**DURBAN UNIVERSITY OF TECHNOLOGY**



An Assessment of the Efficiency and Effectiveness of Supply Chain Management in the Public Sector: a Case Study of the Department of Justice and Constitutional Development in KwaZulu Natal Region.

By

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# ABSTRACT

The Supply Chain Management (SCM) concept emanated from the old purchasing models i.e. provisioning and procurement. This model, SCM, received a great deal of attention in both private and public sector organizations. The model was believed to conform to international best practice and thus it was believed to hold the promise of a better purchasing system in the public sector. In this context this research seeks to assess the efficiency and effectiveness of SCM in the public sector, with particular reference to the Department of Justice and Constitutional Development (DoJ and CD) in the KwaZulu Natal (KZN) Region.

Research data was obtained by means of quantitative paradigm aided by a 5-point Likert scale questionnaire. The questionnaire addressed specific themes pertaining to SCM as well as the objectives of the research project. A total of 129 members of the target population participated in the research. They were selected from various offices in KZN. A purposive sampling technique was applied to select the participants. The researcher was personally involved in the collection of the questionnaires from them. Prior to its administration, the questionnaire was pre-tested for accuracy and clarity. The data collected were analysed by means of the Statistical Package for the Social Sciences (SPSS) version 24.0 for Windows, and the research report was evaluated for plagiarism with the use of the computer programme TURNITIN.

The research revealed that SCM in the organization under study has contributed significantly to enhancing conformance to the principles of good governance and to service standards. However, challenges associated with capacity deficiencies such as a lack of manpower, information and skills were noted.

Finally, in line with the research objectives, the researcher concludes by recommending structural re-engineering, the training and development of employees, supplier education, supply chain planning, and teamwork and partnerships among all stakeholders who contribute to the delivery of goods and services to end customers.

# ACKNOWLEDGEMENTS

With the love of Nazareth God, who has since my birth provided me with the courage and strength to carry on even when the world seemed to have ended,

I dedicate this work to Nazareth God, to my daughter, Olwethu Lwandle, and my son, Samkelo Lethuxolo, for have given me a complete purpose in life, for being my reasons to live and my reasons for striving for a better tomorrow.

Moreover, special thanks are dedicated to my late father, Gcinokwakhe Freddy Nkwanyana, for embedding in me the love for education, which has taken me thus far. Ngithi "Jitaz", may your spirit live forever.  Also to my mother, Gijimile Phumelele Nkwanyana, who has through thick and thin, through ups and downs, preserved and fulfilled her role as a truthful mother.

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Last but not least, to my sister, Bongeka Nkwanyana, for being the best sister in the world, for being there through it all. Without you this wouldn't have been possible.

# DECLARATION

I, the undersigned, certify that:

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# GLOSSARY OF ACRONYMS

| ACRONYM | DESCRIPTION |
|---|---|
| AGSA | Auditor General of South Africa |
| BBBEEA | *Broad-Based Black Economic Empowerment Act* |
| CAS | Complex Adaptive System |
| CFO | Chief Financial Officer |
| CSCMP | Council of Supply Chain Management Professionals |
| CSD | Central Supplier Database |
| DCS | Department of Correctional Services |
| DFI | Departmental Financial Instruction |
| DOJ and CD | Department of Justice and Constitutional Development |
| EUK | Entertainment United Kingdom |
| GPS | Global Positioning Systems |
| HDI's | Historically Disadvantaged Individuals |
| JIT | Just-in-Time |
| JYP | Justice Yellow Pages |
| KPI's | Key Performance Indicators |
| KZN | KwaZulu Natal |
| NGO's | Non-Profit Organizations |
| NPMAC | National Performance Management Advisory Commission |
| PERSAL | PERsonnel and SALary Information System of Government |
| PFMA | *Public Financial Management Act* |
| PPPFA | *Preferential Procurement Policy Framework Act* |
| RBT | Resource-Based Theory |
| RBV | Resource-Based View |
| RCC | Regional Control Committee |
| RSA | Republic of South Africa |
| SA | South Africa |
| SAPS | South African Police Services |
| SC | Supply Chain |
| SCA | Sustainable Competitive Advantage |
| SCD | Supply Chain Design |
| SCM | Supply Chain Management |
| SMME's | Small Medium and Micro Enterprises |
| SPSS | Statistical Package for the Social Sciences |
| ST | Systems Theory |
| TOC | Theory of Constraints |
| UK | United Kingdom |

