

**FACTORS INFLUENCING SUPPLY CHAIN
COLLABORATION IN PUBLIC ENTITIES IN KENYA**

BY

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for Award of Master of Business Administration, School of Business,
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DECLARATION

I declare that this research project is my original work and has never been submitted to any other University for assessment or award of a degree.

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This research project has been submitted with my authority as the university supervisor.

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DEDICATION

I dedicate this project to all my ever supportive family members for their moral support.

I am indebted to my parents for their love and support throughout my life.

ACKNOWLEDGEMENTS

I acknowledge the power of God, the creator, and the provider of knowledge for enabling me to accomplish my studies in the right spirit.

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ABSTRACT

The study sought to establish the extent of Supply Chain Collaboration, and determine factors influencing Supply Chain Collaboration in Public Sector in Kenya. The target was national government public entities in Kenya. Primary data was acquired through semi-structured questionnaires and descriptive statistic was used to analyse the quantitative data with tools such as frequencies, mean, standard deviation, regression and factor analysis; while content analysis (verbatim explanations) was applied on qualitative data. The study found that majority of national government public entities are engaged in the Supply Chain Collaboration to a greater extent. Correlation of the factors that influence SCC established a weak to moderate relationship which was a confirmation that the factors are indeed independent and suitable since they give a reflection of the population. Five factors that influence Supply Chain Collaboration were identified through factor analysis. They include: technology; informational sharing; regulation; trust and governance. An examination of the relationship confirmed these findings and established that the five variables jointly account for 60.2% of Supply Chain Collaboration. In conclusion, regression analysis revealed that three out of the five factors identified; technology, information sharing and regulations were the most significant factors for supply chain collaborations in public sector in Kenya implying a strong relationship between these factors and SCC. Public entities should ensure that there is adequate technological infrastructure, high level of information sharing and progressive regulations in order to enhance competitiveness through SCC. Improvement in Supply Chain Collaboration can be nurtured through partnerships; creativity; awareness; regulations, performance and contracting. The study recommends that public entities should enhance greater Supply Chain Collaboration with other industry players in order to improve their service delivery to the public in Kenya and be competitive in general. According to the research there is need for the government to source for adequate funds to invest in technological infrastructure so as to reap maximum benefits of Supply Chain Collaboration. More studies should be done in Supply Chain Collaboration and government invest more in research and development to enhance the strategy. The study was limited by cost and time constraints. Further research should focus on the public entities under county governments in Kenya. The scope could be extended to include either the private and public entities in Kenya or public entities in other East African countries. Further studies should be conducted to establish the correlation between Supply Chain Collaboration and Supply Chain Management legislations.

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ABBREVIATIONS AND ACRONMYS

EU	–	European Union
GDP	-	Gross Domestic Product
GOK	–	Government of Kenya
ICT	-	Information and Communication Technology
IFMIS	-	Integrated Financial Management Information System
IMF	–	International Monetary Fund
KASNEB	-	Kenya Accountants & Secretaries National Examination Board
KISM	-	Kenya Institute of Supplies Management
OECD	-	Organization for Economic Co-operation and Development
PPADA	-	Public Procurement and Asset Disposal Act
PPDA	-	Public Procurement and Disposal Act
PPDR	-	Public Procurement and Disposal Regulations
PPRA	–	Public Procurement Regulatory Authority
PPOA	–	Public Procurement Oversight Authority
SC	-	Supply Chain
SCC	-	Supply Chain Collaboration
SCM	–	Supply Chain Management
SME	–	Small and Medium Enterprises
SRM	-	Supplier Relationship Management

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The government is the principal customer in any given economy and can exploit its purchasing power by influencing the performance of the private sector (Wangai, 2014). Cousins, Lawson and Squire (2008) state that private sector firm competitiveness is transformed into Supply Chain Management activities due to demands for cost reductions, responsiveness and innovative solutions to the next-customer requirements. Thai (2009) argue that the public sector applies regulation and performance requirements to provide services to its citizens. Furthermore public procurement has major differences in its system and operations globally: organizational structures; types of governments; regulations; legislations; funding arrangements and cultures.

Kim (2006) asserts that Supply Chain Management aims to create value by enabling compatibility between internal and external business processes. Contemporary studies have underscored the necessity to shift from adversarial relationships to information sharing and partnership with customers and suppliers (Evrard-Samuel, 2008; Singh & Power, 2009). Wachira (2014) denotes that SCM is essential for business prosperity where technological integration is involved.

1.1.1 Supply Chain Management in the Public Sector

Supply Chain Management is a vibrant practice that encompasses perpetual flow of materials, funds and information across multiple departments among chain members (Jain, Wadhwa & Deshmukh, 2009). Public procurement involves the expenditure of tax payers'

money in goods, services and works by public entities amidst rampant corruption both in developed and developing countries where implementation of ethical procurement is a challenge (Hall, 2009).

Cheboi (2014) noted that the public procurement system in Kenya has undertaken substantial development. Ochieng and Muehle (2013) argue that the system lacked regulations in 1960's then regulated by Treasury Circulars in 1970's, 1980's and 1990's. World Bank rolled out the Public Procurement Reform Program in 1998 which led to Public Procurement Regulations established in 2001 based on Exchequer and Audit Act. The guidelines integrated circulars in public procurement structure, eliminated Central Tender Board and ushered in Procurement Appeals Board, Ministry Tender Committees, and the Public Procurement Directorate as oversight agencies. Critical analysis of ethical thoughts in supply chain management under Public Procurement and Disposal Act, 2005 and the Public Procurement and Disposal Regulations, 2006 were enforced in 2007. Ngari (2012) notes that Public Procurement Oversight Authority (PPOA), Public Procurement Advisory Board (PPAB) and Public Procurement Administrative Review Board (PPARB) are key institutions in SCM system in Kenya created under section 8 of the Act. PPOA is a Semi-Autonomous Government Agency answerable to Ministry of Finance since its inception in 2007. Cheboi (2014) explains that another body regulating professionals is the Kenya Institute of supplies Management (KISM). It draws its mandate from the Supplies Practitioners' Management Act 2007 providing legal framework for its formation and operations as a corporate body for developing capability in supply chain management. The objective is to increase economic undertakings; encourage investment and value creation through Public Procurement and Disposal (Public Private Partnerships) Regulations, 2009.

Ochieng and Muehle (2013) assert that Government is compelled to uphold prudent Financial Governance such as transparency, target orientation and cost efficiency by the Constitution of Kenya, 2010 as stated and demonstrated in Chapter Twelve. The Constitution of Kenya, 2010, Article 227, Part XII; Public Finance guides procurement of public goods and services. Within four years of the constitution enactment, its fourth schedule demanded amendments on procurement of public goods and services by an Act of Parliament. Muraguri (2013) states that Public Procurement and Disposal (Preferences and Reservations) Regulations, 2011 safeguard public interest and support equilibrium for private sector participants in provision of works, goods and services; Public Procurement and Disposal (County Government) Regulations 2013; Public Procurement and Disposal (Amendments) Regulations 2013 and 2014 and finally Public Procurement and Asset Disposal Act 2015 where PPOA has been transformed to Public Procurement Regulatory Authority (PPRA).

1.1.2 Supply Chain Collaboration

SCC is defined as chain participants teaming up for competitiveness through information sharing, joint decision making, and distributing returns amongst themselves after meeting final customer desires with superior services (Simatupang & Sridharan, 2008). Cao and Zhang (2011) notes that businesses are seeking to enhance competence and understanding of partnership, in order to harness resources and knowledge of suppliers and customers by working together with supply chain allies. Fawcett, Stephen and Amydee (2012) define supply chain collaboration as an essential capability that can provide differential performance.

Nyaga, Whipple and Lynch (2010) argue that it's desirable for supply chain associates to focus on value creation for clients in business through creativity and flexibility in their operations. They underline that to realize this goal might be a challenge for individual organizations, but can be attained through collaborative supply chain relationships. Therefore, entities are focusing on collaborative exchanges with supply chain partners so as to enhance efficiencies, flexibility, and viable competitiveness. Hudnurkar, Jakhar and Rathod (2014) assert that collaborative behavior and activities in supply chain management have gained considerable significance.

1.1.3 Supply Chain Management and Supply Chain Collaboration

Entities are advancing their agility level in terms of diversity and sensitivity to market requirements so as to embrace complex and digital economy (Jain et al., 2009). They state that devolving value creation practices through subcontracting and networking is essential for firms. Thus, creation of virtual enterprise is propelled majorly by information technology.

