatively equal at this CRH in Kenya's Western Region.

Table 4. 5: General information of the Respondents

Gender	Frequency	Percent
Male	32	54.2
Female	27	45.8
Total	**59**	**100**
Years Worked		
1- 5 years	16	27.1
6 to 10 years	32	54.3
11years and above	11	18.6
Total	**59**	**100**
Education Level		
Certificate	5	8.5
Diploma	26	44.1
Graduate	22	37.3
Post Graduates	6	10.1
Total	**59**	**100**

Source: (Field data, 2022)

In addition, the respondents were asked to share their length of service in public county referral hospitals. This was vital in determining how knowledgeable they were about supply chain efficiency. According to the results, 27.1% of respondents have been in their current role for less than 5 years, 54.3% have been in the County Referral Hospital for between 6 and 10 years, and 18.6% have been there for more than 10 years. As a result, the majority of the respondents sampled had sufficient work experience, a factor crucial to accomplishing academic objectives.

Participants in the survey were required to reveal their highest level of formal education. They would be able to demonstrate their reading level and their ability to complete the surveys accurately based on this. Regarding education, nearly half of respondents (44%) said they held one or more diplomas, while only a tenth of respondents (8.5%) said they held a certificate. Also, the data showed that 10.1% of the respondents had advanced degrees, while 37.3% of the respondents had at least a bachelor's degree.

4.6 Descriptive analysis of the study variables

This section focuses on descriptive analysis of all research variables, including supply chain collaborativepractices, supplier selection practices, supplier risk management practices, lean supply chain practices and supply chain performance.

4.6.1 Supply chain collaboration practices

The summary of the descriptive statistics for supply chain collaboration practices are as shown in Table 4.7.

Table 4. 6: Descriptive statistics: Supply chain collaboration practices

Statements	Stats	5	4	3	2	1
The hospital includes our suppliers in the process of collaborative planning and forecasting.	F	7	29	13	5	5
	%	11.9	49.2	22	8.5	8.5
The hospital-supplier partnership is founded on mutual understanding and shared objectives.	F	8	25	14	9	3
	%	13.6	42.4	23.7	15.3	5.1
The hospital has a well-defined policy for handling relationships with vendors.	F	17	15	17	6	4
	%	28.8	25.4	28.8	10.2	6.8
The hospital has built a monitoring system for supplier performance.	F	11	34	8	5	1
	%	18.6	57.6	13.6	8.5	1.7
There are defined channels of contact between all hospital departments and our vendors.	F	13	23	14	7	2
	%	22	39	23.7	11.9	3.4

Source: Field data (2022)

Table 4.7 shows that only 11.49% of respondents strongly agreed, 47.2 % agreed, and 22.0 % agreed that the hospital involves its suppliers in the collaborative planning and forecasting process. When asked if the hospital's relationship with its suppliers is based on mutual understanding and common aims, 13.6% of respondents strongly agreed, 42.4% agreed, 23.7% agreed, and 15.5% disagreed.

In addition, a slim majority of respondents (25,4%) agreed that the hospital had a clear policy for managing relationships with suppliers, with 28.8% strongly agreeing, an additional 28.8% agreeing slightly, and 10.2% disagreeing. In addition, 57.6% and 18.6% of the tested respondents agreed and strongly agreed, respectively, that the hospital has built a system to monitor supplier performance, whilst 14.0% of the selected respondents agreed partially.

In conclusion, 22.0% of respondents strongly agreed that there are standardized ways of communication between all hospital departments and our suppliers, while 39.0% of respondents agreed, 23.7% of respondents slightly agreed, and 11.9% disagreed. Gumboh (2017) examined the impact of supply chain collaboration on the robustness of business-to-business relationships among small and medium-sized information and communication technology companies in Kenya. The research revealed a positive correlation between supply chain coordination and business-to-business ties. Njagi and Shalle (2016) reached a similar outcome when they discovered that EABL has a strong collaborative relationship with its suppliers and trains them. This has substantially enhanced procurement performance.

In relation to the interview, the respondents agreed that they had a good relation with the hospital. Further,respondents suggested several ways in which the hospital may enhance its supplier partnership practices. These included, among other things, the adoption of a more equitable platform and the digitization of the procurement procedure. The hospital administration should also make it easier for suppliers to secure financing from financial institutions by relaxing some of the obligatory restrictions contained in the bidding procedure.

4.6.2 Supplier Selection Practices

This section analyses respondents level of agreement on the statements on supplier selection practices as shown in Table 4.8 below.

Table 4. 7: Supplier selection practices descriptive statistics

Statements	Stats	5	4	3	2	1
The hospital uses technical capability, criteria when selecting suppliers	f	8	28	11	9	3
	%	13.6	47.5	18.6	15.3	5.1
The hospital uses technical expertise criteria when selecting supplier	f	8	31	12	4	4
	%	13.6	52.5	20.3	6.8	6.8
The hospital compares supplies based on responses	f	12	25	7	12	3
	%	20.3	42.4	11.9	20.3	5.1
The hospital ranks suppliers on responsiveness	f	11	25	16	4	3
	%	18.6	42.4	27.1	6.8	5.1
The hospital considers suppliers past performance and current relationship when selecting suppliers	f	6	30	18	3	2
	%	10.2	50.8	30.5	5.1	3.4

Source: Field data (2022)

Table 4.8 shows that nearly half of respondents (45%) and a sizable minority (13.6%) are in agreement that the hospital takes technical capacity into account when choosing suppliers. Conversely, 18.6% of respondents somewhat agreed, while 15.3% disagreed, that the hospital considers technical capability, factors for selecting suppliers. In addition, 52.5% of respondents agreed, with 13.66% strongly agreeing and 20.33% agreeing, that the hospital considers technical expertise criteria when picking supplier.

Furthermore, 20.3% of respondents strongly agreed that the hospital does compare supplies depending on responses, whereas 42.4% of respondents agreed. On the other hand, 20.3% of respondents strongly disagreed, while 11.9% agreed only partly. The data also showed that the vast majority of respondents (42.4%). 18.6% strongly agreed, and 27.1% agreed, that the hospital ranks suppliers on responsiveness.

A total of 50.8% of respondents agreed, with 10.2% strongly agreeing and 30.5% agreeing that the hospital takes into account the performance history and current connection of suppliers when making purchases.

According to Kannan and Choon (2002), the selection of a supplier is crucial because it establishes the standards by which that supplier will be judged in the future. Consequently, danger can be mitigated or avoided altogether with the help of a thorough selection procedure that takes into account relevant performance parameters. The research conducted by Obinda and Gichure (2017) in Nairobi City County was intended to measure the impact of supplier selection on supply chain efficiency. The research showed that the effectiveness of the procurement department was impacted by the quality of communication between procurement staff members regarding supplier selection and supplier selection.