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# CHAPTER ONE

## NATURE AND SCOPE OF THE STUDY

### 1.1 INTRODUCTION

In recent years, in a vibrant and turbulent, competitive environment, in the context of an on-going economic crisis, and faced with increasingly demanding customers, organizations have been forced to become more and more efficient and effective. Supply Chain Management (SCM) has emerged as a powerful platform upon which to balance costs incurred with the profit derived in supplying goods and services to end customers. A key aspect of SCM is that it enables the control over various processes, from the flow of raw material to the delivery of goods and services to the customer. It is generally acknowledged as giving businesses an edge in competition in the marketplace. It aids in the development of sound cooperative and collaborative relations amongst stakeholders in the goal to satisfy customer needs. According to Mbanje and Lunga (2015:3), sound SCM will result in enhanced customer service at the lowest possible cost. Wisner, Tan and Leong (2012:4) state that the success of organizations today is dependent on their involvement in how their customers and suppliers conduct their business. SCM is thus key to the survival of organizations (Mbanje and Lunga, 2015:1). Numerous studies of SCM have been undertaken as a result of its prevalence in both public and private sector organizations. Supply chains form part of our day-to-day lives. Thus, the goods and services that we acquire and consume are the outcomes of inputs (raw material and labour) converted and transported to us as the consumers. According to Mentzer (2001:4) consistent fast delivery of quality goods and services can no longer be thought to be a competitive advantage but rather a requirement, due to the nature of customer's demands today.

This study was conducted in the light of the above observations to establish the efficiency and effectiveness of the SCM model adopted by the Department of Justice and Constitutional Development (DoJ and CD) in satisfying its customers' needs.

## 1.2 BACKGROUND AND REASONS FOR THE STUDY

The South African government is responsible for the provision of quality basic services to all citizens of the country. It must ensure that it employs appropriate manpower and processes that promote and support the attainment of this goal. The failure to deliver goods and services to communities is mainly a result of failed internal processes in the public service. A number of challenges to effective public service delivery were identified some years ago. Amongst these were the purchasing models.  SCM in the public sector was thus adopted in 2003 (Migiro and Ambe, 2008:231). However, its widespread prominence within South African industry in general can be traced back to the mid 1980's, although its roots are much older than that. Thus, SCM is not entirely new, but it is just a substantial evolution (Hugos, 2011:2). Its roots stem from logistics or operations management. The difference that SCM has made to date is that organizations now view themselves as partners with their suppliers and customers.  This partnership entails that goods and services, information and money should flow from the source to the customer. It seeks measures that integrate business functions that guarantee that supply meets up with the demand. Since its inception SCM is believed to have increased profitability in many corporate organizations. The same cannot be said about public sector organizations, though. Extensive research suggests adverse outcomes as a result of SCM. It seems that there have been a number of public service delivery failures characterised by service delivery protests as a result of SCM deficiencies. These include amongst others a lack of implementation, incompetence, negligence, fraud and corruption (Ambe, 2009; Mazibu, 2012; Dlova and Nzewu, 2014; Bizana, Naude and Ambe, 2015). Awareness of this phenomenon has given rise to this investigation. This work seeks to establish what progress has been made thus far in relation amongst other things to the public sector's SCM model achieving what it was set out to achieve, i.e. responsiveness to customer needs, accountability, and adherence to the relevant legal framework.

## 1.3 PROBLEM STATEMENT

The problem statement to be addressed is focused on the efficiency and effectiveness of SCM systems in the Public Sector. The DoJ and CD is a South African public sector organization that has a mandate to provide accessible and just services that promote constitutional values to the citizens of South Africa.  Its survival is crucial so that it can continue to discharge its vital role of shaping the legal landscape of country. However, the survival of the DoJ and CD is

dependent on the commitment of its subunits in order to deliver quality services. Acquiring goods and services should be done within the confinement of relevant policy directives of the establishment. According to South Africa (2005:49), accounting officers of the state institutions must develop and implement an effective and efficient SCM system that governs the procurement of goods and services. Besides the provisioning of goods and services, SCM is responsible for the disposal and letting of state assets and inventory that are no longer required. Complementary to these activities, the establishment of a separate SCM unit within the Chief Financial Officer's (CFO) office for effective and efficient delivery of goods and services. In general, there is growing levels of service delivery constraints within the SCM system (Nengwekhulu, 2009:345; Shaida, 2013:8-10). The problem is that without a study such as this one, motivations for efficient and effective SCM system, lack of service delivery and the growing constraints within the SCM systems of the DoJ and CD may not be given enough attention. Besides, official will find it difficult to provide efficient and effective SCM systems in the future.