According to GOK (2011) procuring entities are authorized to use existing framework contracts with disadvantaged groups where appropriate to provide efficient, cost effective and flexible means to deliver goods, works and services of routine nature. Nyangweso (2013) established that investments in relationship as an assets (commitment and trust), sharing of knowledge (cooperation & communication), complementary possessions and competences (expertise, skills, & assets) and prudent governance (goals & performance measures) are factors influencing SCC. Hudnurkar et al. (2014) assert that factors affecting collaboration in supply chain includes: commitment; trust; enabling technology; legal

protection coordinative structures & collaborative agreement; government support; information sharing among others. Wachira (2014) notes that trust, communication, risk assessment & management and strategic supplier partnership influence SCC.

1.1.4 Public Entities in Kenya

According to the Constitution of Kenya 2010 there are two levels of government. These are the National Government and the County Government which are 47 in number. Public entities are legitimate bodies created by the government through enactment of Acts of parliament to undertake economic activities on its behalf under different ministries that are established by the President at National level and the Governor at the County level. There are twenty national government ministries according to the GOK (2015). Ministries in Counties vary due to their needs, priorities, capabilities and uniqueness (County Government Act, 2013). In Kenya, government entities are categorized as State Corporations which fall under established ministries where they work collaboratively to achieve the overall goals of their respective ministries; State Agencies comprising of executive agency, regulatory body, public university, public tertiary education institution and research institution; County Corporations and County Agencies (The Government Owned Entities Bill, 2014).

Government entities are required to deliver services to the nation as they consume a huge portion of the nation's budget. According to Kenya National Bureau of Statistics (2016) the total expenditure in social sector is expected to grow by 19.8% from Kshs. 358.9 billion in 2014/2015 to Kshs. 430.1 billion in 2015/2016. The social sector comprise of the "Ministry of Education, Science & Technology; Ministry of Health; Ministry of Labour,

Social Security & Services; Ministry of Sports, Culture & Arts; Ministry of Public Service, Youth & Gender Affairs among others.” This implies greater scrutiny of the entities operations to ensure value for money when delivering services to the public.

1.2 Statement of the Problem

SCM practitioners encounter several challenges notwithstanding different country’s economic, social, cultural and political environment (Schapper, Veiga Malta & Gilbert, 2006). They established corruption as a hindrance to good governance for governments and is prevalent in developing countries; particularly being systematic and fashionable. It deters service delivery to the needy by serving those who can afford. Okwiri (2012) argue that SCM in Kenya lacks consistency in implementation due to diversity in funding by the government, corporates or donors such as World Bank, IMF, and EU where each has its own procurement procedures. Thus, creating an avenue for unethical practices such as tailor made specifications for a given bidder, acceptance of sub-standard good contrary to specifications, selective sharing of information to favour certain bidders leading to poor quality of services. According to the PPADA (2015), more procurement methods have been incorporated such as Framework Agreement, Competitive Negotiations among others to enhance SCC in public sector. However, Government to Government Procurement Arrangements and Public Private Partnerships which could be used to facilitate SCC in the Public Sector have not been recognized as procurement methods in the Act.

Kohli and Jensen (2010) studied “Assessing Effectiveness of Supply Chain Collaboration: An Empirical Study.” They found that some firm-specific factors were interconnected to the benefits of SCC as perceived by entities and businesses that collaborate extensively

usually appreciate the effectiveness of collaboration. More so goal congruence was the sole appropriate moderator associated to SC success. Musanzikwa (2013) studied “Public procurement system challenges in developing countries: the case of Zimbabwe.” He established that procurement function was critical to any organization and when properly constituted with right strategies, it contributes to business success than ever before resulting in cost saving of up to 25%. Talavera (2014) studied “Supply Chain Collaboration and Trust in the Philippines.” Finding confirmed that strength of bond and partners’ accessibility that stakeholders cherish resulted from trust which emanates from participants deliberate resolution to promote information exchange in supply chain. Therefore, SC synchronization necessary to advance supply chain integration mechanisms was enhanced through effective information sharing.

Nyangweso (2013) in his study “Collaborative Public Procurement Among The State Corporations” noted that 21.1% of the state corporations had not adopted collaborative public procurement practice irrespective of its benefits including; ability to improve flexibility & responsiveness to customer demands, ability to share tasks in form of lead buying and ability to share design processes successfully. Cheboi (2014) studied “Procurement Legislation and Procurement Performance a case of Kenya National Highway Authority,” his findings indicated that there was marginal success in legislation as a tool for improving procurement performance; lack of management support to implement procurement legislation and resistance to change were some of the challenges for procurement legislation to be a catalyst for organization performance. Wachira, (2014) studied “Supplier Relationship Management and Supply Chain Performance in Alcoholic Beverage Industry in Kenya.” The research indicates that adopting collaborative

relationships with suppliers contribute to competitive advantage and value creation in Supply Chain Performance.

Previous studies have focused majorly on “Public Procurement Regulatory Framework and Organization Performance; Integrity and Ethical Effects and Organization Performance; Supplier Relationship Management and Supply Chain Performance; Factors affecting Supply Chain Collaboration in Manufacturing Organizations; Supply Chain Collaboration and Organization Performance; and factors affecting Supply Chain Collaborations in the Government Ministries,” however, this research aimed to establish factors influencing Supply Chain Collaboration in public sector in Kenya. The study sought to answer the following research questions: What is the extent of Supply Chain Collaboration in Public Sector in Kenya? What are the factors influencing Supply Chain Collaboration in Public Sector in Kenya?

1.3 Research Objectives

The research objectives of the study were:

- i. To establish the extent of Supply Chain Collaboration in Public Sector in Kenya.
- ii. To determine the factors influencing Supply Chain Collaboration in Public Sector in Kenya.

1.4 Value of the Study

The study is expected to shade more light on factors influencing SCC in the public sector in the country. Therefore, whatever takes place in public entities in the County can be emulated by other sectors in different parts of the country. This will enables public entities

and the country as a whole to effectively and efficiently improve service delivery and customer satisfaction in a sustainable manner.

The research will help universities and other learning institutions which offer Supply Chain Management courses to design appropriate curriculum tailored to procurement personnel in practice. This will link theoretical concepts to actual practice in the field and make necessary adjustments to suit the market. More so the above strategy will be relevant to the business environment. To academicians and researchers the study will provide a base for further studies and also give a point of reference to broaden their view of factors influencing SCC. This will definitely enhance their competitiveness and cascade the benefits to their clients and society.

The study will help the government formulate policies and regulations on Supply Chain Management that will enable both private and public entities improve their performance through SCM process. This will ensure high service level at a lower cost. From the findings and recommendations of this research the government will be able to appreciate factors influencing SCC so as to give direction on how the strategy can be utilized effectively in Kenyan economy.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The purpose of this section is to provide critical evaluation of available research evidence about Factors Influencing Supply Chain Collaboration in Public Sector in Kenya. It covers various studies conducted by other researchers on Supply Chain Collaboration in Public and Private Sector. The areas reviewed include: the extent of Supply Chain Collaboration and the factors influencing Supply Chain Collaboration.

2.2 Theoretical Literature Review

Several theories and models have been developed to explain Supply Chain Collaboration. Some of these theories include stakeholder theory (ST), Knowledge - Based View (KBV) and Institutional Theory (IT).

2.2.1 Stakeholder Theory

Companies operate within complex linkages both intra and inter organizational level thus management of sustainable business interactions with participants is essential for their growth and existence (Zineldin, 2007). He further states that organizations have substantial partners such as suppliers, customers and internal clients; who endeavor to accomplish various incompatible objectives. Co and Barro (2009) noted that actors usually embrace cooperative strategies under trustworthy circumstances however, they have authority to adopt hostile approaches due to valid and imperative stakes which require organizations attention. Greenwood and Van Burren (2010) argued that the entity has to guarantee equality to participants when accomplishing its responsibilities in terms of stakeholder theory and trust because partners affiliated in business have varying levels of influence

which depend on its credibility. The theory explains that every legitimate person or groups contribute to the activities of a firm to obtain benefits and the priority of all genuine stakeholders was not self-evident.

The fundamental aim of this theory is to determine how well an organization copes with focal groups such as customers, employees, suppliers, communities, regulators, financiers, and others that can affect its purpose realization (Freeman, 2010). The role of the firm is to manage all these groups, balancing their interests, while ensuring stakeholder welfares can be maximized over time through SCC. The theory asserts that managing inter-organizational interactions is an imperative asset which facilitates access to partner's resources, earning the required provisions, addressing client challenges and creating value (Soita, 2015). However, different practices and decisions require different participants. Stakeholders are likely to cooperate with other players who demonstrate similar interest thus fostering collaboration. This theory assisted the researcher to demystify the role of stakeholders as a factor that influences SCC in public sector where technically everyone has a stake in the government despite his or her competing needs and wants unlike in the private sector.

