

**ROLE OF SUPPLY CHAIN KNOWLEDGE TRANSFER
ON THE PERFORMANCE OF STATE CORPORATIONS
IN KENYA**

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**Role of Supply Chain Knowledge Transfer on the Performance of
State Corporations in Kenya**

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University

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This thesis has been submitted for examination with our approval as University supervisors.

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DEDICATION

Dedicated to my loving wife, Tabitha Wambui, for her unwavering support and encouragement during my entire study; she has always stood with me and given me the courage to move on. Her commitment to our family values and her love to our children assured me that all was well during the many hours that I had to isolate myself during this research. To her I say may the Almighty God bless you and fulfill all the desires of your heart. Secondly to my two handsome, brilliant and intelligent sons Peter Maina and David Nganga and my two beautiful, astute and super knowledgeable daughters Faith Njeri and Mercy Wangui who have always made me happy, challenged and want to work harder. To them all I say: may you live and grow-up to become great and distinguished scholars as you pursue your different careers and may your determination always be rewarded by the Almighty God.

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DEFINITION OF TERMS

This study adopted the following definitions of key terms:

Combination: It is the process of converting localized tested knowledge into an organization-wide, explicitly stated resource (Chei & Rujuta , 2013).

Explicit Knowledge: Represents content that has been captured in some tangible form such as words, audio recordings, or images. Explicit knowledge is usually contained within tangible or concrete media (Hau & Evangelista, 2007).

Externalization: The process of articulating tacit knowledge in the form of explicit concepts such as metaphors, analogies, hypotheses and models (Nor , Mohamed , & Norshidah , 2012).

Internalization: The process of converting explicit knowledge to tacit knowledge and is closely related to learning by doing (Nor , Mohamed , & Norshidah , 2012).

Knowledge Management: Applying knowledge from previous experiences of decision-making to current and future decision making activities with the express purpose of improving organizational effectiveness, it the process of applying a systematic approach to the capture, structure, management, and dissemination of knowledge throughout an organization(Jennex M. , 2005).

Knowledge Transfer: The process through which one unit (e.g., group, department, or division) is affected by the experience of another. It is the communication of knowledge from a source so that it is learned and applied by a recipient. Knowledge transfer occurs

when a contributor shares knowledge that is used by an adopter. (Dong-Gil, Lauriel , & William, 2005)

Learning: An enduring change in behavior, or in the capacity to behave in a given fashion, which results from practice or other forms of experience (Peggy & Timothy, 2013).

Sustainability: The ability of an activity to be maintained or kept at a similar level into the future, (Kenneth & Brian, 2012).

Socialization: Socialization is the process of developing new knowledge through shared personal experiences, (Chei & Rujuta , 2013).

Tacit Knowledge: A type of knowledge that is unarticulated, intuitive, and difficult to verbalize and detect. This type of knowledge is expressed in actions, attitudes, evaluations, points of view, motivation, and commitments, and in most cases, the only way it can be expressed is through representations, metaphors, and non-verbal forms of expression. (Hau & Evangelista, 2007)

LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|----------------|-------------------------------|
| BMW | Bayerische Motoren Werke |
| BSC | Balanced score card |
| E&E | Events and Exhibitions |
| EU | European Union |
| GDP | Gross Domestic Product |
| GOCS | Government Owned corporations |
| GoK | Government of Kenya |
| IT | Information Technology |
| JIT | Just in time |
| KM | Knowledge Management |
| KS | Knowledge sharing |
| KT | Knowledge transfer |
| MNCs | Multi-National Corporations |
| R&D | Research and development |
| RBV | Resource Based View |

| | |
|------------|-------------------------|
| RoK | Republic of Kenya |
| SCs | State Corporations |
| SOE | State Owned Enterprises |
| WIP | work-in-progress |

ABSTRACT

Knowledge is considered as the capacity to take effective action in varied and uncertain situations. Supply chain member can contribute to the creation, management and dissemination of collective knowledge throughout the organization. A successful company should be a knowledge-creating company: that is, one which is able to consistently produce new knowledge, to disseminate it throughout the company and to embody it into new products or services quickly. The supply chain is endowed with great specialized knowledge that can be of great use to all the members of the supply network. To leverage this, the supply chain members must transfer this knowledge on either side of the chain. The main objective of this study was to examine the role of supply chain knowledge transfer on the performance of State Corporations in Kenya. The specific objectives of this study were: to establish the role of supply chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skills transfer and supply chain competencies transfer as intervened by innovative thinking on performance of State Corporations in Kenya. There are two basic schools of thoughts which have focused on knowledge transfer theories, namely behaviorist psychology which is based on an empirical epistemology and cognitive psychology which is based on a rational epistemology. Empiricists have espoused the view that knowledge is derived from sensory impressions. Several theories guided this research which included: behaviorist psychology, cognitive psychology, the learning curve, experiential learning, knowledge transfer model and resource based theory. This research adopted a positivist, quantitative approach to the development of the research instrument. A cross-sectional survey research design was used in this study with a descriptive approach. The choice of this design was appropriate for this study since it utilizes a questionnaire as a tool of data collection and helps to establish the role of supply chain knowledge transfer in the performance of state corporations. The study population comprised of 119 State Corporations in Kenya as listed in Office of the President website. The samples size of this study was 220 respondents i.e. 55respondents from each of the four core supply chain division in the 119 state corporations in Kenya. Descriptive statistics were used aided by Statistical Package for Social Sciences (SPSS) version 22 to compute percentages and means of respondents' answers. Inferential statistics employing multiple regression and correlation analysis was applied to examine the relationship between the research variables. Tables, charts and figures were used to present the analyzed results to ease interpretation. Overall the findings indicated that supply chain knowledge transfer components played a strong role in the performance of state corporations by enabling the production of high quality products and services, making production processes more efficient and effective by both reducing defects in products and services as produced and delivered to the customers. It was also realized that these knowledge components when effectively transferred. The study recommends that state corporations should corroborate with their strategic suppliers to enhance knowledge transfer and sharing between them so that they could leverage on the knowledge bases of each other to enhance their competitiveness. The researcher further recommends state corporations should establish mechanisms to encourage and reward employees who want to share and transfer supply chain knowledge freely.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Knowledge is considered as the capacity (potential or actual) to take effective action in varied and uncertain situations (Wallis, 2008). Joyce & Alex (2010), argues that knowledge consists of understanding, insight, meaning, creativity, judgment, and the ability to anticipate the outcome of actions. The value of knowledge to an individual or an organization can only be measured in terms of the outcomes of its performance and application. Knowledge utilization is crucial to the success and competitiveness of any organization.

Much has been published about transient workforces taking knowledge with them when they walk out the door or exit organizations (Murray, 2008). Knowledge workers accumulate lots of knowledge in their working lives and therefore care and measures should be taken to have this knowledge retained within the organization when the workers exits or retires. The objective of knowledge management is to optimize the knowledge that is domiciled in an organization by putting that knowledge to the most appropriate use (Armstrong & Fukami, 2008).

This involves creating new knowledge from the already existing knowledge and increasing all stakeholders' awareness and understanding in the process. According Firestone, & McElroy (2005), in today's extremely competitive business world, organizations constantly strive to stay ahead in their chosen marketplace and niche. Commitment to best practice, knowledge and excellence is continually at the forefront of managers' minds. It is the utilization of the right and available knowledge that sets an organization apart.

The competitiveness of any organization must at some level depend on the available knowledge within that organization. Knowledge assets underpin capabilities and core competencies of any organization (Kamasak, 2010) Supply chain members can contribute to the creation, management and dissemination of collective knowledge

throughout the organization. Knowledge must be allowed to be transferred freely within an organization boundary to increase the level at which the transfer process takes place.

Dan (2010), postulates that the ability of firms to grow and compete over the next decade will increasingly depend on access to and utilization of relevant knowledge critical to its operations, and the performance and skills of its knowledge workers. Milton & Dirk (2010), continue to say that knowledge workers distinguish themselves from other types of workers because their main focus is knowledge itself. Knowledge worker are the greatest source of a company sustainable competitive advantage due to their ability to perform and undertake their responsibility effectively and efficiently, (Nisha & Neharika , 2010).

Knowledge workers are considered as the engines of growth of the new economy. They determine where the organization moves in terms of its competitiveness. Stankosky (2005) defines knowledge management as the ability of an organization to leverage relevant knowledge assets to improve performance, with emphasis on improving efficiency, effectiveness, and innovation. Benoît & Marguerite (2007) argues that the new knowledge must be shared across the organization or individual department so that it can become valuable to the organization.

DeFillippi *et al* (2006) suggest that knowledge enables an organization to make better decisions and compete effectively. Knowledge creates competitive advantage and is instrumental in enhancing organizational and supply chains performance. Armstrong & Fukami (2005) explains that knowledge management is the systematic process that supports and enhances the continuous development of individual, group and organizational learning. Knowledge management as a sustainable competitive tool consists of the creation, acquisition, gathering, transforming, transfer and application of knowledge to achieve organizational objectives.

Bernard *et al* (2004) indicates that knowledge is recognized as a durable and more sustainable strategic resource to acquire and maintain. Knowledge is a resource that forms the foundation of the company's capabilities. Capabilities combine to become

competencies and these becomes core competencies when they represent a domain in which the organization excels. The importance of knowledge and its contribution to sustainable competitive advantage for any nation or organization was illustrated in Lisbon, when European Union leaders declared that by 2010 the EU would be the most competitive and dynamic knowledge-based economy in the world, capable of sustaining economic growth with more and greater jobs and greater social cohesion (Maria , 2010).

According to Armstrong and Fukami (2005) a holistic approach to knowledge management involves: acquiring knowledge; generating or creating new knowledge; transforming information into new knowledge; capturing unspoken, internal or tacit knowledge; storing knowledge; sharing or disseminating knowledge throughout the organization; protecting distinctive value adding knowledge; and developing knowledge to develop core capabilities. Knowledge can be acquired from environmental scanning, market research, purchasing research, benchmarking exercises, modeling and networking with like-minded individuals and organizations.

Nonaka (2008) suggests that a successful company should be knowledge-creating company: that is one which is able consistently to produce new knowledge, to disseminate it throughout the company and to embody it into new products or services quickly. This has the greater implication of making the company more responsive to its customer needs and requirements. A knowledge company is one that is agile in its operation. Agility makes a company to respond with speed on what its customer may demand at any time.

New information can be transformed into new knowledge by compiling, combining, analyzing, interpreting or reformatting the already existing pool of knowledge present in the organization. According to Bernard *et al* (2004) knowledge assets interact with each other to create capabilities and competencies, and it is often this interaction which delivers a competitive advantage because it makes these assets difficult for competitors to imitate or replicate. Non-imitable competencies are critical for any organization that wants to stay at the top, for it shields the organization from ordinary competition.

All organizations are member of a supply chain. The supply chain encompasses all the organization on both the upstream and downstream of the supply spectrum. Ismail *et al* (2006) defines a supply chain as a network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer. The supply chain is endowed with great specialized knowledge that can be of great use to all the members of the supply network. But to leverage this supply chain knowledge, the supply chain members must transfer this knowledge on either side of the chain.

Knowledge transfer and knowledge sharing are sometimes used synonymously or are considered to have overlapping content (Pauline & Suneson, 2012). Many authors prefer using these terms interchangeably to denote the fact that for knowledge to be transferred, it must first be shared between individuals. This implies that knowledge transfer may not take place unless there is an aspect of knowledge sharing. A fundamental part in knowledge management is to freely spread and make knowledge accessible and usable within or between chosen organizations or between individuals. Knowledge transfer (KT) can be termed as a fundamental process of modern civilization and that it is central to learning which in turn is critical to development.

There is clear support for exploring the term knowledge transfer. KT is sometimes used interchangeably with knowledge sharing (Jonsson, 2008). In order to explore knowledge transfer, knowledge sharing (KS) should not be ignored and should therefore be looked in detail. Knowledge sharing can be defined as: “An exchange of knowledge between two individuals: one who communicates knowledge and one who assimilates it. In knowledge sharing, the focus is on human capital and the interaction of individuals. Strictly speaking, knowledge can never be shared. Because it exists in a context; the receiver interprets it in the light of his or her own background. (Schwartz, 2006).

Schwartz further states that knowledge sharing can be construed to be: “The exchange of knowledge between and among individuals, and within and among

teams, organizational units, and organizations. This exchange may be focused or unfocused, but it usually does not have a clear a priori objective.” Factors affecting such transfer were divided into motivational factors and knowledge barriers. Within knowledge barriers, three factors were identified: 1) Lack of absorptive capacity (in which lack of knowledge is a part). 2) Causal ambiguity – uncertainty regarding how aspects of the knowledge interact and respond to factors in the environment as well as uncertainty if necessary factors are present in a given situation. 3) An arduous relationship between the source and the recipient. How easy or frictionless is the communication and intimacy between sender and receiver?

Knowledge, in a sense, cannot be transferred but has to be redeveloped by each individual in order for it to be absorbed for reuse. New knowledge has to fit a mental model, be incorporated by sense making into this model then develop it and change it. Organizational learning can be conceived as having three sub processes: creating, retaining and transferring knowledge (Argote & Miron-Spektor, 2011). When organizations learn from experience, new knowledge is created in the organization (Yang, 2007). This new knowledge can then be used within the organization to create competitive advantage. This knowledge can be then retained so that it exhibits some persistence over time within the organization.

1.1.1 Global Perspective of Supply Chain Knowledge Transfer

Creating and replicating knowledge is important for all organizations. These abilities are especially critical for firms that compete in dynamic environments. Such firms require flexibility to coordinate internal resources and adaptive capacity for managing environmental challenges; innovation becomes an important determinant of survival (Laura *et al.*, 2009). Knowledge sharing in a supply chain is beneficial for removing knowledge barriers, strengthening supply chain synchronization and thereby enhancing knowledge level, knowledge capability, knowledge innovation and the overall competitive advantage of a particular supply chain (Peyman *et al.*, 2014).

In their study entitled, “Knowledge transfer between globally dispersed units at BMW,” Stephanie and Andreas (2009), discovered that the search for and transfer of knowledge depends foremost on the applicability of context-specific knowledge rather than its complexity. They majored their research on two opposing views namely, the social network view and the product innovation perspective on knowledge transfer. They further argued that close inter-unit integration and frequent and direct interaction between subunits are directly linked to increased innovation.

Argote and Miron-Spektor, (2011), states that knowledge transfer between units has been understood as the process through which one unit (e.g. group, department, or division) is affected by the experience of another. This has the implication of using one specific type of knowledge for different aspects of work. Stephen and Andreas (2009), continue to state that knowledge transfer is often referred to as the most important, yet most challenging knowledge activity due to the high complexity it possesses.

It is much complex when it comes to sharing or transferring knowledge from one organization to another (Antonova & Csepregi, 2011). They explain that this complexity stems from the fact that knowledge is not only created by and rests within individuals, but is also embedded in particular ways of thinking and acting. In their finding Stephen and Andreas found that there are five specific elements that are most influential to effective intra-organizational knowledge transfers between individual members of the business units helping in their competitiveness and making the firms to be more sustainable.

These specific elements are: strength of network ties; formality of network ties; absorptive capacity; learning adaptiveness; and communication channels. In conclusion, Stephen and Andreas (2009) stated that knowledge transfer effectiveness requires different strengths and formalities of social network ties in an intra-unit setting. Effective knowledge transfer between units in Multi-National Corporations (MNCs) depends foremost on the context specificity of knowledge.

The influence knowledge transfer drivers such as the strength and formality of network ties, absorptive capacity, learning adaptiveness, and communication channels have on the knowledge transfer process stem directly from the applicability of valuable knowledge created within each unit. Globally, a lot of research has been carried out on the field of knowledge management and knowledge transfer. Most of these researches have been conducted in relation to human resource management and in technology transfer between different countries. However, there is little literature or empirical studies on supply chain knowledge transfer and its contribution to performance of organizations.

1.1.2 Regional Perspective of Supply Chain Knowledge Transfer

Developing country and especially in Africa needs considerable effort to fully absorb and implement knowledge transfer because such inflows and domestic abilities to use them interact in complex ways (Osabutey & Jin, 2016). In their study entitled as “Factors influencing technology and knowledge transfer: Configurational recipes for Sub-Saharan Africa”, Osabutey and Jin (2016) investigated factors that could influence technological and knowledge transfer in a developing country, specifically in a African setting such as Ghana. Their study revealed that the four contextual factors that could influence technological and knowledge transfer are less congestion of firms both foreign and local, government policy incentives, effective intermediate industry institutions, and educational effectiveness. They also found out that quality of knowledge transfer and its management depends to a large extent on having quality foreign and local firms.

Although their conclusion was logical, and therefore not significantly new, the results emphasize the importance of quality in specific knowledge transfer processes. Their findings also significantly contributes to the theory remarking that, even though organizations need to learn, this process has to take place within the context of institutional factors. Consequently, the findings on Sub-Saharan Africa context inform and enhance organizational learning theory. The findings most significant contribution to literature is the demonstration that the enhancement of both technological and knowledge transfer in host developing economies requires less

congestion of firms. Developing countries rely on foreign knowledge and technological transfer inflows for own development (Osabutey & Debra, 2012).

Although the international technological and knowledge transfer literature goes to several decades ago, studies seemingly ignore Sub Saharan Countries in their discourses. Theories that explain why the knowledge transfer uptake in the region is low remain scarce and unavailable. Knowledge transfer in Africa is equally a new concept that is developing over time. There was little literature also found on supply chain knowledge transfer as well.

1.1.3 State of Knowledge Transfer in Kenya

Godfrey , Stephen, & James (2015) rightly argue that the resource-based view (RBV) considers firm-specific factors as a source of competitive advantage for organizations. This is important because it implies that competitive organization must rely on what they already have to exploit the opportunities accorded to them by the environment. They further indicate that the RBV assumes intangible assets such as knowledge, innovation, and intellectual properties as value drivers and sources of company's competitive advantage.

Knowledge transfer and exploitation is a new concept in the Kenyan environment. However, as highlighted by Godfrey, Stephen, and James, some commercial banks in Kenya have been exploiting knowledge as a valuable resource in their competitive strategy. In their study investigating the influence of knowledge transfer and knowledge conversion on performance of Commercial Banks in Kenya, they found out that knowledge transfer has a positive influence on performance of organizations.

They further recommended that the management of Commercial Banks should ensure that information is more available and accessible, and that it flows should be enhanced in order to facilitate transmission of tacit knowledge. Tacit knowledge which resides in people can only be valuable to organizations through knowledge transfer (Mohajan, 2016). There is limited literature available on knowledge transfer

in Kenya and especially in supply chain domain and its contribution to the performance of these organizations.

1.1.4 A Brief Profile of State Corporations

Laurie (2012) explains that all organizations have their own individual character, culture and sense of identity and differ in their attributes, processes and methods of working. Laurie, further suggest that, despite the differences, there are at least three common factors in any organization: people, objectives and structure. It is the interaction of people in order to achieve objectives that form the basis of an organization. State corporations are legal entity created by a government to undertake commercial activities on behalf of the government (R.o.K , 2009). Their legal status varies from being a part of government into companies with a state as a regular stockholder (R.o.K, 2010).

According Kamanda (2001), there is no standard definition of a government owned corporation (GOC) or state owned enterprise (SOE), although the two terms can be used interchangeably. The definition characteristics are that they have a distinct legal form and they are established to operate in commercial affairs (Makau & Onyango, 2010). While they may also have public policy objectives, GOCs should be differentiated from other forms of government agencies established to pursue purely non-financial objectives.

According to Laurie (2012), Organizations can, traditionally, be distinguished in terms of two generic groups: private enterprise organizations and public sector organizations. The distinction can be made on the basis of ownership and finance, and the profit motive. Private enterprise organizations are owned and financed by individuals, partners, or shareholders in a joint stock company, and are accountable to their owners or members. They vary widely in nature and size, and the type and scope of goods and services provided. The main aim is of a commercial nature such as profit, return on capital employed, market standing or sales level.

The main aim of public organizations is a service to and the well-being of the

community. GOEs can be fully or partially owned by government (R.o.K, 2010).The Kenya government forms state corporations to meet both commercial and social goals. They exist for various reasons including: to correct market failure, to exploit social and political objectives, provide education, health, redistribute income or develop marginal areas (State, 2015).

The performance of State Corporations (SCs) has been a matter of on-going concern in an environment of resource scarcity and mounting needs. A number of policy issues and challenges afflict SCs in Kenya, including: Lack of clarity on the role that State Corporations should play in the economy. This is compounded by the apparent differences in opinion in respect of the exact role of the state in the national development effort; Poor linkage of State Corporations activity with the national development goals; Weak human resource and institutional capacity to attract and retain the skill sets needed to drive performance; Lack of a clear government policy in respect of government linked companies; and an inadequate performance management framework that effectively links performance of SCs to national development goals and fails to adequately link individual performance to institutional performance (G.o.K, 2013).

Government owned entities (GOEs) will continue to play an important role in the development process of the country. Kenya's Vision 2030 requires a transformational mindset in the way business is conducted. In driving towards the goals set out under these well-elaborated programs, GOEs will be expected to play the following key roles: promote and accelerate economic growth and development that will drive the social and economic transformation of Kenya to, "a globally competitive and prosperous country with a high quality of life by 2030"; support efforts aimed at building the institutional capability and technical capacity of the state in facilitating and promoting national development; improving delivery of public services, including meeting basic needs of citizens; and support the creation of good and widespread employment opportunities in various sectors and across the entire country (G.o.K, 2013).

State corporations have played a significant role in capital formation as shown by the rapid expansion of total capital expenditure of the state corporations for the period 2008-2011, which expanded at a rate of 70% per annum raising the capital of state corporations from Ksh.15.7 billion in 2008/09 to the projected Ksh.392.2 billion by the end of 2011/2012 financial year this is a more than 20-fold increase in a very short period. As a group the Corporations have a wage bill of over KES. 131.2 billion of which the National Treasury finances 60.34 billion (46%). The total wage bill takes about 4% of GDP (currently KES. 3.44 trillion³) while their internally generated funds contribute about 7% of GDP. The Government contribution to salaries in the sector is about 6% of recurrent expenditure for 2012/2013 financial year (G.o.K, 2013).

In addition to contribution to capital formation, state corporations contribute significantly to formal employment. Formal wage employment in the parastatals has been declining in both absolute numbers, as well as its share of the formal wage employment. In the year 2000, state corporations accounted for about 15% of total wage employment, declining marginally to 13.8%. Similarly, in the same period, parastatals wage payments as a percentage of total wage payments declined from 8.3% (2000) to 6.9% (2012). There has been improvement in performance of State Corporations perhaps due to improvement in governance that has been witnessed from 2004. In the period 2009 to 2012 commercially oriented state corporations registered a growth in turnover, profits and dividends to the Exchequer. This reflects growth in Turnover, profit and dividends of 31.2%, 33.2% and 99.1% respectively between 2009/10 and 2011/12. In the same period a number of State Corporations made losses as shown below. (G.o.K, 2013).

Losses by State Corporations in 2011/12 were as follows, eleven (11) commercial state corporations made losses, compared to twelve (12) in 2010/11 and sixteen (16) in 2009/10. In Kenya state corporations accounted for 20% of the country's Gross Domestic Product (GDP), provided employment opportunities to about 300,000 people in the formal sector and 3.7 million persons in the informal sectors of the economy (G. o. K., 2004). One aim of making Kenya a newly industrialized, middle

income country by providing quality life for all its citizens is by the actualization of Vision 2030 (R. O.K., 2011). Noor *et al.* (2013), continues to state that productivity of state corporations was quite low in 2003 while at the same time they continued to absorb excessive portion of the budget, becoming a principal cause of long term concern.

1.2 Statement of the Problem

The report of the Presidential Taskforce on Parastatals Reforms of 2013 (G.o.K., 2013) highlighted the five major roles for Government Owned Entities (GOEs) in the national development effort. These roles include: promoting economic growth and development; building the capability and technical capacity of the state; improving the delivery of public services; creation of employment opportunities; and building of international partnerships (Neil & Njeru, 2009). One of the key policy instruments that governments world over applies in supporting national development have been GOEs (International, 2015), in Kenya referred to as parastatals or state corporations (Wamalwa, 2003).

A number of policy issues and challenges afflict SCs in Kenya (Ondari & Minishi, 2007) which includes: lack of clarity on the role that SCs should play in the economy and differences in opinion in respect of the exact role of the state in the national development (State, 2015); weak human resource and institutional capacity to attract and retain the skill sets needed to drive performance; and an inadequate performance management framework that effectively links performance of SCs to national development goals (Kenya, 2013). Knowledge Management enhances an organization's capacity to adapt by improving its ability to learn and innovate and to detect and solve problems (Zachary & Becky, 2010).

State corporation's accounts for about 20% of the country's Gross Domestic Product (GDP), provides employment opportunities to about 300,000 people in the formal sector and 3.7 million persons in the informal sectors of the economy (G. o. K., 2004). But in the period 2011/12, eleven (11) state corporations made losses, compared to twelve (12) in 2010/11 and sixteen (16), in 2009/10. Though this data

shows a downward trend, the losses made are a great source of concern. (R. O.K., 2011).

State Corporations' operations have become inefficient and non-profitable, partly due to multiplicity of objectives and lack of a skilled and competent work force (Kenya, 2013). A skilled and competent work force is a product of effective knowledge transfer (Wamundila, 2008). When knowledge is shared and transferred across the supply chain, performance of individual organizations should be evident (Stephanie & Andreas, 2009). Milton and Dirk (2010), states that knowledge is the main asset of today's globalized economy. Individual in organizations hold a lot of knowledge acquired over time in their career.

The supply chain is a rich source of knowledge (Harley, 2014), for it brings together the different players in the chain who include: the customer; the suppliers; and manufacturers of products and services. The Kenya government through sessional paper no. 10 of 1965 established State Corporation by an act of parliament to meet both commercial and social goals (Kenya, 2013). These goals include: to correct market failure; to exploit social and political objectives and to provide education and health services (State, 2015).

These goals will not be realized if knowledge as a resource and a tool of competitive advantage resides on isolated areas in the supply chain (Omotayo, 2015). It's no secret that the government and especially the state corporations is the home for some of the best knowledge workers and highly educated staff, yet this is not evident in work performance. State corporations in Kenya need to adopt innovative techniques in its knowledge transfer so that it can add value and improve its competitive advantage. Dynamic innovation is characterized by continuous, energetic, and sustained efforts that improve the client's operational efficiency, process effectiveness and strategic performance (Mary & Leslie, 2014).

Innovative thinking in state corporations in Kenya is important to make them both effective in the performance of their mandate and efficient in the utilization of the resources availed to them by their stakeholders. Innovation is rarely a one-time, big-

bang project, but rather multiple innovations projects deliver substantial improvements to the client's performance over time. Innovative deliverables might include effective modes in knowledge sharing, faster dissemination of knowledge between supply chain members, and higher utilization of the transferred knowledge

It is evident that knowledge is not readily transferable across state corporations. State corporations ineffective knowledge transfer has contributed to their poor performance. To be able to meet their constitutional mandate, state corporations knowledge workers must be willing and ready to transfer and share their knowledge freely among themselves to produce a skilled and competent work force. This Thesis investigated the critical role of supply chain knowledge transfer in the performance of State Corporations in Kenya as intervened by innovative thinking.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of this study was to examine the role of supply chain knowledge transfer on the performance State Corporations in Kenya.

1.3.2 Specific Objectives

The specific objectives of this study were:

1. To establish the role of supply chain acquired knowledge transfer on performance of State Corporations in Kenya.
2. To evaluate the role of supply chain created knowledge transfer on performance of State Corporations in Kenya.
3. To determine the role of supply chain competencies transfer on performance of State Corporations in Kenya.
4. To explore the role of supply chain skills transfer on performance of State Corporations in Kenya.

5. To assess how innovative thinking intervenes in the transfer of acquired knowledge, created knowledge, skills and competencies in State Corporations in Kenya

1.4 Research Hypothesis

H₀₁: Supply chain acquired knowledge transfer does not significantly affect the performance of State Corporations in Kenya.

H₀₂: Supply chain created knowledge transfer does not significantly affect the performance of State Corporations in Kenya.

H₀₃: Supply chain skills transfer does not significantly affect the performance of State Corporations in Kenya.

H₀₄: Supply chain competencies transfer does not significantly affect the performance of State Corporations in Kenya.