## 1.4 RESEARCH OBJECTIVES

**1.4.1** Primary objective

The main objective of the study is to assess the efficiency and effectiveness of the SCM in the public sector through the study of a single case, that of the DoJ and CD in the KwaZulu Natal (KZN) Region.

**1.4.2** Secondary Objectives

•	To examine the SCM processes within the DoJ and CD in the KZN region.

•	To determine the level of customer satisfaction as a result the inception of the SCM in the DoJ and CD in the KZN region.

•	To understand the SCM challenges that inhibits efficient and effective service delivery in the organization under study.

•	To establish what promotes SCM efficiency and effectiveness in the organization under study.

- To make recommendations to improve the SCM processes and services in the organization under study.

## 1.5 RESEARCH QUESTIONS

### 1.5.1 Main research question

- How effective and efficient are the SCM in the DoJ and CD in KZN Region in delivering end customer services?

### 1.5.2 Specific research questions

- What are the current SCM practices that are utilized in the DoJ and CD?
- Do customers receive better services as a result of current SCM system within DOJ and CD?
- What challenges inhibits successful delivery of SCM services in the DOJ and CD?
- What are the determinants of successful SCM service delivery in the DOJ and CD?
- What could be the recommended strategies to improve SCM performance?

## 1.6 RATIONALE OF THE STUDY

It is informative to note the potential influence of SCM on an organization's success, and to establish what its adoption has contributed mainly to private sector industries. This involves gaining insight into at least some of the business processes of many linked businesses. This makes the analysis of a SCM a challenging task. In addition, the satisfaction of the needs of the end customer depends ultimately on the satisfaction of the needs of all the other partners in the SCM. For instance, for SCM in the DoJ and CD to supply its end customers with printing paper, the Government Printing Works (GPW) needs to supply the paper to its fleet service provider, which needs to transport the paper to the DoJ and CD. Through assessing the impact of the current public sector SCM model on meeting customer demands in the DoJ and CD, this study will in effect be analyzing a general model of SCM in terms of design, partnering bodies, drivers, practices, concerns, competencies, and the various SCM strategies that could be adopted by organizations. It will also propose the adoption of a specific SCM model by the South African government.

## 1.7 SCOPE OF THE STUDY

The study is confined to the SCM in the case under investigation as well as to the specific demographic location of the respondents.

**1.7.1** Field of the Study

The study focuses on the assessment of the performance of SCM in the public sector in the ambit of the discipline of Public Management and Economics.

**1.7.2** Organization under investigation

The DoJ and CD is an essential national public sector department which is tasked with administering judicial issues country-wide. The Department consists of nine regional offices across nine provincial administrative areas. Each of the regional offices serves to provide support functions to the Magistrates' Courts, State Attorneys, Masters of High Courts and Family Advocate offices. The DoJ and CD provides rulings on cases brought before it. Figure 1.1 illustrates the nine administrative areas of the Republic of South Africa, where the nine regional offices of the DoJ and CD are located, including the region under investigation, KZN.