2.2.2 Knowledge-Based View

Several authors in their quest to expound the functionality of supply chain networks, have focused on knowledge explicitly (Adamides, Karacapilidis, Pylarinou & Koumanakos, 2008). They note that Knowledge-Based View (KBV) is an improvement of "Resource Based View" which recommends knowledge as the fundamental means for sustainability. Meier (2011) notes that this is predominantly appropriate supply chain networks since

sharing of information and knowledge (knowledge management) are perceived as indispensable enablers for effective integration. Sharing of knowledge is crucial in enhancing commitment by entities to collaborate instead of competing in order to gain complementary competencies in business.

Knowledge is difficult to imitate and it provides viable differentiation because of its competitive advantage and sustainability. Entities or collaborations strive to develop, handover and convert knowledge into valuable resource for viability (Takeuchi, 2013). In addition sophisticated deliberate creativity and responsiveness to economic dynamics is enhanced through superior knowledge base. Utilization of available knowledge in the organisation or associating with other firms create fresh knowledge which broadens its knowledge base. Ariffin, Abas, and Baluch (2015) asserts that knowledge based competition will be critical for organizational success in contemporary world. The current economy is driven by knowledge, based upon knowledge and moved by knowledge and no single firm possess all this thus the need to collaborate for the benefit of the SC. Factors influencing SCC was studied based on this theory to demonstrate its viability in public sector and the entire economy. This is because knowledge is power and firms nowadays, are competing based on knowledge instead of resources for sustainability.

2.2.3 Institutional Theory

The theory focus on embracing guidelines and customs of institution by players so as to protect their authority and legality (Scott, 2007). Therefore, institutions declares specific actions to be adopted which determines decision making practices in organizations and dictates what is proper or authentic. It offers hypothetical perspective where scholars might establish variables that stimulate organizational endurance and lawfulness which comprise

of social – cultural environment, conventions, customs, commercial enticements and acknowledging the role of possessions (Baumol, Litan & Schramm, 2009; Brunton, Ahlstrom & Li, 2010). Hillestad, Xie and Haugland (2010) questioned whether the contributions and approach to sustainability by different players in the supply chain was strategic.

This theory describes how choices regarding SCC are influenced by variations in communal beliefs, technological developments, and code of practice. Genuine engagements for establishments are governed by Institutions which shape anticipations and senses through which acts, instructions and presumed behavioral philosophies seem normal and an obligation (Stanger, 2013). This provides highlights to contributions of partners in advancement of viable relationship through collaborations. SCC is enhanced when firms seek to improve their performance in the industry. The theory was useful in the study of factors influencing SCC in public sector which comprise of various entities resulting to enhanced competitiveness. Thus, institutions strive to outshine each other in performance or seek relevancy to avoid extinction.

2.3 Supply Chain Collaboration in the Public Sector

SCC is defined as partners teaming up for competitiveness through information exchange, mutual decision making, and distributing rewards obtained by meeting the needs of clients with superior services amongst themselves (Simatupang & Sridharan, 2008). Slack and Lewis (2011) asserts that collaboration is considered a strategic alliance, where skills and resources are shared to attain mutual benefits which cannot be realized working

individually. Fawcett et al. (2012) argue that SCC is a vital dynamic capability, able to deliver superior performance. Some of the factors affecting SCC in public sector include;

2.3.1 Trust

According to Kohli and Jensen (2010) personal interaction and trust have been deliberated frequently in literature and considered crucial for collaboration success, but they were insignificant. It was a deviation from previous studies, which proposed that functional collaboration require members to be trustworthy and dedicated through passionate individual interaction. Saini (2010) argue that in supply chain integrity, participants are risk takers based on guarantee from other players. Jambulingan, Kathuria and Nevin (2011) in the study “buyer-seller relationships existing in retail pharmacies,” noted that trust occurs under circumstances of exposure, uncertainty, and dependency, with anticipation that the aftermath will be healthier if trust is upheld. When one partner does not fulfil his duty to implement the contract, the other partner becomes susceptible to insecurity in the engagement. Contrary, one partner’s failure due to trust issues exposes the partners to very nasty conditions which might even lead to hostility.

“Northern Ireland procurement frameworks” were considered to have several benefits, including value creation by centralization, decrease of obstacles and development of favorable sustainable affiliations with partners (Perry, 2011). Talavera (2014) argue that Trust is a prerequisite for any inter-organizational cooperation like SCC. Wachira (2014) established that SRM largely depends upon four major aspects: trust, communication, risk assessment & management and strategic supplier partnership.

2.3.2 Information sharing

Bullwhip effects across supply chain can be minimised by capturing accurate customer demand information (Ouyang, 2007). It is inadequate to rely on information exchange only because effects of demand amplification are experienced in advanced value chain containing echelons of openness and cooperative activities (Bailey & Francis, 2008). Sohn and Lim (2008) assert that when life cycle of a product is shorter, appropriate strategy for sharing information and projecting technique enhances supply chain performance. The concept of collaboration was classified into three categories: Sharing information which entails gathering and disseminating appropriate and pertinent information for decision making in supply chain management; harmonized decision denotes mutual decision-making during development and implementation settings and motivation orientation which refers to the extent of sharing risks, costs, and benefits by partners (Simatupang & Sridharan, 2008).

Manufacturing companies usually request supply chain companions like outsourced service providers to adopt mutual practices that entail information exchange in order to develop supply chain synchronization and enhance product quality. Sustainable improvement is attained by information sharing which considerably decreases supply chain costs (Jain et al., 2009). According to Kohli and Jensen (2010) the alleged value of cooperation is enrich through extensive sharing of information, mutual planning, and information systems integration. Winsor, Tan and Leong (2012) argue that sharing of information enhance partnerships with strategic clients; develop product design, delivery, quality and cost reduction through inter-organisation actors; cultivates common goals; and finally, allocating the rewards among associates with arrangements on how to increase

performance and viability is crucial. Wachira (2014) identified sharing of technical expertise, fulfillment of roles and responsibilities among supply chain members, implementation of cross-functional practices between supply chain members, adopting normative procedures in organizing and choosing companions in supply chain as critical for SCC.

2.3.3 Enabling Technology

The contemporary economy is automatically linked and vibrant in general (Jain et al., 2009). Thus, firms aim at meeting unpredictable market requirements by improving their swiftness with the objective of being creative and compliance. Outsourcing and development of virtual enterprise are strategies that numerous entities have decided to devolve their value-creation undertakings. This underscores the significance of information and communication technology (ICT) while incorporating associates in virtual enterprises in supply chain management. Van Weele (2009) established challenges of prosperous Supply Chain Collaboration implementation as fear of failure, exposure to unfair competition, anxiety surrounding trust, complex supply networks, and technological incompatibility. Li, Yang, Sun and Sohal (2009) argue that the world has become a global village and the economy requires IT application in SCM so to provide precise, dependable, and opportune information therefore, enriching supply chain systems. Jain et al. (2009) studied supply chain activities at functional and strategic echelons with intrinsic focus on web-enabled collaboration support by information systems among supply chain participants. They concluded that information and communication technology (ICT) facilitates efficient information sharing among supply chain members.

Business detection and reaction proficiencies are enabled by IT interventions (Ngai, Chau, & Chan, 2011). Entities should not imitate existing challengers' strategies but instead evidently comprehend their economical significances and assess technological information that fit them for implementations. Lee, Palekar and Qualls (2011) note that it is paramount for mutual venture in new technology that has prospective to enhance competence and safety of the supply chain network by players. Ngai et al. (2011) argue that the backbone of supply chain proficiency is IT capability; IT incorporation advances supply chain integration and innovation while IT creativity guarantees supply chain development. Soita (2015) identified information technology as a factor influencing SCC based on electronic supply chain management system, interchange of information, dynamism in supply chain and competency in ICT. They concluded that "supply chain collaboration in government ministries" was influenced abundantly by information technology thus embracing technological advancement was vital in enhancing information exchange and computerizing the system for tracking purposes in collaborative environment where partners are dedicated.

2.3.4 Legislation

Laws and regulations provide the guidelines for financial instruments, institutions and market operations in the economy (Owegi & Aligula, 2006). The SCM in Kenya has progressed from makeshift arrangements without guidelines to extremely structured system which conforms to global requirements. According to Kaspar and Puddehatt (2012) effective Supply Chain Management regulation policies affects both developed and developing nations. They attract foreign investment and provide local commercial prospects through revenue generating activities. It is remarkable, given the substantial

amount of national GDP consumed by SCM disbursement. They note that implementation of SCM ideologies differ subject to communal, commercial and civil condition of a republic. Therefore, in emerging and industrialized economies mutual fundamentals of strong SCM system are common.