H₀₅: Innovative thinking does not significantly affect the transfer of acquired knowledge, created knowledge, skills and competencies in State Corporations in Kenya

1.5 Significance of the study

Supply chain knowledge transfer cuts across the entire supply chain affecting the suppliers, buyers and different organizations both downstream and upstream. The findings of this study have the potential to impact all these players differently.

1.5.1 State Corporations

Public organization will find the study on supply chain knowledge transfer role valuable in aiding them in the fulfillment of their objective of offering services to the public in the most efficient manner. With knowledgeable workers who will be able to use the transferred knowledge from colleagues, it would be possible for public organization to be more responsive to public demands and wishes of better services

from the government. Public organization might also find the findings of this study crucial in helping the policy makers in these organizations to develop better frameworks for knowledge transfers in their supply chains in particular and across the entire organizations in general.

1.5.2 Policy Makers

Those charged with the responsibility of developing knowledge in different aspects of organization and government will find the study on the role of supply chain knowledge transfer helpful in determining the importance of this aspect of knowledge. They may want to use the findings to develop the right policy if they can view all people as members of an ever ending chain.

1.5.3 Academicians and Researchers

Supply chain knowledge transfer is a relatively new field of study. Knowledge management especially in the supply chains is also a new and emerging trend. In this regard further insights in this issue will be of great importance to scholars and academicians in supply chain management and procurement generally.

1.5.4 Stakeholders

The stakeholders might use the research findings to evaluate their managerial strategies and the extent to which they are affected by supply chain knowledge transfer with an aim of improving their performance.

1.6 Scope of the Study

This study was focused on supply chain knowledge transfer role on the performance of State Corporations in Kenya (State, 2015), as they are listed in Appendix III. The study covered state corporations in Kenya. Data was collected from corporations as clustered and stratified under appendix III. Supply chain managers from the four core supply chain division that include: Transportation and Logistic Managers, Tender Managers, Contract Managers and Inventory Managers

from 119 state corporations in Kenya were the respondents in this study. This study was carried out in 2017. Supply chain knowledge transfer is relevant to the entire supply chain function hence the choice of these four core supply chain division. These four groups of respondents are directly involved in the implementation and execution of supply chain processes and policies in state corporations.

The outcomes of supply chain knowledge transfer may include: acquisition of knowledge about ideas, concepts, theories, methodologies and practical abilities to undertake tasks; generating or creation of new knowledge from environmental scanning, market research and benchmarking processes; innovative thinking and transformation of existing information into new knowledge; development of skills which allows or aids in the successful, rapid and confident performance of complex tasks, skills are complex behaviors acquired as a result of knowledge transfer and practice; and development of competencies which is the integration of knowledge and behavior resulting in high performance and proficiency. All these outcomes are critical to the performance of State Corporations. These are the main drivers of an organizations sustainable competitive advantage.

1.7 Limitation of the Study

The major limitation encountered was obtaining information from the supply chain managers as most of them were not willing to disclose some information which they thought to be confidential. The researcher overcame this limitation by using the introduction letter from the University to assure them that the information provided will be used for academic purpose only. The data of the study were collected from state corporations and therefore it might be difficult to replicate the findings to all other organizations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the relevant theoretical and empirical literatures available and related to supply chain knowledge transfer. It covered; concept of supply chain knowledge transfer which included; supply chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skills transfer, supply chain competencies transfer and innovative thinking, theories and models of knowledge transfer, the conceptual framework, critiquing of existing literature, summary of reviewed literature, and the research gaps.

2.2 Theoretical Review

According to Evenett and Hoekman (2005) theories can be classified according to their scope, function, structure and levels. Several theories and models have been put forward by scholars to create insight in the field of supply chain knowledge transfer. However most of these theories have their roots in knowledge management and knowledge transfer. The relationship depicted by these theories and models is therefore reflected in this section of the literature concerning role of supply chain knowledge transfer in enhancing the performance of State Corporations.

There are different ways of understanding what supply chain knowledge transfer is, how the transfer process works and what we mean when we say that an individual 'knows' something (Armstrong & Fukami, 2008). There are two basic schools which have focused on knowledge transfer theory namely behaviorist psychology which is based on an empirical epistemology and cognitive psychology which is based on a rational epistemology. According to Peggy and Timothy, (2013) empiricism is the view that experience is the primary source of knowledge. This mean that organisms are born with basically no knowledge and anything learned is gained through interactions and associations with the environment.

Empiricists have espoused the view that knowledge is derived from sensory impressions. These impressions, when associated contiguously in time and space, can be hooked together to form complex ideas. Rationalism is the view that knowledge derives from reason without the aid of the senses (Peggy & Timothy, 2013). This is the viewpoint that humans learn by recalling or “discovering” what already exists in the mind. From this perspective, instructional design issues focus on how best to structure new information in order to facilitate the learners’ encoding of this new information, as well as the recalling of that which is already known.

2.2.1 Behaviorist Psychology Theory and Supply Chain Acquired Knowledge Transfer

Behaviorist psychology is based on an empirical epistemology; this is the view that the human mind operates purely on information obtained from the senses. It focuses on observable behaviors, which arise from the relationships between stimuli or sensory experience and our responses to those stimuli. Learning is interpreted as the formation of new connections between stimulus and response on the basis of experience or conditioning. Peggy and Timothy (2013) states that behaviorism equates learning with changes in either the form or frequency of observable performance. They posit that learning is accomplished when a proper response is demonstrated following the presentation of a specific environmental stimulus.

Messages about the results of our behaviors, also known as feedback are either an incentives leading to positive reinforcement or a deterrent which leads to negative reinforcement to similar behavior in future (Laurie, 2012). Reinforcement is any event following a behavior that increases the likelihood of that behavior occurring again. According to behaviorist theory, we lean to modify our responses to a given stimulus according to whether the feedback on the results of previous experience was good or bad (Armstrong & Fukami, 2008). The development of associations between stimuli and responses happens through a process called conditioning.

There are two types of conditioning that are extensively covered in literature namely classical conditioning and operant conditioning. Classical conditioning also known

as simple learning was described by Pavlov (1927) when he noted a dog that salivated not only on the sight of food, but on the appearance of the lab assistance bring the food. According to Pavlov, there was a clear association between the stimulus of the food and the natural response of salivating. The dog had also through repeated experience come to associate the appearance of the assistant with the food as a conditioned stimulus and responded by salivating on his appearance as a conditioned response.

In follow-up experiments, Pavlov by repeatedly ringing a bell while showing the dog the meat created an association between the sound and the meat. The dog became conditioned to salivate at the sound of the bell even if the meat was not present. It can therefore be concluded that classical conditioning involves associating an established response with a new stimulus (Laurie, 2012). Operant conditioning also known as instrumental conditioning describes how new behaviors or responses become established through association with a particular stimuli.

Operant conditioning suggests that any behavior that is rewarded by reinforcement will tend to be repeated and any behavior that is punished will not be repeated and any behavior that is ignored will tend to die out. Skinner (1954) demonstrated this in experiments with rats. A hungry rat was placed in a box with a lever which, if pressed, delivered a pallet of food. The rat was allowed to explore its environment at random. When the rat accidentally pressed the lever, it was rewarded with food, reinforcing the behavior. After a number of repetitions, the rat would press the lever deliberately in order to obtain food. Operant behaviors are actions that individuals take to meet the demands of their environments.

Skinner established the following results: complex patterns of behavior or skilled performance can be built up by step-by-step reinforcement of individual actions or learning steps; punishment is of relatively little value in encouraging learning, reinforcing desired behavior with positive and valued reward is more effective; and occasional reinforcement is sufficient to maintain learned behaviors once they have been established. Skinner's findings are the basis of experiential or trial and error

learning, where payoff or positive reinforcement like recognition, praise or reward is immediately given for desired outcomes.

Knowledge workers are able to transfer the tacit knowledge they have to new workers by allowing them to try doing what they learn by encouraging them and approving their effort (Ragna & Evi, 2008). Reinforcement is a key concept in supply chain knowledge transfer because it determines which new skills will be adopted for future use and which will be discarded. By reinforcing what is required in supply chain concepts, new behavior or new way of doing things is developed and later put into use. Behaviorist psychology theory (Harasim, 2012) helps us to understand how supply chain skills transfer takes place and how the transferred skills impacts on work performance. Change of behavior is crucial in the knowledge transfer process as it impacts on both the transferor and the transferee of knowledge.

2.2.2 Cognitive Psychology Theory and Supply Chain Created Knowledge Transfer

Cognitive psychology is based on a rational epistemology which is the view that the human mind imposes meaning and organization on sensory data. Cognitive psychology argues that we process or interpret and utilize feedback information on the result of our past behaviors in order to make rational decision about whether to maintain successful behaviors or modify unsuccessful behaviors in future, according to our goals and our plans for reaching them. This in turn helps individuals to create a new body of knowledge. As suggested by Song *et al.* (2007) epistemic alignment is important to the successful implementation of constructivist learning environments.

David (2011) says that knowledge societies are built on collaborative problem-solving and knowledge-creation skills that may be best taught and learned in constructivist-based learning environments. Cognitive psychology is concerned with the goals and plans individuals choose to pursue, the methods they adopt, and the effect of experience and thinking on those plans and methods (Laurie, 2012). Learning is the way in which human being process and interprets feedback on the result of their experience and skills in pursuit of their chosen goals. Cognitive

learning approaches suggest several useful concepts for supply chain knowledge transfer.

Supply chain knowledge transfer is most effective if people are encouraged to formulate clear goals or desired outcomes for their learning and if they receive clear and immediate feedback that suggests whether the learned behavior contributes to attaining those goals or outcomes. The e cognitive approach focuses on the mental activities of the learner that lead up to a response and acknowledges the processes of mental planning, goal-setting, and organizational strategies.

According to Peggy and Timothy (2013) cognitive theories stress the acquisition of knowledge and internal mental structures and, as such, are closer to the rationalist end of the epistemology continuum. Learning is equated with discrete changes between states of knowledge rather than with changes in the probability of response. Cognitive theories focus on the conceptualization of the learning processes and address the issues of how information is received, organized, stored, and retrieved by the mind. Learning is concerned not so much with what learners do but with what they know and how they come to acquire it.

Supply chain knowledge transfer is also likely to be most effective if learners are able to experiment, discover things and solve problems by themselves. Participation and problem-solving encourages the engagement of cognitive processes, which means that the learner is more likely to retain the skill or knowledge acquired, transfer it to other workers or context, and even re-use it when required. This is the basis for approaches such as workshops, role plays, case studies, simulation and discovery learning. The e real focus of the cognitive approach is on changing the learner by encouraging them to use appropriate learning strategies (Peggy & Timothy, 2013).

Human beings develop strategies for how to learn different types of skills and be able to solve different types of problems. Supply chain knowledge transfer interventions may be more effective when directed at learning how to learn by reasoning, solving problems, gathering and using data, formulating questions and finding solutions for those questions. An important goal of work-related knowledge transfer is the transfer

of knowledge from one context to another, by transposing a solution from one learning experience to other solutions which are similar but in different context (Jennex, 2005). Transfer of knowledge is maximized when something previously learned is built on, to create new knowledge, helping the brain to generalize, compare and make connections. Cognitive psychology theory helps us to understand how supply chain core competencies are developed and how these competencies can be used to leverage performance of complex and specialized tasks.

2.2.3 Learning Curve Theory and Supply Chain Competencies Transfer

The learning effect can be represented by a line called a learning curve, which display the relationship between the total direct labor per unit and the cumulative quantity of a product or service produced (Armstrong & Fukami, 2008). The learning curve relates to a repetitive job or task and represents the relationship between experience and productivity: The time required to produce a unit decreases as the operator or firm produces more units. A learning curve is a graph of an individual's competence over time, showing the relationship between time spent in learning and the level of competence attained.

Laurie (2012) says that both change and learning are natural processes that continue throughout life. Individual learning is a lifelong process that is essential if people are able to cope with the changing nature of work organizations. It is common for people to say that they are 'on a steep learning curve' when they have to acquire a lot of new knowledge in a short period of time. The standard learning curve is initially steep, leveling out towards proficiency. But in practice, the curve typically shows a variable pace of learning.

The curve for acquisition of manual skills, for example, typically shows a slow start, because the trainee has a lot to take in, then gains momentum. There may be one or more plateaus where output levels off for a while, reflecting the trainee's need to consolidate what he has already learned (Laurie, 2012). Momentum then typically gathers again, until the trainee reaches proficiency level, where the curve will level

off, unless there is an injection of new equipment or methods, or fresh motivation, to lift output again.

Learning results when information is stored in memory in an organized, meaningful manner (Peggy & Timothy, 2013). Learning curves can go down as well as up, for example, if the learner is unable to apply newly acquired skills and forgets them, or suffers disorientation as a result of major job change. An up-and-down transition curve is common in cases where an individual changes job roles or work methods. Organizational learning involves gaining experience with products and processes, achieving greater efficiency through automation and other capital investments, and making other improvements in administrative methods or personnel.

Productivity improvements may be gained from better work methods, tools, product design, or supervision, as well as from individual worker learning. These improvements mean that existing standards must be continually evaluated and new ones set. Learning curve theory is used in explaining how supply chain acquired knowledge transfer as a process takes place and the contribution of the acquired skills toward innovation and innovative thinking of the players and the general performance of the firm and the extended supply chain.

2.2.4 Experiential Learning Theory and Supply Chain Skill Transfer

Experiential learning is learning by experience or learning by doing (Kolb, 2005), which can also be termed as skills Effective knowledge transfer could start, not just from abstract concepts or theories, but from concrete experience. Kolb formulated the 'experiential learning cycle' to demonstrate how everyday work experiences can be used for learning, transfer of knowledge, personal development and performance improvement, through the process of 'learning by doing'. The experiential learning cycle has four stages namely: act; analyze; abstract; and adjust.

These four stages help the learner to undertake the task at hand through a process of continuous repetition and progress to the specific requirements of the task (Armstrong & Fukami, 2008). To start with, the learner may have concrete

experience of the technique or concept to be learned. A good example of the four stages of the experiential cycle would be a trainee supply chain manager being given an opportunity to chair a meeting with suppliers (Armstrong & Fukami, 2008). After chairing the meeting, the trainee supply chain manager thinks back over the experience he had and notices that the meeting split into side issues on several occasions.

After pondering what would have allowed this to happen. Using theory and experience, he develops some abstract concepts and sets up a hypothesis for future action. He realizes that the facilitator should be responsible for controlling the meeting and that this can only be achieved only by being the focus of all communications. He then applies and tests this hypothesis in new situation by planning to facilitate the next meeting, by requesting that all communications to be routed via him as the chair. The trainee is thereby supplied with a new or adjusted concrete experience or knowledge from which to begin the cycle all over again.

Trial and error is an important knowledge transfer process. It basically involves doing something and if you do not get the desired results, doing it again differently. This is the foundation of experiential learning, where every work situation particularly mistakes and problems can become a learning opportunity (Kolb, 2005). A safe environment is required in order to allow practice and to genuinely encourage error-making as part of supply chain knowledge transfer. A negative consequence for errors demotivates learning and creates a downside risk for the supply chain, where knowledge transfer involves real-life tasks or resources.

Experiential learning allows any experience or situation to become an opportunity for learning and development, enabling the learner to manage his own learning. It also provides a systematic and effective approach to learning to learn and emphasizes the nature of learning as a continuous process (Laurie, 2012). Experiential learning builds in knowledge transfer or application of learning from the original learning context to other contexts reinforcing and embedding learning on the job through experimentation, practice, theorizing, watching and reflecting. Experiential learning theory can be used to explain the process of new supply chain created knowledge

transfer and how this important process affects the performance and the competitiveness of any organization.

2.2.5 Resource-Based Theory and the Performance of State Corporations

Spender (2003) states that a knowledge management approach to the firm, focuses on the processes by which its knowledge is generated, moved, stored, and applied to create a competitive advantage and enhancing of organizational performance. This theory treats knowledge as an organizational asset, seldom represented on the balance sheet, but as needing to be managed as any other organizational asset. Spender continues to state that it costs money to produce or acquire knowledge, thereby making knowledge a strategic factor of production. Teece (2000) assert that knowledge has now become the most strategic factor of production in any given firm.

Knowledge must be shared and applied to the generation of goods and services for it to be a tool of competitive advantage. The Resource Based View (RBV) of the firm establishes the possibility for researchers to link the resources of the firm (including knowledge) to its sustained competitive advantage. This theory identifies the existence of rivalry between firms that present differences in efficiency due to resources heterogeneity. Industry equilibrium is based on the productivity differentials between firms.

The RBV of the firm considers that the differences in efficiency between firms within the same industry persist due to the difficulty in imitating the resources each firm possesses (Seth & Thomas, 1994). This means that systematic variations in profit and performance have their origins in particular firm factors (Amit & Schoemaker, 1993). Much of the knowledge necessary for the firm's functioning comes not from outside, prior to the firm's existence, but from the creativity of the workers within the firm. This is the stock of knowledge created and accumulated as workers undertake their works and responsibilities.

The knowledge based view helps us to see the supply chain not only as a spender of knowledge but as a creator of knowledge also. The firm's knowledge is harvested by rigorous observation and evaluated by trained staff, and articulated into the tools and procedures to be followed by those to who is transferred (Spender, 2003). Organizational knowledge is a strategic resource in the supply chain (Hult *et al.*, 2003). To be strategic, a resource must meet three criteria. First, the resource must be valuable, meaning it helps create outputs that are important to customers.

Knowledge appears to surmount this hurdle, particularly in the supply management context (Das & Teng, 2000). Implementing a fast cycle time climate requires adopting a paradigm focused on learning, where flexibility, responsiveness, creativity, and timeliness are stressed. From this perspective, knowledge is a valuable resource to supply chain in that it subtly but persistently steers innovation and behavior toward effectively satisfying the needs of customers. A strategic resource must also be rare, meaning that the resource is found infrequently and that close substitutes are not available.

Supply chain knowledge is a complex concept, encompassing both a process and a structure (Hult *et al.*, 2003). The process of learning refers to the development of new knowledge that has the potential to change behavior and altitude. Thus, supply management organizations stressing learning must learn and then behave accordingly to be effective (Hult *et al.*, 2003). Resource based theory knits together the entire process of supply chain knowledge transfer by highlighting how the different aspects of knowledge transfer works together to produce a competitive advantage for any firm.

When supply chain acquired knowledge transfer, knowledge creation, innovative thinking, skill development and core competencies development are combined and made to work together in harmony, and they become a dynamic resource that directly contribute to the performance of any organization.

2.2.6 Knowledge transfer model

According to Ikujiro (1998), organizational learning results from a process in which individual knowledge is transferred, enlarged and shared upwardly to the organizational level. Ikujiro and Hirotaka (1998), developed a model based on the distinction between tacit and explicit knowledge. Murray (2008) clearly highlights that tacit knowledge is knowledge that is understood within a knower's mind.

He argues that tacit knowledge consists of cognitive and technical components. Cognitive components are the mental models used by the knower, which cannot be expressed directly by data or knowledge representations. Tacit knowledge is innate know-how, deeply ingrained, taken-for-granted and often unconscious mental models and competencies (Laurie, 2012). People just-know how to do things. Such knowledge is difficult to articulate, formalize or share with others.

Explicit knowledge is formal, systematic, clearly articulated knowledge, which can be communicated and shared via tools such as product specifications, procedures or computer programs. Sivakumar and Roy (2004), indicate that explicit knowledge can be codified and transmitted easily. For instance, explicit knowledge for cathedral building would include the templates and practical geometric notions that masons and artisans would use to explain, plan, and execute the task.

According to Murray (2012), knowledge transfer in an organization occurs when members of an organization pass tacit and explicit knowledge to each other. Lifelong learning will be the only way to keep abreast of the pace of change in a technological age, requiring flexible labor markets that operate in an increasingly global economy (Murray, 2008). While objectivity is the hallmark of explicit knowledge, tacit knowledge is characterized by subjectivity.

To increase organizational learning, a process of knowledge conversion is required, beginning at the individual level and expanding through social interaction to include a diversity of perspectives that ultimately represent shared knowledge at the organizational level (CIPS, 2012). According to Eugene (1998), Socialization is the

transfer of tacit knowledge through interaction between individuals, as when a master shares craft knowledge and skills with an apprentice, or a mentor with a mentoree. This may occur without knowledge being verbalized. A good example may be through observation, imitation, and practice. Externalization is the transformation of tacit knowledge into explicit knowledge, as one individual explains to another what he knows. Metaphors and analogies may be used to explain tacit concepts that are otherwise difficult to articulate.

Combination is the aggregation of multiple, diverse pieces of explicit knowledge to form an enhanced understanding, which may be formalized or codified for further sharing and use. Internalization is the conversion of explicit knowledge to tacit (embedded) knowledge, through a series of repetitions in which concepts become concrete and ultimately absorbed into people's mental models as integral beliefs and values or unconscious competence (Laura, 2012). This process is initiated at the level of the individual organization member. Individual commitment to knowledge creation and sharing is therefore critical.

Managers may have an important role in creating the conditions within which knowledge conversion process occurs. This can be done by stimulating the motivation to pursue new knowledge and providing the freedom to do so by creating an open communication climate, promoting trust and allowing time for knowledge creation processes. Peggy and Timothy (2013) indicate that knowledge transfer is a function of how information is stored in memory. When a learner understands how to apply knowledge in different contexts, then transfer has occurred. Understanding is seen as being composed of a knowledge base in the form of rules, concepts, and discriminations. Prior knowledge is used to establish boundary constraints for identifying the similarities and differences of novel information. Not only must the knowledge itself be stored in memory but the uses of that knowledge as well. Specific instructional or real-world events will trigger particular responses, but the learner must believe that the knowledge is useful in a given situation before he or she will activate it.

2.3 Conceptual Framework

The conceptual frame that will guide this study indicates the relationship between the independent variables and the dependent variable as well as the intervening variable. The dependent variable in this study is performance of state corporations in Kenya; while the independent variables are supply chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skills development and supply chain competencies development. The intervening variable is innovative thinking which controls the respondents' ability to share and transfer knowledge among themselves.

Many organizations are now concentrating their efforts on how knowledge, particularly tacit knowledge that exists in the organization, can be transferred across the organization (Syed *et al.*, 2004). Knowledge transfer helps members of the supply chain to contribute to the creation, management and dissemination of collective know-that and know-how throughout the supply chain. This helps in the optimization of the knowledge that is available in the supply chain by creating new knowledge and increasing awareness and understanding in the process. Knowledge transfer process supports the continuous development of individual, group and organizational learning, transfer and application of knowledge to achieve organizational and supply chain objectives.

The outcomes of supply chain knowledge transfer may include: acquisition of knowledge about ideas, concepts, theories, methodologies and practical abilities to undertake tasks; generating or creation of new knowledge from environmental scanning, market research and benchmarking processes; innovative thinking and transformation of existing information into new knowledge; development of skills which allows or aids in the successful, rapid and confident performance of complex tasks, skills are complex behaviors acquired as a result of knowledge transfer and practice; and development of competencies which is the integration of knowledge and behavior resulting in high performance and proficiency.

Knowledge is increasingly at the heart of a firm's ability to do things. To be able to do this, the knowledge workers must be able to transfer the acquired knowledge into the real task or job. The knowledge that is possessed by knowledge workers is of two types: its either tacit knowledge or explicit knowledge (Nonaka, 1999). Tacit knowledge is also known as the-know-how knowledge. Tacit knowledge in spite of being inaccessible for direct measurement, its power of influence over performance can be overwhelming (Darwin, 2003).

This is knowledge that has developed over time in the worker through continuous doing and repetition of a particular task, (Laurie, 2012). Hatch and Dyer (2004) argue that tacit knowledge provides competitive advantage because it is particularly inimitable, non-substitutable, path-dependent, and cannot be purchased in the market by competitors. Tacit knowledge is deeply ingrained in the user knowledge bank and is unique to the individual. Johannessen *et al.* (2001) suggest that tacit knowledge is a sort of organizational immune system, hindering imitation from other social systems.

Tacit knowledge and practice are thus closely related concepts, but distinct ones. Jon and Bjorn (2011) argues that tacit knowledge is developed and transferred through doing and using, where there is a relation in existence between a master and an apprentice, or an expert and a novice, or one who knows and one who wants to know. Tacit knowledge is founded in trying to do thing. The development, transfer and integration of tacit knowledge presuppose action, reflection and emotional involvement. On the other hand, explicit knowledge is also known as the-know-that knowledge.

Explicit knowledge is codified knowledge about how things should be done, as contrasted to tacit knowledge which is how things are done (Rajat, 2012). Explicit knowledge is knowledge found in books, manuals, work-procedures, companies' intranet, internet and extranets. It is the know-how knowledge that makes it is possible for a knowledge worker to be effective in his day to day duties and responsibilities.

Darwin (2003) hypothesizes that a person can possess considerable knowledge as a result of learning, but such knowledge remains a hidden power until the person uses the knowledge to do something, such as performing some task, understanding something, making a decision or solving a problem. But tacit knowledge must be learned from other people. In most cases, people must be taught how to do thing. Knowledge worker should be able to pass their tacit knowledge in explicit form so that it can be converted by the new worker into their own tacit knowledge.

Dixon (2000) found that the two main knowledge activities that need to be balanced are the creation of knowledge and the transferring of knowledge across time and space. According to Tan (2000), a successful company is a knowledge-creating company: that is one which is able consistently to produce new knowledge, to disseminate it throughout the company and to embody it into new products or services quickly. To be useful to a person, the knowledge must not only be acquired, but also retained or remembered (Darwin, 2003).

The process of acquiring and retaining knowledge in memory is called learning and is a product of all the experiences of a person from the beginning of his/her life to the moment at hand (Darwin, 2003). Darwin continues to say that learning has is the relatively permanent modification of the behavioral potential which accompanies practice. Kano (2001), state that the theory of attractive quality explains the relationship between objective performance and customer satisfaction. Supply chain knowledge transfer outcomes may include: acquisition of knowledge that is relevant and specific; creation of new knowledge that can be regarded as proprietary to the individual supply chain member; innovativeness in undertaking tasks and roles; the development of skills that are critical to specific performance of unique tasks and development of competencies in specific areas in the supply chains (CIPS 2012)

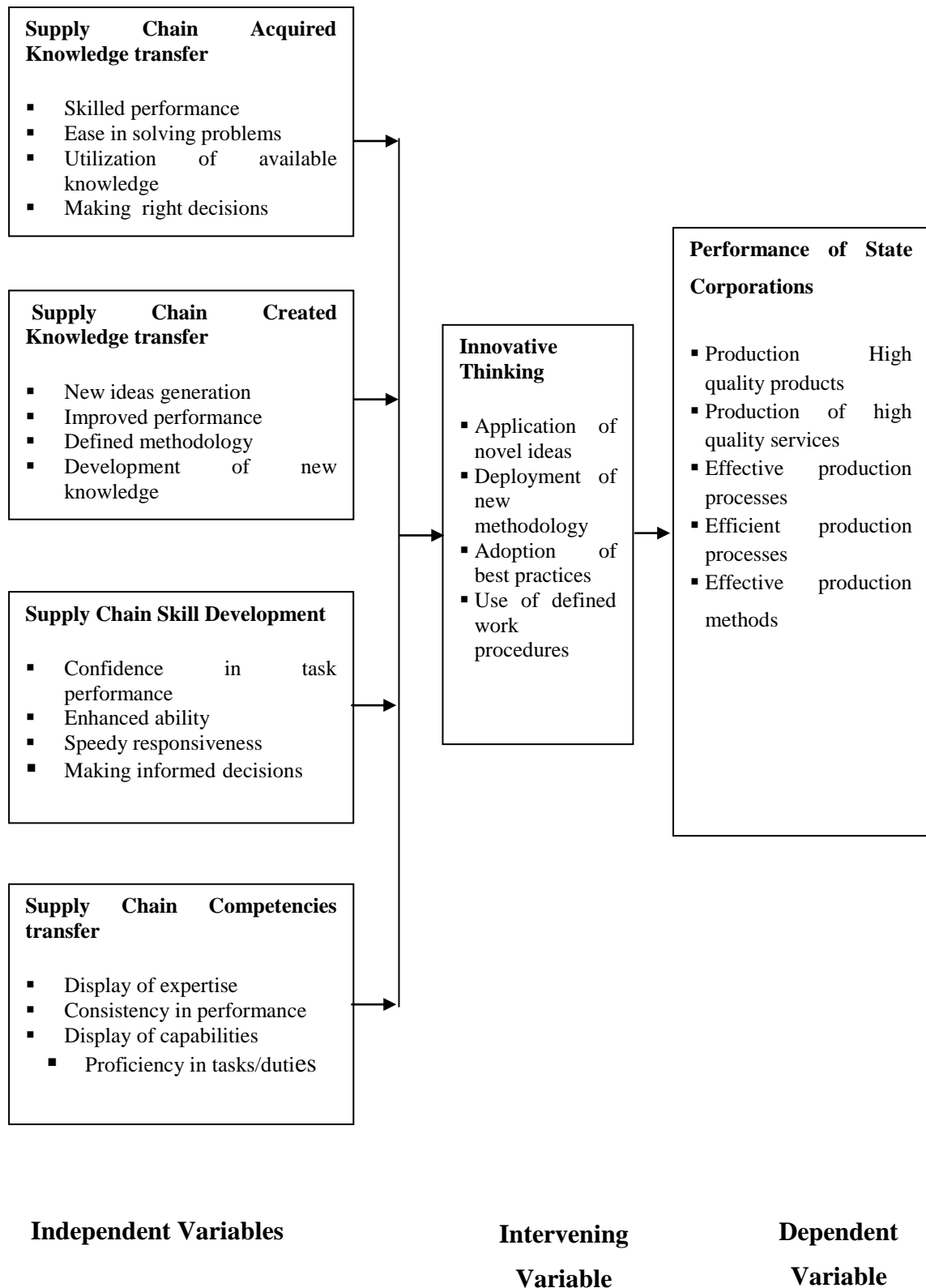


Figure 2.1: Conceptual Framework

2.3.1 Supply chain acquired knowledge transfer

Levine (2001) hypothesizes that an organization that supports information sharing and knowledge creation among its members and is committed to including and reconciling multiple viewpoints is likely to establish effective and efficient processes as well as improve organizational life. Knowledge acquisition is an important aspect in the performance of state corporations. It is the acquired knowledge, transferred from one individual to another that helps in the effective execution of tasks and duties (Kopainsky & Sawicka, 2011).