**Figure 1.1**: Map of South Africa showing the location of KZN
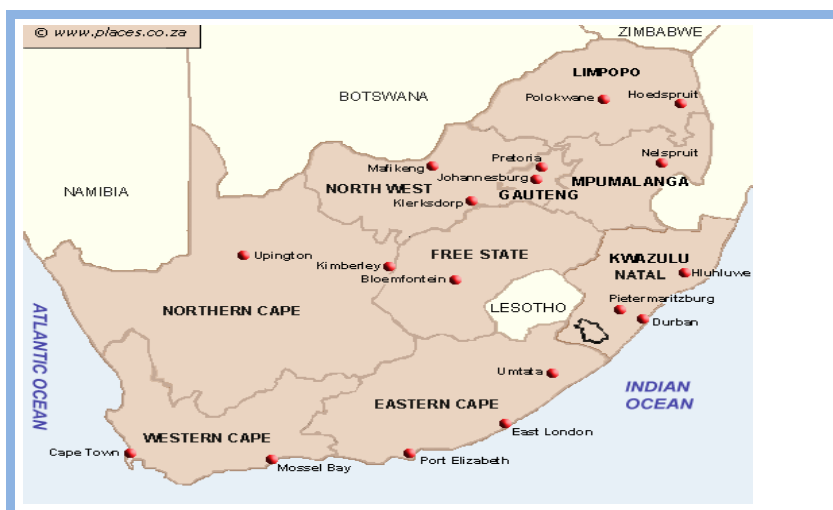


**Source:** www.places.co.za Accessed: 01 February 2016.

The KZN Regional office of the DoJ and CD is one of the nine provincial offices of the RSA, as shown above. It is comprised of five directorates, namely Human Resources Management, Legal Services, Court Operations, Facilities Management, and the Finance. These directorates serve to support seventy-nine DoJ and CD offices in KZN. The offices are housed in ten district municipalities in KZN, as shown in figure 1.2.

**Figure 1.2**: KZN metropolitan and district municipalities
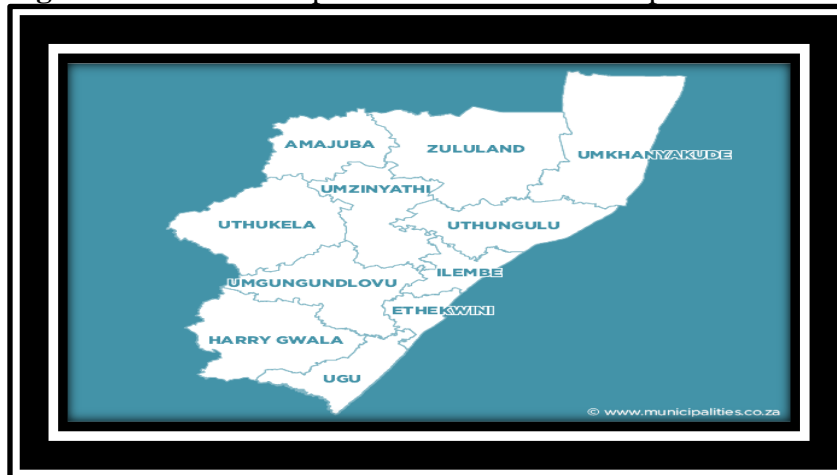


**Source: www.municipalities.co.za**

This KZN Regional Office itself is located in the Ethekwini Metropolitan Municipality. One of the sub-components of the DoJ and CD is the SCM section, which forms part of the provincial structure. The SCM unit forms part of the Chief Directorate, Finance, which is tasked with the administration of the financial affairs of the DoJ and CD. The SCM section consists of eighteen employees in varying positions ranging from the Director to the administrative and accounting clerks.

The SCM unit is sub-divided into four sub-units, namely Demand and Acquisition Management, Fleet Management, Asset Management and Warehousing or Stores, which is commonly known as Logistics Management. The sub-unit Demand and Acquisitions management deals with the procurement of goods and services. These are procured to support the strategic and operational plans of the Department. Approximately two hundred and thirty-two employees in the seventy-nine offices perform the demand management function. These employees are tasked with identifying needs within their own offices. They also source quotations from prospective service providers (suppliers) for further approval by the Regional

Office. Such suppliers must be registered on both the Central Supplier Database (CSD) and the supplier's database within the DoJ and CD, which is known as the *Justice Yellow Pages* (JYP).

**1.7.2.1** Historical overview of SCM in South Africa

With the dawn of the democratic dispensation in SA the new government initiated unprecedented social initiatives (Boateng, 2008), in the attempt to remedy the injustices of the past. However, most citizens were still unable to enjoy the freedom that would have been associated with their receiving socio-economic benefits from the new situation. As a result, most people across the country remained unhappy. They had been let down by the improper governance of the state, the inability of the government to render quality services generally, and growing rates of fraud and corruption due to lack of policy implementation (De Lange, 2011).