The interviewees cited price, financial and technical capacity of the supplier and supplier tract record as crucial criteria for making supplier selections. Political involvement, forged paperwork from vendors and poor risk estimating techniques all worked against a fair and balanced selection process. Supplier selection also plays an important role in achieving contractual goals and reducing risk. The respondents mentioned that the hospitals should ensure supplier selection process is done in a professional manner taking into consideration intergrity,accountability and transparency.

4.6.3 Supplier risk management practices

This section analyzes the respondents level of agreement on statement on supplier risk management practices in county referral Hospitals effect of supplier risk management

practices on Supply management practices on supply chain performance of CPRH in Western Region, Kenya.

Table 4. 8: Descriptive statistics: Supplier risk management practices

Statements	Stats	5	4	3	2	1
Potential supply chain risks are identified by the	f	10	30	6	5	8
hospital.	%	16.9	50.8	10.2	8.5	13.6
	f	19	13	20	5	2
The hospital asses the level of supplier risk.	%	32.2	22	33.9	8.5	3.4
The hospital regularly hosts training seminars in	f	16	21	15	4	3
conjunction with our vendors.	%	27.1	35.6	25.4	6.8	5.1
Joint risk workshops are held with the hospital	f	13	21	14	8	3
and its vendors.	%	22	35.6	23.7	13.6	5.1
To mitigate hazards, dual sourcing is ideal in	f	9	24	17	7	2
any healthcare facility.	%	15.3	40.7	28.8	11.9	3.4

Source: (Field data, 2022)

Table 4.9 shows that between fifty percent and sixteen point nine percent of respondents feel that the hospital is doing a good job of identifying supply chain risks. On the other hand, 13.6% of people indicated they strongly disagreed, and 10.2% stated they disagreed, that the hospital does identify potential risk in the supply chain. Moreover, 32.2% of respondents strongly agreed that the hospital assesses the level of supplier risk while 22.0% agreed and 33.9% slightly agreed.

As for the hospital holding joint training sessions with our suppliers, 35.7% of respondents agreed, 27.1% strongly agreed, and 25% agreed. The results also showed that 35.6% of

respondents agreed with the statement that the hospital hosts collaborative risk workshops with our suppliers, while 22.0% strongly agreed and 23.7% agreed.

Final results showed that 40.7% of respondents believed that dual sourcing is desirable to balance risks, with 15.3% strongly agreeing and 28.8% moderately agreeing. Findings from this study are consistent with those from a study by Nyagechanga (2017) that looked at how to measure the impact of procurement risk management on supply chain performance. According to the research, businesses may lessen the impact of uncertainty on their operations by maintaining a consistent cycle of risk assessments across their supply chains. Researchers concluded that management should prioritize procurement risk management because of the growing recognition that threats can originate from previously unanticipated sources. According to the findings, procurement risk management methods could account for or explain supply chain performance.

Regarding the interview the respondents were of the opinion that the hospital administration would have an easier time methodically managing all of the business' connections with suppliers if supplier risk assessment techniques were addressed from the start. In addition, some respondents claimed that the hospitals did not manage risks well because the client previously gave him an order but then required that the supply be completed at the originally indicated price despite a change in market price (upwards). Suppliers generally agree that the hospital does a good job of managing risk connected to supply since they are consulted by the hospital before service orders are started once they get the local purchase orders, and they are expected to acknowledge if they cannot.

The majority of the hospitals surveyed identified an increase in the cost of the goods as their biggest difficulty. Some suppliers have complained about the hospital's slow order processing, which forces them to raise their pricing, as well as the hospital's infrequent market surveys, which make it difficult to know what the going rate is, and the lack of supplier input into the creation of specifications.

The interviewees suggested several ways in which the hospital could better manage the risks associated with its relationships with its suppliers. These included conducting regular price surveys to determine the going rate in the market, expediting local purchase orders, and communicating order specifications to vendors in advance.

4.6.4 Lean Supply Chain Practices

This section analyzes the effect of supplier risk management practices on lean supply chain practices of CRH in Western Region, Kenya.

Table 4. 9: Descriptive statistics: Lean supply chain practices

Statements	Stats	5	4	3	2	1
The hospital has standardized and reduced quantity of goods,works or services to avoid wastage.	F	10	23	18	2	6
	%	16.9	39	30.5	3.4	10.2
The hospital always ensures quality is maintained when procuring goods,works and services.	F	8	34	13	1	3
	%	13.6	57.6	22	1.7	5.1
The hospital orders minimum quantity of required goods andservices where the quantity deliverables are not determined at the beginning.	F	16	28	8	4	3
	%	27.1	47.5	13.6	6.8	5.1
Pull system procurement is used by the hospital (Only when there is an anticipation of use)	F	13	28	13	2	3
	%	22	47.5	22	3.4	5.1
The hospital provides vendors with information on quality and timeliness.	F	9	35	8	5	2
	%	15.3	59.3	13.6	8.5	3.4

Source: (Field data, 2022)

Table 4.10 shows that just 16.9% of respondents strongly agreed that the hospital has standardized and rationalized the variety of goods,works and services while 39.0% agreed. Contrarily, just 35.5% of respondents agreed while 10.2% strongly disapproved. Additionally, 57.6% of respondents agreed and 13.6% of respondents strongly agreed that quality assurance is maintained when procuring goods,works and services. However, only 22.0% were in full agreement that quality assurance measures were taken all the time at the institution.

The data also showed that almost half of respondents (47.5%) agreed, and another 27.1% strongly agreed, that the hospital order minimum quantity of goods and services required.

However, 13.6 percent of respondents only partly agreed that downstream operations are ultimately responsible for approving the production or supply of any new parts. The results also showed that 47.5% of respondents agreed that the hospital uses a pull method (Only when there is an anticipation of need) for its procurement needs, with 22% strongly agreeing and 23% agreeing. In conclusion, 59.3% of respondents agreed and 15.3% strongly agreed that the hospital provides feedback to suppliers on quality and delivery. Contrarily, 13.6 percent of respondents agreed only partially that the hospital provides vendors with input on quality and delivery.

Thuranira (2016), who investigated the impact of lean supply chain management elements on efficiency in Kenya's tea plants, corroborated the findings. The study found that when it comes to lean supply chain management, different factories take different approaches at different times. The majority of the manufacturing facilities used lean practices in all three stages of the supply chain, as measured by the study's metrics for procurement, production, and storage. The research indicated that hospitals' long-term approach for improving operational performance should include implementing elements of lean supply chain management.