In the supply chain context, knowledge can be categorized as propositional knowledge which is the 'know-that' knowledge about ideas, concepts or methodologies, and practical knowledge or know-how knowledge which is knowledge to do something. Peggy and Timothy (2013), states that knowledge acquisition can be described as a mental activity that entails internal coding and structuring by the learner. The learner is viewed as a very active participant in the learning process. Practical knowledge may be based on untaught, un-verbalized or tacit knowledge and is acquired through imitation and experience.

An organization needs to develop both know-that: understanding of processes and know-how: ability to apply processes effectively (Armstrong & Fukami, 2008). McDermott and ODell (2001) argue that in an organization with a knowledge sharing culture, people would share ideas and insights because they see it as natural, rather than something they are forced to do. This orientation to knowledge is important for it make knowledge acquisition easier to those interested in getting and using knowledge residing in other people.

2.3.2 Supply chain created knowledge transfer

New knowledge can be created through idea generation processes like brainstorming and think-tanks, research and development, stakeholder consultation and earlier supplier involvement (Stave & Hopper, 2007). The creation and transfer of knowledge in an organization has become a critical factor in an organization's success and

competitiveness (Pirnay-Dummer *et al.*, 2010). Many organizations are now concentrating their efforts on how knowledge, particularly tacit knowledge that exists in the organization, can be transferred across the organization (Syed *et al.*, 2004).

A successful company is a knowledge-creating company, one which is able consistently to produce new knowledge, disseminate it throughout the company and embody it into new products or services quickly (Tan, 2000). Nonaka and Takeuchi (1995) affirms that knowledge creation takes place at three levels: the individual, the group, and the organizational levels within the company. The difference in how a company is viewed affects the knowledge creation process.

To create knowledge, a number of different conversions or syntheses need to take place. These include a conversion or synthesis across: tacit knowledge and explicit knowledge; levels (individual, group, and organizational) within the company; functions, departments, and divisions within the company; layers (top-management, middle manager, and front-line worker) within the company; knowledge inside the company and knowledge outside the company created by suppliers, customers, dealers, local communities, competitors, universities, government and other stakeholders (Ahmadjian, 2004).

These synthesizing capabilities make or break the knowledge creation process. Syed *et al.* (2004) advises that organizations should identify where tacit and explicit knowledge resides when designing strategies, to ensure that knowledge is created and transferred to the right individuals. However, knowledge, particularly tacit knowledge, is very difficult to transfer. Knowledge creation will mostly depend on those who holds the knowledge and their willingness to share it with others within their organization in particular and the supply chain in general. It is difficult to transfer tacit knowledge because most of tacit knowledge is acquired thorough learning by doing and this makes it idiosyncratic to the particular constellation of people, technology, structures and environmental conditions within which it was acquired.

2.3.3 Supply chain skills transfer

McCarter *et al.* (2005) identify problem solving, teamwork, decision-making, written and oral communication and negotiation as important skills for supply chain professionals. A skill is a learned pattern of operations or response to stimuli which allows the successful, rapid and confident performance of a complex task. People have natural aptitudes or abilities, but skills are complex behaviors which are acquired as a result of knowledge transfer and practice. Effective work performance depends on the unhindered exercise of skills (Alessi *et al.*, 2008). Supply chain professionals must possess an appropriate set of competencies and skills to manage global supply chains and be in a position to deal with a wide variety of issues and challenges in an effective and responsive manner (Daniel & Amrik, 2013).

Knight *et al.* (2005) have explored team building capabilities for individuals in a supply management role and operating within inter-organizational networks. This lead those to develop a list of skills required in areas like strategic supply management, network understanding, relationship management, strategy formulation and implementation and finally learning and knowledge management in a team environment. Faes *et al.* (2001) recommends that supply chain professionals should be more flexible team workers with leadership abilities and possess good communications skills to be able to communicate across functions and organizations in order to promote supply chain professionals and coordinate SCM, as well as to manage the upward and downward communication within the organization (Carr & Smeltzer, 2000).

Giunipero *et al.* (2006) highlights five key skills required by supply chain professionals for a more strategic management approach. These skills include: team building skills – leadership, decision-making, influencing, and compromising; strategic planning skills – project scoping, goal-setting, and execution; communication skills – presentation, public speaking, listening and writing; technical skills – web-enabled research and sourcing analysis; and broader financial skills – cost accounting and making the business case. These skills are important for the performance of State Corporation for they impact on their competitiveness.

2.3.4 Supply Chain Competencies Transfer

A competency is the combination of skill, knowledge and behavior that need to be applied for effective performance in a work role and context. Syed *et al.* (2004) defines knowledge transfer as the process through which one unit or group is affected by the experience of another. Knowledge transfer is key component in improving supply chain members competency. Competency integrates knowledge, skill and other attributes into the notion of overall ability, specifically in the workplace performance and proficiency. When knowledge is transferred between individuals in the supply chain it benefits not only the organization but also tends to improve competence in the individuals who are involved in the transfer process (Sveiby, 2001).

Knowledge transfer may lead to advantage through speedier deployment of knowledge to portions of the organizations that can benefit most by it. If knowledge can move from one node to the other in the supply chain, its impact can be felt when it aids the supply chain members in smooth and speedier execution of their duties and roles. People are said to be competent if they are able to perform tasks effectively and efficiently on their own. Ngai *et al.* (2011) indicates that the combination of management competencies, IT integration and supply chain integration have strong and positive effect on supply chain agility. It can be argued that agility, as one of the future competitive strategies, would require firms to have competent supply chain professionals as well as effective supply chain technologies. Supply chain competencies help an organization knowledge worker to undertake their duties effectively and efficiently.

Sivakumar and Roy (2004) argues that efficiency is a major facet of agile supply chain. A firm's "know-how", or the knowledge it requires to conduct its business successfully, is made up of a complex package of manufacturing, technological, marketing, and management competencies. Syed *et al.* (2004) argues organizations to identify where knowledge resides within the supply chain for speedier deployment when the need arises. Knowledge competencies cannot be bought and sold and need

to be built in-house by organizations, and exploited internally in order for their full value to be realized (Teece, 2000).

2.3.5 Innovative Thinking

Innovative thinking helps in the transfer and application of knowledge to develop core capabilities like agile and lean supply which cannot be imitated by competitors (Hopper & Stave, 2008). Anssi and Liisa (2011) posit that company leaders should learn to practice high-speed innovation experimentation, from ideation to operational execution, in order to offer products and services with unique customer benefits. This is important if an organization has to remain competitive in the dynamic world of technology and innovation. They add that after brainstorming an idea to match a business opportunity, a business then needs to innovate the execution of the idea.

This only emerges after a learning process of iterative experimentation geared toward innovative thinking. That is why the actual business opportunity, the combination of identifying a value creation opportunity and innovative supply chain to deliver it, can best be developed through the process of execution innovation. Business opportunity ideas typically need to be accompanied by many additional execution innovations in order to achieve any business benefit. Firms look to adopt technological innovations in hopes of realizing a variety of positive outcomes, such as to increase productivity and attain higher service levels without expending more resources (Prahalad & Mashelkar., 2010).

According to Benjamin *et al.* (2012) the mere adoption of an innovation by an organization does not necessarily imply that the innovation is actually being used or adding value to the firm and its trading partners. A firm needs to adopt innovative techniques in its knowledge transfer so that it can add value and improve its competitive advantage. Dynamic innovation is characterized by continuous, energetic, and sustained efforts that improve the client's operational efficiency, process effectiveness and strategic performance (Mary & Leslie, 2014).

This is important for State Corporation for they require being both effective in the performance of their mandate and efficient in the utilization of the resources availed to them by their stakeholders. Innovation is rarely a one-time, big-bang project, but rather multiple innovations projects deliver substantial improvements to the client's performance over time. Innovative deliverables might include effective modes in knowledge sharing, faster dissemination of knowledge between supply chain members, and higher utilization of the transferred knowledge. Davenport and Prusak (2006) states that, a static view of innovation would call each innovation incremental, but a dynamic view of innovation assesses how year-on-year programs of change accumulate to radically improve the client's performance.

Rogers (2006) defines innovation as an idea, practice, or object that is perceived as new by an individual or organization. Mary and Leslie (2014) adds that innovation is something that improves the customer's services or costs, regardless of its novelty. This is important because where there is innovation there must also be change to supply chain member's perception. If you always do what you always did, you will always get what you always got. To achieve step-change improvements, organizations need to break the strong forces of habit and administration and mandate innovation. Innovative thinking may intervene on how supply chain knowledge is both transferred and shared across state corporations.

2.3.6 Performance of Organizations

State corporations exist for the performance of specific objectives which include: delivery of essential public services which the private sector might not otherwise provide; to encourage national and community development, by developing skills, stimulating economic activity and employment and developing technology and infrastructure; to pursue socio-economic goals; to achieve value for money, as the public sector is accountable to taxpayers. Many governments have demanded greater transparency and accountability in regard to the use of public funds, forcing state corporations to turn to private sector performance management practices as potential means of improving and demonstrating their own performance and accountability (Perera *et al.*, 2003; Lapsley & Wright, 2004).

Deryl and Tuivaiti (2012), argues that, in recent times there has been a move towards specifying strategic goals, which then form the basis for setting published performance targets against which state corporations must report. The performance of State Corporation can be measured in two fronts namely: customer satisfaction and shareholder value. The customers whom they serve must be satisfied and they must maximize their shareholders value by generating revenue and wealth. State corporation shareholders may include the government and the individuals who have invested money in them.

The balanced scorecard (BSC) has gained widespread acceptance as a useful performance management tool for business organizations (Brignall, 2002; Hallman, 2005). Initially, the BSC was proposed as a multi-dimensional performance measurement tool, but its focus soon shifted to performance management (Kaplan & Norton, 2001). The performance management potential of the BSC is predicated on the assumption that causal links exist between its four dimensions namely: innovation and learning, internal business processes, the customer, and financial.

According to Syed et al. (2004) the ability to transfer knowledge form one unit to another has been found to contribute to organizational performance. As knowledge is shared and transferred from one individual to another, the dynamics of organizational performance are bound to change and impact positively on organization and the supply chain. Sveiby (2001) argues that knowledge that is transferred between individuals not only benefits the organization but also tends to improve competence in both the individuals that are involved in the process.

According to Andre (2007) a high performance organization is an organization that achieves financial results that are better than those of its peer group over a longer period of time by adapting well to changes and reacting quickly, by managing for the long term, by setting up an integrated and aligned management structure, by continuously improving its core capabilities. Improving of core capabilities through knowledge transfer by an organization may have two major contributions to the performance of state corporations namely: customer satisfaction and shareholder value.

Sivakumar and Roy (2004) argue that inter-firm knowledge has been considered an important antecedent for a number of organizational performance dimensions such as productivity, effectiveness and efficiency. In the 1990s, customer satisfaction had a significant impact on management thinking. In fact, the realization that understanding, meeting, and anticipating customer needs was probably the most important source of sustained and competitive advantage for a company had a decisive effect on the setting of corporate priorities and practices (Manuel & Pedro, 2003).

Customer satisfaction influences customer loyalty, while corporate financial results are directly influenced by customer loyalty. If organization customers are satisfied, then they will remain loyal to that organization thereby enabling the organization to improve on its earning and its shareholders value. Brook (2003) informs us that customer satisfaction and loyalty is determined by the customer-employee relationship. This relationship is impacted by the kind of skills and competencies that employees in the supply chain acquire through knowledge transfer from other employee.

According to Brook, compelling evidence shows that there is a strong linkage between employee and customer satisfactions. Manuel and Pedro (2003) argues that cumulative customer satisfaction is an overall evaluation based on the total purchase and consumption of a product or service over time. This is an important indicator of performance of state corporations because satisfied customer will stick with an organization and consume its goods and services as long as they are satisfied.

David *et al.* (2002) states that added value is the key of corporate success. They define added value as the difference between the value of a firm's outputs and the cost of the firm's inputs. According to David (1999), the view that the shareholder is the owner of the company and is therefore the "corporate person" to whom a business is ultimately responsible is not new. Nor is the notion that business performance should be managed in order to maximize the return to the shareholders' investment in the business.

Kano (2001), states that the theory of attractive quality explains how the relationship between objective performance and customer satisfaction with an attribute depends on how customers evaluate a certain product or offering. Customer will view the quality attributes from different perspective and even on different stages of a products life and its performance to satisfy them during this stages. According to Nilson and Fundin (2005) quality attributes are dynamic, giving the implication that they are not static but bound to change over time.

Attractive quality attributes can be described as surprise and delight attributes, which provide satisfaction to a customer when achieved fully (Kano, 2001). These are attributes that are not normally expected by customer but their presence gives great delight. Martin *et al.* (2011) opines that it is on this quality attributes that companies compete over in order to win customers from their competition. Kano (2001) postulated that successful quality attributes follow a life cycle in which a quality attribute starts with being indifferent turns into attractive on to one-dimensional and finally ends as must-be. For companies to remain competitive, they should focus on the vital few quality attributes that give them a key competitive advantage (Martin *et al.*, 2011).

Whatever quality measurements have been made and whatever analysis and planning has been performed, no value is added until the improvement actions have been implemented (John, 2000). It is important to have end picture on sight before the initiation of quality improvement processes or procedures for there is little point in starting a quality improvement program unless there is a structural mechanism and capability to carry out these actions. This will ensure that the quality initiatives are productive and that the energy expended in doing so bears the expected fruits or outcomes.

John (2000) suggest that any quality improvement project aimed at satisfying the customer requires to follow the following key steps: measure the current quality level; plan actions that should be undertaken to improve the quality; carry out the actions; and measure the quality level to determine if the expected improvement has occurred or has been realized. These logical steps are important in ensuring that the

quality correctional measures bear the required fruits and equally fulfills the purpose of which they were undertaken. To remain competitive organization must transfer quality standards and best practices knowledge from one knowledge worker to the other across their supply chains or supply networks.

Michael (2013) defines operational efficiency as typically the difference between business inputs and the resulting outputs of goods and/or services. The value added to inputs as they are transformed into outputs determines how efficient a process is. For a process to be determined as efficient, the value addition must be sufficient enough to generate or produce real value in the eyes of the customer. Michael suggests that while improving operational efficiency, organizations can have a few alternatives from an economic point-of-view. The most common choices would be: achieving the same results or impact with less input or financial investment; having the same financial input but realizing more results; and investing much more to have a greater impact on a larger per-unit scale.

Supply activities are the basic units of competitive advantage. Determining overall competitive advantage or disadvantage in terms of efficiencies is a result of what an organization's combined activities are in total. This should be addressed by recognizing the need to change as an organization and not just in smaller departmental pockets of influence. Evaluating efficiency of business organizations is becoming increasingly important as competition in the marketplace gets keener (Ali *et al*, 2013). Organizations should keenly look at their operational processes to determine bottlenecks and sources of inefficiencies that are likely to negatively impact on their performances.

If an organization is efficient in its operations, it is likely to excel in its objectives and mandate. Customers of any particular organization demands high quality services and product, but at minimal cost, a situation that can only be sustained by efficient operations.

Operational effectiveness means performing similar activities better than rivals perform them. Operational effectiveness includes, but is not limited to, efficiency. This means organization must be able to show continuous improvement over time by performing the same activities with a degree of operational efficiency (Michael, 2013). To be effective, a system or a process must also be efficient in terms of resources and energy utilization. Effectiveness refers to any number of practices that allow a company or organization to better utilize its inputs by, for example, reducing defects in products or developing better products faster. This is critical for all organizations that aspire to be competitive and attractive in the face of their customers.

According to Michael (2013) the key to moving toward a relevant and sustainable future is to recognize our current situation and ensure that we have developed a habit of building operational efficiencies that will move us forward effectively and flexible enough to be modified as changes occur. Sustainability is a key aspect and concern for all competitive organizations. This is because all organizations must be concerned on what will happen in the near and distant future.

Sustainability has become the strategic imperative of the new millennium. The phrases sustainability, corporate social responsibility, corporate social performance, going green and the “triple bottom line” all refer to organizations enhancing their long-term economic, social and environmental performance (Timothy *et al.*, 2015). This has the greater implication that organization must not only consider what happens among them but in the entire supply chain for them to be competitive.

It is important for organizations to consider all aspects of its operations and processes. Timothy *et al.* (2015), states that innovative sustainability solutions, which produce win–win–win outcomes for the environment, society and firms, depend upon leaders being intentional in fostering a “culture of sustainability” within their organizations. The process of fostering sustainability decisions and behaviors at all levels of the organization begins by incorporating sustainability into the organization’s strategic management process.

Along with performance benefits, strategic management enables firms to have a clearer direction, a sharper focus on what is important and an improved understanding of a rapidly changing environment (Andersen, 2000). As important as organizational-level goals are, they are not adequate in themselves to create a comprehensive approach to sustainability. To ensure that the firm's commitment to sustainability permeates the entire organization, the goal-setting process must be extended into the development of functional strategies (Timothy *et al.*, (2015). Supply chain competitiveness and performance should as a paradigm embrace sustainability.

2.4 Empirical Review

2.4.1 Supply Chain Acquired Knowledge Transfer

Bedman (2008) in his study entitled "Knowledge transfer in developed-developing country inter-firm collaborations: a conceptual framework", argues that knowledge has emerged as one of the strategic resources of a firm. He asserts that while other organizational resources are easily amenable to imitation by competitors, or could easily be acquired on the market. Knowledge is mostly protected through intellectual property rights and because of its fluid nature; it is not easily imitated by competitors. As such, firms that possess this intangible organizational resource could achieve sustained competitive advantage (Argote & Ingram, 2000).

Knowledge transfer through inter-firm collaborations is a process by which a firm makes its knowledge stock available to other firms within collaborative ventures. Knowledge transfer, especially through strategic alliances, has become a shot gun approach for a firm to acquire knowledge that it could not easily develop within its confines. Corporate giants such as Toyota and General Motors were said to have formed the knowledge alliance so that they could leverage on the knowledge bases of each other to enhance their competitiveness. Bedman asserts that sometimes the learning that occurs may assume a race, with the fastest learner winning the race or, terminating the alliance or setting up a new bargaining position within the alliance using the new knowledge.

Bedman research had two major aims: First, to highlight the characteristics of transferors and transferees which could promote knowledge transfer in collaborative ventures; Second, to develop a model of knowledge transfer. Inkpen (2000) argues that the firm itself has been seen as a repository of knowledge. This strategic view of the firm as a store of the knowledge acquired and accumulated in the course of its operation. Bedman model assumes that the majority of the knowledge to be transferred will flow out of the company's existing knowledge stock (Bontis *et al.*, 2002).

The firm's knowledge repositories or knowledge stock are found in individual members, roles and organizational structures, standard operating procedures and practices, culture and physical layout of the workplace (Bedman, 2008). This knowledge stock is made up of best practices and proprietary knowledge accumulated over the years. It may include customer knowledge obtained through traditional market research, customer satisfaction surveys and market intelligence gathering. Bedman model proposes four interrelated set of activities to be involved in the process of moving the knowledge from the developed country based firms and their subsequent application in the developing country firms or alliances.

These processes include: knowledge conversions - ranging between the conversion of tacit knowledge to explicit knowledge and the subsequent re-conversion of explicit knowledge into tacit knowledge; knowledge routing - the channels which are used to impart the knowledge to the transferees; knowledge dissemination - a mechanism put in place to ensure that the knowledge diffuses from individual level to the group level before it finally settles within the organizational memory; and knowledge application - the application process provides a feedback about the effectiveness of the knowledge transfer process and can be divided into learning-by-doing, learning-by-adapting and learning-by-creating.

Bedman model and framework provides a deeper understanding of the characteristics of the transferors and transferees as well as their interaction and how they influence knowledge transfer across firm borders. Bedman concludes that developing country alliance partners should be aware that learning can only take place when people have

the background to absorb the new knowledge and are backed by organizational systems that support learning. For this to happen, Bedman suggest that they must first articulate the knowledge acquisition vision and recruit qualified personnel to act as agents of the learning process.

2.4.2 Supply Created Knowledge Transfer

In study conducted by Stephanie and Andreas in 2009 and entitled, "Knowledge transfer between globally dispersed units at BMW", they found out that effective knowledge transfer between events and exhibition (E&E) units depends on a combination of key drivers such as: social network ties; absorptive capacity; learning adaptiveness; and communication channels. Their findings suggested that the search for and transfer of knowledge depends foremost on the applicability of context-specific knowledge rather than its complexity (Stephanie & Andreas, 2009).

In order to be able to share knowledge most effectively between units, certain collaborative attributes have to be present (Bond *et al.*, 2004). Different units such as Marketing and R&D often need to perceive each other knowledge as credible in order to be willing to collaborate with one another. This is important if knowledge will be transferred and used to enhance the competitiveness of the firm. It is the sharing and transfer of knowledge across the different units that creates the truth worth of the knowledge which makes it difficult for other firms to replicate it or imitate.

Stephanie and Andreas (2009) argues that managing knowledge and its organization-wide transfer are important to create and sustain competitive advantage. They further posit that that any knowledge transfer between units, irrespective of their geographic and strategic position, depends on a number of contexts, social and relational-specific factors. Their study had interesting findings about knowledge transfer. Their results indicated that managers perceived five specific elements as being most influential to effective intra-organizational knowledge transfers between individual members of event and exhibition units.

These elements include: strength of network ties; formality of network ties; absorptive capacity; learning adaptiveness and communication channels. They also found out that event and exhibition conference fosters the building of more trusting and stronger personal relationships between employees and units across the globe that encourage purposeful knowledge sharing. But trust was found to be the most important element in facilitating knowledge transfer. Stephanie and Andreas agree that knowledge transfer effectiveness requires different strengths and formalities of social network ties in an intra-unit setting.

They also agree that within respective units and within cross-unit teams purposeful knowledge transfer is characterized through close interactions and extensive communication. They conclude that effective knowledge transfer between E&E units in MNCs depends foremost on the context specificity of knowledge. The influence knowledge transfer drivers such as the strength and formality of network ties, absorptive capacity, learning adaptiveness, and communication channels have on the knowledge transfer process stem directly from the applicability of valuable knowledge created within each unit.

2.4.3 Supply Chain Skills Transfer

In his study on skills transfer, Tan (2000) suggests that a successful company should be knowledge-creating company: that is one which is able consistently to produce new knowledge, to disseminate it throughout the company and to embody it into new products or services quickly. This has the greater implication of making the company more responsive to its customer needs and requirements.

A knowledge company is one that is agile in its operation. Agility makes a company to respond with speed on what its customer may demand at any time. Laurie (2012) identifies knowledge management both with organizational leading and with the ability of the organization to make effective use of its intellectual assets. Modern organizations must leverage the use of knowledge as an intellectual capital tool to set them apart from their competitors.

Competitive organizations must always strive to become learning organizations where they use knowledge to improve on their systems so that they can become more innovative and creative in designing and implementing new methods of doing things. Bernard *et al.* (2004) states that knowledge is today's driver of company life, steering the company to success or doom. Organizations that value knowledge are bound to stand out as successful and more responsive organizations. Laurie passionately intimate that organizations intellectual assets must also be harvested and put to proper use since it has the capacity to guarantee the organization a sustainable competitive advantage in this ever changing information age.

2.4.3 Supply Chain Competencies Transfer

In his study on competencies transfer, Dan (2010), the ability of firms to grow and compete over the next decade will increasingly depend on access to and utilization of relevant knowledge critical to its operations, and the performance and skills of its knowledge workers. It's the proper use of knowledge that sets apart organization by distinguishing between those that are successful and those that are not. New knowledge can be created or generated through processes such as ideas generation; commonly achieved through brainstorming and use of think-tanks, research and development activities carried out by the organization, stakeholder consultations and suppliers involvement, lesson learning from previous occurrences during routine functioning of the organization like project reviews and learning capture and cultivating supplier and workforce diversity to gain diverse perspective and harvest knowledge.

2.5 Critique of Existing Literature Relevant to the Study

Knowledge transfer as a discipline has been extensively covered in literature. A lot of empirical research has been undertaken in this area by different authors as can be attested to by the research by both (Stephanie & Andreas, 2009; Bedman, 2008). They have looked a knowledge transfer from different perspective including inter-unit transfer in multinational cooperation's and between developing nation.

It was found out that cross-unit team purposeful knowledge transfer is characterized through close interactions and extensive communication. This is an important requirement in organizations if knowledge is going to be passed from one unit to the other to create competitiveness in those organizations. But Stephanie and Andreas found out that trust is closely linked to credibility, and regarded as one of the most important factors of knowledge transfer between units. This is an important observation because a lot of energy is normally expended to an organization vision and mission as compared to creating trust among the knowledge holders in knowledge based organizations.

Bedman (2008) introduces an interesting dimension of knowledge transfer between developed and developing nations. He asserts that developing country alliance partners should be aware that learning can only take place when people have the background to absorb the new knowledge and are backed by organizational systems that support learning. The absorptive capacity though critical may inhibit the ability to transfer knowledge between individuals in an organization. But of all these studies that have been conducted by different researchers, none has been found that addresses the issues of knowledge transfer in supply chains or supply networks.

The supply chain entails all the organizations that are responsible for the production of products and services meant to satisfy the final customer. This means that, a lot of knowledge resides and individual supply chains for product and services. In the literature reviewed an encompassing framework that can succinctly capture supply chain knowledge transfer in state corporations was not found in the literature. This Thesis attempted to fill this gap by offering a framework on supply chain knowledge transfer and its critical role in the performance of State Corporations.

According to Peggy and Timothy (2013), knowledge acquisition can be described as a mental activity that entails internal coding and structuring by the learner. The learner is viewed as a very active participant in the learning process. This view may not hold as participants may not be active at all times. Sometimes it may be possible to learn new concepts while trying some out of the blues and discoveries emanate even in playful moments where the participant is not concentrating on the job role.

In their study Nonaka and Takeuchi (1995) affirms that knowledge creation takes place at three levels: the individual, the group, and the organizational levels within the company. They suggest that how a company is viewed affects the knowledge creation process. This position may not apply to all organization as some organizations by nature are not learning company. Retail companies for example deals with goods that have already been produced by manufacturing firms, they may have very little contribution on how those products are produced. Their learning process and ability to create knowledge on the products they sell may be curtailed by their position on the supply chain.