A large amount of state money was misappropriated by corrupt officials and there was a high rate of negligence among public officials (De Lange, 2011). Countless probes were instituted to look into corrupt activities. According to Pauw (2011), some municipal employees in the Tshwane Metro were investigated for business fraud amounting to R185 million. About 20 per cent of the state procurement budget was misused by officials due to their paying inflated prices for goods and services or not properly monitoring projects to limit flaws in the allocation of funds (De Lange, 2011). Thus, during briefings to Parliament's Standing Committee on Public Accounts, the Auditor General of South Africa (AGSA) cited several flaws and deficiencies in information technology and human resource management, as well as a lack of proper capital assets applications (*Smart Procurement,* 2011).

The inadequate monitoring and assessment was the result of an inability to institute effective control measures, since the state institutions were largely unable to implement the procurement reforms required by the new policy framework. According to Acevedo *et al.* (2010:43), effective policy-making leads to the dissemination of high levels of information that determine whether or not intended outcomes have been realized. Acevedo *et al.* (2010:43) also aver that through adequate monitoring and ongoing assessment it becomes possible to compile and integrate information which facilitates the application of sound policy measures. This is vital, because a large amount of money has been unaccounted for by procurement officials in recent

times due to their unlawful application of policies and the ever-increasing number of regulatory flaws (De Lange, 2011).

Other researchers such as Stemele (2009:68) indicate that there has been irregular, unauthorized and wasteful expenditure across national and provincial authorities as a result of their non-adherence to approved laws. Other areas of concern include the lack of standardized processes and procedures, and a disregard for correct tender documentation at a municipal level (McCarthy, 2006). It was an awareness of these problems that was the impetus for the switch to SCM. According to Migiro and Ambe (2008:231) SCM serves as an integral part of financial management that conforms with internationally best standards. It replaced the old provisioning and procurement practices (Bizana, Naude and Ambe, 2015:668) and it was adopted by the Cabinet of the Republic of South Africa (RSA) in September 2003 in an attempt to remedy procurement deficiencies. Shaffer and Dalton (2012:101) add that the main aim of the adoption of SCM was to increase operational efficiency and effectiveness.

## 1.8. LIMITATIONS OF THE STUDY

Du Plooy-Cilliers, Davis and Bezuidenhoud (2014:275) describe limitations as constraints that could impact on the study. This includes issues such as a lack of time, resources, financial capability or access to information. A limitation encountered in this study was the prolonged response time. This delay could have been caused by a fear of victimization in revealing their feelings about the system, the lack of interest of the respondents, bad timing, of their thinking initially that the study would make no difference to the status quo.

## 1.9 DELIMITATIONS

The study was confined to the DoJ and CD KZN region only and was limited to SCM role-players only. Its findings could therefore be difficult to generalize.

## 1.10 LAYOUT OF THE STUDY

This study consists of five chapters. Figure 1.3 illustrates how the study was designed.