A respondent stated during an interview that lean management practices that improve performance have not been properly adopted despite the fact that the suppliers' records and information are supposed to be maintained in a computerized data base that is frequently updated. It has been reported by some vendors that the hospital does not practice lean supply management. All of the interviewed vendors were in agreement that the hospital practices lean supply management.

According to the interviewees, the hospital can take steps to improve its lean supply management in order to reduce waste by, among other things, implementing lean supply management practices in order to minimize on storage cost, wastage, and redundancy of commodities; and conducting consumption forecasting in order to come up with reasonable and realistic quantities that can be conceived at given specific time frames.

4.6.5 Supply Chain Performance of CRH in Western Region, Kenya

The descriptive on supply chain performance is summarized in Table 4.11.

Table 4. 10: Descriptive statistics on supply Chain Performance

Statements	Stats	5	4	3	2	1
	F	18	25	10	3	3
There is timely delivery of goods and services.	%	30.5	42.4	16.9	5.1	5.1
In general,user departments are pleases with the	F	4	24	13	13	5
items and services acquired.	%	6.8	40.7	22	22	8.5
Goods and services are acquired at the current	F	16	23	8	9	3
market price.	%	27.1	39	13.6	15.3	5.1
	F	13	26	11	7	2
The appropriate quantity of items are acquired.	%	22	44.1	18.6	11.9	3.4
The hospital acquires high quality of goods and	F	18	25	10	3	3
services.	%	30.5	42.4	16.9	5.1	5.1

Source: (Field data, 2022)

Table 4.11 shows that, overall, 30.5% of respondents agreed and 42.4% strongly agreed that there is punctual shipment of goods and services.40.7 and 6.8 of respondents agreed and stronly strongly agreed that user departments are pleased with the items and services acquired while (22.0%) of respondents fully disagreed that deliveries of items and services are always made on time.

Additionally, 39.0% of respondents agreed that services and goods are obtained at the current market price, with 27.1% either agreeing or strongly agreeing. However, 13.6% of respondents only partially agreed, and 15.3% of respondents did not agree. Most respondents (44.1%), based on these findings, also believed that the appropriate quantity of goods and services are acquired. In addition, 22.0% were in complete agreement that the hospital acquires high quality of goods and services with 30.5% strongly agreeing and 16.9% partially agreeing.The respondents mentioned that the hospital engages in lean supply chain practices.

Regarding the interview,respondents revealed that continuous improvement process, the implementation of successful supplier management programs, delivery times, consumer happiness and cost reduction, a focus on fast and efficient supply chains, increased pressure on supply chain executives and the building of strong connections with suppliers are the most important SMP contributing to supply chain performance.

4.7 Inferential statistics

This section provides results for inferential statistics used in the study which included correlation and regression analysis.

4.7.1 Correlation

The correlation coefficient (r) values are displayed in Table 4.12 using Pearson correlation analysis, which calculates the direction (Positive/negative) and the strength (Ranges from -1 to +1) of the association between two continuous or ratio/scale variables.

Table 4. 11: Correlation Matrix

		SCCP	SSP	SRMP	LSCP
SCCP: Supply chain collaboration practices	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	59			
SSP: Supplier selection practices	Pearson Correlation	.485**	1		
	Sig. (2-tailed)	.000			
	N	59	59		
SRMP: Supplier risk management practices	Pearson Correlation	.595**	.422**	1	
	Sig. (2-tailed)	.000	.000		
	N	59	59	59	
LSCP: Lean supply chain practices	Pearson Correlation	.141	.225**	.322**	1
	Sig. (2-tailed)	.078	.005	.000	
	N	59	59	59	59
Supply chain Performance	Pearson Correlation	.497**	.457**	.505**	.400**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	59	59	59	59

. Correlation is significant at the 0.01 level (2-tailed)." **Source: (Field data, 2022)

According to Table 4.12, supply chain collaboration practices are positively connected with the supply chain performance of CRH in Kenya's Western Region; the coefficient is 0.497 (p value 0.01), which is statistically significant with a 99% level of confidence. Research findings corroborated those of Rotich and Ochiri (2018), who demonstrated that supply chain collaboration practices significantly affect the procurement success of major projects in Kenya's energy industry.

The correlation coefficient for supplier selection practices was 0.457, P=0.000, indicating that there is a strong positive association between supplier selection methods and supply chain performance of CRH in Kenya's Western Region. In the banking industry, Krop and

Iravo (2016) discovered a substantial association between supplier selection and supply chain. It was discovered that supplier selection and evaluation techniques were the most utilized by the company and had the greatest impact on supply chain performance.

The correlation coefficient of 0.505** indicated a substantial positive link between supplier risk management methods and supply chain performance of CRHs in Kenya's Western Region. Njagi and Shalle's (2016) study of East African breweries attempted to measure the impact of supplier management on manufacturing firms' procurement outcomes. According to EABL's findings, maintained a great collaborative relationship with its suppliers and implemented training programs for them.

As evidenced by.400**, p=0.000, there is a substantial positive link between lean supply chain techniques and the supply chain performance of CRH in Western Region, Kenya. These findings were consistent with those of Kumar Singh and Modgil (2020). Three LSCM techniques had a positive and statistically significant impact on market performance, as indicated by their investigation of the impact of lean practices on performance measurements in the automobile industry.

All of the supplier management techniques were found to have a positive association with supply chain performance, but Kannan (2002) argues that in order to achieve the benefits of this relationship, the buying firm must also demonstrate a strategic commitment to improving supply chain performance and that this in turn necessitates a comparable commitment from its partners.

4.7.2 Simple Linear Regression Results

In this section testing of the research hypotheses and inferences of the of the study results is discussed.