Knight *et al.* (2005) have explored team building capabilities for individuals in a supply management role and operating within inter-organizational networks. They had the view that those involved or who participate develops a list of skills required in areas like strategic supply management, network understanding, relationship management, strategy formulation and implementation and finally learning and knowledge management in a team environment. This is unlikely for most of the team building activities as most of them have nothing to do with the actual jobs as undertaken in the office environment. For most organizations, teambuilding acts as stress reliever and bonding session rather than knowledge creating avenues.

In their study, Ngai *et al.* (2011) indicates that the combination of management competencies, IT integration and supply chain integration have strong and positive effect on supply chain agility. They argued that agility, as one of the future competitive strategies, would require firms to have competent supply chain professionals as well as effective supply chain technologies. This may not apply to government agencies and state corporations as they are more rigid to change than agile. This is due to the fact that decision making is more bureaucratic in SCs that it is in private companies. The levels of decision making may affect building of supply chain competencies due to the many layers in the decision tree hierarchy.

Rogers (2006) defines innovation as an idea, practice, or object that is perceived as new by an individual or organization. While this may be true in most of the circumstances, innovation may also start from scratch or from the unknown. The idea

may be a completely new invention that may be hard to be articulated by those individual within an organization. These may call for new mindsets to be involved rather than relying on the already available knowledge workers who may not be willing to accept the new innovation. This is prevalent in the services industry where introduction of new services is a major factor in keeping those firms competitive in an ever changing and dynamic environment.

2.6 Summary of literature Reviewed

The supply chain of any organization is a repository of knowledge that has been acquired and accumulated over time by individual supply chain member. Every link or node in the chain is normally specialized in a key area of its operation. For example the suppliers would possess technical knowledge of what is required by the user. The knowledge held by the supplier is critical in fulfilling the customer demand by supplying the right and required product or service. On the other hand, the buyers of goods or services will most of the time buy the goods or services on behalf of the final customer.

The buyers by virtue of their position on the chain will always act as the link connecting the customer to the supplier and in extension to the producer of the goods. This means that the buyer who would be correctly referred to as the focal firm will hold both the knowledge of what the customer want and what the supplier can produce. This knowledge is critical for the customer to remain satisfied and loyal to the focal firm and thereby continue buying or using its products or services. Other players will also possess and hold different stocks of knowledge that ultimately contribute to the satisfaction of the final customer.

People in marketing and sale promotion are critical in providing the focal firm with information on current trends and changing customer's requirement for they are always in contact with the end users. Most of market research will always be interested in determining what the customer wants and how it should be package or produced to suit their needs. This information is what is normally required to make an organization responsive to its customers' requirements. This then means that, for

organizations to remain competitive over the long run, they must be able to tap and utilize the different stocks of knowledge held by these different members of the supply chain.

This study seeks to establish the kinds of knowledge stocks that will be present in the supply chain and how this knowledge is normally used to leverage the competitiveness or the performance of these organizations. This study will contribute to increase of literature on supply chain knowledge transfer and its role in the performance of the organization. In particular, this study will look at different stock of knowledge and the outcomes of knowledge transfer such as: skills, expertise, innovative thinking and competencies in the supply chain. It is this knowledge transfer outcomes that contributes to the performance of organization.

In the literature reviewed in this study, it has been established that there are two basic schools which have focused on knowledge transfer theory namely behaviorist psychology which is based on an empirical epistemology and cognitive psychology which is based on a rational epistemology. According to Peggy and Timothy (2013) empiricism is the view that experience is the primary source of knowledge. This mean that organisms are born with basically no knowledge and anything learned is gained through interactions and associations with the environment.

This view is important when thinking of successful supply chain knowledge transfer as most of the players in the supply chain may only understand what happens on the end of the chain. This therefore means that anything learned is gained through interactions and associations with the environment and other members in the supply network. Collaboration therefore becomes a key aspect of supply chain knowledge transfer. Suppliers must develop avenues of collaboration with their manufacturers in order to get what they require from them.

According to Peggy and Timothy (2013) behaviorism equates learning with changes in either the form or frequency of observable performance. They posit that learning is accomplished when a proper response is demonstrated following the presentation of a specific environmental stimulus. This is true in most learning environment as

performance is likely to change when people acquire new skills and attain new competencies. We may conclude that learning takes place when behavior changes and the method of operations employed in undertaking tasks improves leading to efficiency and effectiveness.

To a great extent cognitive theories focus on the conceptualization of the learning processes and address the issues of how information is received, organized, stored, and retrieved by the mind. Learning is concerned not so much with what learners do but with what they know and how they come to acquire it. This means that it might be possible to tell what an individual knows by just observing what they do. To gain from the knowledge domiciled in people's mind, talking to them may actually provide more insights and assist in the knowledge transfer process.

The Resource Based View of the firm establishes the possibility for researchers to link the resources of the firm (including knowledge) to its sustained competitive advantage. This theory identifies the existence of rivalry between firms that present differences in efficiency due to resource heterogeneity. Industry equilibrium is based on the productivity differentials between firms. This theory helps firms to value knowledge as an asset and thereby assist in developing mechanisms on how the knowledge within a particular firm can be used to leverage that individual firm performance.

According to Ikujiro (1998), organizational learning results from a process in which individual knowledge is transferred, enlarged and shared upwardly to the organizational level. Knowledge transfer should be viewed as the effort required in identifying knowledge that already exists, acquiring it and subsequently applying this knowledge to develop new concepts or enhance the existing ideas to make a process faster, better or safer than they would have otherwise been. In reality, knowledge transfer is not only about exploiting accessible resources, i.e. knowledge, but also about how to acquire and absorb it well to make things more efficient and effective.

The five theories reviewed in this study, namely behaviorist psychology, cognitive psychology, learning curve, experiential learning and resource based theory together with knowledge transfer model are hardly in explaining the supply chain knowledge transfer processes and how this successful transfer impacts on the performance of state corporations in Kenya. The knowledge transfer processes included in the study are supply chain acquired knowledge transfer, supply created knowledge transfer, supply chain skills transfer and supply chain competencies transfer.

2.7 Research Gap

Though much has been covered in literature about knowledge transfer from different dimension, there were no empirical studies that were found on the role of supply chain knowledge transfer on the performance of state corporations. From the literature that was reviewed, it was evident that knowledge is not readily transferable across organizations. State corporations ineffective knowledge transfer has contributed to their poor performance. Knowledge workers must be willing and ready to transfer and share their knowledge freely among themselves to produce a skilled and competent work force.

Specifically, there is a knowledge gap on the on the role of supply chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skills transfer and supply chain competencies transfer on the performance of state corporations. It is evident that knowledge is not readily transferable across state corporations. State corporations ineffective knowledge transfer has contributed to their poor performance. The supply chain is the network created amongst different companies producing, handling and distributing a specific product. Specifically, the supply chain encompasses the steps taken to get a good or service from the supplier to the customer.

The supply chain as a network is the home to diverse knowledge from different supply chain members ranging from users, buyers, suppliers and even the government. This are all important players and they possess both tacit and explicit knowledge that can be used to create a sustainable competitive advantage for the

individual organization in any supply chain. The purpose of this study was to help in establishing the role played by specific supply chain knowledge transfer components in the performance of State Corporations in Kenya and thereby attempt to fill this gap in knowledge. This study attempted to fill this gap by integrating the knowledge present in different supply chain networks to the performance of State Corporations in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research methodology, research philosophy and research design that was used in the study, the target population, sampling methodology, sample size, sampling technique, data collection and data analysis method employed. The pilot study and validity and reliability of the research instruments are also discussed.

3.2 Research Philosophy and Design

3.2.1 Research Philosophy

A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analyzed and used in interpretation. The term epistemology (what is known to be true) as opposed to doxology (what is believed to be true) encompasses the various philosophies of research approach. The purpose of science, then, is the process of transforming things believed into things known. Two major research philosophies have been identified in the Western tradition of science, namely positivist also known as scientific and interpretivist also known as anti-positivist.

Positivists believe that reality is stable and can be observed and described from an objective viewpoint, that is, without interfering with the phenomena being studied (Saunders, 2003). They contend that phenomena should be isolated and that observations should be repeatable. This often involves manipulation of reality with variations in only a single independent variable so as to identify regularities in, and to form relationships between, some of the constituent elements of the social world.

Predictions can be made on the basis of the previously observed and explained realities and their inter-relationships. It is so embedded in our society that knowledge claims not grounded in positivist thought are simply dismissed as unscientific and therefore invalid. Interpretivist contends that only through the subjective interpretation of and intervention in reality can the reality be fully understood (Johnson & Christensen, 2010). The study of phenomena in their natural environment is key to the interpretivist philosophy, together with the acknowledgement that scientists cannot avoid affecting those phenomena they study. They admit that there may be many interpretations of reality, but maintain that these interpretations are in themselves a part of the scientific knowledge they are pursuing.

The over-riding concern is that the research undertaken should be both relevant to the research hypotheses (Ridenour Jr & Newman, 2008), as set out in Chapter One, and rigorous in its operationalization. Overall an interpretivist philosophy is required for this purpose, i.e. the understanding of how supply chain knowledge transfer takes place, specifically how this affects the performance of state corporations in Kenya. Recognizing the lack of objectivity sometimes associated with interpretivist research methods, this research adopted a positivist, quantitative approach to the development of the research instrument.

3.2.2 Research Design

Research design refers to how data collection and analysis are structured in order to meet the research objectives through empirical evidence economically (Chandran, 2004). A research design is a set of logical procedures that enables one to obtain evidence to determine the degree to which a theoretical hypothesis is correct. Research design constitutes the blue print for the collection, measurement and analysis of data, (Kothari, 2005).

Across-sectional survey research design was used in this study with a descriptive approach. Cross-sectional survey is a method that involves the analysis of data collected from a population, or a representative subset, at one specific point in time (Orodho, 2003). The choice of this design was appropriate for this study since it

utilizes a questionnaire as a tool of data collection and helps to establish the role of supply chain knowledge transfer in the performance of state corporations.

Research design is a plan that guides the research in the process of collecting, analyzing and interpreting observations; the researcher's blueprint for the methods and instruments used in collecting data and evaluating it, in order to respond to the research questions of the study (Eriksson & Kovalainen, 2008). Descriptive approach is designed to obtain information concerning the current phenomenon and whatever possible to draw valid general conclusions from facts discussed (Sekaran & Bougie, 2016). The design also has enough provision for protection of bias and maximized reliability (Kothari, 2017). In this study, inferential statistics and measures of central, dispersion and distribution were applied.

3.3 Target Population

Population refers to an entire group of persons or elements that have at least one thing in common. Population also refers to the larger group from which a sample is taken (Orodho, 2003). A population can be defined as including all people or items with the characteristic one wish to understand. The study population of this study comprised of one hundred and nineteen (119) State Corporations in Kenya as listed in Office of the President website (Public, 2016), as shown below and highlighted in Appendix V.

Table 3.1: Target Population

| State Corporations in Kenya | Target Population |
|-----------------------------|-------------------|
| 119 | 199 |

3.4 Sampling Frame

A sampling frame is the source material or device from which a sample is drawn. According to Orodho (2003) a sampling frame is a list of all those within a population who can be sampled. The sample frame for this study comprised of supply chain managers from the four core supply chain division that include: Transportation and Logistic Managers, Tender Managers, Contract Managers and Inventory Managers from 119 state corporations in Kenya. Supply chain knowledge transfer is relevant to the entire supply chain function hence the choice of these four core supply chain division.

These four groups of respondents are directly involved in the implementation and execution of supply chain processes and policies in state corporations. A list containing managers in the four divisions was sourced from the human resource department of each state corporation and directorate of state corporations (G.o.K, 2013).

A sample is a set of observations drawn from a population by a defined procedure. The sample represents a subset of manageable size. Samples are collected and statistics are calculated from the samples so that one can make inferences or extrapolations from the sample to the population.

3.5 Sampling Techniques and Sample Size

Kothari (2004) defines a sample as the selected respondent who represents the entire population. Since the target population is highly heterogeneous, a cluster sampling was used to select 55 respondents from each of the four core supply chain division across the 119 state corporations. Cluster sampling is a sampling technique used when "natural" but relatively homogeneous groupings are evident in a statistical population. In this technique, the total population is divided into groups (or clusters as classified in Appendix V) and a simple random sample of the groups is selected.

Then the required information will be collected from a simple random sample of the elements within each selected group. This may be done for every element in these groups or a subsample of elements may be selected within each of these groups. A common motivation for cluster sampling is to reduce the total number of interviews and costs given the desired accuracy. Assuming a fixed sample size, the technique gives more accurate results when most of the variation in the population is within the groups, not between them (Orodho, 2003).

A simple random sampling plan where every respondent, or object or subject has chance of representation was used in this study. Yamane provides a simplified formula to calculate sample sizes (Israel, 2012). The samples size of this study was 220 respondents i.e. 55respondents from each of the four core supply chain division in the 119 state corporations in Kenya, bringing the total number of respondent 220 as derived from Yamane formula and as shown in table 3.2.

Table 3.2: Sample Frame

| Population | Target Population | Sampleat95% confidence interval and 0.10 alpha level |
|---|--------------------------|---|
| Transportation & Logistic Managers | 119 | 55 |
| Tender Managers | 119 | 55 |
| Contract Managers | 119 | 55 |
| Inventory Managers | 119 | 55 |
| Total | 476 | 220 |

Sample size formula for a known population

$$n = \frac{N}{1 + N(e)^2}$$

Where

N = population size, and

e = alpha level, i.e. e = 0.10 if the confidence interval is 95%.

Therefore: Population N = 119, using 0.95 confidence interval,

$$\text{The sample size is: } 119 / (1 + 119(0.10)^2) = 119 / 2.19 = 54.3 \approx 55$$

This is the size for one supply chain function. We have 4 supply chain functions which mean we must multiply 55x4 to get the study sample size as 220 respondents.

I.e. Study sample size is 55 x 4 = 220 Respondents

3.6 Data Collection Instruments

According to (Mugenda & Mugenda, 2003) data collection is the means by which information is obtained from the selected subject of an investigation. The researcher collected primary data during the research. Primary data was collected using a questionnaire covering supply chain knowledge transfer role in the performance of State Corporation. The questionnaire contained structured questions. The close-ended questions were used to limit the respondents to given variables in which the researcher had interest (Kothari, 2005).

3.7 Data Collection Procedure

Data collection will involve self-administered questionnaires. The researcher dropped the questionnaires personally at the respondent's place of work. The questionnaires were then collected after a period of one month. A total of 220 questionnaires were distributed to the four core supply chain divisions in state corporations that included: Transportation and Logistic Managers, Tender Managers, Contract Managers and Inventory Managers to fill in. After one month, for further processing of data at the end of the data collection period that was approximately one month.

3.7 Pilot Study

According to Mugenda and Mugenda, (2003) pilot test is necessary to give validity to a study. A pilot test was conducted using questionnaires administered to supply chain managers. This constituted 10% of the 55 state corporations firms registered by directorate of state corporation for supply chain managers (10% of 55) = 5.5 \approx 6. The six respondents were selected using simple random sampling. This constituted the respondents in each state corporation and therefore the total number of the respondents for the pilot study was 6 respondents in the four core supply chain divisions.

The pilot was under taken to pretest data collection instrument for validity and reliability. According to (Orodho, 2003) a pilot study is necessary for testing the reliability of data collection instruments. Cooper and Schindler (2001) explain reliability of research as determining whether the research truly measures that which it was intended to measure or how truthful the research results are. Pilot study is thus conducted to detect weakness in design and instrumentation and to provide accurate data for selection of a sample (Young, 2009).

3.7.1 Validity Testing

The validity of the questionnaire was determined using construct validity method. According to Mugenda and Mugenda (2003) construct validity is the degree to

which attest measures an intended hypothetical construct Using a panel of experts familiar with the construct, this type of validity can be assessed; the experts can examine the items and decide if the specific item intended to be measured will be measured accurately (Kothari,2005). The study used different groups of experts in the field of supply chain and issued them with the questionnaires. The experts were be required to assess if the questionnaires helps in establishing supply chain knowledge transfer role in the performance of state corporations in Kenya.

The coefficient of data gathered from the pilot study was computed with aid of Statistical package of social Sciences (SPSS) Version2 3. If a coefficient of above 0.5 is obtained, this will be an indication that the data collection instruments are valid (Klein & Ford , 2003). There commendations from the supply chain experts were later used to improve on the data collection instruments. Data validity plays an important role in helping in the generalization of the gathered data to reflect the true characteristics of the study problem.

3.7.2 Reliability Test

The study conducted factor analysis to select a subset of variables from a larger set based on the original variables with the highest correlations with the principal component factors. Reliability analysis was conducted using Cronbach's alpha to determine whether the data gathered on each variable has a significant relationship with supply chain role in knowledge transfer. Reliability is the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability. If the results of a study can be reproduced under a similar methodology, then the research instruments are considered to be reliable (Orodho, 2003).

Cooper and Schindler (2001) identify three types of reliability referred to in quantitative research. These reliability types relates to: the degree to which a measurement if given repeatedly, remains the same; the stability of a measurement over time; and the similarity of measurements within a given time period. Mugenda and Mugenda (2003) agrees to the notion that consistency with which questionnaire

items are answered or individuals scores remain relatively the same can be determined through the test- re-test method at two different times. This attribute of the instrument is actually referred to as stability. If we are dealing with a stable measure, then the results should be similar. A high degree of stability indicates high degree of reliability, which means the results are repeatable. To measure the reliability of the gathered data, Cronbach’s alpha was applied. Cronbach’s alpha is a coefficient of internal consistency.

Cronbach’s α Model

$$\alpha = \frac{K}{K - 1} \left(1 - \frac{\sum_{i=1}^K \sigma_{Y_i}^2}{\sigma_X^2} \right)$$

Where

- K - is the number of items,
- σ_X^2 - is the variance of the sum of all of the items, and
- $\sigma_{Y_i}^2$ - is the variance of the i^{th} item.
- X - is the given variable

A commonly acceptable rule of thumb for describing internal consistency using Cronbach’s α is as highlighted by the table below:

Table 3.3: Internal consistency-Cronbach Alpha

| | |
|-------------------------|--|
| $\alpha \geq 0.9$ | Excellent (high stakes testing) |
| $0.7 \leq \alpha < 0.9$ | Good (low stake testing) |
| $0.6 \leq \alpha < 0.7$ | Acceptable |
| $0.5 \leq \alpha < 0.6$ | Poor |
| $\alpha < 0.5$ | Unacceptable |

3.8 Data analysis and Presentation

3.8.1 Data Analysis

This study produced both quantitative and qualitative data to explain supply chain knowledge transfer role in the performance of state corporations exhaustively. The collected data was thoroughly examined and checked for completeness and comprehensibility. The data was then coded, summarized and tabulated as appropriate. Descriptive statistics was used to identify and establish patterns, trends and relationships, and to make it easier to understand and interpret implications of the study.

This technique gave simple summaries about the sample data and presented quantitative descriptions in a manageable form, (Orodho, 2003). Measures of central tendency (mean, mode and median) were used to establish any similarities in the data, while measures of dispersion (standard deviation and variance) were used to establish any variations (deviations) from the data.

3.8.2 Multicollinearity Test

Multicollinearity is a phenomenon where there is inter-correlation among the study variables. (Runkle *et al.*, 2013) posit that, multicollinearity can occurs in statistics where two or more predictor variables in a multiple regression model are highly correlated. The variables or items should be reasonably correlated to each other but not to the point of extreme multicollinearity or correlations greater than 0.90 (Tabachnick, Fidell, & Ullman, 2007).

But we should only worry of multicollinearity when it is a very severe; otherwise if it is not severe, we can simply tolerate or accommodate the problem, and work with it. Multicollinearity results in the estimate of one variable impacting on the dependent variable while controlling for other variables that tends to be less precise than if predictors were uncorrelated. (Murray, 2013), observes that the bottom line is this; if two x variables are significantly correlated; only include one of them in the regression model, not both. If you include both, the computer won't know what

numbers to give as coefficients for each of the two variables because they share their contribution to determining the value of y .

Multicollinearity occurs in statistics where two or more predictor variables in a multiple regression model are highly correlated (Bucki & Suchanek, 2012). The Gauss-Markov assumption only requires that there be no perfect multicollinearity and so long as there is no perfect multicollinearity the model is identified. This means the model can estimate all the coefficients and that the coefficients remained best linear unbiased estimates and that the standard errors were correct and efficient (Runkle *et al.*, 2013). Variance Inflation Factor (VIF) was used to measure the problem of multicollinearity in the multiple regression models.

VIF statistic of a predictor in a model is the reciprocal of tolerance and it indicates how much larger the error variance for the unique effect of a predictor (Baguley, 2012). (Cohen, West & Aiken, 2014) defines Variance Inflation Factor (VIF) as an index of the amount that the variance of each regression coefficient is increased relative to a situation in which all of the predictor variables are uncorrelated and suggested a VIFs of 5 or more to be the rule of thumb for concluding VIF to be too large hence not suitable. Runkle *et al.* (2013) argued that if two or more variables have a Variance Inflation Factor (VIF) of 5 or greater than 5, one of them must be removed from the regression analysis as this indicates presence of multicollinearity.

3.8.3 Normality Test

The normality test was performed on the dependent variable to determine if the data has a normal distribution. The assumption of a normal model for a population of responses will be required in order to perform inference procedures. So as to make deductions, from an analysis, assumption of a normally distributed dependent variable is important. If the observations follow approximately a normal distribution, the resulting plot should be roughly a straight line with a positive slope. Q-Q plot should be linear and is an exploratory graphical device used to check the validity of a distributional assumption for a data set. In general, the basic idea is to compute the theoretically expected value for each data point based on the distribution in question.

If the data indeed follow the assumed distribution, then the points on the q-q plot will fall approximately on a straight line (Goldstein, 2011).

A test of normality was used to determine if the data is well modelled and normally distributed (Gujarati, 2002). According to Ghasemi & Zahediasl, Ghasemi, (2012), the variables are supposed to be roughly normally distributed especially if the results are to be generalized beyond the sample. The study will use both kolmogorov-Sminorv and Shapiro-Wilk normality tests. In kolmogorov- smirnov test, if the tests of normality yield a figure of less than 0.05 it means that the data is not normally distributed but for Shapiro-wilk if the figure was less than 0.05 then the data will be normally distributed.

Table 3.4: Hypotheses Testing

| Hypotheses | Hypothesis Test | Regression Model |
|---|--|---|
| Hypothesis 1: H ₀₁ : Supply chain acquired knowledge transfer does not significantly affect the performance of State Corporations in Kenya. | H ₀ : $\beta_1 = 0$ vs H _a : $\beta_1 \neq 0$ Reject H ₀ if $p < 0.05$, otherwise fail to reject the H ₀ | $Y = \beta_0 + \beta_1 X_1 + \epsilon$ Where: Y = performance of state corporations β_0 = Constant(Co-efficient of intercept) β_1 = Regressionco-efficientofX ₁ . X ₁ = Supply chain acquired knowledge transfer, ϵ = Error Term |
| Hypothesis 2: H ₀₂ : Supply chain created knowledge transfer does not significantly affect the performance of State Corporations in Kenya | H ₀ : $\beta_2 = 0$ vs H _a : $\beta_2 \neq 0$ Reject H ₀ if $p < 0.05$, otherwise fail to reject the H ₀ | $Y = \beta_0 + \beta_2 X_2 + \epsilon$ Where: Y = performance of state corporations β_0 = Constant(Co-efficient of intercept) β_2 = Regressionco-efficientofX ₂ . X ₂ = Supply chain created knowledge transfer, ϵ = Error Term |
| Hypothesis 3: H ₀₃ : Supply chain skills transfer does not significantly affect the performance of State Corporations in Kenya. | H ₀ : $\beta_3 = 0$ vs H _a : $\beta_3 \neq 0$ Reject H ₀ if $p < 0.05$, otherwise fail to reject the H ₀ | Where: Y = performance of state corporations β_0 = Constant(Co-efficient of intercept) β_3 = Regressionco-efficientofX ₃ . X ₃ = Supply chain skills transfer ϵ = Error Term |
| Hypothesis 4: H ₀₄ : Supply chain competencies transfer does not significantly affect the performance of State Corporations in Kenya. | H ₀ : $\beta_4 = 0$ vs H _a : $\beta_4 \neq 0$ Reject H ₀ if $p < 0.05$, otherwise fail to reject the H ₀ | Y = performance of state corporations β_0 = Constant(Co-efficient of intercept) β_4 = Regressionco-efficientofX ₄ X ₄ = Supply Chain competencies transfer ϵ = Error Term |
| Hypothesis 5: H ₀₅ : Innovative thinking does not significantly affect supply chain knowledge transfer in State Corporations in Kenya. | H ₀ : $\beta_5 = 0$ vs H _a : $\beta_5 \neq 0$ Reject H ₀ if $p < 0.05$, otherwise fail to reject the H ₀ | Y = performance of state corporations β_0 = Constant(Co-efficient of intercept) β_5 = Regressionco-efficientofX ₅ X ₅ = Innovative thinking ϵ = Error Term |

3.8.4 Hypotheses Testing

This section presents the approach that was adopted to test the objectives as presented in chapter one. Supply chain function staff perceptions of how successful supply chain knowledge transfer affect performance of state corporations as espoused in the research hypotheses was measured through Pearson's Moment of correlation. Table 3.4 shows how the various hypotheses were attained.

3.8.5 Sampling Adequacy Test

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was conducted to determine adequacy of the sample size. According to Magd (2008), KMO is an index used to examine and justify the appropriateness of application of Factor Analysis; values between 0.5-1.0 indicate that a factor is significant. Moutinho and Hutcheson (2010) suggested that values between 0.7 and 0.8 are good for factor analysis.

3.8.6 Sobel Test

Sobel test was conducted to test whether the mediator (intervening variable) which is innovative thinking carries the influence of an IV (independent variable) to a DV (dependent variable). Sobel test is a test of whether the indirect effect of the IV on the DV via the mediator is significantly different from zero.

3.8.7 Multiple Regression Analysis Model

Performance in the state corporations was regressed against five variables depicting supply chain knowledge transfer role namely: knowledge acquisition, knowledge creation, innovative thinking, skill development and competence development. The equation was expressed as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon$$

Where:

- Y = performance of state corporations
- β_0 = Constant(Co-efficient of intercept)
- $\beta_1 - \beta_5$ = Regression co-efficient of five variables.
- X_1 = Supply chain acquired knowledge transfer (Acquired),
- X_2 = Supply chain created knowledge transfer (Creation),
- X_3 = Supply chain skills transfer (Skills)
- X_4 = Supply chain competencies transfer (Competencies)
- X_5 = Innovative thinking (Innovative),
- ϵ = Error Term

Thus the generic model above was summarized as follows:-

$$Y = \beta_0 + \beta_1(\text{Acquired}) + \beta_2(\text{Creation}) + \beta_3(\text{Skills}) + \beta_4(\text{Competencies}) + \beta_5(\text{Innovative}) + \epsilon$$

Using SPSS, the regression model was tested on how well it fits the data. The significance of each independent variable was also tested. Fischer distribution test called F-test was applied. This ratio refers to the ratio between the model mean square divided by the error mean square. F-test was used to test the significance of the overall model at 5% confidence level. The p-value for the F-statistic was applied in determining the robustness of the model.

The conclusion was based on the basis of the p-value where if null hypothesis of the beta is rejected then the overall model will be significant and if null hypothesis is accepted the overall model was insignificant. In other words, if the p-value is less than 0.05 then it will be concluded that the model is significant and has good predictors of the dependent variable and that the result are not based on chance. If the p-value is greater than 0.05 then the model will not be significant and cannot be used to explain the variation in the dependent variable.

Similarly the t-test statistic was used to test the significance of each individual predictor or independent variable and hypothesis. The p-value for the F-statistic was applied in determining the robustness of the model. The benchmark for this study for failure to reject or failure to accept the null hypothesis is a level of significance of 5%. If the p-value is less than 5% the null hypothesis will fail to be accepted and the alternate hypothesis will fail to be rejected. Also if the p-value is greater than 5% the null hypothesis will fail to be rejected and the alternate hypothesis fails to be accepted i.e.

Reject $H_0: \beta x = 0$; if $p < 0.05$,

Otherwise fail to reject the $H_0: \beta x = 0$

3.8.8 Data Presentation

Presentation of data is an extremely important part of any study. The purpose of graphical displays and tables is to impart information to the reader in a more easily and digestible form. The study used SPSS version 23 computer software to analyse the collected data. Frequency distribution tables, pie charts and bar graphs, as well as, percentages were used to represent data in a format that can be easily understood to enable easier comprehension, understandability and interpretation.