SCM specialists encounter challenges when complying with their public's SCM procedures and social - economical SCM goals without undermining global trade treaties (Muraguri, 2013). He states the need to conform to national economic policies through preference and reservation regulations without being prejudiced to overseas businesses as demonstrated in global trade accords, which entails proper understanding of trade covenants so as to implement distinctive requirements wisely. Cheboi (2014) argue that the ability of procurement legislations to address challenges in procurement process in business was not affected by the PPDA implementation. This was a concern for the organisation and indicated deterrent to real procurement process was enforcement of ethical code of conduct by staff and other players in the supply chain. Nevertheless, this was not caused by procurement legislation but failure to adhere to SCM rules and techniques by organizations. Chemoiywo (2014) asserts that improvement in quality of products and services, enhanced relationship with suppliers and compliance to procedures leads to reduction in costs of services and products. Therefore, when procurement procedures are adopted they lead to effective contract management.

2.3.5 Governance

In order to build trust in SCM system for competitiveness there is need to ensure rules are adhered (Trybus, 2006). Corruption in SCM might happen at some phase in the procurement cycle (Pidaparathi, 2006). According to PPOA (2007), unethical practices in

SCM includes; weaknesses in execution of the law; transparency deficiencies and nonexistence of culpability; collapse or destruction of ethics and standards; poor governance, improper measures and techniques; absence of professional uprightness; self-indulgence and misuse of optional influence.

Effective governance demands for top management support from all stakeholders (Simatupang & Sridharan, 2008). They note that members must also function based on agreed goals and performance measures while executing applicable structures to foster collaboration. Thus, members need to be aligned in growth and management of duties and tasks across the supply chain. More so it is manifested in planned innovations such as “co-managed inventory and vendor managed inventory.” Strategically, orientation comprises of creation of goals guiding performance appraisal, procedure enhancement, and inducement allotment. The OECD (2010) explains that many countries have not tackled integrity concerns in public SCM networks. Public SCM is the nation’s undertaking most susceptible to corruption according to OECD. Therefore, in public SCM, absence of openness and culpability are identified as the foremost threats to integrity. According to World Bank (2010) technical frameworks have not been initiated by various republics to ensure: SCM activities are transparent and encourage reasonable and equitable treatment; proper utilization of public resources in SCM as per the plan; SCM professionalism fosters public obligations of the entity and mechanisms are developed to address inappropriate SCM resolutions; guarantee culpability and advocate for public verification. Puddephatt (2012) asserts that in Egypt, where SCM contribute immensely to commercial activities and has the ability to positively influence SME growth, collusion during tendering process, corruption and deficiency in openness are harsh obstacle for SMEs. He concluded that in

emerging economies where corruption is common, transparency practices are vital in solving numerous short comings hindering SMEs from benefit from SCM activities.

2.4 Summary of Literature Review and Knowledge Gaps

According to literature reviewed, it is apparent that there are insufficient studies on factors influencing Supply Chain Collaboration in Public Sector in Kenya.

Table 2.1: Summary of Literature Review and knowledge Gaps

Scholar/ Researcher	Title of study	Major findings	Limitations & Knowledge Gap
Kohli and Jensen (2010)	“Assessing Effectiveness of Supply Chain Collaboration: An Empirical Study.”	Firm-specific factors were consistent to its perception of the worth of SCC and businesses that collaborate extensively usually appreciate its effectiveness.	Failed to include strategic dimensions of collaboration among SC partners and did not focus on perspective of all members involved in a partnership.
Musanzikwa (2013)	“Public Procurement System Challenges in Developing Countries: the case of Zimbabwe.”	Procurement function is crucial to any organization and when properly constituted with right strategies it contributes to business success.	It was an overview of challenges facing public procurement and did not narrow down to specific aspects of collaboration.
Talavera (2014)	“Supply Chain Collaboration and Trust in the Philippines.”	Better information sharing enhances supply chain coordination thus the need to develop supply chain integration activities.	Focused on manufacturing industry and did not cover other variables that affect SCC especially in service sector.
Nyangweso (2013)	“Collaborative Public Procurement among the State Corporations.”	State corporations have not fully adopted collaborative public procurement practice notwithstanding its benefits.	Non-compliance to public procurement regulations was not adequately captured as a contributor to SCC.
Cheboi (2014)	“Procurement Legislation and Procurement Performance a case of Kenya National Highway Authority.”	There is no success in use of legislation to improve procurement performance, instead enforce ethical code of conduct by professionals in SCM.	Laws and Regulations enforcement is not adhered to comprehensively to facilitate SCC and enhance performance.
Wachira (2014)	“Supplier Relationship Management and Supply Chain Performance in Alcoholic Beverage Industry in Kenya.”	Adopting collaborative relationships with suppliers contribute to competitive advantage and value creation in Supply Chain Performance.	Dealt with manufacturing industry but did not cover service industry and the role of technology in SCC.

Source: Research data (2016)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter dealt with research design, target population, sample design, data collection instruments, validity and dependability of the instruments, process of data collection, and data analysis techniques.

3.2 Research Design

The study was done through a descriptive survey research design. The design encompasses what exists and connects to foregoing events that have predisposed or impacted contemporary circumstances or events. Nyangweso (2013); Cheboi, (2014); Wachira, (2014) and Onyango, (2014) have used the same method successfully in similar research in Kenya.

3.3 Target Population

The researcher targeted all national government agencies in Nairobi (Appendix II). According to GOK (2015) there are 177 national government agencies in Nairobi categorized under different ministries out of which a random sample was taken for the study due to time and cost considerations.

3.4 Sample Design

There are a number of approaches to determining the sample size in any given study. Some of them comprise census for small populations, emulating sample size of related research, reading published sample design tables, and applying formulas to compute sample size. This research used the formula shown below (Israel, 2013).

$$n = \frac{N}{1 + Ne^2}$$

Where: n = Sample size
 N = Population size
 e = error of Sampling (0.05)

The distribution was as below.

Table 3.1 Sample Size

National Government Agencies in Nairobi (Stratum)	Population	Sample size $n_h = \left(\frac{N_h}{N}\right)n$
Ministry of Finance & National Treasury	23	16
Ministry of Agriculture, Livestock and Fisheries	20	14
Ministry of Industrialization and Enterprise Development	17	12
Ministry of Education, Science & Technology	17	12
Ministry of Interior and Coordination of National Government	15	10
Ministry of Health	12	8
Ministry of Energy and Petroleum	10	7
Ministry of Transport and Infrastructure	10	7
Ministry of Public Service, Youth & Gender Affairs	9	6
Ministry of Tourism	8	6
Ministry of Information, Communication and Technology	8	6
Ministry of Devolution and Planning	7	5
Ministry of Water & irrigation	7	5
Ministry of Sports, Culture and the Arts	5	3
Ministry of Environment & Natural resources	4	3
Ministry of Land, Housing and Urban Development	3	3
Ministry of Labor & East Africa Affairs	2	2
Ministry of Mining	0	0
Ministry of Defense	0	0
Ministry of Foreign Affairs & International Trade	0	0
OVERALL	177	125

Source: Research data (2016)

Hence, a sample size of 123 respondents was generated. The study used stratified sampling technique to select respondents calculated based on their weight, according Neyman (1934) allocation formula below;

$$n_h = \left(\frac{N_h}{N} \right) n$$

Where: n_h - The sample size for stratum h,
 n – The overall sample size,
 N_h -The population size for stratum h,
 N - The overall population

Thereafter, respondents from each stratum were nominated using simple random sampling method where applicable.

3.5 Data Collection

Primary data was obtained using self-administered questionnaire, on a face to face environment to ensure clarification of issues to the respondent so as to attain high response rate and minimize errors from sampled public entities in Nairobi. The questionnaire was semi-structured (Appendix I) targeting the head of SCM department or equivalent in public entities. The questionnaire contained four sections; section one focused on general information; section two the extent of SCC in public sector; section three factors influencing SCC and section four personal recommendations.

3.5.1 Pilot Test

The questionnaire was subjected to a pilot test before final administration to the respondents. A convenient sample of five (5) respondents who heads SCM department or equivalent were picked to answer the questionnaire in the presence of the research administrator. The results were used to check for face validity and to refine the instrument for clarity thus clearing any ambiguities in order to obtain the intended outcome.

3.6 Data analysis

Numerical variables were analysed by descriptive statistics techniques. These included: simple means; standard deviations, correlation, regression and factor analysis applied on factors influencing collaboration in public entities by use of SPSS. Content analysis (verbatim explanations) was used to analyse qualitative data. Onyango (2014) and Soita (2015) have used the same method successfully in similar studies in Kenya.