4.7.2.1 Influence of supply chain collaboration practices on supply chain performance

From the hypothesis;

H_{O1}: *Supply chain collaboration practices does not significantly affect supply chain performance of CRH in Western Region, Kenya.*

Table 4. 12: Regression Results of Supply chain collaboration practices on Supply chain performance

"Model	R	R Square	Adjusted R Square	Std. Error of Estimate	R Sq Change	F Change	df1	df2	Sig. F Change
				Model Summary					
1	.497[a]	.247	.242	.7387	.247	50.417	1	57	.000

a. Predictors: (Constant), supply chain collaboration practices

Model		Sum of Squares	Df	Mean Square	F	Sig.
				ANOVA[a]		
1	Regression	27.513	1	27.513	50.417	.000[b]
	Residual	84.037	57	.546		
	Total	111.550	58			

a. Dependent Variable: Supply chain performance

b. Predictors: (Constant), supply chain collaboration practices

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
				Coefficients[a]		
1	(Constant)	.952	.343		2.777	.006
	Supply chain collaboration	.641	.090	.497	7.101	.000

a. Dependent Variable: Supply chain performance"

Source: (Field data, 2022)

The supply chain performance at a CRH in Western Region, Kenya, varied by 24.7% ($R^2 = 0.247$) as a direct result of the degree to which the hospital's staff engaged in supply chain collaboration. According to the ANOVA table 4.13, supply chain collaboration practices significantly predict supply chain performance at the CRH in the Western Region of Kenya.

Supply chain collaboration practices were found to have a positive and statistically significant (p<0.05) association with the supply chain performance of CRH in Western Region, Kenya (regression coefficient B=0.641, analysis of variance F=50.417, t-test value t=7.101). Therefore, the supply chain performance of CRH in Western Region, Kenya is significantly impacted by supply chain collaboration practices, thereby rejecting the null hypothesis.

The results are represented in the following model:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where Y= supply chain performance of CPRH in Western Region, Kenya,

B_0 =0.952 (constant)

β_1= 0.641

X_1= Supply chain collaboration practices

Replacing in the equation above, the model becomes: $Y=0.952 + 0.641X_1$

A beta coefficient of 0.641 was found for supply chain collaboration activities. Supply chain performance at the CPRH in Western Region, Kenya, will increase by 64.1% if supply chain collaboration practices were increased by just one percent. The outcomes demonstrated a statistically significant positive association between supply chain collaboration practices and supply chain performance at a CRH in Kenya's Western Region.„

Agyei-Owusu, Asamoah, Andoh-Baidoo and Akaribo (2016) found that external collaboration was more prevalent among surveyed organizations than internal collaboration,

despite the fact that internal collaboration had a greater impact on procurement performance.

 Gommans and Kari (2015) found that the management of Homegrown Horticulture Company in Naivasha, Kenya, was able to respond more effectively to fluctuations in commodity prices after the establishment of collaborative networks among company personnel. Malaba, Ogolla and Mburu (2018) also discovered that supply chain techniques like supply chain collaboration significantly affect the success of procurement for Kenyan government agencies, hence these results are consistent with their findings. On the other hand, Kosgei and Gitau's (2016) research suggests an inverse relationship between supply chain collaboration practices and performance.

4.7.2.2 Influence of supplier selection practices on supply chain performance

The hypothesis states that;

H_{O2}: *Supplier selection practices does not significantly affect supply chain performance of CPRH in Western Region, Kenya*

Table 4. 13: Regression Results of Supplier selection practices and Supply chain performance

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.457[a]	.209	.204	.7568	.209	40.739	1	57	.000

a. Predictors: (Constant), supplier selection practices

ANOVA[a]					
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	23.336	1	23.336	40.739	.001[b]
1 Residual	88.214	57	.573		
Total	111.550	58			

a. Dependent Variable: FP

b. Predictors: (Constant), supplier selection practices

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.623	.277		5.852	.001
Supplier selection	.488	.076	.457	6.383	.001

a. Dependent Variable: Supply chain performance

Source: (Field data, 2022)

The supply chain performance of a CRH in Western Region, Kenya, varied by 20.9% ($R^2 = 0.209$) as a direct result of the procurement procedures employed by the institution. As a result, the methods used to choose suppliers have a substantial impact on how well the supply chain operates at the CRH in the Western Region of Kenya.

The relation between supplier selection practices supply chain performance of the CRH in Western Region, Kenya was positive and significant (p-value=0.001 is less than 0.05)Thus supplier selection practices predicts supply chain performance. Therefore, supplier selection

practices have a substantial effect on the supply chain performance of the CRH in the Western Region of Kenya, rejecting the null hypothesis.

The results are represented in the following model:

$$Y = \beta_0 + \beta_2 X_2 + \varepsilon$$

Where Y= supply chain performance of CRH in Western Region, Kenya,

β_0= 1.623(constant)

β_2= 0.488

X_2= Supplier selection practices

Substituting equation above with values, the model becomes: $Y = 1.623 + 0.488 X_2$.

The beta coefficient for supplier selection practices was 0.488,P=0.000. This indicates that a one percent increase in supplier selection practices would result in a considerable boost in supply chain performance of CRH in Western Region, Kenya by 48.8 percent when all other factors are maintained constant.

These results are in line with those found by Kareem, Owomoyela, and Oyebamiji (2014), who showed that manufacturing firms' operational performance was significantly impacted by supplier selection strategies in the areas of production cost reduction, product quality improvement, time to market, and operational flexibility. Findings are also similar to Krop and Iravo (2016) who established that supplier selection significantly influenced procurement performance and supply chain effectiveness.

However, Kariithi (2016) found that the methods used to choose suppliers can have a negative effect on the efficiency of the supply chain. He pointed out that the financial resources and connections of more advantageous businesses have a direct impact on supply chain performance. As a result, improving supply chain performance necessitates giving special attention to supplier relationship management, supplier partnership/development, and supplier lead time reduction in the supplier selection process.

4.7.2.3 Influence of supplier risk management practices on supply chain performance

The hypothesis states that;

H_{O3}: *Supplier risk management practices does not significantly affect supply chain performance of CRH in Western Region, Kenya*

Table 4. 14: Regression Results of Supplier risk management practices and supply chain performance

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.505ᵃ	.255	.250	.7347	.255	52.648	1	57	.000

a. Predictors: (Constant), supplier risk management practices

ANOVAᵃ						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	28.420	1	28.420	52.648	.000ᵇ
	Residual	83.130	58	.540		
	Total	111.550	59			

a. Dependent Variable: Supply chain performance
b. Predictors: (Constant), supplier risk management practices

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.490	.263		5.661	.000
	Supplier risk management practices	.521	.072	.505	7.256	.000

a. Dependent Variable: Supply chain performance

Source: (Field data, 2022)

The supply chain performance of a CPRH in Western Region, Kenya, varied by 25.5% ($R^2 = 0.255$), all due to the supplier's risk management practices.

The relation between supplier risk management practices and supply chain performance of the CRH in the Western Region of Kenya was found to be positive and significant (p-value=0.000 is less than 0.05)Thus supplier risk management practice predicts supply chain performance. Coefficient findings reveal that supplier risk management practices has a

positive and significant effect on supply chain performance. (t=7.256,P,<0.05). Therefore, the null hypothesis is rejected, and supplier risk management practices do have a substantial impact on the supply chain performance of the CRH in the Western Region of Kenya.