3.9 Measurement of Variables

All constructs in this study were measured using a five-point Likert scales with anchors defined as strongly disagree = 1, disagree = 2, neutral = 0, agree = 4, and strongly agree = 5 for independent variables and 41% - 50% = 5, 31 - 40% = 4, 21 - 30% = 3, 11 - 20% = 2, 1- 10% = 1 for the dependent variable, with 5 depicting high contribution and 1 low contribution. The respondent were requested to rate the statements on a scale of 1 to 5 to allow standardization and uniformity of the responses as shown in Table 3.4. All the statements were positively worded. The independent variables were: Supply chain acquired knowledge transfer, Supply chain created knowledge transfer, Supply chain skills transfer and Supply Chain

Competencies transfer. The intervening variable was: Innovative Thinking, while the dependent variable was: Performance of State Corporations.

Table 3.5: Operationalization of variables

| Variable | Variable Name | Variable Indicator | Adopted from |
|----------------------|--|--|-------------------------------------|
| Independent Variable | Supply chain acquired knowledge transfer | Skilled performance Ease in solving problems Utilization of available knowledge Making right decisions | (Kopinsky & Sawicka, 2011) |
| Independent Variable | Supply chain created knowledge transfer | New ideas generation Improved performance Defined methodology Development of new knowledge | (Stave & Hopper, 2007) |
| Independent Variable | Supply chain skills transfer | Confidence in task performance Enhanced ability Speedy responsiveness Making informed decisions | (Kopinsky & Sawicka, 2011) |
| Independent Variable | Supply Chain Competencies transfer | Display of expertise Consistency in performance Display of capabilities Proficiency in tasks/duties | (Pirnay-Dummer <i>et al</i> , 2010) |
| Intervening Variable | Innovative Thinking | Application of novel ideas Deployment of new methodology Adoption of best practices Use of defined work procedure | (Hopper & Stave, 2008) |
| Dependent Variable | Performance of State Corporations | High quality products High quality services Efficient production processes Effective production methods | (Alessi <i>et al</i> , 2008) |

Supply chain acquired knowledge transfer had the following indicators: skilled performance, ease in solving problems, utilization of available knowledge and making right decisions. Supply chain created knowledge transfer had the following indicators: new ideas generation, improved performance, defined methodology and development of new knowledge. Supply chain skills transfer had the following indicators: confidence in task performance, enhanced ability, speedy responsiveness and making informed decisions.

Supply Chain Competencies transfer had the following indicators: display of expertise, consistency in performance, display of capabilities and proficiency in tasks/duties. Innovative Thinking had the following indicators: application of novel ideas, deployment of new methodology and adoption of best practices and use of defined work procedure. Performance of State Corporations had the following indicators: high quality products, high quality services, efficient production processes and effective production methods

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The study sought to investigate supply chain knowledge transfer role on the performance of state corporations in Kenya. Specifically the study looked at supply chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skills development, supply chain competencies development and supply chain innovative thinking. This chapter presents the empirical findings and the results of the applications of the variables using cross-sectional survey. The collected data was analyzed and results interpreted on the basis of the overall objectives of the study.

4.2 Response Rate

Response rate is defined as the extent to which the final data sets includes all the sample members, (Orodho, 2003), and is calculated as the number of respondents with whom the interviews are completed, divided by the total number of respondents in the entire sample including non-respondents. Data was collected from state corporations registered under the inspectorate of state corporations and posted on the office of the president website. The study sample consisted of 220 respondents. The response rate for this study was 80% as 176 questionnaires were filled and collected i.e. $(176/220) \times 100 = 80\%$.

4.3 Result of Pilot Study

A pilot study was undertaken to pretest data collection instrument for validity and reliability. According to Orodho (2003), a pilot study is necessary for testing the reliability of data collection instruments. Cooper and Schindler (2001), explains reliability of research as the determinant of whether the research truly measures that which it was intended to measure or how truthful the research results are. Pilot study is thus conducted to detect weakness in design and instrumentation so that accurate data can be provided for the selection of a sample (Young, 2009).

The validity of the questionnaires was determined using construct validity method. Construct validity is the degree to which tests measures an intended hypothetical construct (Mugenda & Mugenda, 2003). Using a panel of experts familiar with the construct is a mean by which this type of validity can be assessed; the experts can examine the items and decided what that specific item is intended to measure (Mugenda & Mugenda, 2003). The study dealt with experts in supply chain management who were issued with the questionnaires.

These experts were required to assess if the questionnaires aided in determining supply chain knowledge transfer role on the performance of state corporations in Kenya. The coefficient of the data gathered from the pilot study was computed with the aid of Statistical Parkage for Social Sciences (SPSS) version 23. A coefficient of above 0.5 was obtained, indicating that the data collection instruments were valid (Kothari, 2005). The recommendations from supply chain management experts were used to improve on the data collection instruments. Data validity played an important role towards the generalization of gathered data to reflect the characteristics of the study problem.

The reliability of the questionnaires was determined using a test retest methods. A reliable measurement is one that if repeated a second time gives the same results as it did the first time (Mugenda & Mugenda, 2003). Test-retest reliability is a measure of reliability obtained by administering the same test twice over a period of time to a group of individual (Klein & Ford , 2003). The scores from time 1 and time 2 can be correlated in order to evaluate the test for stability over time. Test-retest reliability is the degree to which scores are consistent over time: it indicates score variation that occurs from testing session to testing session as a result of errors of measurement (Kothari, 2005). The first draft of questionnaire was given to a panel of four experts in supply chain management.

These experts were asked to review the instruments and to make recommendations for improving its validity. The recommendations made were incorporated into a second draft of the instrument which was then given a smaller sample of supply chain management professionals. These experts were asked to comment on the ease

with which they understood and completed the tests items. Where applicable, their comments were incorporated into a third draft of the test instrument. This third draft constituted the final test instrument. An internal consistency technique using Cronbach's Alpha was applied to measure the reliability of the questionnaires issued to the pilot respondents. Cronbach Alpha is a coefficient of reliability that gives an unbiased estimates of data generalizability (Kothari, 2005).

An alpha coefficient higher than 0.70 indicates that the gathered data has a relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target populations (Mandrish & Schaffer, 2005). Data reliability plays an important role towards generalization of the gathered data to reflect the true characteristics of the study problem (Klein & Ford , 2003).

Table 4.1: Reliability Analysis

| Variable | No. of Items | Cronbach's Alpha Value |
|--|---------------------|-------------------------------|
| Supply chain acquired knowledge transfer | 6 | 0.713 |
| Supply chain created knowledge transfer | 6 | 0.700 |
| Supply chain skills transfer | 6 | 0.752 |
| Supply chain competencies transfer | 6 | 0.719 |
| Supply chain Innovative thinking | 6 | 0.711 |
| Performance of state corporations | 10 | 0.729 |

4.4 Respondents Background Information

The background information sought for this study was: gender, age group, highest level of education, length of service in the supply chain function and employee job cadre of all the respondents in the study.

4.4.1 Gender Distribution

Findings on the respondents gender is as captured in Table 4.2. There is uneven gender distribution whereby we have 60.8% of the respondents being male, while 39.2% are female. This is a good distribution in state corporations and adheres to the constitutional requirement in Kenya where more than a third of all employees in any government institution must be women to bridge the gender parity gap. A fair gender distribution is important in evaluating supply chain knowledge transfer role on the performance of state corporations in Kenya as state corporations should depict fairness in job distribution as a government principal on equity and fair distribution of available opportunities.

Since majority of the responses for this study relies on perceptual measures of the respondents, this gender distribution is expected to accommodate the opinions and views from both sides of the gender divide. Table 4.2 illustrates respondents' gender distribution.

Table 4.2: Respondents Gender

| Variable | Frequency | Percentage |
|----------|-----------|------------|
| Male | 107 | 60.8 |
| Female | 69 | 39.2 |
| Total | 176 | 100.0 |

4.4.2 Respondents Age Groups

It is evident that most of the respondents were between the ages of 26 – 35 years at 30.7%, followed by 36 – 45 years at 26.7%. This was an important observation in this study and can be attributed to the fact that supply chain management is a relatively new discipline. Supply chain knowledge transfer is equally a new trend which would greatly benefit from young and energetic minds. The number of the very young managers at 15.3% was slightly less than that of a bit elderly respondents

at 19.9% as indicated in Figure 4.1. There were 7.4% respondents on the 56 – 60 years old bracket. This could again be attributed to the fact that supply chain management is an emerging trend in the Kenyan context.

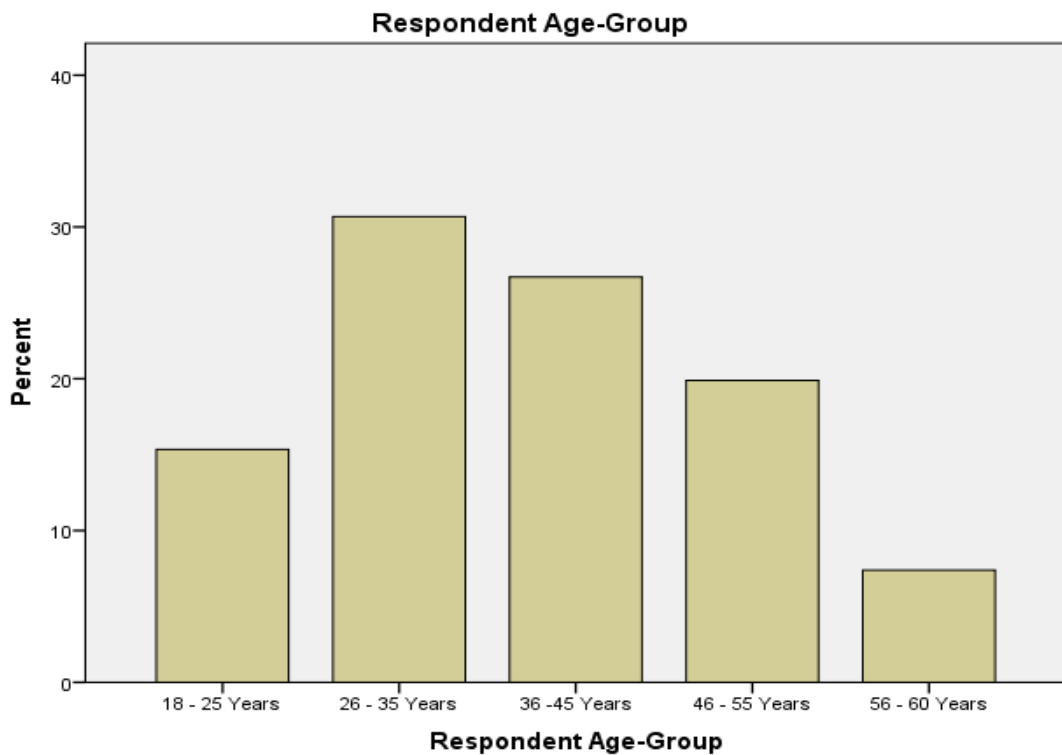


Figure 4.1: Respondents Age-Group

4.4.3 Respondents Highest Level of Education

The study found that most of the respondent had either a Bachelor’s degree (42%) or Master’s degree (27.3%). This indicates that most of the respondents were well educated and therefore knowledgeable on supply chain management function and therefore capable of offering the required information on supply chain knowledge transfer. Only a few managers (8.5%) had an education level of College diploma and Professional diploma (12.5%). There were also a few respondents (9.7%) with Doctorate degree. This seem to be a very small number but can be justified in that the employees in senior management are policy makers and not policy implementers and

therefore their small number would not negatively impact on the findings of the study.

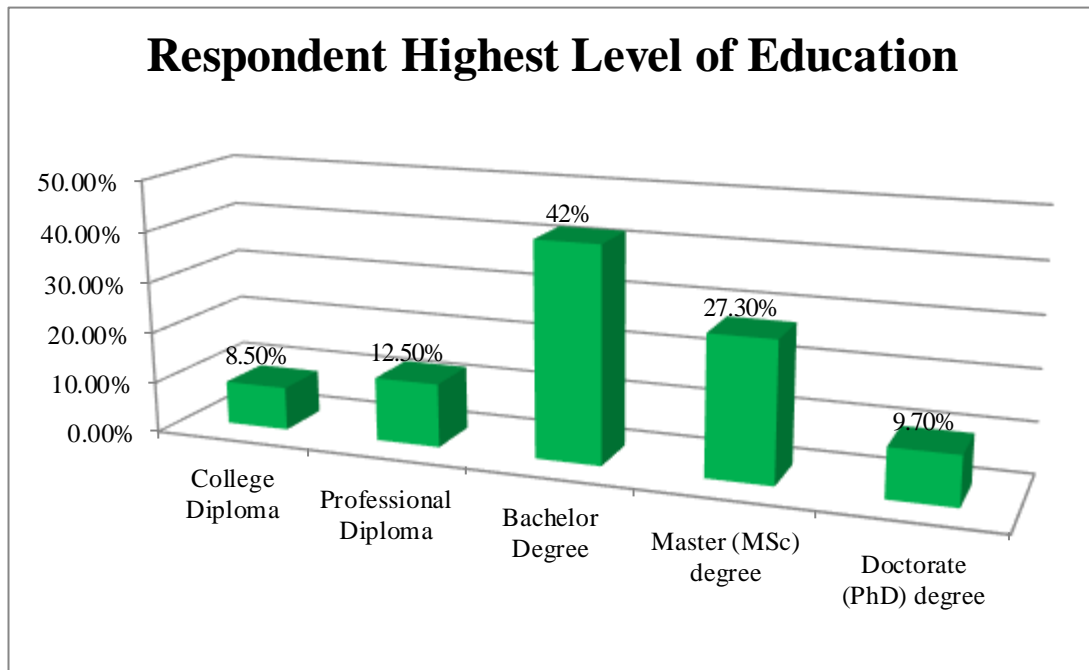


Figure 4.2: Highest Level of Education

4.4.4 Respondents length of Service

Majority of the respondent (23.9%) had worked for their organization for about five years. This is understandable since supply chain management is a relatively new discipline and therefore most of the state corporations are engaging new, young and educated minds fresh from the university. But all the other respondents combined (76.1%) had worked in the supply chain function for over 5 years making them more knowledgeable in the issues of supply chain knowledge transfer and its contributions to the overall performance of these corporations. It is impressive to note that we had quite a big number of this manager (17.6%) who had been in the supply chain function for over 15 years, making their input to this study valuable as

they were beneficiially of supply chain knowledge transfer in the course of their working lives.

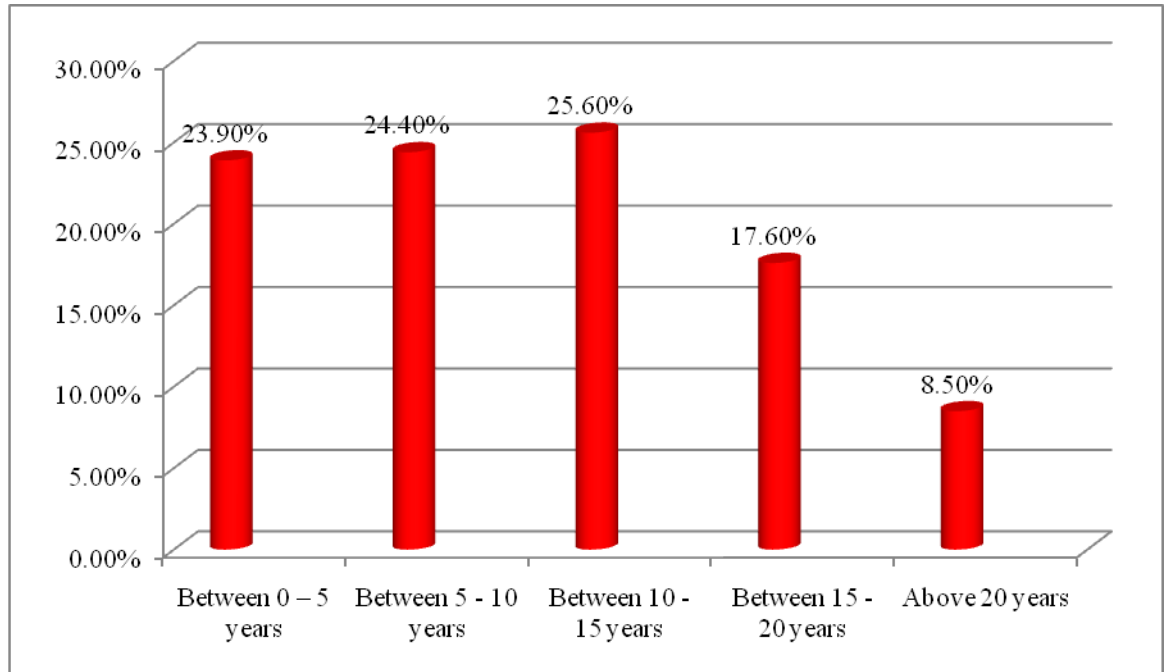


Figure 4.3: Respondent Length of Service

4.4.5 Respondents Job Level – Cadre

The respondent job level or cadre in their respective corporations was sought. The job levels was classified into three major categories ranging from lower management to top management as indicated in Table 4.3 to allow in understanding the respondent interaction with supply chain knowledge transfer processes. Majority of the respondent were in either middle management (53.4%) or lower management (28.4%). There were a few respondents (18.2%) in the top management.

This was not surprising since in most state corporations, supply chain functions are managed under the finance function. The lower and middle management staff are indeed the one responsible for policy implementations in state corporations and therefore the ones rightly placed in transferring supply chain knowledge stocks. The

middle managers are strategically placed to cascade the corporate knowledge transfer strategy from the top management, while the lower manager are actually the implementer of the knowledge transfer strategy, making the two groups the most appropriate in this research. The middle management cadre plays an important role in explaining and enabling the knowledge transfer process to the entire organization, and this made their participation important.

Table 4.3: Respondent Job Cadre

| Characteristic | Frequency | Percent |
|-------------------|-----------|---------|
| Lower management | 50 | 28.4 |
| Middle management | 94 | 53.4 |
| Top management | 32 | 18.2 |
| Total | 176 | 100.0 |

4.5 Multi-collinearity

In relation to the multi-collinearity, the independent variables comprising of Supply chain acquired knowledge transfer improves performance, Supply chain created knowledge transfer improves performance, Supply chain skills transfer improves performance and Supply chain competencies transfer improves performance returned a VIF (Variance Inflation Factor) value of 2.928, 2.051, 3.000, and 2.002 respectively. This indicates that the VIF values obtained is within the acceptable range of 1 to 5. It can be concluded that there is no multi-collinearity signs in the model. Table 4.9 illustrates the results of Collinearity statistics.

Table 4.4 Multi-collinearity Statistics

| Independent variables | Collinearity Statistics | |
|--|-------------------------|-------|
| | Tolerance | VIF |
| Supply chain acquired knowledge transfer improves performance | 0.342 | 2.928 |
| Supply chain created knowledge transfer improves performance | 0.488 | 2.051 |
| Supply chain skill transfer improves performance | 0.333 | 3.000 |
| Supply chain Competencies transfer improves performance | 0.499 | 2.002 |
| Innovative thinking aids in successful knowledge transfer which in-turn improves performance | 0.797 | 1.255 |

Dependent Variable: Supply Chain Knowledge Transfer Role in Performance**4.6 Reliability and Factor Analysis**

The study conducted factor analysis to select a subset of variables from a larger set, based on the original variables with the highest correlations with the principal component factors. Factor analysis is the name given to a group of statistical techniques that can be used to analyze interrelationships among a large number of variables and to explain these variables in terms of their common underlying dimensions (factors). This approach involves condensing the information contained in a number of original variables into a smaller set of dimensions (factors) with a minimum loss of information (Baets, 2002). In more technical terms factor analysis addresses the problem of analyzing the structure of the interrelationships (correlations) among a large number of variables (for example, test scores, test items, questionnaire responses) by defining a set of common underlying dimensions, known as factors.

Factor analysis is an interdependence technique in which all variables are simultaneously considered, each related to all others. Reliability is the extent to which results are consistent over time and an accurate presentation of the total population under study is referred to as reliability and if the results of a study can be produced under a similar methodology, then the research instrument is considered to be reliable (Orodho, 2003). (Cooper & Schindler, 2001) identify three types of reliability referred to in quantitative research, which relates to: the degree to which a measurement, given repeatedly, remains the same, the stability of a measurement over time; and the similarity of measurements within a given time period. (Mugenda, 2003) adheres to the notions that consistency with which questionnaire items are answered or individual's scores remain relatively the same can be determined through the test-retest method at two different times. This attribute of the instrument is actually referred to as stability.

If we are dealing with a stable measure, then the results should be similar. A high degree of stability indicates a high degree of reliability, which means that the results are repeatable. (Orodho, 2003) detects a problem with the test-retest method which can make the instrument, to a certain degree, unreliable. He explains that test-retest method may sensitize the respondent to the subject matter, and hence influence the responses given. Similarly, (Bayton, 2008) note that when a respondent answer a set of test items, the score obtained represents only a limited sample of behavior.

As a result, the scores may change due to some characteristic of the respondent, which may lead to errors of measurement. These kinds of errors reduced the accuracy and consistency of the instrument and the test scores. Hence, it is the researchers' responsibility to assure high consistency and accuracy of the tests and scores (Gebauer & Seveg, 2001). To measure the reliability of the gathered data, Cronbach's alpha was applied.

4.6.1 Factor Loading for Construct Supply chain acquired knowledge transfer

Table 4.4 shows Cronbach's alpha values of all the items for the construct supply chain acquired knowledge transfer. This aids in selecting a subset of variables from a large set, based on which original variables had the highest correlations with the principal components factor. The table indicates that the Cronbach's alpha value of all supply chain acquired knowledge transfer items remained as 0.617 since all the items had a factor loading value of more than 0.4, therefore no items were removed.

Marbert *et al.* (2003) states that factor loading values that are greater than 0.4 should be accepted and those below 0.4 should lead to collection of more data to aid in determining the values to be included in the study. They continue to affirm that values between 0.5 and 0.7 are mediocre, between 0.7 and 0.8 are good and those between 0.8 and 0.9 are great, while values above 0.9 are superb. They recommend 0.4 as the minimum acceptable value. All the items were retained since they all had a factor loading between 0.439 and 0.789 and thereby used for subsequent data analysis. These values meant that factor analysis was appropriate for the data, therefore no items were discarded.

Table 4.5: Factor Loading for Construct Supply chain acquired knowledge transfer

| α Before | Item | Factor Loading | α After |
|-----------------------------------|--|-----------------------|----------------------------------|
| .617 | | | .617 |
| | Skilled performance of tasks aids in production of high quality products | .664 | |
| | Ease in problem solving makes it possible to offer high quality services to customers | .727 | |
| | Utilization of available knowledge as acquired makes production processes more efficient | .789 | |
| | Making right decisions assists in making production methods more effective | .453 | |
| | Buyers should collaborate with suppliers to acquire specific knowledge | .706 | |
| | Supply chain acquired knowledge transfer is crucial for better performance of state corporations | .439 | |

4.6.2 Factor Loading for Construct Supply chain created knowledge transfer

Table 4.5 shows Cronbach's alpha values of all the items for the construct supply chain created knowledge transfer. The table indicates that the Cronbach's alpha value of all supply chain created knowledge transfer items remained as 0.737 since all the items had a factor loading value of more than 0.4, therefore no items were removed.

The construct “Defined methodology makes production processes more efficient” had the highest loading at 0.745 followed by “Buyers should collaborate with suppliers to create new knowledge” at 0.706. All the items were retained since they all had a factor loading between 0.414 and 0.745 and thereby used for subsequent data analysis.

Table 4.6: Factor Loading for Construct Supply chain created knowledge transfer

| α Before | Item | Factor Loading | α After |
|-----------------|---|----------------|----------------|
| .737 | | | .737 |
| | New ideas generation aids in production of high quality products | .698 | |
| | Availability of created knowledge makes it possible to offer high quality services to customers | .656 | |
| | Defined methodology makes production processes more efficient | .745 | |
| | Development of new knowledge assists in making production methods more effective | .693 | |
| | Buyers should collaborate with suppliers to create new knowledge | .706 | |
| | Supply chain created knowledge transfer is crucial for better performance of state corporations | .414 | |

4.6.3 Factor Loading for Construct Supply chain skills transfer

Table 4.6 shows reliability and factor analysis on construct supply chain skills transfer before and after removal of items with a factor loading value of less than 0.4. The alpha value changed from 0.380 to 0.733 after the factor “Buyer should collaborate with suppliers to enhance the supply chain skills transfer” was removed. All the other factors were retained as they had a new factor loading of between 0.510 – 0.796 as recommended. Speedy responsiveness makes production processes more efficient returned the highest value with a factor loading of 0.796 followed by supply chain skills transfer is crucial for better performance of state corporations at 0.758.

Table 4.7: Factor Loading for Construct Supply chain skills transfers

| α Before | Item | Factor Loading | α After |
|-----------------------------------|--|-----------------------|----------------------------------|
| .380 | | | .733 |
| | Confidence in task performance aids in production of high quality products | .510 | |
| | Enhanced ability makes it possible to offer high quality services to customers | .615 | |
| | Speedy responsiveness makes production processes more efficient | .796 | |
| | Making informed decisions assists in making production methods more effective | .572 | |
| | Supply chain skills transfer is crucial for better performance of state corporations | .758 | |

4.6.4 Factor Loading for Construct Supply chain competencies transfers

Table 4.7 shows Cronbach’s alpha values of all the items for the construct supply chain competencies transfer. The table indicates that the Cronbach’s alpha value of all supply chain competencies transfer items remained as 0.838 since all the items had a factor loading value of more than 0.4, therefore no items were removed. The construct “Display of capabilities makes production processes more efficient” had the highest factor loading at 0.895 followed by “Buyers should collaborate with suppliers to develop competencies” at 0.863. All the items were retained since they all had a factor loading between 0.612 and 0.895 and thereby used for subsequent data analysis.

Table 4.8: Factor Loading for Construct Supply chain competencies transfer

| α Before | Items | Factor Loading | α After |
|-----------------------------------|--|-----------------------|----------------------------------|
| .838 | | | .838 |
| | Display of expertise aids in production of high quality products | .733 | |
| | Consistency in performance makes it possible to offer high quality services to customers | .840 | |
| | Display of capabilities makes production processes more efficient | .895 | |
| | Proficiency in tasks/duties assists in making production methods more effective | .766 | |
| | Buyers should collaborate with suppliers to develop competencies | .863 | |
| | Supply chain competencies transfer is crucial for better performance of state corporations | .612 | |

4.6.5 Factor Loading for Construct Supply Chain Innovative Thinking

Table 4.8 shows Cronbach's alpha values of all the items for the construct supply chain innovative thinking. The table indicates that the Cronbach's alpha value of all supply chain innovative thinking items remained as 0.750 since all the items had a factor loading value of more than 0.4, therefore no items were removed. The construct "Application of novel ideas in production of high quality products" had the factor highest loading at 0.704 followed by "Buyers should collaborate with suppliers to enhance innovative thinking" at 0.693. All the items were retained since they all had a factor loading between 0.588 and 0.704 and thereby used for subsequent data analysis.

Table 4.9: Factor Loading for Construct Supply Chain Innovative thinking

| α Before | Items | Factor Loading | α After |
|---------------------------------------|---|---------------------------|----------------------------------|
| .750 | | | .750 |
| | Application of novel ideas in production of high quality products | .704 | |
| | Deployment of new methodology makes it possible to offer high quality services to customers | .623 | |
| | Application of novel ideas makes production processes more efficient | .572 | |
| | Deployment of new methodology assists in making production methods more effective | .626 | |
| | Buyers should collaborate with suppliers to enhance innovative thinking | .693 | |
| | Innovative thinking is crucial for better performance of state corporations | .588 | |

4.6.6 Factor Loading for Construct Performance of State Corporations

Table 4.10 shows Cronbach's alpha values of all the items for the construct performance of state corporations. The table indicates that the Cronbach's alpha value of all supply chain innovative thinking items remained as 0.837 since all the items had a factor loading value of more than 0.4, therefore no items were removed.