Table 3.2 Summary of Data Analysis

Objective	Questionnaire	Data Analysis Technique
To establish the extent of Supply Chain Collaboration in public sector in Kenya	Section B	Descriptive Analysis
To determine the factors influencing Supply Chain Collaboration in public sector in Kenya	Section C	Factor Analysis

Source: Research data (2016)

CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

The chapter presents results from data analysis, interpretation and discussion. The overall aim of research was to examine the extent of Supply Chain Collaboration and determine the factors influencing Supply Chain Collaboration in public sector in Kenya. Data analysis was done using frequencies, means, standard deviations, correlation, regression and factor analysis as the primary tools of analysis while content analysis (verbatim explanations) was used to analyse the qualitative data. Results are presented as follows: The study targeted 125 National Government Public Entities in Nairobi which were sampled out of which 103 entities responded to the questionnaire representing 82.4% response rate. This response rate was considered high enough and representative. Majority (54.4%) were male while 45.6% were female respondents. This suggests a near equal distribution of respondents by gender. Majority (37.9%) of the respondents were aged between 34 - 41 years while 27.2% represented those aged between 26 - 33 years and 42 - 50 years respectively. Only 7.8% were aged 51 Years and above. These findings indicate that most of the respondents were at prime working age and thus could easily respond informatively to the questions posed. Majority (55.3%) of the respondents had served the entity for 5 years and above while 44.7% had served the entity for less than 5 years. This therefore indicates that the questionnaires were answered by well-informed persons regarding Supply Chain Management in the entity.

4.2 Supply Chain Collaboration

The research sought to establish the extent of Supply Chain Collaboration in public sector in Kenya. The respondents were requested to rate their approval on various statements used as indicators of Supply Chain Collaboration on a scale of 1 – 5 where 1 represents strongly disagree while 5 represents strongly agree. The mean ratings were computed and ranked as displayed in the table 4.1.

From table 4.1, all Supply Chain Collaboration indicators were rated between 2.25 and 4.1 where 57.14% of the aspects indicated that Supply Chain Collaboration had been practiced to a large extent by the entities. Specifically, five aspects had a mean of over 4.00 and seven aspects had a mean of 3.50 to 4.00 while nine had a mean of less than 3.50. These findings indicate that majority of national government public entities have responded positively to the government policy initiatives such as the PPADA 2015 which encourage Supply Chain Collaboration strategies for effective and efficiency delivery of services to the public while enhancing competitiveness. The findings concur with Nyangweso (2013) that 50% state corporations have adopted collaborative practices to a large extent. The study confirms what Wachira (2014) found that there was some elements of both collaborative and adversarial relationship but was mostly geared towards collaborative relationships. It is in line with Soita (2015) who established a moderate level of collaboration among the ministries and various stakeholders; the highest being subcontracting partners, followed by suppliers, then outsourcing partners and finally customers.

Table 4.1: Supply Chain Collaboration

Supply Chain Collaboration Practices	Mean	Std. Deviation
There is mutual information sharing among supply chain members	4.10	.995
There is high level of trust among supply chain members	4.09	.902
We maintain long-term relationships with our partners	4.09	.991
There is a high level of commitment to relationship among members	4.08	1.082
There exists clear understanding of each other's roles and responsibilities as partners	4.04	1.066
The firm has developed performance measures that incorporate the performance of the supply chain partner	3.93	.973
There exists mutual goals between supply chain partners	3.84	1.109
The entity is involved in enhancing responsiveness to changes in customer demand	3.83	.933
We are engaged in knowledge sharing in the design stage	3.78	1.122
The entity is involved in enhancing flexibility to changes in customer demand	3.78	.907
We are involved in Collaborative planning as partners	3.51	1.137
There is exploitation of complementary skills among supply chain members	3.50	1.056
The is sharing resources in the form of shared services	3.31	1.172
The entity has many different suppliers who deliver the same product	3.21	1.480
The firm awards contracts based on price in most cases	3.15	1.451
We interchange staff with partners in joint Projects	3.07	1.188
The firm is dependent on other firms for an effective solution delivery	2.86	1.237
The entity engages third party for sourcing routine items for efficiency	2.71	1.571
There is sharing tasks in form of lead-buying	2.66	1.369
There is fear of exposing our business secrets when relating with other parties	2.51	1.313
We interchange staff with partners in joint Projects	2.25	1.135

Source: Research data (2016)

4.3 Correlation of Supply Chain Collaboration Variables

The study sought to establish how theoretical factors of Supply Chain Collaboration in public sector in Kenya are correlated. The respondents correlated five Supply Chain Collaboration factors on a scale of 1 – 5 where 1 represents least priority while 5 represents highest priority. Spearman's Ranking Correlation was used to correlate the factors as displayed in table 4.2.

From table 4.2, the lowest correlation coefficient was -0.039 while the highest was -0.554 between the factors when correlated one against the other. The correlation of trust and information sharing was 0.101 which was the only weak positive relationship. The correlation of trust and technology; correlation of information sharing and technology; correlation of technology and legislation and correlation of legislation and governance was -0.096; -0.124; -0.045 and -0.039 respectively representing a weak negative relationship. The correlation of trust and legislation; correlation of information sharing and legislation; correlation of information sharing and governance and correlation of technology and governance was -0.348; -0.357; -0.373 and -0.344 respectively which indicates a negative moderate but significant relationship. The correlation of trust and governance was the strongest and significant at -0.554 though a negative relationship. Therefore, there was enough evidence to suggest existence of a weak to moderate relationship between factors that influence SCC in public entities when compared against each other.

Table 4.2: Spearman's Ranking Correlation of Factors

		Correlations				
		Trust	Information	Technology	Legislation	Governance
Spearman's rho	Trust					
	Correlation Coefficient	1.000	.101	-.096	-.348**	-.554**
	Sig. (2-tailed)	.	.308	.333	.000	.000
	N	103	103	103	103	103
	Information					
	Correlation Coefficient	.101	1.000	-.124	-.357**	-.373**
	Sig. (2-tailed)	.308	.	.214	.000	.000
	N	103	103	103	103	103
	Technology					
	Correlation Coefficient	-.096	-.124	1.000	-.045	-.344**
	Sig. (2-tailed)	.333	.214	.	.649	.000
	N	103	103	103	103	103
	Legislation					
	Correlation Coefficient	-.348**	-.357**	-.045	1.000	-.039
	Sig. (2-tailed)	.000	.000	.649	.	.699
N	103	103	103	103	103	
Governance						
Correlation Coefficient	-.554**	-.373**	-.344**	-.039	1.000	
Sig. (2-tailed)	.000	.000	.000	.699	.	
N	103	103	103	103	103	

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Research data (2016)

4.4 Factors influencing Supply Chain Collaboration

The study sought to find out the factors influencing Supply Chain Collaboration. The respondents specified their levels of agreement with 52 proposed aspects that might influencing Supply Chain Collaboration, on a scale of 1 – 5 where 1 refers to strongly disagree and 5 refers to strongly agree. The 52 elements were subjected to factor analysis

(Principal Component Analysis) based on Varimax Rotation and the results obtained are displayed in table 4.3.

Table 4.3: Factor loadings and univariate descriptive of identified factors

	Factor loadings	Underlying factor	Mean	Std. Deviation
Enabling Technology in SC	.867	Technology	4.11	1.019
Information Sharing	.822		4.18	.979
Process Integration/Innovation	.813		4.12	.992
Advance Technology	.804		4.13	1.047
Policies in Industry	.756		3.87	1.115
Commitment to Relationship	.671		3.95	1.035
Stakeholders	.653		4.01	.941
Supplier Performance	.649		4.07	.927
Procurement Legislation	.620		4.06	.977
Demographic Trends	.609		3.31	1.286
Co-operation	.566		3.94	.988
Governance in SC	.559		3.94	.944
Business Performance	.546		4.07	.881
Trust in SC	.543		4.00	1.173
Mutual Benefits/Reciprocity	.786	Information Sharing	3.88	1.083
Economic conditions	.736		3.75	1.021
Continuous Development	.693		4.13	.931
Maturity in Relationship	.662		3.88	1.083
Learning and Improvement	.658		4.14	.979
Partner Reputation	.648		3.56	1.041
Value Alignment	.638		3.80	.996
Interdependence	.633		3.68	1.160
Loyalty in Relationship	.630		3.68	1.123
Strategy	.613		3.96	1.070
Frequency of Transactions	.604		3.58	1.098
Topology/SC Configuration	.550		3.46	1.041
Competitive Advantage	.534		3.85	1.236

	Factor loadings	Underlying factor	Mean	Std. Deviation
Efficiency	.529		4.11	1.059
Shared Rewards and Risks	.496		3.72	.944
Synergy	.337		3.99	.896
Lead Buying	.820	Regulations	2.82	1.331
Joint Projects	.773		2.90	1.418
Power Between Partners	.729		2.71	1.224
Stability	.728		3.48	1.332
Market Power	.724		3.12	1.474
Number of Suppliers	.699		3.10	1.327
Stiff Competition	.693		2.70	1.218
Distance Between Partners	.979		2.79	1.154
Resource Pooling	.587		3.25	1.250
Flexibility and Responsiveness	.574		3.58	1.098
Previous Experience	.570		3.48	.925
Resource Sharing	.532		3.46	1.119
Industry Dynamics	.473		3.38	1.220
Survival	.453		2.57	1.266
Behavior Uncertainty	.720	Trust	3.25	1.250
Interpersonal Relationship	.606		3.70	1.200
Cost of Relationship	.573		3.19	1.034
Culture Fit	.556		2.75	1.041
Joint Assessment	.703	Governance	3.35	1.109
Goal Congruence	.595		3.68	1.132
Pressure from Consumer Groups	.593		2.59	1.197

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 9 iterations.