The results are represented in the following model:

$$Y = \beta_0 + \beta_3 X_3 + \varepsilon$$

Where Y= supply chain performance of CRH in Western Region, Kenya,

β_0= 1.490(constant)

β_3= 0.521

X_3= Supplier risk management practices

Substituting equation above with values, the model becomes: $Y= 1.490+ 0.521X_3+\varepsilon$

This means that a one percent increase in supplier risk management practices will result in a 52.1% increase in supply chain performance at the CPRH in the Western Region of Kenya, assuming all other factors remain constant.

These findings corroborate those of Mburu (2017), who showed that supply chain performance was affected when risk identification management approach constructs were applied jointly. Similarly, Munyuko (2015) findings confirmed the connection between effective supply chain risk management and overall business success and recommended for businesses need to be aware of the risks in their supply chain, assess them, and put contingency plans in place to deal with them.

Javaid and Siddiqui (2018) indicated that supply risk management and operational risk management are positively and significantly related to supply chain responsiveness, and that supply chain responsiveness is positively and significantly related to supply chain performance.

Moreover Hughes and Wadd (2012) reiterated ineffective risk management can have a detrimental effect on the efficiency of the supply chain. Therefore, it is essential for a firm to methodically manage all of its interactions with its suppliers in order to practice good supplier relationship management.

4.7.2.4 Influence of lean supply chain practices on supply chain performance

The hypothesis states that; H_{O3}: *Lean supply chain practices does not significantly affect supply chain performance of CRH in Western Region, Kenya*

Table 4. 15: Regression Results of Lean supply chain practices and supply chain performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
				Model Summary	**Change Statistics**				
1	.400[a]	.160	.154	.7802	.160	29.253	1	57	.000

a. Predictors: (Constant), Lean supply chain practices

Model		Sum of Squares	Df	Mean Square	F	Sig.
			ANOVA[a]			
1	Regression	17.807	1	17.807	29.253	.002[b]
	Residual	93.743	57	.609		
	Total	111.550	58			

a. Dependent Variable: Supply chain performance of CPRH in Western Region, Kenya
b. Predictors: (Constant), Lean supply chain practices

Model	B	Std. Error	Beta	T	Sig.
	Unstandardized Coefficients		**Standardized Coefficients**		
	Coefficients[a]				
(Constant)	1.548	.339		4.564	.002
1 Lean supply chain practices	.491	.091	.400	5.409	.002

a. Dependent Variable: Supply chain performance of CPRH in Western Region, Kenya

Source: (Field data, 2022)

The supply chain performance of the CRH in Western Region, Kenya, varied by 16.0% (R^2 = 0.160) as a direct result of the institution's adoption of lean supply chain practices. As a result, lean supply chain methods are a crucial determinant of the supply chain performance of the CRH in the Western Region of Kenya.

The relationship between lean supply chain practices and CRH in the Western Region of Kenya was found to be positive and significant (p value is less than 0.05 significant level and F value of 29.253)This implies that lean supply chain predicts supply chain

performance.Coefficient findings reveal that lean supply chain practices has a positive and significant effect on supply chain performance(t=5.409,p<0.05)Therefore the null hypothesis that lean supply practices does not significantly affect supply performance is rejected.

The results are represented in the following model:

$Y = \beta_0 + \beta_4 X_4 + \varepsilon$

Where Y= supply chain performance of CPRH in Western Region, Kenya,

β_0= 1.548(constant)

β_4= 0.491

X_4= Lean supply chain practices

Substituting equation above with values, the model becomes: $Y= 1.548 + 0.491 X_4$

The lean supply chain practices exhibited a beta coefficient of 0.491, P=0.00. This means that a 49.1% improvement in supply chain performance may be expected from a one percent increase in lean supply chain practices at the CRH in the Western Region of Kenya, all other factors being constant.

This finding agrees with those of other studies. Macharia (2014), for instance, showed a substantial beneficial link between lean procurement practices and supply chain efficiency. Employee empowerment, supplier-firm relationships, pull systems, total quality management, continuous improvement, and e-procurement were also created as examples of lean procurement approaches employed by Safaricom. Similarly, Mwangangi and Achuora (2019) found that there is a statistically significant positive correlation between Lean Supply chain and Organizational Performance. This suggests that the implementation of Lean

Supply chain initiatives in Kenya's public universities is likely to boost the universities' overall performance. In contrast, Kumar and Modgil's (2020) research suggests that lean management practices negatively influence supplier chain practices.

4.7.3 Multiple Regression Analysis

Multiple regression analysis was used to determine the multivariate influence of supply chain cooperation, supplier selection, supplier risk management, and lean supply chain techniques on the dependent variable (supply chain performance of CRH in Western Region, Kenya). This was after the compulsory assumptions of multiple regression analyses were evaluated and met. The multiple regression results are shown in table 4.17.

Table 4. 16: Multiple regression results

					Model Summary				
				Std. Error		Change Statistics			
		R	Adjusted	of the	R Square	F			Sig. F
Model	R	Square	R Square	Estimate	Change	Change	df1	df2	Change
1	.643ª	.413	.398	.6580	.414	26.666	4	54	.000

		ANOVAᵇ				
		Sum of		Mean		
Model		Squares	Df	Square	F	Sig.
1	Regression	46.178	4	11.544	26.666	.000ᵇ
	Residual	77.419	55	1.408		
	Total	123.597	59			

Model 1	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.475	.394		-1.206	.230
Supply chain collaboration	.326	.326	.252	3.068	.003
Supplier selection practices	.210	.078	.197	2.693	.008
Supplier risk management	.194	.085	.188	2.293	.023
Lean supply chain practices	.318	.082	.259	3.891	.000

a. Predictors: (Constant), Lean supply chain practices, Supplier risk management practices, Supplier selection practices, Supply chain collaboration practices

b. Dependent Variable: Supply chain performance

Source: (Field data, 2022)

Table 4.17 displays the results of a multiple regression analysis, which reveals how all of the independent variables in the study interacted with one another (supply chain collaboration practices, supplier selection practices, supplier risk management practices and lean supply chain practices). With an R2 of 0.414, the study models explain 41.4% of the variance in

supply chain performance at a CRH in Western Region, Kenya. The remaining 58.6% is attributable to characteristics that were not taken into account when developing the model.