Table 4.10: Factor Loading for Construct Performance of State Corporations

| α Before | Item | Factor Loading | α After |
|-----------------|---|----------------|----------------|
| 0.837 | Successful supply chain acquired knowledge transfer helps in improving product/service quality by reducing defect by at least... | .831 | 0.837 |
| | Successful supply chain created knowledge transfer helps in improving product/service quality by reducing defect by at least... | .836 | |
| | Successful supply chain skills transfer helps in product/service quality by reducing defect by at least... | .776 | |
| | Successful supply chain competencies transfer helps in improving product/service quality by reducing defect by at least... | .690 | |
| | Successful supply chain acquired knowledge transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | .799 | |
| | Successful supply chain created knowledge transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | .709 | |
| | Successful supply chain skills transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | .720 | |
| | Successful supply chain competencies transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | .685 | |
| | Supply Chain Innovative Thinking plays an intervening role in Successful Knowledge Transfer which in turn helps in improving product/service quality by reducing defect by at least... | .719 | |
| | Supply Chain Innovative Thinking plays an intervening role in Successful Knowledge Transfer which in turn helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | .784 | |

The construct “Successful supply chain created knowledge transfer helps in improving product/service quality by reducing defect by at least...” had the factor highest loading at 0.836 followed by “Successful supply chain acquired knowledge transfer helps in improving product/service quality by reducing defect by at least...” at 0.831. All the items were retained since they all had a factor loading between 0.685 and 0.836 and thereby used for subsequent data analysis.

4.7 Descriptive Analysis

Descriptive statistics was used to identify and establish patterns, trends and relationships, and to make it easier to understand and interpret implications of the study.

4.7.1 Construct Supply chain acquired knowledge transfer

In the supply chain context, knowledge can be categorized as propositional knowledge which is the knowledge about ideas, concepts or methodologies, and practical knowledge or know-how knowledge which is knowledge to do something. Table 4.11 shows descriptive analyses of construct supply chain acquired knowledge transfer.

Table 4.11: Construct Supply chain acquired knowledge transfer

| Statement | SD | D | N | A | SA |
|--|-----------|------------|------------|-------------|--------------|
| Skilled performance of tasks aids in production of high quality products | 1 0.6% | 9 5.1% | 11 6.2% | 69 39.2% | 86 48.9% |
| Ease in problem solving makes it possible to offer high quality services to customers | 0 0.0% | 6 3.4% | 14 8.0% | 81 46.0% | 75 42.6% |
| Utilization of available knowledge as acquired makes production processes more efficient | 0 0.0% | 7 4.0% | 16 9.1% | 84 47.7% | 69 39.2% |
| Making right decisions assists in making production methods more effective | 0 0.0% | 6 3.4% | 12 6.8% | 85 48.3% | 73 41.5% |
| Buyers should collaborate with suppliers to acquire specific knowledge | 0 0.0% | 6 3.4% | 10 5.7% | 85 48.3% | 75 42.6% |
| Supply chain acquired knowledge transfer is crucial for better performance of state corporations | 0 0.0% | 14 8.0% | 10 5.7% | 48 27.3% | 104 59.1% |

Key: SD=Strongly Disagree; D=Disagree; N=Neutral; A=Agree; SA=Strongly Agree; and%=Percentages.

The finding in Table 4.11 indicates that up to 88.1% of the respondents affirmed that skilled performance of tasks aids in production of high quality products. Further respondents maintained that: ease in problem solving makes it possible to offer high quality services to customers (88.6%), utilization of available knowledge as acquired makes production processes more efficient (86.9%), making right decisions assists in making production methods more effective (89.8%), buyers should collaborate with suppliers to acquire specific knowledge (90.9%).

Similarly, 86.9% of the respondents overwhelmingly asserted that supply chain acquired knowledge transfer is crucial for better performance of state corporations. From this finding, it can be deduced that supply chain acquired knowledge transfer is crucial for better performance of state corporations. This finding corroborates Levine (2001) who posits that an organization that supports information sharing and transfer among its members and is committed to including and reconciling multiple viewpoints is likely to establish effective and efficient processes as well as improve organizational life. When information is effectively shared, people become more knowledgeable and execute their mandate effectively.

In their paper entitled, “Why Knowledge Acquisition is Important to effective Supply Chain Management: The Role of Supply Chain Managers as Knowledge Acquisitors”, Afolayan and Mason-jones (2016), stated that the acquisition of knowledge either by organizations or individuals is considered critical to the success of the organization in a dynamic and uncertain business environment. Likewise, the acquisition of knowledge in supply chain is seen to be of great advantage to the complex activities that goes on in the supply chain, where it is difficult to forecast demand and therefore maximize competitive advantage. Supply chain managers are conceptualized as either active acquirers of knowledge, and thereby potential sources of competitive advantage, or merely passive recipients of data and information.

They further argued that to achieve improved supply chain management performance supply chain managers need to engage in active knowledge acquisition. They continue to state that the mere existence of knowledge in an organization does not automatically transfer into a competitive advantage neither does it guarantee competitive advantage. What is recognized as important for competitive advantage is the availability of the right knowledge at the right time (and in the right place) and also the ability to create, acquire, transfer, utilize and protect difficult to imitate the knowledge asset(s) of the organization .

4.7.2 Cross-tabulation between Respondent Gender and Supply Chain Acquired Knowledge Transfer contribution to performance

To further explain on the variable, Chi square test was run to determine whether there was a significant difference between male and female respondents on their opinion of whether supply chain acquired knowledge transfer is crucial for better performance of state corporations.

The finding indicate that there is no difference between male and female respondents regarding the fact that supply chain acquired knowledge transfer is crucial for better performance of state corporations (Pearson chi square = 0.101; $p > 0.05$). The findings further indicate that Supply Chain acquired knowledge transfer contributes to performance as espoused by male (58.5%) and female (37.5%) respondents respectively.

Table 4.12: Cross-tabulation of Respondent Gender and Supply Chain Acquired Knowledge Transfer

| | | Supply Chain Acquired Knowledge Transfer contribution to performance | | | |
|--------------------|--------|---|---------------------|---------------------------------|-------------|
| | | | Does not contribute | Not sure whether it contributes | Contributes |
| Respondent Gender | Male | Count | 1 | 3 | 103 |
| | | % of Total | 0.6% | 1.7% | 58.5% |
| Gender | Female | Count | 1 | 2 | 66 |
| | | % of Total | 0.6% | 1.1% | 37.5% |
| Total | | Count | 2 | 5 | 169 |
| | | % of Total | 1.1% | 2.8% | 96.0% |
| Pearson Chi-Square | | | 0.101 | | |
| Df | | | 2 | | |
| p-value | | | 0.951 | | |

4.7.3 Construct Supply chain created knowledge transfer

A descriptive analysis of the construct supply chain created knowledge transfer was performed and presented in the table below. As regards supply chain created knowledge transfer, it was observed that 84.7% of respondents affirmed that new ideas generation aids in production of high quality products. Majority of respondents affirmed that, availability of created knowledge makes it possible to offer high quality services to customers (90.4%). Further, it was established that defined methodology makes production processes more efficient (86.9%), and that development of new knowledge assists in making production methods more effective (87.5%). 90.1% of the respondents overwhelmingly suggest that buyers should collaborate with suppliers to create new knowledge within their organizations.

Table 4.13: Construct Supply chain created knowledge transfer

| Statement | SD | D | N | A | SA |
|---|------|------|-------|-------|-------|
| | 1 | 7 | 19 | 82 | 67 |
| New ideas generation aids in production of high quality products | 0.6% | 4.0% | 10.8% | 46.6% | 38.1% |
| Availability of created knowledge makes it possible to offer high quality services to customers | 0 | 13 | 19 | 72 | 72 |
| | 0.0% | 7.4% | 10.8% | 40.9% | 40.9% |
| Defined methodology makes production processes more efficient | 1 | 2 | 14 | 89 | 70 |
| | 0.6% | 1.1% | 8.0% | 50.6% | 39.8% |
| Development of new knowledge assists in making production methods more effective | 0 | 6 | 17 | 110 | 43 |
| | 0.0% | 3.4% | 9.7% | 62.5% | 24.4% |
| Buyers should collaborate with suppliers to create new knowledge | 0 | 3 | 19 | 72 | 82 |
| | 0.0% | 1.7% | 10.8% | 40.9% | 46.6% |
| Supply chain created knowledge transfer is crucial for better performance of state corporations | 1 | 6 | 9 | 56 | 104 |
| | 0.6% | 3.4% | 5.1% | 31.8% | 59.1% |

Key: SD=Strongly Disagree; D=Disagree; N=Neutral; A=Agree; SA=Strongly Agree; and%=Percentages.

Finally 81.8% of the respondents confirmed that supply chain created knowledge transfer is crucial for better performance of state corporations in Kenya. It can be argued that an effective company is a knowledge-creating company, and one which is able reliably to create new knowledge and distribute it throughout the company. This finding confirms Pirnay-Dummer *et al.* (2010) who avers that the creation and transfer of knowledge in an organization has become a critical factor in an organization's success and competitiveness. For an organization to remain competitive, it must be able to continually create new knowledge and effectively transfer that knowledge within its boundaries and across its supply network.

This view is further in agreement with the findings of Ramírez *et al.* (2011), which states that knowledge has become one of the most important intangible assets for the company in the current competitive environment. They continue to say that being of particular importance knowledge creation processes within an organization helps to achieve long-term competitive advantage for the firm. Further Ramirez *et al* affirms that in the current competitive environment characterized by a turbulent, rapidly changing, intense global competition and high uncertainty for a firm to have competitive advantages and to improve and maintain the competitive position over time, it is critical for any organization to be able to continuously create new knowledge.

In this new situation knowledge has become one the most important intangible assets for the company since it is accumulated through organizational learning, and is difficult to imitate. In his findings, Uziene (2010), agrees with this position an observes that since knowledge management allows the firm to influence core competences and obtain competitive advantage in a long term, the creation of new knowledge within organization is of particular importance for this process. It is hard for an organization to remain competitive without the creation of new knowledge within its boundaries and across its supply chains.

4.7.4 A Cross tabulation between Respondent Gender and Supply Chain Created Knowledge Transfer

Table 4.14: A Cross tabulation between Gender and Supply Chain Created Knowledge Transfer

| | | Supply Chain Created Knowledge transfer contribution to performance | |
|--------------------|--------|---|-------|
| | | Not sure whether it contributes | |
| Respondent Gender | Male | Count | 98 |
| | | % of Total | 55.7% |
| | Female | Count | 64 |
| | | % of Total | 36.4% |
| Total | | Count | 162 |
| | | % of Total | 92.0% |
| Pearson Chi-Square | | | 0.078 |
| Df | | | 1 |
| p-value | | | 0.780 |

To further explain on the variable, Chi square test was run to determine whether there was a significant difference between male and female respondents on their opinion of whether supply chain created knowledge transfer contributes to performance of state corporations in Kenya.

The finding indicate that there is no difference between male and female respondents regarding the fact that supply chain created knowledge transfer is crucial for better performance of state corporations (Pearson chi square = 0.101; $p > 0.05$). This is because the p value lies beyond the critical region. The finding further indicates that successful supply chain created knowledge transfer contributes to performance of state corporations as adopted by male (58.5%) and female (37.5%) respondents respectively.

4.7.5 Construct Supply chain skills transfers

Table 4.15: Construct Supply chain skills transfers

| Statement | SD | D | N | A | SA |
|--|------|------|------|-------|-------|
| Confidence in task performance aids in production of high quality products | 1 | 7 | 7 | 68 | 93 |
| | 0.6% | 4.0% | 4.0% | 38.6% | 52.8% |
| Enhanced ability makes it possible to offer high quality services to customers | 0 | 10 | 12 | 80 | 74 |
| | 0.0% | 5.7% | 6.8% | 45.5% | 42.0% |
| Speedy responsiveness makes production processes more efficient | 0 | 4 | 15 | 78 | 79 |
| | 0.0% | 2.3% | 8.5% | 44.3% | 44.9% |
| Making informed decisions assists in making production methods more effective | 0 | 2 | 13 | 79 | 82 |
| | 0.0% | 1.1% | 7.4% | 44.9% | 46.6% |
| Buyer should collaborate with suppliers to develop skills | 0 | 7 | 7 | 93 | 69 |
| | 0.0% | 4.0% | 4.0% | 52.8% | 39.2% |
| Supply chain skills transfer is crucial for better performance of state corporations | 0 | 5 | 12 | 62 | 97 |
| | 0.0% | 2.8% | 6.8% | 35.2% | 55.1% |

Key: SD=Strongly Disagree; D=Disagree; N=Neutral; A=Agree; SA=Strongly Agree; and%=Percentages.

A descriptive analysis of the construct supply chain skills transfers was conducted and presented in the table above. Analyzed data revealed that respondents agreed that confidence in task performance aids in production of high quality products (91.4%). Majority of the respondents at 92% asserted that Enhanced ability makes it possible to offer high quality services to customers. Correspondingly, it was acknowledged that: speedy responsiveness makes production processes more efficient (89.2%), making informed decisions assists in making production methods more effective

(91.5%), buyer should collaborate with suppliers to develop their skills (90.3%). Similarly, 87.5% of the respondents affirmed that supply chain skills transfer is crucial for better performance of state corporations.

It can be construed from these findings that successful indispensable skills transfer is critical for better performance of state corporations in Kenya. These findings are in agreement with Daniel and Amrik (2013) who affirm that supply chain professionals must possess an appropriate set of competencies and skills to manage global supply chains and be in a position to deal with a wide variety of issues and challenges in an effective and responsive manner. In particular, specific and requisite skills are required to undertake a specific jobs role that in turn contributes to effective knowledge transfer.

This view is further supported by Ding *et al.* (2009), in their study entitled: “A critical review of three theoretical approaches on knowledge transfer in cooperative alliances”, where they state that skills transfer and inter-organizational cooperation provides a platform for maximizing long-term profitability – either by increasing sales or decreasing costs, or both. They also note that other common motives include capturing increased economies of scale, being cost-effective and efficient in the height of the globalization of markets and access local market channel. Access to resources, core competencies, innovative skills, and country-specific knowledge as the primary goals for business firms. In many industries, increasingly rapid technological update and competition results in alliances intending to access knowledge, skills, and resources beyond firm boundaries. Companies that are capital-rich but knowledge resource-poor cannot be competitive unless they become attracted to collaborative alliance ventures.

In their report entitled, “Final Report-Skills Transfer in Municipalities in South Africa”, Mafunisa *et al.* (2017), posits that Skills transfer enables employees to apply the skills learned in training on the job. Skills transfer is performing particular activities before, during, and after a training session that enables employees to more effectively and quickly apply the skills learned in training back on the job. Skills transfer is the goal when employees are involved in any internal or external training

activity, session, seminar, or on-the-job training. The goal of training is to enhance the skills, knowledge, and the thinking and learning ability of employees.

But, even more important, is the capability to apply the new information, skills, or knowledge in the employee's job. They further argue that employee learns the new information, applies the information on the job, and then, shares the new information by transferring the knowledge (training) to other employees. Innovation is defined as the development and implementation of new processes or procedures that are subsequently different from existing ones; and that implies change through activity. They conclude that the external expertise must in the long run be transferred to other employees to ensure that the shortage of skills is reduced. Skills transfer is the dependency of human conduct, learning, or performance on prior experience.

4.7.6 Cross tabulation between level of management and Supply Chain Skill Transfer

The finding indicate that there is difference between management level regarding their responses on supply chain skill transfer contribution to performance (Pearson chi square = 5.836; $p < 0.05$). This is because the p value lies within the critical rejection region. The finding further indicates that supply chain skill transfer contributes up to 78.4% and 17.6% as reported by Lower Management and Top Management respectively. The position by top management staff can be attributed to the fact that they holds a decision making position where knowledge transfer would find more application.

Table 4.16: Skills Transfer Contribution to Performance

| | Does contribute | not contributes | Not sure whether it contributes | Contributes |
|--------------------------|--------------------|--------------------|---------------------------------------|-------------|
| Lower Management | 0 0.0% | 6 3.4% | 138 78.4% | |
| Top Management | 1 0.6% | 0 0.0% | 31 17.6% | |
| Total | 1 0.6% | 6 3.4% | 169 96.0% | |
| Pearson Chi-Square value | 5.836 | | | |
| Df | 2 | | | |
| p-value | 0.054 | | | |

4.7.7 Construct Supply chain competencies transfers

A competency is the combination of skill, knowledge and behavior that need to be applied for effective performance in a work role and context. A descriptive analysis of the construct supply chain competencies transfers was conducted and presented in the table below.

The findings indicated that display of expertise aids in production of high quality products as affirmed by (85.8%). Further, it was established that consistency in performance makes it possible to offer high quality services to customers as indicated by 92.6% of the respondents. Similarly, 89.8% of the respondents confirmed that display of capabilities makes production processes more efficient. It was noted also that 90.9% of the respondents averred that proficiency in tasks and duties assists in making production methods more effective.

Table 4.17: Construct Supply chain competencies transfers

| Statement | SD | D | N | A | SA |
|--|-----------|-----------|-------------|--------------|--------------|
| Display of expertise aids in production of high quality products | 0 0.0% | 6 3.4% | 19 10.8% | 74 42.0% | 77 43.8% |
| Consistency in performance makes it possible to offer high quality services to customers | 1 0.6% | 2 1.1% | 10 5.7% | 82 46.6% | 81 46.0% |
| Display of capabilities makes production processes more efficient | 0 0.0% | 5 2.8% | 13 7.4% | 100 56.8% | 58 33.0% |
| Proficiency in tasks/duties assists in making production methods more effective | 0 0.0% | 4 2.3% | 12 6.8% | 70 39.8% | 90 51.1% |
| Buyers should collaborate with suppliers to develop competencies | 0 0.0% | 4 2.3% | 8 4.5% | 59 33.5% | 105 59.7% |
| Supply chain competencies transfer is crucial for better performance of state corporations | 0 0.0% | 5 2.8% | 11 6.2% | 102 58.0% | 58 33.0% |

Key: SD=Strongly Disagree; D=Disagree; N=Neutral; A=Agree; SA=Strongly Agree; and%=Percentages.

Suggestion were also made by the respondents that buyers should collaborate with suppliers to develop competencies within their organizations. 91% of the respondent affirmed that supply chain competencies transfer is crucial for better performance of state corporations. From this finding, it can be argued that core competencies transfer is crucial for better performance of state corporations as indicated by Ngai *et al.* (2011) who specify that the combination of management competencies, IT integration and supply chain integration have strong and positive effect on supply chain agility.

This is supported by Analoui (2002), who argues that skill as an ability which can be developed and which is manifested in performance, not merely in potential, the ability to translate knowledge into practice. He proposes that all managers require management skills and that those skills are crucial for the manager's success. For businesses to be successful managers with adequate managerial knowledge and skills are needed to support the enterprise. Since managers play a critical role in the success of the business, one way to develop managerial competencies and effectiveness as a result, is to provide the managers with opportunities to attend management training programs to enhance their competencies.

The findings of this study is further supported by Ashad (2016), who rightly states that increased competition in a globalized market place has resulted in most organizations focusing on their core competencies and outsourcing other activities to their suppliers and business partners, both upstream and downstream in the value chain. Added reliance on suppliers has transformed competition between individual firms to competition between supply chains. The source of competitive advantage is no more localized in the focal organization but is dispersed along the entire supply chain. This has led to a greater internationalization of sourcing, production and manufacturing activities, adding to the complexity of supply chains. Management of supply chains has thus become increasingly important as a potential source of competitive advantage and improved performance.

Ashad continue to say that critical to the concept of supply chain management is the notion of collaboration and integration among business partners. Organizations are called upon to collaborate extensively so that the entire process across the supply chain can be managed as a unit where each member of the supply chain focuses on what it does best leaving the rest to others, thereby exploiting available core competencies. Though the extent of interaction is determined by the level of integration desired, management of supply chain processes necessitates multiple communications at different decision levels leading to lower inventories, reduction in cycle time, improved quality and better customer services. Furthermore, companies high on the integration level do not limit their collaboration to

operational issues alone. They fully realize the benefit of outsourcing through increased involvement in joint product design and development, and other allied activities.

4.7.8 Cross tabulation between level of management and Supply Chain Competencies Transfer

The finding indicate that there is difference between management level regarding their responses on supply chain competencies transfer contribution to performance (Pearson chi square = 2.787; $p < 0.05$). This is because the p value lies within the critical rejection region. The finding further indicates that supply chain competencies transfer contributes up to 70.5% and 89.2% as reported by Lower Management and Top Management respectively. The position by top management staff can be attributed to the fact that can be assumed to be more competent as regard knowledge transfer by virtue of their position in the management hierarchy in their organizations.

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Table 4.18: Cross Tabulation between Level of management and Supply Chain Competencies Transfer

| | | | Does not Contributes to Performance | Not sure whether it Contributes to Performance | Contributes to Performance |
|--------------------------------|--------------------|-------|--|--|----------------------------------|
| Respondent management Level | Lower Managers | Level | 1 0.6% | 17 9.7% | 124 70.5% |
| | Medium Managers | Level | 0 0.0% | 1 0.6% | 27 15.3% |
| | Top Managers | Level | 0 0.0% | 0 0.0% | 6 3.4% |
| Total | | | 1 0.6% | 18 10.3% | 157 89.2% |
| Pearson Chi-Square value | | | 2.787 | | |
| Df | | | 4 | | |
| P-value | | | 0.064 | | |

4.7.9 Intervening Variable Supply Chain Innovative Thinking

Analysis was conducted to determine how construct supply chain innovative thinking among the respondents intervened on successful supply chain knowledge transfer. It was found out that 86.4% affirm that application of novel ideas in supply chain aids in successful knowledge transfer. Further 87.5% of the respondents asserted that deployment of new methodology in supply chain aids in successful knowledge transfer. It was evident that adoption of best practices in supply chain aids in successful knowledge transfer (87.5%). Similarly 86.6% of the respondents upheld that use of defined work procedures in supply chain aids in successful knowledge transfer. Most of the respondents also suggested that buyers should collaborate with suppliers to enable successful supply chain knowledge transfer at 86.9%.

Table 4.19: Intervening Variable Supply Chain Innovative Thinking

| Statement | SD | D | N | A | SA |
|---|------|------|------|-------|-------|
| Application of novel ideas in supply chain aids in successful knowledge transfer | 0 | 11 | 13 | 76 | 76 |
| | 0.0% | 6.2% | 7.4% | 43.2% | 43.2% |
| Deployment of new methodology in supply chain aids in successful knowledge transfer | 0 | 7 | 15 | 83 | 71 |
| | 0.0% | 4.0% | 8.5% | 47.2% | 40.3% |
| Adoption of best practices in supply chain aids in successful knowledge transfer | 2 | 5 | 15 | 104 | 50 |
| | 1.1% | 2.8% | 8.5% | 59.1% | 28.4% |
| Use of defined work procedures in supply chain aids in successful knowledge transfer | 1 | 8 | 13 | 121 | 33 |
| | 0.6% | 4.5% | 7.4% | 68.8% | 18.8% |
| Buyers should collaborate with suppliers to enable successful supply chain knowledge transfer | 1 | 6 | 16 | 79 | 74 |
| | 0.6% | 3.4% | 9.1% | 44.9% | 42.0% |
| Innovative thinking intervenes in successful supply chain knowledge transfer | 0 | 11 | 4 | 64 | 97 |
| | 0.0% | 6.2% | 2.3% | 36.4% | 55.1% |

Key: SD=Strongly Disagree; D=Disagree; N=Neutral; A=Agree; SA=Strongly Agree; and%=Percentages.

Finally 91.5% of the respondents professed that innovative thinking in supply chain overall intervenes in successful supply chain knowledge transfer. It is evidently clear that supply chain innovative thinking is crucial for better performance of state corporations as it intervenes in successful knowledge transfer which in turn improves the performance of state corporations in Kenya. This is in line with Anssi and Liisa (2011) who suggests that company leaders should learn to practice high-speed innovation experimentation, from ideation to operational execution, in order to offer

products and services with unique customer benefits. A firm's ability to offer superior products and services to a large extent depends on internal innovations.

In his book, John Cantwell,(Cantwell, 2001)states that the development of new products and processes is the outcome of a path-dependent building upon established capabilities and achievements, by the critical revision of emergent new products or methods and the search for relevant novelty. Thus, innovation depends upon the generation of feasible new capabilities, the operation of which adds new value to the existing circular stream of income, and thereby creates new profits and higher income. New products and services, which by design should be of higher quality will most of the times emanate from innovative thinking along the supply chain.

Cantwell, further observes that the critical contribution of large firms to modern innovation may lie instead in their creation of novel technological capability run by skilled teams and developed through their continual problem-solving activity, which becomes a resource for other firms with which they cooperate as well as for themselves. This view supports the finding of this study that supply chain innovative thinking is crucial for better performance of state corporations as it intervenes in successful knowledge transfer which in turn improves the performance of state corporations in Kenya.

This view is further supported by Testa (2004), who in her study entitled, "Innovation or imitation? Benchmarking: a knowledge-management process to innovate Services"...state that in today's complex and turbulent environment the need for innovation in products and processes is widely recognized. This is true especially in the services sector where, in the absence of a concrete productive structure, innovation is even faster and competition is harder and increasingly global. A knowledge-based perspective of the firm has recently emerged. This perspective builds upon and extends the resource-based theory of the firm. It is not so much the tangible resources per se that create the firm's competitive advantage, but the services rendered by those resources that are, in their turn, a function of the firm's know-how. Because knowledge-based resources are often the product of extended learning processes and so are complex and difficult to acquire and copy, the

knowledge-based extension of the resource-based view of the firm posits they may produce long-term sustainable competitive advantage.

Testa continues to say that the core competence of an enterprise is the outcome of the process of accumulating the particular mix of tangible and intangible assets to which the firm has access; therefore they are considered as its main strategic device and a dynamic key of competitive advantage. She posits that it is not the amount of knowledge existing at any given time that is important but the firm's ability to effectively apply the existing knowledge to create new knowledge. Following such a perspective, organizational knowledge and its management are strictly connected to the issue of organizational learning-unlearning and innovation. The innovative features of any firm process may concern several aspects such as technology, procedures, business models etc. and each of them generates knowledge gaps that have to be bridged through innovation and innovative thinking.

4.7.10 Cross Tabulation between Respondent Level of Education and Supply Chain Innovative Thinking

Table 4.20: Cross Tabulation between Respondent Level of Education and Supply Chain Innovative Thinking

| | | Not sure whether it Intervenes in Successful Knowledge Transfer | Intervenes in Successful Knowledge Transfer |
|----------------------------|-------------------|--|--|
| Respondent of Education | Diploma | 0 0.0% | 37 21% |
| | Under Graduate | 12 6.8% | 110 62.5% |
| | Post Graduate | 4 2.3% | 13 7.4% |
| | Total | 16 9.1% | 160 90.9% |
| Pearson Chi-Square value | | 8.070 | |
| Df | | 2 | |
| P-value | | 0.04 | |

The finding indicate that there is difference between respondent level of education regarding their responses on supply chain innovative thinking intervening role on supply chain knowledge transfer (Pearson chi square = 8.070; $p < 0.05$). This is because the p value lies within the critical rejection region. The finding further indicates that supply chain innovative thinking intervening intervenes with up to 62.5% and 90.1% as reported by Undergraduate degree holders and Post Graduate degree holders respectively. The position by staff with Post Graduate degree can be attributed to the fact that they highly educate making them more knowledgeable on matters innovation and by extension innovative thinking and its role in supply chain knowledge transfer.

4.7.11 Normality Test

Tests of normality were used to determine if the data was well modelled and normally distributed (Gujarati, 2003). The results were presented in Table 4.21.

Table 4.21: Summary of Normality Test Results

| | | X ₁ | X ₂ | X ₃ | X ₄ | Z | Y |
|---------------------------|----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| N | | 176 | 176 | 176 | 176 | 176 | 176 |
| Normal | Mean | 2.8864 | 2.8523 | 2.9034 | 2.8864 | 2.9091 | 2.5511 |
| Parameters ^{a,b} | Std. Deviation | .31827 | .35584 | .29624 | .33575 | .28830 | .39880 |
| Most Extreme Differences | Absolute | .526 | .513 | .531 | .525 | .533 | .517 |
| | Positive | .361 | .339 | .372 | .368 | .376 | .370 |
| | Negative | -.526 | -.513 | -.531 | -.525 | -.533 | -.567 |
| Kolmogorov-Smirnov Z | | .526 | .513 | .531 | .525 | .533 | .567 |
| Asymp. Sig. (2-tailed) | | .000 ^c | .000 ^c | .000 ^c | .000 ^c | .000 ^c | .000 ^c |

a. Test distribution is Normal.

b. Calculated from data.