**Figure 1.3:** Illustration of the layout of the study
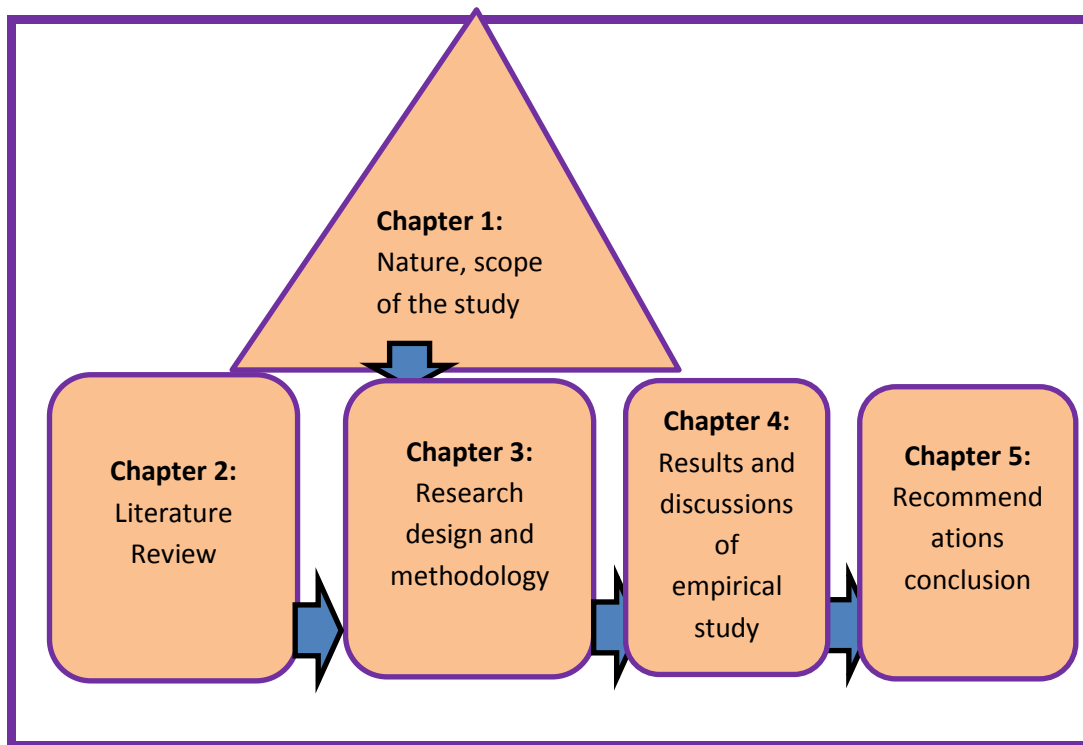


**Source:** Researcher's own contribution

**Chapter 1- Introduction**

Chapter 1 is the introductory chapter, which provides not only the background to the study but also gives an indication of the purpose of the study, and the ideas and significance of the study.

**Chapter 2- Literature review**

This chapter interrogates literature from various authors and researchers on SCM in general, its definitions and the various approaches that explain SCM in SA, elsewhere in Africa and across the globe. Furthermore, issues such as the objectives of SCM, the characteristics of SCM, and the policies and conceptual frameworks that govern SCM are discussed in this chapter.

**Chapter 3- Research design and methodology**

The chapter elaborates on the methodology, the population of the study, the sampling method, and the measuring instrument that was used to gather data. The chapter also provides a

comprehensive analysis of the research, validity, reliability, anonymity, confidentiality, and plan of the research activities.   Ethical issues will also be discussed.

**Chapter 4 –Discussion of results of the empirical study**

This section covers the analysis and interpretation of the data and discusses the findings. Included in this section is the information that was collected and critically analysed and interpreted to provide the key findings. Graphs and charts were drawn to illustrate the outcomes of the research.

**Chapter 5- Recommendations and conclusions**

This chapter presents conclusions and recommendations based on the current state of the performance of SCM, with valuable suggestions for improvement to achieve enhanced service delivery. The chapter highlights the possibilities and potential limitations of implementing the recommendations.

**1.11 SUMMARY OF THE CHAPTER**

This chapter has given a synopsis of the content of the research study. The SCM concept has been discussed in general to give a perspective on the study. A brief overview of the research objectives, taking into consideration the underlying framework. The background in respect of the population understudy and its location was described. Participants were from 12 clusters of the 79 offices in the DoJ and CD in the KZN Province. The next chapter will provide a detailed description of issues pertaining to SCM, and thus establish a framework for this study.

**CHAPTER TWO**

**LITERATURE REVIEW**

## 2.1 INTRODUCTION

The South African public service is faced with increasing demands for the provision of basic services to its communities. Such services are mainly attained through formal procurement processes. Over the past few years, the delivery of such goods and services including infrastructure development has been neglected. Linked to this were issues around a lack of accountability and a lack of supporting structures, fragmented processes and the inconsistent application of policies (Ambe and Bardenhorst – Weiss, 2012:242-243). Reform became essential. Hence the adoption of the SCM concept which, in the public sector domain, can be traced back to 2003 (Migiro Ambe, 2008:231). SCM is a financial management function that integrates all processes that result in end products and services. Dlova and Nzewu (2014:8) argue that SCM serves as a cornerstone of service delivery. According to Ambe (2009:73) SCM has been identified as holding the promise of improving public procurement systems. This chapter aims to orientate readers to the concept of SCM by describing its origins, how it is defined, its governing prescripts, the role-players involved, its anticipated benefits, and its status in the public sector domain to date.