Moreover, Analysis of Variance (ANOVA) demonstrates that the mean squares and F statistics are significant (F=26.666; significant at p.001), validating the model's fitness and indicating that the study's independent variables (supply chain collaboration practices, supplier selection practices, supplier risk management practices, lean supply chain practices) have substantial changes in their contributions to supply chain performance of CRH.

Finally, the values of unstandardized regression coefficients with standard errors in parenthesis in table 4.19 indicate that all the study's independent variables (supply chain collaboration practices;$\beta = 0.326$, t=3.068 at $p<0.01$, supplier selection practices; $\beta = 0.210$, t=2.693 at $p<0.01$;supplier risk management practices; $\beta = 0.194$, t=2.293 at $p<0.05$, lean supply chain practices; $\beta = 0.318$, t=3.891 at $p<0.01$significantly influenced supply chain performance of CRH in Western Region, Kenya(dependent variable).

In this regard, the study's final multiple regression equation is;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

$$Y=0.475+0.326X_1+0.210X_2+ 0.194X_3 + 0.318X_4$$

Results of multiple regression coefficients reveal that supply chain collaboration practices significantly influenced the supply chain performance of the CRH in Kenya's Western Region ($\beta = 0.326$, p<0.01). When other components in the model are held constant, the results indicate that a one percent improvement in supply chain collaboration practices will

result in a 32.6% improvement in the supply chain performance of the CRH in Western Region, Kenya. These results correspond favorably to those of Mahulo (2015), who found a nearly perfect positive correlation between supply chain collaboration techniques and the organizational performance of Kenyan cement companies. Gichuru, Iravo and Arani (2015) investigated the impact of collaborative supply chain methods on Del Monte Kenya Ltd.'s performance. The study indicated that sharing information and resources has a favorable effect on the functioning of the organization. Barasa, Simiyu and Iravo (2015) found that supply chain collaboration practice strongly influenced the success of Kenyan steel manufacturers. Mahulo (2015) found an almost perfect correlation between supply chain collaboration methods and the organizational performance of Kenyan cement companies.

The multiple regression coefficients reveal that supplier selection practices significantly influenced the supply chain performance of the CPRH in Kenya's Western Region (β= 0.210, $p<0.01$). When other components in the model are held constant, the results indicate that a one percent increase in supplier selection methods will result in a 21.0% improvement in the supply chain performance of the CPRH in Western Region, Kenya. These results compare positively to those of Nyakoe and Muturi (2017), who aimed to establish the impact of price structure on the performance of the procurement function. Nyamira County's procurement performance was significantly affected by the selection of its suppliers, according to the study's findings. Nyaberi (2020) investigated the developing impact of supplier development management methods on the organizational performance of manufacturing organizations. If applied, the four variables can now account for 65.3% of the overall performance of organizational development.

The coefficients of multiple regression reveal that supplier risk management techniques do not significantly influence supply chain performance ($\beta= 0.19$ at $p<0.05$). When other model variables are held constant, the results indicate that a one percent improvement in supplier risk management procedures will result in a 19.4% unit improvement in the supply chain performance of the CPRH in Western Region, Kenya. Okonjo, Magutu, and Nyaoga (2016), who tried to identify the relationship between procurement risk management techniques and supply chain performance among Kenyan mobile phone service providers, support these findings. It was also evident that there was a strong correlation between procurement risk management practices and supply chain performance, as indicated by the adjusted R2 value of 0.646%, which corresponds to 64.6% of the variation explained by the ten independent practices of Procurement Risk Management. Waithira (2018) investigated the impact of supplier management on the performance of manufacturing enterprises in Kenya, with an emphasis on supplier evaluation and supply risk analysis.

The coefficients of multiple regression reveal that lean supply chain methods have a substantial impact on the supply chain performance of the CPRH in Western Region, Kenya ($\beta = 0.318$, $p<0.01$). When other elements in the model are held constant, the results indicate that a one percent improvement in lean supply chain techniques will result in a 31.8% improvement in the supply chain performance of the CPRH in Western Region, Kenya. Ambe (2017) attempted to investigate the impact of lean methods on the operation performance of the Kenyan county of Vihiga. According to the findings of the study, there is a considerable correlation between lean practice and operational performance. The findings are in line with those of Omwoyo, Wanyoike and Mbeche (2019) who found that that lean

procurement considerably increases supply chain agility.Additional studies on supplier management practices have confirmed that they have an influence on performance (Kiplangat & Kiarie, 2015; Mahulo, 2015; Opaleye, Ojelade & Aremu, 2020).

4.7.4 Summary of hypothesis testing

The summary of the hypothesis testing is as shown in Table 4.18 below;

Table 4. 17: Summary of hypothesis Testing

Objective	Hypothesis	Analysis of the model	P values	Decision	Conclusion
To determine effect of supply chain collaboration practices on supply chain performance of CPRH in Western Region, Kenya.	H_{01} Supply chain collaboration practices do not significantly affect supply chain performance of CPRH in Western Region, Kenya	Simple linear regression analysis	p=0.000	The null hypothesis was rejected	Supply chain collaboration practices affect supply chain performance of CPRH in Western Region, Kenya
To assess effect of supplier selection practices on supply chain performance of CPRH in Western Region, Kenya.	H_{02} Supplier selection practices do not significantly affect supply chain performance of CPRHs in Western Region, Kenya	Simple linear regression analysis	P=0.001	The null hypothesis was rejected	Supplier selection practices affect supply chain performance of CPRHs in Western Region, Kenya
To examine effect of supplier risk management practices on supply chain performance of CPRH in Western Region,	H_{03} Supplier risk management practices do not significantly affect supply chain performance of CPRHs in	Simple linear regression analysis	p=0.000	The null hypothesis was rejected	Supplier risk management practices affect supply chain performance of CPRHs in Western Region, Kenya

Kenya.	Western Region, Kenya				
To ascertain effect of lean supply chain practices on supply chain performance of CPRH in Western Region, Kenya.	H_{03} Lean supply chain practices do not significantly affect supply chain performance of CPRHs in Western Region, Kenya	Simple linear regression analysis	p=0.002	The null hypothesis was rejected	Lean supply chain practices affect supply chain performance of CPRHs in Western Region, Kenya

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of major findings of the study and the conclusions on SMP influencing supply chain performance of CPRH in Western Region, Kenya. Finally, the chapter highlights important recommendations for further research.

5.2. Summary of study findings

The main objective of this study was to investigate effect of SMP on supply chain performance of CPRH in Western Region, Kenya. The study tested a total of four hypotheses; that is; H_{01}:Supply chain collaboration practices do not significantly determine the supply chain performance of CPRH in Western Region, Kenya; H_{02}:Supplier selection practices does not significantly determine the supply chain performance projects; H_{03}: Supplier risk management practices does not significantly determine the supply chain performance projects; H_{04}:Lean supply chain practices is not a significant determinant of supply chain performance.