Source: Research data (2016)

From table 4.3, five (5) factor were identified as underlying variables. The first variable was Information Sharing which had 16 items with a mean ranging between 3.58 and 4.13.

This indicates that Information Sharing as a factor of SCC was highest among public

entities. The second factor was Technology represented by 14 items with means lying between 3.31 and 4.11. This indicates that Technology as a factor of SCC was high among public entities. The third variable was Regulations with 14 items with means ranging between 2.7 and 3.58. This indicates that in public entities Regulations was a moderate factor of SCC. The fourth variable was Trust represented by 4 items with means ranging between 2.75 and 3.7 indicating that Trust as a factor of SCC was moderate among public entities. The fifth variable was Governance represented by 3 items with means ranging between 2.59 and 3.68 indicating that Governance as a factor of SCC was moderate among public entities. It is inconsistent with Kohli and Jensen (2010) findings that goal congruence was the only factor influencing SCC since there are five other factors identified in this study. The findings concur with Nyangweso (2013) who established that investments in relationship as an assets (commitment and trust), sharing of knowledge (cooperation & communication), complementary possessions and competences (expertise, skills, & assets) and prudent governance (goals & performance measures) are factors influencing SCC. These findings are consistent with those of Talavera (2014) who identified information sharing among partners in supply chain as a resolution that is governed by trust where both are factors influencing SCC. It is consistent with Hudnurkar et al. (2014) that factors affecting collaboration in supply chain includes: commitment; trust; enabling technology; legal protection coordinative structures and collaborative agreement; government support; information sharing among others. They are in line with Wachira (2014) who established that trust, communication, risk assessment & management and strategic supplier partnership influence SCC. The findings concur with Soita (2015)

that legal framework; quality of personnel; compliance with SCM policies; information technology and stakeholders involvement influence SCC.

4.5 Relationship between identified factors and Supply Chain Collaboration

The researcher undertook a multiple regression analysis for the relationship between factors identified in factor analysis and Supply Chain Collaboration. A multivariate linear regression equation was built-in to the data with the identified factors as predictor variables and Supply Chain Collaboration as predicted variable. The results are shown in the tables below.

Table 4.4: Coefficients Estimates

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.082	.036		85.336	.000
Technology	.197	.036	.369	5.415	.000
Information Sharing	.149	.036	.280	4.109	.000
Regulations	.316	.036	.594	8.709	.000
Trust	-.029	.036	-.055	-.802	.425
Governance	-.038	.036	-.072	-1.053	.295

Source: Research data (2016)

From table 4.4, the equation obtained was as follows:

$$SCC = 3.082 + 0.197T + 0.149IS + 0.316 R - 0.029TR - 0.038G + e$$

Where SCC = Supply Chain Collaboration T = Technology

IS = Information Sharing

R = Regulations

TR = Trust

G = Governance

e = Error term

From the regression equation established, taking all other predictor variables at zero, SCC in the public sector will be 3.082. The findings indicate that a component rise in Technology result to 0.197 increase in SCC in public sector holding other predictor variables constant. A component rise in Information Sharing result to an increase of 0.149 in SCC in public sector considering other predictor variables constant. A component rise in Regulations result to 0.316 increase in SCC in public sector considering other predictor variable constant. On the other hand, a component rise in Trust result to 0.29 decrease in SCC in public sector considering other predictor variables constant. A component rise in Governance result to 0.38 decrease in SCC in public sector considering other predictor variable constant. The outcome above show that only three identified factors (Technology, Information Sharing and Regulations) have significant influence on SCC in public sector in Kenya while two factors (Trust and Governance) have insignificant influence on SCC in public sector in Kenya. The standardized coefficient (Beta) confirms the findings where one standard deviation growth in technology, the model predicts that SCC will increase by 0.369 standard deviation. One standard deviation growth in information sharing, the model predicts that SCC will increase by 0.280 standard deviation. One standard deviation growth in regulation, the model predicts that SCC will increase by 0.594 standard deviation which is the highest. One standard deviation growth in trust and governance the model predicts that SCC will decrease by 0.055 and 0.072 standard deviation respectively. This implies that SCC is influenced greatly by technology, information sharing and regulations only while trust and governance does not influence SCC to a greater extent and can be excluded

without varying the prediction model. This is supported by the high Coefficient of Multiple Determination of 0.576 and significance of 0.00 (refer to Table 4.5: Model Summary).

These results infer that regulations contributes most to supply chain collaborations in public sector in Kenya, followed by technology, then information sharing, while trust and governance contributes the least to supply chain collaborations in public sector in Kenya. This is portrayed by the government’s commitment to enhance SCM regulations through legislations such as the PPADA 2015 and the implementation of IFMIS as a technological platform for SCM in public entities. Regulations, technology and information sharing had 0.000 level of significance respectively at 95% confidence level and 5% significance level hence, the most significant factors for supply chain collaborations in public sector in Kenya. Governance had 0.295 level of significance which is insignificant factor for supply chain collaborations in public sector in Kenya and trust had 0.425 level of significance which is the most insignificant factor for supply chain collaborations in public sector in Kenya. The model Summary for the regression is shown in table 4.5.

Table 4.5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.759 ^a	.576	.553	.35570

Source: Research data (2016)

From table 4.5, the coefficient of determination was found to be 0.576 and was adjusted to 0.553 which takes into consideration the sample size used in the study. This therefore means that five independent variables contribute 57.6% of the supply chain collaborations in public sector while unstudied factors by the researcher contributes 42.4% of the supply

chain collaborations in public sector. This represents a high goodness of fit since an R-square of 0.7 is generally accepted as the threshold for a good fit.

Table 4.6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.665	5	3.133	24.762	.000 ^b
	Residual	11.513	91	.127		
	Total	27.178	96			

Source: Research data (2016)

From table 4.6, the sum of squares for regression (15.665) represents estimated values and sum of squares for residual (11.513) represents the difference between the real values and the regression values. At a significance level of 5%; the numerator df = 5 and denominator df = 91, the critical F value (Critical Values of the F Distribution for $\alpha = .05$) is 2.37 and table 4.6 shows computed F value as 24.762. The general model was significant because F calculated is greater than the F critical, this indicates that it is a suitable prediction model for explaining factors influencing supply chain collaborations. The F ratio of 24.762 and the significance of 0.000 shows that there was a very slight difference in means between dependent and independent variables and that the identified factors have a statistically significant relationship with SCC. This implies that the identified factors generally influence SCC in public sector.

4.6 Personal Recommendations

The study aimed to establish recommendations for improvement of Supply Chain Collaboration in public entities. The respondents were asked to provide up to three suggestions in their own personal expressions. Qualitative data technique; Content

Analysis (verbatim explanations) was used to group individual responses into six groups based on underlying themes and the results obtained are in table 4.7.

Table 4.7: Suggested Improvements for Supply Chain Collaboration

	Frequency	Percent
Partnership	43	27.74
Creativity	40	25.80
Awareness	31	20.00
Regulations	19	12.26
Performance	13	8.39
Contracting	9	5.81
Total	155	100.0

Source: Research data (2016)

From table 4.7, the recommendations fit well with the identified factors that influence SCC. Partnerships can be developed through trust between SC members; creativity generally leads to technological advancement; awareness enables information sharing among SC members; regulations and contract management emanates from legislation and performance is an element of leadership and a reflection of governance.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The research sought to determine; the extent of Supply Chain Collaboration and factors influencing Supply Chain Collaboration in Public Sector in Kenya. The chapter provides a summary of the findings, conclusions, recommendations and suggestions for further study.

5.2 Summary of Findings

The researcher's aim was to determine the extent of Supply Chain Collaboration and factors that influence Supply Chain Collaboration in Public Sector in Kenya. Regarding demographic information about the respondents, the findings indicated 82.4% response rate. Majorities of the respondents were men, a large percentage of the respondents were at prime working age and had worked longer for their current organization.