The results obtained indicate that Kolmogorov-Smirnov statistic for all the variables was greater than 0.05, with a p value of less than 0.05 which was the level of significance of 0.05, thus the study concluded that the data for all the variables was normally distributed and therefore fit for linear regression analysis. The variables were roughly normally distributed because the results were generalized beyond the sample (Ghasemi & Zahediasl, 2012.)

4.7.12 Sampling Adequacy Test

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was conducted to determine adequacy of the sample size. The results were presented in Table 4.22

Table 4.22: Kaiser-Meyer-Olkin (KMO) and Bartlett’s Test of Sphericity

| | | |
|--|--------------------|---------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .750 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 163.860 |
| | df | 15 |
| | Sig. | .000 |

The results in Table 4.22 show that the KMO test of the variables of this study generated a sufficient value of 0.750 which is more than 0.7 implying that the sample size was adequate for further analysis (Magd, 2008). This was supported by the Bartlett’s test of sphericity which had a chi-square value of 163.860 with a p value of 0.000 which is less than 0.05. Since the p value is less than 0.05 this shows that there is a strong relationship among the study variables under investigation and hence the Bartlett’s test is highly significant (Moutinho & Hutcheson, 2010).

4.7.13. Performance of State Corporations

Vis-à-vis performance of state corporations, the finding of the analyzed data revealed that 54.5% of the respondents reported that Successful supply chain acquired knowledge transfer helps in improving product and service quality by reducing

defect by at least 81-100%. Similarly, 43.8% maintained that Successful supply chain created knowledge transfer helps in improving product/service quality by reducing defect by at least 61- 80%.

About half of the respondents (42.6%) affirmed that successful supply chain skills transfer helps in improving product and service quality by reducing defect by at least 61 - 80%. It was observed that 43.3% of the respondents recounted that Successful supply chain competencies transfer helps in improving product/service quality by reducing defect by at least 81-100%. Correspondingly, 47.7% of the respondents indicated that successful supply chain acquired knowledge transfer helps in improving supply chain process efficiency and effectiveness thereby reducing production and operational costs by at least 61-80%. Further 60.2% of the respondents agreed that successful supply chain created knowledge transfer helps in improving supply chain process efficiency and effectiveness thereby reducing production and operational costs by at least 61-80%.

More than half the respondents at 53.4% averred that successful supply chain skills transfer helps in improving supply chain process efficiency and effectiveness thereby reducing production and operational costs by at least 81-100%. Equally more than half the respondents at 59.1% of the respondents reported that successful supply chain competencies transfer helps in improving supply chain process efficiency and effectiveness thereby reducing the overall production and operational costs by at least 80 - 100%. Majority of the respondents at 60.8% affirmed that supply chain innovative thinking plays an intervening role in successful knowledge transfer which in turn helps in improving product and service quality by reducing defect by at least 60 - 80%.

Table 4.23: Supply Chain Knowledge Transfer Role on Performance of State Corporations

| Statement | 1-20% Contribution | 21-40% Contribution | 41-60% Contribution | 61-80% Contribution | 81-100% Contribution |
|---|-----------------------|------------------------|------------------------|------------------------|-------------------------|
| Successful supply chain acquired knowledge transfer helps in improving product/service quality by reducing defect by at least... | 4 2.3% | 8 4.5% | 9 5.1% | 59 33.5% | 96 54.5% |
| Successful supply chain created knowledge transfer helps in improving product/service quality by reducing defect by at least... | 5 2.8% | 8 4.5% | 12 6.8% | 77 43.8% | 74 42.0% |
| Successful supply chain skills transfer helps in product/service quality by reducing defect by at least... | 2 1.1% | 8 4.5% | 21 11.9% | 75 42.6% | 70 39.8% |
| Successful supply chain competencies transfer helps in improving product/service quality by reducing defect by at least... | 0 0.0% | 11 6.2% | 19 10.8% | 68 38.6% | 78 44.3% |
| Successful supply chain acquired knowledge transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | 1 0.6% | 1 0.6% | 12 6.8% | 84 47.7% | 78 44.3% |
| Successful supply chain created knowledge transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | 0 0.0% | 2 1.1% | 13 7.4% | 106 60.2% | 55 31.2% |
| Successful supply chain skills transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | 0 0.0% | 3 1.7% | 14 8.0% | 65 36.9% | 94 53.4% |
| Successful supply chain competencies transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | 0 0.0% | 2 1.1% | 9 5.1% | 61 34.7% | 104 59.1% |
| Supply Chain Innovative Thinking plays an intervening role in Successful Knowledge Transfer which in turn helps in improving product/service quality by reducing defect by at least... | 0 0.0% | 2 1.1% | 13 7.4% | 107 60.8% | 54 30.7% |
| Supply Chain Innovative Thinking plays an intervening role in Successful Knowledge Transfer which in turn helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | 0 0.0% | 4 2.3% | 7 4.0% | 56 31.8% | 109 61.9% |

Consequently 61.9% of the respondents agreed that supply chain innovative thinking plays an intervening role in successful knowledge transfer which in turn helps in improving supply chain process efficiency and effectiveness thereby reducing production and operational costs by at least 80 - 100%. In order to be able to share knowledge most effectively between units, certain collaborative attributes have to be present (Bond *et al.*, 2004). Different units such as Marketing and R&D often need to perceive each other knowledge as credible in order to be willing to collaborate with one another.

This view is further supported by Ramírez *et al.* (2011) who state that, there exist a relationship between knowledge creation process and organizational learning, which shows how knowledge creation and transfer affect firm performance. Their findings show that knowledge conversion of knowledge and transfer affect directly and indirectly organizational learning which means the greater presence of the processes of knowledge creation in the organization, i.e. organizational learning facilitates efforts to improve organizational performance. Thus, knowledge creation processes are directly related to organizational learning thereby playing the key role of improving organizational performance.

Further, the findings of this study are supported by Nonaka and Toyama, (2003) who states that with regard to organizational performance, there is sufficient evidence on the existence of a positive and direct relationship between organizational learning and performance, and the existence of positive direct and indirect effects of knowledge conversion on performance. They continue to say that knowledge conversion enables firms to integrate emerging knowledge into its strategic development and they can create new knowledge and develop new product at a lower cost and more speedily than their competitors can do. Thus, knowledge creation provides an opportunity for firms to enhance efficiency and sustain its competitive advantages.

4.7.14 Supply Chain Knowledge Transfer Role in the Performance of State Corporations

An analysis was conducted to determine whether Knowledge Transfer significantly contributes to performance of start Corporations in Kenya. Table 4.24 indicates that only 5.8% reported that they were not sure whether supply chain knowledge transfer improves performance of state corporations in Kenya. However, up to 94.2 % of all respondents significantly ($\chi^2 = 134.33$; $p < 0.05$) maintained that supply chain knowledge transfer contributed to the performance of state corporation in Kenya. It was also established that 96.0% of the respondent significantly ($\chi^2 = 311.33$; $p < 0.05$) agreed that supply chain acquired knowledge transfer contributes to the performance of state corporations in Kenya.

Table 4.24: Knowledge Transfer contribution to performance

| Variable | Does not contribute | Not sure whether it contributes | Contributes | χ^2 | p-value |
|--|---------------------|---------------------------------|--------------|----------|---------|
| Supply Chain Knowledge Transfer Improves Performance | 0 0.0% | 10 5.8% | 162 94.2% | 134.33 | 0.000 |
| Supply Chain Competencies Transfer contribution to performance | 0 0.0% | 7 4.0% | 169 96.0% | 149.11 | 0.000 |
| Supply Chain Skill Transfer in contribution to performance | 1 0.6% | 6 3.4% | 169 96.0% | 311.45 | 0.000 |
| Supply Chain Acquired Knowledge Transfer contribution to performance | 2 1.1% | 5 2.8% | 169 96.0% | 311.33 | 0.000 |
| Supply Chain Created Knowledge transfer contribution to performance | 0 0.0% | 14 8.0% | 162 92.0% | 124.46 | 0.000 |
| Innovative Thinking Role in knowledge transfer | 2 1.1% | 10 5.7% | 164 93.2% | 284.23 | 0.000 |

Furthermore, up to 96.0% of the respondents significantly ($\chi^2 = 149.11$; $p < 0.05$) agreed that supply chain competencies transfer contributes to performance of state corporations. It was further observed that 92% of the respondent avowed that supply chain created knowledge transfer contributes to performance of state corporation in Kenya significantly ($\chi^2 = 124.46$; $p < 0.05$). In addition, 93.2% of the respondents significantly ($\chi^2 = 284.23$; $p < 0.05$) agreed that innovative thinking had an intervening role in successful knowledge transfer which in turns contributes to the performance of state corporations in Kenya.

It can be affirmed from the analyzed data that knowledge transfer improves performance of state corporations in Kenya. This view concurs with Dan (2010) who advances that the ability of firms to grow and compete over the next decade will increasingly depend on access to and utilization of relevant knowledge critical to its operations, and the performance and skills of its knowledge workers. It's the proper use of knowledge that sets apart organization by distinguishing between those that are successful and those that are not.

4.8 Correlation Analysis

Correlation analysis was conducted to determine whether there existed relationship between independent, intervening and dependent variables. The findings revealed that there exists a positive and statistically significant relationship between supply chains acquired knowledge transfer and performance of state corporations in Kenya. ($r = 0.606^{**}$; $p < 0.01$).

Conversely lack of supply chain acquired knowledge transfer will decrease the performance of State Corporation. This implies that, skilled performance of tasks, ease in solving problems, utilization of available knowledge and making right decisions will lead to improvement in the performance of these organizations.

Table 4.25: Correlations Analysis

| | | Performance of State corporations | Acquired knowledge transfer | Created knowledge transfer | Skill transfer | Competencies transfer | Innovative thinking |
|-----------------------------------|-------------------------------------|-----------------------------------|-----------------------------|----------------------------|----------------|-----------------------|---------------------|
| Performance of State corporations | Pearson Correlation Sig. (2-tailed) | 1 | | | | | |
| | N | 176 | | | | | |
| Acquired knowledge transfer | Pearson Correlation Sig. (2-tailed) | .606** | 1 | | | | |
| | N | 176 | 176 | | | | |
| Created knowledge transfer | Pearson Correlation Sig. (2-tailed) | .707** | .558** | 1 | | | |
| | N | 176 | 176 | 176 | | | |
| Skill transfer | Pearson Correlation Sig. (2-tailed) | .628** | .793** | .582** | 1 | | |
| | N | 176 | 176 | 176 | 176 | | |
| Competencies transfer | Pearson Correlation Sig. (2-tailed) | .650** | .602** | .635** | .591** | 1 | |
| | N | 176 | 176 | 176 | 176 | 176 | |
| Innovative thinking | Pearson Correlation Sig. (2-tailed) | .304** | .307** | .431** | .358** | .295** | 1 |
| | N | 176 | 176 | 176 | 176 | 176 | 176 |

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

Furthermore, the analyzed data indicated that there exist a positive and statistically significant relationship between supply chain created knowledge transfer and performance of state corporations in Kenya ($r = 0.707^{**}$; $p < 0.01$). This infers that an increase in new ideas generation, improved performance of duties, defined methodology in undertaking tasks and development of new knowledge will improve the performance of state corporations in Kenya.

Moreover, analysis was conducted to determine the relationship between supply chain skill transfer and performance of state corporations. The results indicated that there exist a positive and statistically significant relationship between supply chain skill transfer and performance of State corporations ($r = 0.628^{**}$; $p < 0.01$). This implies that when there is confidence in task performance, enhanced ability in job roles, speedy responsiveness to customer's requirements and increased ability in making informed decisions, performance will increase progressively.

Further the analyzed data indicated that there exist a positive and statistically significant relationship between supply chain competencies transfer and performance of state corporations ($r = 0.650^{**}$; $p < 0.01$). These indicate that display of expertise in jobs roles, consistency in performance of tasks, display of capabilities and proficiency in tasks and duties correlates positively with performance in state corporations in Kenya.

Finally, it was discovered that innovative thinking as a intervening variable have a weak, but positive and statistically significant relationship with performance of state corporations in Kenya ($r = 0.304^{**}$; $p < 0.01$). This indicates that application of novel ideas, deployment of new methodology, adoption of best practices and use of defined work procedure has a positive, but weak influence in performance of state Corporation.

4.9 Regression Analysis

4.9.1 Model summary

The result of the Model is summarized in table below.

Table 4.26: Model summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .779 ^a | .607 | .596 | .2608 |

a. Predictors: (Constant), Innovative thinking aids in successful knowledge transfer which in-turn improves performance, supply chain core competencies transfer improves performance, supply chain acquired knowledge transfer improves performance, supply chain created knowledge transfer improves performance, and supply chain skill transfer improves performance.

Table 4.26 indicates an R Square value as 0.607. This means that 60.7% variation in performance of state corporations is explained in the variation of supply chain competencies transfer, supply chain acquired knowledge transfer, supply chain created knowledge transfer and supply chain skill transfer as intervened by innovative thinking with a standard error of the estimate of 0.2608. The unexplained variation is 39.3% and could be explained by other factors outside the model.

4.10 ANOVA Test

F-test was used to test the significance of the overall model at 5% level of significance. The p-value for the F-statistic was applied in determining the robustness of the model in predicting the study variables effects.

Table 4.27: ANOVA^a

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|-----|-------------|--------|-------------------|
| 1 Regression | 17.878 | 5 | 3.576 | 52.579 | .000 ^b |
| Residual | 11.561 | 170 | .068 | | |
| Total | 29.439 | 175 | | | |

a. Dependent Variable: Performance of State corporations

b. Predictors: (Constant), Innovative thinking aids in successful knowledge transfer which in-turn improves performance, supply chain core competencies transfer improves performance, supply acquired knowledge transfer improves performance, supply chain created knowledge transfer improves performance, supply chain skill transfer improves performance.

The ANOVA test indicates that the model is highly significant at 5% level of significance; $R^2 = 0.607$, $F(5, 170) = 52.579$; $p < 0.05$. This indicates that the model is 95% significantly efficient in predicting the effect of independent variables on dependent variable. In other words, performance of state corporations can be explained by the effect of supply chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skill transfer and supply chain competencies transfer as intervened by innovative thinking,

4.11 Regression Coefficients

Performance in the state corporations was regressed against five variables depicting the role of supply chain knowledge transfer namely: supply chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skill transfer and supply chain competence transfer as intervened by innovative thinking,. Table 4.28 shows coefficients.

Table 4.28: Coefficients^a

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|--|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| (Constant) | 1.077 | .228 | | 4.727 | .000 |
| Supply chain acquired knowledge transfer improves performance | .084 | .067 | .104 | 1.261 | .209 |
| Supply chain created knowledge transfer improves performance | .348 | .058 | .414 | 6.010 | .000 |
| Supply chain skill transfer improves performance | .152 | .069 | .185 | 2.218 | .028 |
| Supply chain competencies transfer improves performance | .204 | .061 | .228 | 3.353 | .001 |
| Innovative thinking aids in successful knowledge transfer which in-turn improves performance | -.033 | .044 | -.040 | -.740 | .460 |

a. Dependent Variable: Performance of State corporations

On the basis of Unstandardized Beta coefficients, the model shows that supply chain acquired knowledge transfer causes 8.4% positive variation on performance of state corporations. Correspondingly, it was revealing that supply chain created knowledge transfer causes 34.8% positive variation, supply chain skill transfer causes 15.2% positive variation and supply chain competencies transfer causes 20.4% positive variation on performance of state corporations in Kenya. However, Innovative thinking causes 3.3% negative variation on performance of state corporations.

4.12 Sobel Test

Sobel test was conducted to test whether a mediator (intervening variable) carries the influence of an IV (independent variable) to a DV (dependent variable). It is a test of whether the indirect effect of the IV on the DV via the mediator is significantly different from zero.

Table 4.29: Sobel Test

| Input | | Type of test | Test statistic | Std. Error | P value |
|----------------|--------|---------------------|-----------------------|-------------------|----------------|
| a | 0.497 | Sobel test: | 1.908 | 0.022 | 0.05 |
| b | 0.084 | Aroian test | 1.908 | 0.022 | 0.05 |
| S _a | -0.009 | Goodman test | 1.908 | 0.022 | 0.05 |
| S _b | 0.044 | | | | |

The test statistic for the Sobel test is 1.908, with an associated *p*-value of 0.05. The fact that the observed *p*-value fall within the established alpha level of .05 indicates that the association between the Independent variable and the Dependent variable (in this case supply chain knowledge transfer role and performance of state corporations in Kenya) is highly reduced significantly by the inclusion of the mediator (in this case innovative thinking) in the model; in other words, there is adequate evidence of mediation.

4.13 Hypothesis Testing

The benchmark for this study for failure to reject or failure to accept the null hypothesis is a level of significance of 5%. For instance; Reject $H_0: \beta_x = 0$; if $p < 0.05$, Otherwise fail to reject the $H_0: \beta_x = 0$.

4.13.1 H01: Supply chain acquired knowledge transfer does not significantly affect the performance of State Corporations in Kenya.

From the finding in Table 4.24, the beta coefficient has a corresponding p value greater than 0.05 alpha. Therefore, we fail to reject the null hypothesis and conclusion made that supply chain acquired knowledge transfer does not significantly affect the performance of state corporations in Kenya.

4.13.2 H02: Supply chain created knowledge transfer does not significantly affect the performance of State Corporations in Kenya

As regards the unstandardized Beta coefficient, its corresponding p value is less than 0.05 alpha, leading to a rejection of the null hypothesis. Consequently, a decision is made that supply chain created knowledge transfer significantly affects the performance of State Corporations in Kenya.

4.13.3 H03: Supply chain skills transfer does not significantly affect the performance of State Corporations in Kenya.

Concerning the unstandardized Beta coefficient, its corresponding p value is less than 0.05 alpha, leading to a rejection of the null hypothesis. Accordingly, a decision is made that supply chain skills transfer significantly affects the performance of state corporations in Kenya.

4.13.4 H04: Supply chain competencies transfer does not significantly affect the performance of State Corporations in Kenya.

Vis-à-vis the unstandardized Beta coefficient, its corresponding p value is less than 0.05 alpha leading to a rejection of the null hypothesis. Accordingly, a decision is made that Supply chain competencies transfer significantly affect the performance of State Corporations in Kenya.

4.13.5 H05: Innovative thinking does not significantly affect supply chain knowledge transfer in State Corporations in Kenya.

It was noted that the beta coefficient has an equivalent p value greater than 0.05 alpha. Therefore, we fail to reject the null hypothesis and inference made that innovative thinking does not significantly affect supply chain knowledge transfer in State Corporations in Kenya.

4.14 Heteroscedasticity

Homoscedasticity describes a situation in which the error term that is, the “noise” or random disturbance in the relationship between the independent variables and the dependent variable is the same across all values of the independent variables (Popescu, 2019). Heteroscedasticity such as the violation of homoscedasticity is present when the size of the error term differs across values of an independent variable. This is in agreement with the findings of (Williams, 2015) who observed that a more serious problem associated with heteroscedasticity is the fact that the standard errors are biased. Because the standard error is central to conducting significance tests and calculating confidence intervals, biased standard errors lead to incorrect conclusions about the significance of the regression coefficients.

Another approach for dealing with heteroscedasticity is to transform the dependent variable using one of the variance stabilizing transformations. Miles *et al* (2014) contended that the existence of Heteroscedasticity is a major concern in the application of regression analysis, even in the analysis of variance, as it can invalidate statistical tests of significance that assume that the modeling errors are uncorrelated and uniform: -hence that their variances do not vary with the effects being modeled. Heteroscedasticity often occurs when there is a large difference among the sizes of the observations. Heteroscedasticity is the absence of homoscedasticity. Homoscedasticity refers to whether these residuals are equally distributed, or whether they tend to bunch together at some values and at other values, spread far apart (Field, 2013).

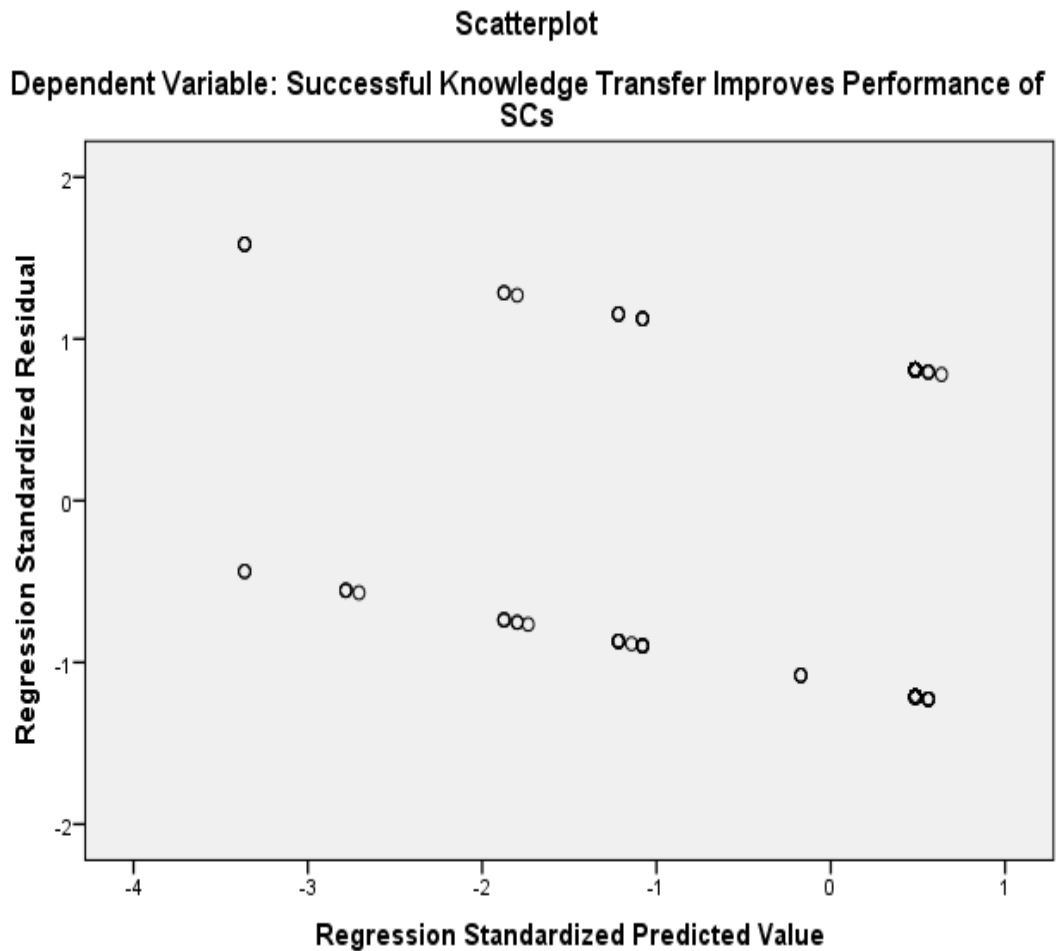


Figure 4.4: Scatter Plot for Heteroscedasticity of Data

In the context of *t*-tests and ANOVAs, this same concept is referred to as equality of variances or homogeneity of variances (Debbie & Richard, 2012). Data is homoscedastic if it looks somewhat like a shotgun blast of randomly distributed data. The opposite of homoscedasticity is heteroscedasticity, where you might find a cone or fan shape in your data. Homoscedasticity data looks like you shot it out of a shotgun—it does not have an obvious pattern, there are points equally distributed above and below zero on the X axis, and to the left and right of zero on the Y axis. If the data is not homoscedastic and you were to draw a line around your data, it would look like a cone. A key assumption of regression is that the variance of the errors is

constant across observations. Typically, residuals are plotted to assess this assumption. Standard estimation methods are inefficient when the errors are heteroscedasticity or have non-constant variance. Looking at the scatter plot below, the data have a homoscedasticity pattern meaning that the model is not heteroscedasticity.

4.15 Overall Model

Thus the Overall model was summarized as follows:-

$$Y = \beta_0 + \beta_1(\text{Acquired}) + \beta_2(\text{Creation}) + \beta_3(\text{Skills}) + \beta_4(\text{Competencies}) + \beta_5(\text{Innovative}) + \epsilon$$

$$Y = 1.077 + 0.084(\text{Acquired}) + 0.348(\text{Creation}) + 0.152(\text{Skills}) + 0.204(\text{Competencies}) - 0.033(\text{Innovative}) + 0.2608$$

4.16 Optimal Model

In the development of optimal model, the following output was produced.

Table 4. 30: Optimal Model Coefficients

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|----------------------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| (Constant) | 1.034 | .208 | | 4.978 | .000 |
| Created Knowledge Transfer | .343 | .056 | .407 | 6.168 | .000 |
| Developed Skill Transfer | .202 | .052 | .245 | 3.880 | .000 |
| Core competencies transfer | .222 | .060 | .247 | 3.719 | .000 |

a. Dependent Variable: Performance of State corporations

As regards to the model coefficients, the model was revised removing the variables that were removed leaving predictors which were highly significant at 95% confidence level.

Thus the revised Optimal model was summarized as follows:-

$$Y = \beta_0 + \beta_2(\text{Creation}) + \beta_3(\text{Skills}) + \beta_4(\text{Competencies}) + \epsilon$$

$$Y = 1.034 + 0.343(\text{Creation}) + 0.202(\text{Skills}) + 0.222(\text{Competencies}) + 0.2609.$$

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the findings, the overall effects of the variables, conclusions, recommendations and suggestions on areas of further research in line with the overall objectives of the study. Statistical analysis discussions were done with reference to the objectives and research questions of the study. Data was interpreted and the results of the findings were correlated with both empirical and theoretical literature currently available. The conclusion relates directly to the specific objective and research questions. The recommendations were deduced from the conclusion and discussions.

5.2 Summary of Key Findings

The study sought to investigate the role of supply chain knowledge transfer on the performance of state corporations in Kenya. Specifically the study looked at supply chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skills transfer, supply chain competencies transfer and supply chain innovative thinking as enablers of supply chain knowledge transfer processes in state corporations in Kenya.

5.2.1 Role of supply chain knowledge transfer on the performance state corporations in Kenya.

The main objective of this study was to examine the role of supply chain knowledge transfer on the performance State Corporations in Kenya. This was to be determined by examining how different components of supply chain knowledge transfer namely, supply chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skills transfer and supply chain competencies transfer intervened by supply chain innovative thinking impacts on the performance of state

corporations as measured by production of high quality products, high quality services, efficient production processes and effective production methods.

Majority of the respondent in the study strongly agreed that all these knowledge transfer components as a whole played a strong role in the performance of state corporations in Kenya by both improving product and service quality by reducing defect and improving supply chain process efficiency and effectiveness thereby reducing overall production and operational costs.

5.2.2 Effects of supply chain acquired knowledge transfer on the performance of State Corporations in Kenya.

The study sought to establish how supply chain acquired knowledge transfer affects the performance of state corporations. Knowledge acquisition should results in skilled performance of tasks and job roles, enable individuals to solve problems on their own as they apply and utilize the acquired knowledge while making the right decision to enhance performance. The study established that majority of the respondents affirmed that acquired knowledge transfer is crucial for better performance of state corporations.

This view was supported by most of the respondents who maintained that transferring acquired knowledge contributed in skilled performance of tasks which in turn aids in the production of high quality products across these organizations. Similarly, the study found out that transferring acquired knowledge helps in easing problem solving which also makes it possible for organization to offer high quality services to customers.

Majority of the respondents asserted that utilization of available knowledge as acquired makes production processes more efficient and error free. It was also noted that making right decisions across the supply chain assists in making production methods more effective. Almost all the respondents overwhelmingly asserted that buyers should collaborate with suppliers to enhance the transfer of supply chain acquired knowledge.

Majority of the respondents indicated that transfer of acquired knowledge helps in ensuring the sustainability of state corporations. Almost all the respondents observed that transfer of acquired knowledge improves organizational effectiveness they-by making this organizations more responsive as well as aiding in reduction of operational costs.