5.2.1 Supply chain collaboration practices and supply chain performance of CPRH in Western Region, Kenya

Collaboration in the supply chain can be recognized by its indicators, which include joint planning and forecasting, shared goals with clients, transparent coordination, and resource sharing. Using descriptive statistics,the study verified that our suppliers are included in the

organization's joint planning and forecasting process, that the organization has a clear policy for managing its relationship with its suppliers, and that it has developed a system to track the suppliers' performance. The results of the correlation analysis showed a favorable and statistically significant relationship between supply chain collaboration practices and the supply chain performance of a CRH in Kenya's Western Region. The performance of w CRH was found to be positively and significantly impacted by supply chain collaboration practices through regression analysis. The results suggest that the supply chain performance of the CRH in Western Region, Kenya, might be enhanced by increasing the prevalence of collaborative practices within the supply chain.

5.2.2 Supplier selection practices and supply chain performance of CRH in Western Region, Kenya

Supplier evaluation, Supplier certification, and supplier comparison are indicators of supplier selection practices. According to the descriptive analysis, the majority of the respondents agreed that the company utilizes technical capability, criteria when selecting suppliers, and that the company employs technical expertise criteria when picking suppliers. When choosing suppliers, the company also takes into account the quality of their previous work and the quality of their current connection. The supply chain performance of a CRH in Kenya's Western Region was found to be favorably and significantly connected with the hospital's supplier selection practices. It was hypothesized that if the CRH in Western Region, Kenya used better supplier selection practices, the hospital's supply chain performance would improve.

5.2.3 Supplier risk management practices and supply chain performance of CRH in Western Region, Kenya

Risk identification, risk evaluation and alternative sourcing are all hallmarks of effective supplier risk management. The majority of respondents acknowledged through descriptive analysis that the company identifies possible risks in the supply chain and that it holds joint training sessions with our suppliers. An inferential examination of data from a CRH in Kenya's Western Region found a strong correlation between the hospital's supply chain performance and its use of supplier risk management techniques. It was predicted that if a CRH in Kenya's Western Region paid closer attention to the risks involved in doing business with its suppliers, the performance of its supply chain would increase.

5.2.4 Lean supply chain practices and supply chain performance of CRH in Western Region, Kenya

As indications of Lean supply chain practices, supply base optimization, framework contracting, and supply chain visibility are included. The majority of respondents agreed that the company routinely uses quality assurance, that the downstream operations are the ones who decide whether or not to order more materials, that they use a pull system to order supplies (meaning they do so only when they know they will be needed), and that they give their suppliers feedback on both quality and delivery. The supply chain performance of a CRH in Western Region, Kenya was found to be significantly affected by the implementation of lean supply chain methods, according to inferential analysis. It was

predicted that by putting these lean supply chain ideas into practice, the CRH in Kenya's Western Region will perform better in terms of its supply chain.

5.3 Conclusion

5.3.1.   Supply chain collaboration practices and supply chain performance of CPRH in Western Region, Kenya

Supply chain collaboration practices were found to have a substantial impact on supply chain performance at the CRH in Western Region, Kenya. CRHs collaborate with their suppliers on planning, have established mechanisms to track supplier performance, and use consistent channels of communication for all of their dealings with vendors. Their connection with their suppliers is moderate, based on mutual understanding and shared objectives, but they lack a transparent policy for managing their relationships with their vendors.

5.3.2. Supplier selection practices and supply chain performance of CRH in Western Region, Kenya

Further findings from this study highlight the importance of careful supplier selection practices for the success of the supply chain performance at the CRH in Kenya's Western Region. According to the results, the CRH selected suppliers based on their technical capacity and expertise. When making its choice of suppliers, the CRH looked at how different companies responded to inquiries and how well they had performed in the past, as well as their present working relationship.

5.3.3. Supplier risk management practices and supply chain performance of CRH in Western Region, Kenya

The study also indicated that suppliers' approaches to risk management had a major impact on the supply chain performance of the CRH in Western Region, Kenya. Researchers found that they do things like train their suppliers together and conduct risk assessments to find and eliminate threats in the supply chain. However, they did considerably undertake collaborative risk workshops with their suppliers, and dual sourcing is fairly encouraged to balance risks.

5.3.4. Lean supply chain practices and supply chain performance of CRH in Western Region, Kenya

The research revealed, finally, that supply chain performance at CRHs in Western Region, Kenya was considerably impacted by the adoption of lean supply chain practices. The research indicated that all of the CRHs used quality assurance all the time, used a pull system for purchasing, and provided feedback to their suppliers on both product quality and timeliness of delivery. Materials, components and consumables were moderately standardized and rationalized.

5.4 Implications of the Study

The study contributes to literature in the area of supplier management by affirming that supplier management practices which include Lean Supply chain Practices, Supply Chain Collaboration practices, Supplier selection Practices and Supplier Risk Management

practices have an influence on supply chain performance of county referral Hospitals in Western Region, Kenya.

The findings may aid policy makers in developing policies related to supplier management. The management of county referral hospitals in western region, Kenya can draw from the findings to understand the influence of Supplier Management Practices and come up with better strategies to help improve on supply chain performance.

5.5 Areas for further research

This research looked into how different supplier management practices affected the supply chain performance of a CRH in Kenya's Western Region. Supply chain performance is just one metric that can be studied in the future and research linking supplier management practices with others such as operational performance, can be undertaken as well.

The study factored four supplier management practices; supply chain collaboration, supplier selection, supplier risk management and lean supplier practices. Other studies can focus on other supplier management practices such as supplier development. Additionally, other studies can introduce moderating variables such as procurement policies. Further studies may be extended to county referral hospitals in other counties as this study was done in western region. Lastly studies may be done in other sectors such as manufacturing sector and education sector.

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APPENDICES

APPENDIX I: Introductory letter

Dear Participant/Respondent,

RE: <u>REQUEST FOR RESEARCH DATA</u>

I am a post graduate student pursuing a Degree of Master of Science in Procurement and Logistic. I am undertaking a research study titled, **'EFFECTS OF SUPPLIER MANAGEMENT PRACTICES ON SUPPLY CHAIN PERFORMANCE OF PUBLIC REFERRAL HOSPITAL IN WESTERN REGION, KENYA.***"* I humbly request you to participate in this study as a respondent.