The findings on the extent of SCC in public entities indicate that majority of national government public entities are utilizing this SC strategy since twelve aspects had a mean of 3.50 and above compared to nine aspects which had a mean below 3.5. This shows that Supply Chain Collaboration is practiced to a large extent by public entities. It also implies compliance to PPADA 2015 which encourages Supply Chain Collaboration as a strategy for competitiveness through framework contracts among other methods of engagements. Correlation of theoretical factors that influence SCC established a weak to moderate relationship among trust; information sharing; technology; legislation and governance when compared against each other as factors of SCC in public entities. It is a confirmation that the factors are indeed independent and gives a reflection of the population.

Five factors that influence Supply Chain Collaboration in Public Sector in Kenya were identified through factor analysis. These include: technology; information sharing, regulations; trust and governance. Two out of the five factors above were found to have high contribution to SCC; Technology and information sharing. Regulations, trust and governance had moderate influence to SCC. An examination of the joint relationship confirmed these findings and established that five variables jointly account for 60.2% of Supply Chain Collaboration. The findings concur with Nyangweso (2013) that accomplishment of SCC in public SCM in Kenya depends on investment made in establishing critical enabling structures. It confirms Soita (2015) findings that SCC is a pointer to the responsiveness, flexibility, commitment and the belief of the stakeholders' willingness to dedicate energy to sustain the relationship. The outcome of the regression analysis (see table 4.5) show a high Coefficient of Multiple Determination (R^2) at 0.576. This implies that the model is of high 'goodness of fit' thus, the regression line explains 57.6% of the factors that influence Supply Chain Collaboration. The outcomes show that significance change is 0.00 implying that at 5% confidence level, the factors influence on Supply Chain Collaboration is significant. However, the regression analysis findings indicate that technology, information sharing and regulations were the most significant factors for supply chain collaborations in public sector in Kenya implying that there was a strong relationship between the factors and SCC. Contrary, trust and governance were insignificant factors for supply chain collaborations in public sector in Kenya implying that there was a very weak relationship between the factors and SCC and they can be dropped from the model without meaningful impact occurring.

Finally the respondents recommended that improvement in Supply Chain Collaboration can be nurtured through partnerships and strategic alliances; creativity and personal initiatives; awareness, learning and development; contract management & progressive regulations and performance which emanates from leadership.

5.3 Conclusions

The following conclusions were made, it is evident that Supply Chain Collaboration is practiced to a large extent by public entities in Kenya. However, there is disparity on how identified factors influence Supply Chain Collaboration in public sector in Kenya. The aggregate influence level for all public entities was 57.14% indicating that public entities engage the strategy of SCC to a great extent. There was enough evidence to show existence of a weak to moderate relationship between factors that influence SCC when compared to each other in the public entities. This implies that the factors are independent and suitable as they reflect the actual variables for SCC in public entities. This means that the factors contributes immensely to SCC in public entities.

The results from table 4.3 indicate that; Technology, Information Sharing, Regulation, Trust and Governance are factors that influence Supply Chain Collaboration in public entities in Kenya. The regression model summary, implies that 57.6% of Supply Chain Collaboration in public entities in Kenya can be attributed to the identified factors. It was also concluded that the drivers of Supply Chain Collaboration are: technology which is propelled by creativity and organizational initiatives in SC issues; informational sharing through awareness creation, learning and development; regulation as guidelines from legislation and government policies; trust which leads to partnership, strategic alliances &

consortium purchasing and governance that determines performance of SCC as a whole. Three out of the five factors identified; technology, information sharing and regulations were the most significant factors for supply chain collaborations in public sector in Kenya implying a strong association between the factors and SCC. Public entities should ensure availability of adequate technological infrastructure, high level of information sharing and progressive regulations in order to enhance competitiveness through SCC.

5.4 Recommendations

First, public entities should endeavor to enhance greater collaboration with other industry players and stakeholders in order to enrich their service delivery to the public in Kenya and become competitive. Bureaucracy and retrogressive policies and regulations in public sector should be eliminated to facilitate Supply Chain Collaboration. Second, information sharing was identified as the most influential factor of SCC in the public sector thus essential in relationship development. Compliance to PPADA 2015 and relying on inter-organization relationships where entities share similar interest or goals may not be sufficient. Third, technology was identified as an influential factor of SCC in the public sector; the government should source for adequate funds to invest in technological infrastructure (equipment, human resource & innovation) so as to reap maximum benefits of SCC such as reduced procurement costs, improved products & services quality and enhanced flexibility and responsiveness through partnerships among other benefits. More studies should be done in Supply Chain Collaboration and the public entities should invest in research and development to enhance the strategy.

5.5 Limitations of the Study

The research was done in Kenya's capital city, Nairobi where most of the government offices are located due to centralized system of government adopted by the national government. The sample was considered representative of the entire country but, obtaining samples from public entities in each county would have yielded more external validity to the findings. However, due to time constraints and cost implications, it was not possible to obtain larger countrywide samples.

The study largely relied on primary data collected using questionnaires and was limited to the responses received. The researcher assumed credibility of feedback provided by the respondent while filling the questionnaire because it was a challenge to verify the wisdom applied.

The research targeted public entities under the national government; the findings might not be applicable to public entities under county government since they are autonomous and might not be pertinent to private entities because they are not fully bound by the PPADA 2015 and other government policies due to their discretionary power.

5.6 Suggestions for Further Research

The researcher focused on the national government public entities in Kenya, future studies should focus on the public entities under county governments in Kenya. The scope should also be extended to include either the private and public entities in Kenya or public entities in other East African countries. This is because a huge portion of government funds comes from tax payers' and most of its expenditure is supply chain management undertakings therefore, prudent strategies are requires to drive development in the country.

Legislation has a vital role in Supply Chain Collaboration, future studies should be undertaken to find out if Supply Chain Collaboration has connection with Supply Chain Management legislation in public sector in Kenya.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

Section A: General Information

This questionnaire has been designed for the sole purpose of collecting data on factors influencing Supply Chain Collaboration in public sector in Kenya. The data received will be treated with a very high degree of confidentiality and it is meant for academic purpose only. Please tick where applicable or fill in the required information on the spaces provided.

1. What is the name of your entity.....
2. What is your job title
3. Please indicate your gender. Male [] Female []
4. Please indicate your age by ticking in age bracket where you fall.
26 – 33 Years [] 34 – 41 Years []

42 – 50 Years [] 51 Years and above []
5. How long have you served the entity?
Less than 5 years [] 5 years and above []

Section B: Extent of Supply Chain Collaboration

1. Please indicate the extent to which you agree with the following statements on how your entity embraces Supply Chain Collaboration by ticking (√) the number presenting your level of agreement. The values representing the statements are shown below;

- 1 = Strongly Disagree 2 = Disagree 3 = Moderately Agree
4 = Agree 5 = Strongly Agree

No	Statement	1	2	3	4	5
1	We are involved in Collaborative planning as partners					
2	We maintain long-term relationships with our partners					
3	We are involved in joint projects with partners					
4	We interchange staff with partners in joint Projects					
5	There exists clear understanding of each other's roles and responsibilities as partners					
6	There is sharing tasks in form of lead-buying					
7	There is mutual information sharing among supply chain members					
8	There is exploitation of complementary skills among supply chain members					
9	We are engaged in knowledge sharing in the design stage					
10	There exists mutual goals between supply chain partners					
11	The is sharing resources in the form of shared services					
12	There is a high level of commitment to relationship among members					
13	The entity is involved in enhancing flexibility to changes in customer demand					
14	There is a high level of trust among supply chain members					
15	The entity engages third party for sourcing routine items for efficiency					
16	The firm has developed performance measures that incorporate the performance of the supply chain partner					

17	The entity has many different suppliers who deliver the same product					
18	The firm awards contracts based on price in most cases					
19	The firm is dependent on other firms for an effective solution delivery					
20	There is fear of exposing our business secrets when relating with other parties					
21	The entity is involved in enhancing responsiveness to changes in customer demand					

2. How do you rank the following Supply Chain Collaboration variables in the order of priority or importance to you? Tick (√) appropriately only once in each column.

Variables	Ranking (1 being least priority and 5 being highest priority)				
	1	2	3	4	5
Trust					
Information sharing					
Enabling Technology					
Legislation					
Governance					

Section C: Factors Influencing Supply Chain Collaboration

In your view, which of the following are the main reasons for cooperation with other business partners in your organization? Tick (√) appropriately.