From this finding, it can be deduced that supply chain acquired knowledge transfer is crucial for better performance of state corporations as it aids in enhancing the quality of products and services. An organization that supports information sharing and by extension knowledge acquisition and transfer among its members, is likely to have effective and efficient business processes, thereby improving its performance.

5.2.3 Effects of supply chain created knowledge transfer on the performance of State Corporations in Kenya.

The study sought to evaluate how supply chain new knowledge creation affects the performance of state corporations in Kenya. Supply chain knowledge creation is evidenced by generation of new ideas, improved performance of tasks, defining new methodology of executing processes and development and creation of new knowledge that was not domiciled within the organization.

Almost all the respondents affirmed that supply chain created knowledge transfer is crucial for better performance of state corporations. Majority of the respondent agreed and strongly agreed that; new ideas generation aids in production of high quality products and availability of created knowledge makes it possible to offer high quality services to customers.

Similarly, most of the respondent affirmed that development of new knowledge assists in making production methods more effective thereby leading to cost reduction in the production processes and operations. The respondents also averred that as workers assimilate in new knowledge through collaboration with suppliers and business partners, performance of duties was more accurate and elaborate. These respondents also strongly agreed that, the creation of new knowledge within

these corporations enhances quality of products & services as there were few errors and reduced down time in all the processes as people embraced best practices in tasks performance.

Knowledge workers also scaled up their performance while collaborating with suppliers to create new knowledge within their organizations boundaries. An effective company is a knowledge-creating company, and one which is able to reliably create new knowledge and distribute it throughout the company. The study therefore concludes that the supply chain created knowledge transfer in an organization is a critical factor in its success, competitiveness and its overall performance.

5.2.4 Effects of supply chain skills transfer on the performance of State Corporations in Kenya.

The study sought to explore how supply chain skills transfer affected the performance of states corporations in Kenya. Successful supply chain skill transfer is evidenced by confidence while performing tasks and duties, enhanced responsiveness, the ability to make the right decisions when required and enhanced ability in doing specific assignments and ability of making informed decisions and choices.

A high number of respondents agreed that supply chain skills transfer is crucial for better performance of state corporations in Kenya. Majority of the respondent asserted confidence in task performance aids in production of high quality products in state corporations. The respondents also acknowledged that enhanced ability makes it possible to offer high quality services to customers at state corporations. They also agreed that speedy responsiveness makes production processes more efficient thereby improving organizational performance.

Further majority of the respondents avowed that making informed decisions assists in making production methods more effective. The study found that buyer should collaborate with suppliers to develop requisite supply chain skills as it can be

construed that indispensable skills transfer is critical for better performance of state corporations. The study finding strongly affirms that supply chain professionals must possess an appropriate set of competencies and skills to be in a position to deal with a wide variety of issues and challenges in an effective and responsive manner in order to enhance their performance.

5.2.5 Effects of supply chain competencies transfer on the performance of State Corporations in Kenya.

The study sought to determine how supply chain competencies transfer affected the performance of states corporations. A competency is the combination of skill, knowledge and behavior that need to be applied for effective performance in a work role and context. Competency is evidenced by display of high expertise in task performance, consistency in doing things, display of capabilities in job roles and evident proficiency in tasks and duties. Majority of the respondent strongly agreed that supply chain knowledge transfer is crucial for better performance of state corporations.

Nearly all the respondent averred that display of expertise aids in production of high quality products. This is key attributes in services performance as it measures the speed at which the organization responds to customers' requirements. Similarly, majority of the respondent confirmed that consistency in performance makes it possible to offer high quality services to customers there by ensuring the organization's posterity. They also strongly agreed that display of capabilities makes production processes more efficient thereby reducing production cost and enhancing quality of products and services as rendered and produced by the firm.

Proficiency in key assignments or jobs as undertaken is a true reflection of supply chain competences successful transfer as it makes production methods more efficient. The study concludes that buyers should collaborate with suppliers to develop supply chain competencies as required. This study therefore established that successful supply chain competencies transfer is crucial for better performance of state corporations in Kenya.

5.2.6 Effects of innovative thinking intervention in supply chain knowledge transfer in State Corporations in Kenya

The study sought to assess how supply chain innovative thinking intervened in the supply chain knowledge transfer process in state corporations in Kenya. Supply chain innovative thinking is normally depicted as application of novel ideas, deployment of new methodology, use of defined work procedure as creativity in performing tasks and challenging assignments that requires an individual to ‘think outside of the box’ and ability to adopt laid out best practices in any profession.

Most of the respondents affirmed that application of novel ideas in supply chain aids in successful knowledge transfer which in turn impacts on the performance of state corporations in Kenya. Majority of the respondent asserted that deployment of new methodology in supply chain aids in successful knowledge transfer in state corporations in Kenya and along the supply chain network. Almost all the respondents strongly agreed that adoption of best practices in supply chain aids in successful knowledge transfer and were likely to act as a benchmark between organizations and therefore this would improve supply chain knowledge transfer process.

Similarly most of respondents upheld that use of defined work procedures in supply chain aids in successful knowledge transfer. The study further found out that clear supply chain innovative thinking is crucial in aiding supply chain knowledge transfer as it was an important component in the knowledge transfer process as it intervened on how the actual supply chain knowledge transfer took place. Majority of the respondent also suggested that buyers should collaborate with suppliers to enable successful supply chain knowledge transfer within their boundaries and along the supply chain network.

5.2.7 The Overall Effects of the Variables

The study findings showed a great influence of three study variables namely, supply chain created knowledge transfer, supply chain skill transfer and supply chain core

competencies transfer to the performance of state corporations in Kenya. This was not the case for one of the independent variable, namely supply chain acquired knowledge transfer was found not to significantly affect supply chain knowledge transfer process and therefore dropped. This was also the same case for the intervening variable namely innovative thinking that was found to not significantly affect the transfer process. After dropping this two variables the ANOVA test indicated that the optimal model was highly significant at 5% level of significance; $R^2 = 0.607$, $F(5, 170) = 52.579$; $p < 0.05$.

This indicates that the model is 95% significantly efficient in predicting the effect of the independent variables on the dependent variable. In other words, performance of state corporations can be explained by the effect of supply chain created knowledge transfer, supply chain skill transfer and supply chain competencies transfer. As regards to the model coefficients, it can be noted that these three predictors were highly significant at 95% confidence level.

5.3 Conclusion

The aim of this study was to explore supply chain knowledge transfer role on the performance of state corporations in Kenya. Based on previous studies the components of supply chain knowledge transfer, namely: supply chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skills transfer and supply chain competencies transfer, were expected to have positive relation to the performance in state corporations in Kenya. The output given from the findings indicate that there is a significant positive relationship between the three retained components of supply chain knowledge transfer namely, supply chain created knowledge, supply chain skills, supply chain competencies with the performance of state corporations.

Overall the findings indicated that supply chain knowledge transfer components as retained played a strong role in the performance of state corporations in Kenya by enabling the production of high quality products and services, making production processes more efficient and effective by both reducing defects in products and

services as produced and delivered to the customers and also in the enhancement of the operational processes within these organizations. It was also realized that these knowledge components when effectively transferred from one individual to the other had the ability to make the business processes more efficient in term of their responsiveness to customers' requirements and needs.

When analyzed together, the findings of the study indicates that the three retained components of knowledge transfer namely: supply chain created knowledge transfer, supply chain skill transfer and supply chain competencies transfer had a positive and notable impact on the performance of state corporations as a whole. These findings revealed that supply chain created knowledge transfer to a great extent affected the performance of state corporations in Kenya.

5.3.1 Supply Chain Acquired Knowledge Transfer and Performance of State Corporations in Kenya

The study findings indicated that supply chain acquired knowledge transfer which should results in skilled performance of tasks and job roles, enable individuals to solve problems on their own as they apply and utilize the acquired knowledge while making the right decision to enhance performance does not significantly affect the performance of state corporations in Kenya. This study therefore concludes that supply chain acquired knowledge transfer as a component of supply chain knowledge transfer has no contribution in the performance of state corporations in Kenya.

5.3.2 Supply Chain Created Knowledge Transfer and Performance of State Corporations in Kenya

The study findings further revealed that the transfer of supply chain created knowledge improves the performance of state corporations as an increase in generation of new ideas, and proper defined methodology in operations increases performance.

This therefore means that the transfer of supply chain created knowledge is crucial for better performance of state corporations. New supply chain created knowledge

transfer makes organizations to be relevant in a changing world thereby ensuring their sustainability. New supply chain knowledge transfer helps organization to be both effective and efficient and aids in reduction of production costs as organizations adopts best practices.

5.3.3 Supply Chain Skills Transfer and Performance of State Corporations in Kenya

Further, the study findings revealed that the successful transfer of supply chain skill affected the performance of state corporations. The finding indicated that there exist a positive and significant relationship between supply chains skill transfer and the performance of state corporations. This was enabled by confidence in task performance, enhanced ability, speedy responsiveness and the ability to make informed decisions which in turn made this organization more sustainable as they were able to increase the quality of their services at a reduced production cost.

5.3.4 Supply Chain Competencies Transfer and Performance of State Corporations in Kenya

The transfer of supply chain competencies equally was found to impact on the performance of state corporations in Kenya. Successful transfer of supply chain competencies was found to result in display of expertise, consistency in performance, display of capabilities and proficiency in undertaking tasks and duties which helps organization in the reduction of errors in their operational processes which in turn helps in improving quality of goods and services. Display of capabilities and proficiency in tasks/duties makes organizations stand out among others thereby attracting the best knowledge workers which make them more sustainable. This study concludes that supply chain competencies transfer has a significant effect on the performance of state corporations in Kenya.

5.3.5 Innovative and Knowledge Transfer in Kenya

The study finding indicates revealed that, innovative thinking which is normally depicted as application of novel ideas, deployment of new methodology, use of

defined work procedure as creativity in performing tasks and challenging assignments that requires an individual to ‘think outside of the box’ and ability to adopt laid out best practices in any profession does not significantly affect supply chain knowledge transfer in State Corporations in Kenya. Conclusion is therefore made that, as an intervening variable, innovative thinking does not intervene in the knowledge transfer process in state corporations in Kenya.

5.4 Recommendations

This section provides the recommendations that study made based on the findings and discussions presented in chapter four.

5.4.1 Supply chain created knowledge transfer

New knowledge can be created through idea generation processes like early supplier involvement. A successful company is a knowledge-creating company, one which is able to consistently produce new knowledge, disseminate it throughout the company and embody it into new products or services quickly. This study recommends state corporations to put mechanisms in place that will make it possible for new knowledge to be created within their boundaries.

5.4.2 Supply chain skills transfer

Skill is a learned pattern of operations or response to stimuli which allows the successful, rapid and confident performance of a complex task. Skills are complex behaviors which are acquired as a result of knowledge transfer and practice. Effective work performance depends on the unhindered exercise of skills. This study recommends for avenues to be established that would enable skilled employees to be identified using a defined mechanism in state corporations in order to make those skills available for others to learn from and emulate. It is recommended that for all complex tasks, new employees should be accompanied by those who are skilled so that they can be shown how to navigate through those tasks.

5.4.3 Supply chain competencies transfer

A competency is the combination of skill, knowledge and behavior that need to be applied for effective performance in a work role and context. Knowledge transfer is key component in improving supply chain members competency. Competency integrates knowledge, skill and other attributes into the notion of overall ability, specifically in the workplace performance and proficiency. This study recommends state corporations to create avenues where employees can effectively express their competencies as developed at the workplace. This will help in ensuring that the competencies are adopted by others as required and as a result contribute to enhancing the quality of goods and services as produced and offered by these organizations.

5.4.4 Supply chain knowledge transfer

Knowledge transfer through inter-firm collaborations is a process by which a firm makes its knowledge stock available to other firms within collaborative ventures. Knowledge transfer, especially through strategic alliances in the supply chain, should be encouraged to enhance business processes. This study recommends that state corporations should corroborate with their strategic suppliers to enhance knowledge transfer and sharing between them so that they could leverage on the knowledge bases of each other to enhance their competitiveness. The researcher further recommends state corporations to establish mechanisms to encourage and reward employees who want to share and transfer supply chain knowledge. This has the potential of cascading the transferred knowledge to all the people who are responsible in these organizations.

5.5 Areas of Further Research

The finding of this study has highlighted the importance of supply chain knowledge transfer. The study sought to investigate supply chain knowledge transfer role on the performance of state corporations in Kenya. Specifically the study looked at supply

chain acquired knowledge transfer, supply chain created knowledge transfer, supply chain skills development, supply chain competencies development and supply chain innovative thinking as enablers of supply chain knowledge transfer in state corporations.

In the overall model the study revealed that supply chain knowledge transfer components accounted for up to 60.7% variation in performance of state corporations. Therefore, further studies should be conducted to establish other factors that account for the remaining 39.3% of the variation in performance of state corporations in Kenya.

Further study should also be undertaken to establish the role of modern technology in enhancing the supply chain knowledge transfer process. Since the study majored on state corporations, other agencies including private organizations can also be considered for further study. Supply chain knowledge transfer effects can also be assessed across the entire supply chain network, to include customers, suppliers, buyers and other stakeholders across different geographical locations.

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APPENDICES

Appendix I: Letter of Introduction

Maina Samuel Kariuki

P. O. BOX 47936, 00100
NAIROBI

Tel: 0721452499

Email: *evkariuki@yahoo.com*

9th March, 2017

Dear sir/madam,

ROLE OF SUPPLY CHAIN KNOWLEDGE TRANSFER ON THE PERFORMANCE OF STATE CORPORATIONS IN KENYA

I am student at Jomo Kenyatta University of Agriculture and Technology (JKUAT) pursuing a Doctor of Philosophy Degree (PhD) In Supply Chain Management. I am carrying out a research on “**ROLE OF SUPPLY CHAIN KNOWLEDGE TRANSFER ON THE PERFORMANCE OF STATE CORPORATIONS IN KENYA**”, as part of my degree requirement.

This questionnaire has been set in relation to the above objective of the study, which is to establish and document how supply chain acquired knowledge transfer, knowledge creation, skill development, core competencies development and innovative thinking contributes to the performance of state corporations in Kenya.

Kindly give answers to the best of your knowledge by ticking and writing on the provided spaces in the questionnaire. All information will be treated with strict confidentiality and exclusively for academic purposes.

Yours Faithfully,

Maina Samuel Kariuki
Shale

Prof. Mike Amuhaya Iravo

Dr Noor Ismail

PhD Student
Supervisor

University Supervisor

University

Appendix II: Questionnaire

SECTION A – Bio Data

Please tick the appropriate answer or give suitable response in the spaces provided.

1) Gender

Male ()

Female ()

2) What is your age group?

18 – 25 years ()

26 -35 years ()

36 – 45 years ()

46 – 55 years ()

56 – 60 years ()

3) What is your highest level of education?

College Diploma ()

Professional Diploma ()

Bachelor Degree ()

Master (MSc) degree ()

Doctorate (PhD) degree ()

4) How long have you worked in the procurement department?

Between 0 – 5 years ()

Between 5 - 10 years ()

Between 10 - 15 years ()

Between 15 - 20 years ()

Above 20 years ()

5) Which of the cadres below best describe your job level:

Lower management ()

Middle management ()

Top management ()

Section B: Supply chain acquired knowledge transfer Role in Performance of State Corporations in Kenya

*For the following statements, please tick against the answer which closely reflects your opinion on **supply chain acquired knowledge transfer contribution to the performance of State Corporation in Kenya**, where in a scale of 5 to 1, 5 indicates strong agreement and 1 indicates strong disagreement.*

| Statement | Strongly Agree | Agree | Neutral | Disagree | Strongly disagree |
|--|----------------|-------|---------|----------|-------------------|
| | 5 | 4 | 3 | 2 | 1 |
| 6) Skilled performance of tasks aids in production of high quality products | | | | | |
| 7) Ease in problem solving makes it possible to offer high quality services to customers | | | | | |
| 8) Utilization of available knowledge as acquired makes production processes more efficient | | | | | |
| 9) Making right decisions assists in making production methods more effective | | | | | |
| 10) Buyers should collaborate with suppliers to acquire specific knowledge | | | | | |
| 11) Supply chain acquired knowledge transfer is crucial for better performance of state corporations | | | | | |

Section C: Supply chain created knowledge transfer and Performance

*For the following statements, please tick against the answer which closely reflects your opinion on **supply chain created knowledge transfer contribution to the performance of State Corporation in Kenya**, where in a scale of 5 to 1, 5 indicates strong agreement and 1 indicates strong disagreement.*

| Statement | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|----------------|-------|---------|----------|-------------------|
| | 5 | 4 | 3 | 2 | 1 |
| 12) New ideas generation aids in production of high quality products | | | | | |
| 13) Availability of created knowledge makes it possible to offer high quality services to customers | | | | | |
| 14) Defined methodology makes production processes more efficient | | | | | |
| 15) Development of new knowledge assists in making production methods more effective | | | | | |
| 16) Buyers should collaborate with suppliers to create new knowledge | | | | | |
| 17) Supply chain created knowledge transfer is crucial for better performance of state corporations | | | | | |

Section D: Supply chain skills transfers Role in Performance of State Corporations in Kenya

For the following statements, please tick against the answer which closely reflects your opinion on supply chain skills developments contribution to the performance of State Corporation in Kenya, where in a scale of 5 to 1, 5 indicates strong agreement and 1 indicates strong disagreement.

| Statement | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|--|----------------|-------|---------|----------|-------------------|
| | 5 | 4 | 3 | 2 | 1 |
| 18) Confidence in task performance aids in production of high quality products | | | | | |
| 19) Enhanced ability makes it possible to offer high quality services to customers | | | | | |
| 20) Speedy responsiveness makes production processes more efficient | | | | | |
| 21) Making informed decisions assists in making production methods more effective | | | | | |
| 22) Buyer should collaborate with suppliers to develop skills | | | | | |
| 23) Supply chain skills transfer is crucial for better performance of state corporations | | | | | |

Section E: Supply chain competencies transfers Role in Performance of State Corporations in Kenya

For the following statements, please tick against the answer which closely reflects your opinion on supply chain competencies transfers contribution to the performance of State Corporation in Kenya, where in a scale of 5 to 1, 5 indicates strong agreement and 1 indicates strong disagreement.

| Statement | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|--|----------------|-------|---------|----------|-------------------|
| | 5 | 4 | 3 | 2 | 1 |
| 24) Display of expertise aids in production of high quality products | | | | | |
| 25) Consistency in performance makes it possible to offer high quality services to customers | | | | | |
| 26) Display of capabilities makes production processes more efficient | | | | | |
| 27) Proficiency in tasks/duties assists in making production methods more effective | | | | | |
| 28) Buyers should collaborate with suppliers to develop competencies | | | | | |
| 29) Supply chain competencies transfer is crucial for better performance of state corporations | | | | | |

Section F: Supply Chain Innovative Thinking Intervening Role in Successful Knowledge Transfer

*For the following statements, please tick against the answer which closely reflects your opinion on **supply chain innovative thinking intervening role in successful knowledge transfer**, where in a scale of 5 to 1, 5 indicates strong agreement and 1 indicates strong disagreement.*

| Statement | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|----------------|-------|---------|----------|-------------------|
| | 5 | 4 | 3 | 2 | 1 |
| 30) Application of novel ideas in supply chain aids in successful knowledge transfer | | | | | |
| 31) Deployment of new methodology in supply chain aids in successful knowledge transfer | | | | | |
| 32) Adoption of best practices in supply chain aids in successful knowledge transfer | | | | | |
| 33) Use of defined work procedures in supply chain aids in successful knowledge transfer | | | | | |
| 34) Buyers should collaborate with suppliers to enable successful supply chain knowledge transfer | | | | | |
| 35) Innovative thinking intervenes in successful supply chain knowledge transfer | | | | | |

Section G: Supply Chain Knowledge Transfer Role on Performance of State Corporations in Kenya

For the following statements, please tick against the answer which closely reflects your opinion on supply chain knowledge transfer role on the performance of State Corporation in Kenya, where in a scale of 5 to 1, 5 indicates high contribution and 1 indicates low contribution

| Statement | 81% 100% | 61 - 80% | 41 - 60% | 21 - 40% | 1 - 20% |
|---|------------------------|-------------------|---------------------|------------------|-----------------------|
| | Very high contribution | High contribution | Medium contribution | Low contribution | Very low contribution |
| | 5 | 4 | 3 | 2 | 1 |
| 36) Successful supply chain acquired knowledge transfer helps in improving product/service quality by reducing defect by at least... | | | | | |
| 37) Successful supply chain created knowledge transfer helps in improving product/service quality by reducing defect by at least... | | | | | |
| 38) Successful supply chain skills transfer helps in product/service quality by reducing defect by at least... | | | | | |
| 39) Successful supply chain competencies transfer helps in improving product/service quality by reducing defect by at least... | | | | | |
| 40) Successful supply chain acquired knowledge transfer helps in improving supply chain process efficiency/effectiveness thereby reducing | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| production/operational costs by at least... | | | | | |
| 41) Successful supply chain created knowledge transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | | | | | |
| 42) Successful supply chain skills transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | | | | | |
| 43) Successful supply chain competencies transfer helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | | | | | |
| 44) Supply Chain Innovative Thinking plays an intervening role in Successful Knowledge Transfer which in turn helps in improving product/service quality by reducing defect by at least... | | | | | |
| 45) Supply Chain Innovative Thinking plays an intervening role in Successful Knowledge Transfer which in turn helps in improving supply chain process efficiency/effectiveness thereby reducing production/operational costs by at least... | | | | | |

Appendix III: Inventory of State Corporations in Kenya

FINANCIALS

- 1) Agricultural Finance Corporation
- 2) Consolidated Bank
- 3) Deposit Protection Fund Board
- 4) Industrial and Commercial Development Corporation
- 5) Industrial Development Bank
- 6) Kenya Industrial Estates
- 7) Kenya National Assurance
- 8) Kenya Post Office Savings Bank
- 9) Kenya Re-Insurance Corporation
- 10) Kenya Revenue Authority
- 11) Kenya Roads Board
- 12) Kenya Tourist Development Corporation
- 13) National Bank of Kenya
- 14) National Hospital Insurance Fund
- 15) National Social Security Fund

COMMERCIAL AND MANUFACTURING

- 16) Agro-Chemicals and Food Company
- 17) Chemelil Sugar Company
- 18) East African Portland Cement Company
- 19) Gilgil Telecommunications Industries
- 20) Jomo Kenyatta Foundation
- 21) Kenya Airports Authority
- 22) Kenya Broadcasting Corporation
- 23) Kenya Electricity Generating Company
- 24) Kenya Literature Bureau
- 25) Kenya Ordinance Factories Corporation
- 26) Kenya Pipeline Company
- 27) Kenya Ports Authority
- 28) Kenya Power and Lighting Company
- 29) Kenya Railways Corporation
- 30) Kenya Safari Lodges and Hotels
- 31) Kenya Seed Company Limited
- 32) Kenya Wine Agencies
- 33) Kenyatta International Conference Center
- 34) National Cereals and Produce Board
- 35) National Housing Corporation
- 36) National Oil Corporation of Kenya
- 37) National Water Conservation and Pipeline Corporation
- 38) Numerical Machining Complex
- 39) Nzoia Sugar Company
- 40) Postal Corporation of Kenya
- 41) Pyrethrum Board of Kenya
- 42) School Equipment Production Unit
- 43) South Nyanza Sugar Company

- 44) Telkom Kenya Limited
- 45) University of Nairobi Enterprises and Services Limited
- 46) New Kenya Co-operative Creameries Ltd
- 47) Kenya Electricity Transmission Company

PUBLIC UNIVERSITY

- 48) Egerton University
- 49) Jomo Kenyatta University of Agriculture and Technology
- 50) Kenyatta University
- 51) Western University College of Science and Technology
- 52) Maseno University
- 53) Moi University
- 54) University of Nairobi

TRAINING & RESEARCH

- 55) Coffee Research Foundation
- 56) Kenya Agricultural Research Institute
- 57) Kenya Forestry Research Institute
- 58) Kenya Industrial Research and Development Institute
- 59) Kenya Institute of Administration
- 60) Kenya Institute of Public Policy Research and Analysis
- 61) Kenya Marine and Fisheries Research Institute
- 62) Kenya Medical Research Institute
- 63) Kenya Sugar Research Foundation
- 64) National Museums of Kenya
- 65) Tea Research Foundation
- 66) Kenya Institute of Education
- 67) Kenya Education Staff Institute

SERVICE CORPORATIONS

- 68) Kenyatta National Hospital
- 69) Lake Victoria North Water Services Board
- 70) Local Authorities Provident Fund
- 71) Moi Teaching and Referral Hospital
- 72) Nairobi Water Services Board
- 73) National Aids Control Council
- 74) National Council for Law Reporting
- 75) National Sports Stadia Management Board
- 76) Northern Water Services Board
- 77) Rift Valley Water Services Board
- 78) Water Resources Management Authority
- 79) Water Services Trust Fund
- 80) Lake Victoria South Water Services Board
- 81) National Authority for the Campaign Against Alcohol and Drug Abuse
- 82) Athi Water Services Board
- 83) Kenya National Examination Council

REGIONAL DEVELOPMENT

- 84) Coast Development Authority
- 85) Ewaso Ng'iro North Development Authority
- 86) Kerio Valley Development Authority

87) Lake Basin Development Authority

88) Tana and Athi Rivers Development

TERTIARY EDUCATION & TRAINING

89) Cooperative College of Kenya

90) Kenya College of Communications Technology

91) Kenya Medical Training College

92) Kenya Utalii College

93) Kenya Water Institute

REGULATORY

94) Capital Markets Authority

95) Catering and Tourism Development Levy Trustee

96) Coffee Board of Kenya

97) Commission for University Education

98) Communication authority

99) Council for Legal Education

100) Energy Regulatory Commission

101) Export Promotion Council

102) Horticultural Crops Development Authority

103) Kenya Civil Aviation Authority

104) Kenya Bureau of Standards

105) Kenya Dairy Board

106) Kenya Industrial Property Institute

107) Kenya Plant Health Inspectorate Services

108) Kenya Sisal Board

109) Kenya Sugar Board

110) Maritime Authority

111) National Environment Management Authority

112) National Irrigation Board

113) Public Benefits Organizations Regulatory Authority

114) Tea Board of Kenya

115) Water Services Regulatory Board

116) Transport Licensing Board

117) Catering Training & Tourism Development Levy Trustees

118) Export Promotion Council

119) Export Processing Zones Authority

Appendix IV: Sampled State Corporations

1. Agricultural Finance Corporation
2. Deposit Protection Fund Board
3. Industrial Development Bank
4. Kenya National Assurance
5. Kenya Post Office Savings Bank
6. Kenya Revenue Authority
7. Kenya Tourist Development Corporation
8. National Hospital Insurance Fund
9. Agro-Chemicals and Food Company
10. East African Portland Cement Company
11. Jomo Kenyatta Foundation
12. Kenya Broadcasting Corporation
13. Kenya Electricity Generating Company
14. Kenya Ordinance Factories Corporation
15. Kenya Pipeline Company
16. Kenya Ports Authority
17. Kenya Power and Lighting Company
18. National Oil Corporation of Kenya
19. Telkom Kenya Limited
20. New Kenya Co-operative Creameries Ltd
21. Kenya Electricity Transmission Company
22. Egerton University
23. Jomo Kenyatta University of Agriculture and Technology
24. Western University College of Science and Technology
25. Maseno University
26. University of Nairobi
27. Kenya Agricultural Research Institute
28. Kenya Forestry Research Institute
29. Kenya Institute of Administration
30. Kenya Marine and Fisheries Research Institute
31. Kenya Medical Research Institute
32. National Museums of Kenya
33. Kenya Institute of Education
34. Kenyatta National Hospital
35. Local Authorities Provident Fund
36. Moi Teaching and Referral Hospital
37. National Council for Law Reporting
38. Rift Valley Water Services Board
39. Water Resources Management Authority
40. Lake Victoria South Water Services Board
41. Athi Water Services Board
42. Coast Development Authority
43. Kerio Valley Development Authority
44. Tana and Athi Rivers Development
45. Cooperative College of Kenya

46. Kenya Medical Training College
47. Kenya Water Institute
48. Capital Markets Authority
49. Communication authority
50. Energy Regulatory Commission
51. National Environment Management Authority
52. National Irrigation Board
53. Water Services Regulatory Board
54. Transport Licensing Board
55. Export Processing Zones Authority