"I am therefore requesting you to provide honest and accurate responses to the questionnaires. I promise you that the information you will provide will be handled confidentially. You are free to seek any clarification where necessary during the study.

Thank you in advance for accepting.

Yours faithfully,

James Owichi"

APPENDIX II: Respondent Consent

Consent form

I…………………………………. consent/don't consent to participation in the study being conducted by James Owich, a post graduate student pursuing a Degree of Master of Science in Procurement and Logistic. I am undertaking a research study titled, **'EFFECTS OF SUPPLIER MANAGEMENT PRACTICES ON SUPPLY CHAIN PERFORMANCE OF PUBLIC REFERRAL HOSPITAL IN WESTERN REGION, KENYA."**

He has informed me that this is a study for her Master's degree designed to gather information about the study.

I understand that:
i. Participation in the study is voluntary and will involve participating in a key informant interview, focused group discussion and filling questionnaire which will take less than 15 minutes.
ii. The researcher does not foresee any risks to him/her for participating in this study and it is expected that he/she will experience minimal discomfort or stress from the questions asked.
iii. He/she does not have to respond to every question or provide the information he/she does not want to provide, and I understand he/she can withdraw from participating at any time.
iv. Information given will be kept confidential.
v. The researcher will answer any other questions about the research either before or after the research. If I have any other questions or concerns I can address them to the researcher by email or phone.

Signature_____ Witness_____

Contact Numbers of Researcher: **James Owich**

Appendix III: Questionnaire

"The questionnaire will aid in collecting information on **EFFECTS OF SUPPLIER MANAGEMENT PRACTICES ON SUPPLY CHAIN PERFORMANCE OF PUBLIC REFERRAL HOSPITAL IN WESTERN REGION, KENYA**. Kindly tick in the space provided (√). The information provided will be confidential and will be used for academic purposes only.

Section A: Background Information

1. Gender

    Female   (   )

    Male   (   )

2. What is your highest Academic Level?

    Certificate Level   (   )

    Diploma level   (   )

    Bachelor's degree level   (   )

    Masters level   (   )

    Doctorate level   (   )

3. How many years worked in the current position

    Less than one year   (   )

    1-5 years   (   )

    6-10 years   (   )

    More than 10 years   (   )

SECTION B: SUPPLIER MANAGEMENT PRACTICES

Part 1: Supply Chain Collaboration

In the scale of 1-5, kindly indicate to what extent you agree with the statements on Supply Chain Collaboration influence supply chain performance.

Where; 1= Strongly disagree 2= Disagree 3-Fairly Agree 4= Agreed 5= Strongly agreed

No	Supply Chain Collaboration Practices	1	2	3	4	5
i.	The hospital includes our suppliers in the process of collaborative planning and forecasting.					
ii.	The relationship between the hospital and its suppliers is built on mutual understanding and shared objectives.					
iii.	The hospital has a well-defined policy for managing supplier relationships.					
iv.	The hospital has built a monitoring system for supplier performance.					
v.	There are defined channels of contact between all hospital departments and our vendors.					

Part 2: Supplier Selection Practices

In the scale of 1-5, kindly indicate to what extent you agree with the statements on supplier selection influence supply chain performance

Where; 1= Strongly disagree 2= Disagree 3-Fairly Agree 4= Agreed 5= Strongly agreed

No	Supplier Selection	1	2	3	4	5
vi.	The hospital uses technical capability, criteria when selecting suppliers					
vii.	The hospital uses technical expertise criteria when selecting supplier					
viii.	The hospital compares supplies based on responses					
ix.	The hospital ranks suppliers on responsiveness					
x.	The hospital considers suppliers past performance and current relationship when selecting suppliers					

Part 3: Supplier Risk Management Practices

In the scale of 1-5, kindly indicate to what extent you agree with the statements on Supply risk management influence supply chain performance. Use the ratings criteria below.

Where; 1= Strongly disagreed 2= Disagreed 3-Partially Agree 4= Agreed 5= Strongly agreed

No	Supplier Risk Management Practices	1	2	3	4	5
i.	The hospital identifies potential risks within the supply chain.					
ii.	The hospital assesses the level of supplir risk.					
iii.	The hospital conducts training sessions with our vendors.					
iv.	The hospital conducts risk management workshops with our vendors.					
v.	Dual sourcing is preferred in hospitals in order to balance risks.					

Part 4: Lean Supply Management Practices

In the scale of 1-5, kindly indicate to what extent you agree with the statements on Lean Supply Management influence supply chain performance

Where; 1= Strongly disagree 2= Disagreed3-Fairly Agree 4= Agreed 5= Strongly agreed

No	Lean Supply Management	1	2	3	4	5
i.	The hospital has standardizes and reduced quantiy of goods,works services to avoid wastage					
ii.	The hospital always ensures quality is maintained when procuring goods,works and services					
iii.	The hospital orders minimum quantity of required services or works where the quantities are not determined at the beginning					
iv.	Pull system procurement is used by the hospital(only when there is anticipation of use)					
v.	The hospital provides vendors with feedback on quantity and delivery					

Section C: Supply Chain Performance.

4. In the scale of 1-5, kindly indicate to what extent you agree with the following statement on Supply Chain performance

Where; 1= Strongly disagreed 2= Disagreed 3-Partially Agree 4= Agreed 5= Strongly agreed

No	Supply chain performance	1	2	3	4	5
i.	There is punctual shipment of goods and services.					
ii.	In general, user departments are pleased with the items and services acquired.					
iii.	The hospitals acquires goods and services at the current market price					
iv.	The appropriate quantity of items is acquired.					
v.	The hospital acquires high-quality goods and services.					

THANKS FOR YOUR PARTICIPATION IN THIS STUDY

Appendix IV: Interview Schedule

1. (a) Do suppliers and the hospital have a good relationship?

……………………………………………………………………………………
……………………………………………………………………………………
………….

(b) What can be done to strengthen the facility's already positive rapport with its vendors?

2. (a) Are there just standards by which the hospital chooses its supplier?

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(b) Is there anything that can be done to enhance the hospital's supplier selection process is done in a professional manner taking into consideration intergrity,transparency and accountability?

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……………………………………………………………………………………
……….

3. (a) Do you think the hospital adequately manages risks related to supply?

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……………………………………………………………………………………
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(b)What risks have you encountered as a supplier?

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………

(c)What measures should the hospital undertake to improve on supply risk management?

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4. (a)Does the hospital engage in lean supply management?

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(b) Is there anything that can be done to improve the hospital's supply management to reduce waste?

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THANKS FOR YOUR PARTICIPATION IN THIS STUDY

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