1 = Strongly Disagree

2 = Disagree

3 = Moderately Agree

4 = Agree

5 = Strongly Agree

No	Statement	1	2	3	4	5
1	Resource sharing					
2	Synergy					
3	Mutual benefit / Reciprocity					
4	Learning and improvement					
5	Continuous development					
6	Survival					
7	Industry dynamics					
8	Competitive advantage					
9	Interpersonal relationships					
10	Joint assessment					
11	Pressure from consumer groups					
12	Efficiency					
13	Market power					
14	Stability					
15	Stiff competition					
16	Advanced technology					
17	Demographic trends					
18	Strategic compatibility					
19	Cost of managing the relationship					

20	Cultural fit					
21	Improve business performance					
22	Interdependence					
23	Value alignment					
24	Trust					
25	Information sharing					
26	Enabling technology					
27	Legislation					
28	Goal congruence					
29	Governance					
30	Supplier performance					
31	Number of suppliers					
32	Previous experience					
33	Shared rewards and risks					
34	Power between partners					
35	Distance between partners					
36	Commitment to relationship					
37	Maturity in relationship					
38	Frequency of transactions					
39	Policies in industry					

40	Strategy					
41	Economic conditions					
42	Flexibility and responsiveness					
43	Resource pooling					
44	Joint projects					
45	Lead buying					
46	Topology or Supply Chain Configuration					
47	Co-operation					
48	Stakeholders					
49	Processes Integration / Innovation					
50	Behavioral uncertainty					
51	Partner's reputation					
52	Loyalty in the relationship					

Section D: Personal Recommendations

What recommendations would you offer to improve Supply Chain Collaboration in public entities in Kenya? (Brief comments)

.....

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Thank you for your co-operation.

APPENDIX II: NATIONAL GOVERNMENT AGENCIES IN NAIROBI

Ministry of Finance & National Treasury			
1	Public Procurement Regulatory Authority	2	Co-operative Bank of Kenya Ltd
3	Insurance Regulatory Authority	4	Kenya Revenue Authority
5	Kenya Post Office Savings Bank	6	Kenya Accountants and Secretaries National Examinations Board
7	Privatization Commission	8	Kenya Reinsurance Corporation
9	Capital Markets Authority	10	State Corporation Advisory Committee
11	Kenya Trade Agency Network	12	Competition Authority of Kenya
13	Kenya Commercial Bank	14	National Bank of Kenya
15	Office of the Controller of Budgets	16	Office of the Auditor General
17	Uchumi Supermarkets	18	Central Bank of Kenya
19	Industrial Development Bank	20	Kenya Institute of Supplies Management
21	Retirement Benefits Authority	22	Kenya Deposit Insurance Corporation
23	Consolidated Bank of Kenya		
Ministry of Agriculture, Livestock and Fisheries			
1	Kenya Tsetse and Trypanosomiasis Eradication Council	2	Kenya Plant Health Inspectorate Service
3	Agricultural Finance Corporation	4	Kenya Sugar Board
5	Agricultural Information Resource Center	6	Coffee Board of Kenya
7	Kenya Flower Council	8	Horticultural Crops Development Authority
9	Kenya Agricultural and Livestock Research Organization	10	Kenya Veterinary Board
11	Kenya Meat Commission	12	National Cereals and Produce Board
13	Pest Control Products Board	14	Tea Board of Kenya
15	Kenya Dairy Board	16	Kenya Animal Genetic Resource Center
17	Kenya Veterinary Vaccines Production Institute	18	Kenya Leather Development Authority
19	Agriculture, Fisheries and Food Authority	20	Cotton Development Authority
Ministry of Industrialization and Enterprise Development			
1	New Kenya Co-Operative Creameries	2	Sacco Societies Regulatory Authority
3	Kenya National Trading Corporation	4	Kenya Wine Agencies Ltd
5	Export Processing Zones Authority	6	Numerical Machining Complex
7	Kenya Accreditation Service	8	Kenya Bureau of Standards
9	East African Portland Cement	10	Kenya Industrial Estates Limited
11	Kenya Industrial Property Institute	12	Anti-Counterfeiting Agency
13	Kenya Industrial Research and Development Institute	14	Kenya Investment Authority

15	Micro and Small Enterprises Authority	16	Export Promotion Council
17	Kenya Institute of Business Training		
Ministry of Education, Science & Technology			
1	Kenya Literature Bureau	2	Jomo Kenyatta Foundation
3	Kenya School Equipment Production Unit	4	Kenya Institute of Special Education
5	Teachers Service Commission	6	Kenya Institute of Curriculum Development
7	Kenya National Examination Council	8	Kenya Education Management Institute
9	University Of Nairobi	10	Higher Education Loans Board
11	Commission for University Education	12	Technical University of Kenya
13	Multimedia University of Kenya	14	National Council for Science and Technology
15	University of Nairobi Enterprises & Services Ltd	16	Co Operative University College
17	Centre for Mathematics, Science & Technology Education in Africa - CEMESTEA		
Ministry of Interior and Coordination of National Government			
1	Commission on Administration of Legal Justice	2	Kenya School of Law
3	Council for Legal Education	4	National Authority for the Campaign against Alcohol and Drug Abuse
5	National AIDS Control Council	6	Kenya School of Government
7	Kenya Copy Right Board	8	National Crime Research Centre
9	Witness Protection Agency	10	Ethics and Anti-Corruption Authority
11	Independent Police Oversight Authority	12	National Police Service
13	Kenya Law Reform Commission	14	National Cohesion and Integration Commission
15	Independent Electoral and Boundaries Commission - IEBC		
Ministry of Health			
1	Kenya Medical Research Institute	2	Kenya Medical Training College
3	Kenyatta National Hospital	4	National Health Insurance Fund
5	Pharmacy & Poisons Board	6	Kenya Medical Supplies Agency
7	Kenya Medical Practitioners & Dentists Board	8	National Quality Control Laboratory
9	Mbagathi District Hospital	10	Pumwani Maternity Hospital
11	Mathere Mental Hospital	12	Mama Lucy Kibaki Hospital
Ministry of Energy and Petroleum			
1	Kenya Power	2	Kenya Electricity Generating Company
3	Kenya Electricity Transmission Company	4	National Oil Corporation of Kenya

5	Kenya Pipeline Company	6	Energy Regulatory Commission
7	Rural Electrification Authority	8	Kenya Nuclear Electricity Board
9	Petroleum Institute of East Africa	10	Geothermal Development Company
Ministry of Transport and Infrastructure			
1	Kenya National Highways Authority	2	Kenya Roads Board
3	Kenya Urban Roads Authority	4	Kenya Rural Roads Authority
5	Kenya Airports Authority	6	Kenya Railways Corporation
7	East African School of Aviation	8	National Transport and Safety Authority
9	Kenya Institute of Highways and Building Technology	10	Kenya Airways
Ministry of Public Service, Youth & Gender Affairs			
1	Youth Enterprises Development Board	2	Kenya National Library Service
3	NGOS Coordination Board	4	The Government Press
5	Public Service Commission of Kenya	6	Women Enterprise Fund
7	Kenya National Youth Service	8	National Council for Persons with Disability
9	National Council for Children Services		
Ministry of Tourism			
1	Kenya Tourist Board	2	Bomas of Kenya
3	Tourism Fund	4	Tourism Finance Corporation
5	Kenya Utalii College	6	Brand Kenya Board
7	Kenyatta International Conference Center	8	Tourism Regulatory Authority
Ministry of Information, Communication and Technology			
1	Communications Authority of Kenya	2	Media Council of Kenya
3	Kenya Broadcasting Corporation	4	Postal Corporation of Kenya
5	ICT Authority	6	Konza Technopolis Development Authority
7	Telkom Kenya	8	Kenya Year Book Editorial Board - KYBEB
Ministry of Devolution and Planning			
1	Kenya National Bureau of Statistics	2	Kenya Vision 2030 Delivery Secretariat
3	National Government Constituencies Development Fund Board	4	National Council for Population and Development
5	Kenya Institute of Public Policy Research & Analysis	6	Commission on Revenue Allocation
7	Community Development Trust Fund		
Ministry of Water & irrigation			
1	Water Resources Management Authority	2	The Water Services Regulatory Board

3	Kenya Water Institute	4	National Drought Management Authority
5	Kenya Water Towers Agency	6	Arthi Water Service Board - AWSB
7	National Irrigation Board – NIB		
Ministry of Sports, Culture and the Arts			
1	Sports Kenya	2	Kenya Cultural Centre
3	National Museums of Kenya	4	Kenya Film Classification Board
5	Kenya Film Commission		
Ministry of Environment & Natural resources			
1	National Environment Management Authority	2	Kenya Forest Service
3	Kenya Wild Life Service	4	National Bio-Safety Authority
Ministry of Land, Housing and Urban Development			
1	National Housing Corporation	2	Construction Management Authority
3	National Land Commission		
Ministry of Labor & East Africa Affairs			
1	National Social Security Fund	2	National Industrial Training Authority
Ministry of Mining			
0			
Ministry of Defense			
0			
Ministry of Foreign Affairs & International Trade			
0			

Source: GOK (2015)