## 2.2 ORIGIN OF SCM

There is a general consensus that the term SCM was first used by Oliver and Webber in 1982 (Corominas, 2013:6829). This notion is supported by Oliver and Webber (1992, cited in Ganescu *et al.*, 2013:156; Mazibu, 2012:3). They claim that the concept "SCM" was invented in 1982 by Keith Oliver, a consultant at Booz Allen Hamilton. It was used to develop a vision that counteracted the one that existed at that time. It separated production, marketing and distribution. It was extended in 1985 when Houlihan presented its benefits and efficiency. Hugos (2011:3) maintains that before this time the idea of SCM was already in existence, but it was referred to as "logistics" and "operations management." Langley *et al.* (2009:13) claim that the concept could be traced back to the 1980's. SCM became a top agenda item around the 1990's, when institutions acknowledged its potential influence to increase their competitive advantage globally. Competitive advantage can be gained if an institution is able to stand out

from the many in the competitive environment. According to Handfield *et al.* (2011:6-7) a "competitive environment" is a situation characterized by world-class competitors and sophisticated customers who demand better goods and services at the lowest possible cost. These demands are fueled by the widespread transmission of information through the internet and social media. For instance, customers are aware of what would best satisy their individual needs, and if one enterprise fails to provide this, they can publicize such failures or even seek a better service elsewhere, as is the case in the private sector domain. This tendency has impelled many enterprises to utilize customer requirements to establish the specification of the goods and services they provide, so as to retain their customers' loyalty, they add. Moreover, they echoed the sentiments that institutions realized the need to manage their supply bases, which includes the need to take part in the control of, or at least have some relationship with their suppliers and distributors as well as their customers. This in turn gave rise to the "SC" and "SCM" concepts.

## 2.3 DEFINITION OF TERMS

### 2.3.1 Supply Chain

A series of "bodies" who play roles in the fulfilment of a customer's order may be referred to as a SC. Existing literature recognises a SC as individuals or organizations who are directly or indirectly involved in satisfying customers' needs. As cited in Mentzer *et al.* (2001:4), a SC is a "set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and or information from a source to a customer." Ambe and Badenhorst-Weiss (2011:74), however, assert that a SC comprises of all stakeholders directly or indirectly involved in the process of fulfilling the customer's request. Wisner, Tan and Leong (2012:7) assert that a SC is the series of institutions that participate in making goods and services available to end consumers. Chopra and Meindl (2010:20) expand on this by arguing that a SC does not only include manufacturers and suppliers; it also involves stores, transporters and dealers, as well as end users. In essence, the quantity and frequency with which goods and services are required by end users informs the manufacturing of the goods, their supply, and the frequency of transportation. The more goods are required the more goods are produced, transported to stores, and supplied by dealers to the end users. Nagy (2010:18) concludes that a SC is thus more than a dyadic partnership. Moreover, this author notes that all members within the SC work independently but jointly towards the attainment of

a similar goal, which is the satisfaction of customers' needs. The predominant SC members within the DoJ and CD include internal and external stakeholders. The internal stakeholders are officials at the Local, Regional and National Office levels who are delegated by the Chief Financial Officer (CFO) to perform the SC function. The external stakeholders are potential service providers from whom the required goods and services are sourced. It is imperative to note that public and private sector SC's are unalike. Public sector SC's are concerned with service delivery to communities, whilst private sector SC's are profit-oriented (McCue and Pitzer, 2005:8). Basically, SC processes in the public sector are employed for the acquisition of goods and services that support the mandate of the public service delivery goal. However, public and private sector SC's are similar in the sense that they seek to maximize the value added to the end-use customers.

**2.3.2** Supply Chain Management (SCM)

The working together of various parties in a SC in the goal to satisfy common customer needs has since resulted in a demand for such SC's to be managed. The collaboration and coordination of "events or processes" between various parties can be defined as SCM. As may be noted in the DoJ and CD, the coordination of information and process flows from the end customer (who requests for goods and services). It gets approved by Regional or National Office (depending on the threshold delegation). Thereafter the appointed service provider supplies the requested goods and services to the end customer. This is exemplary of SCM. According to Mentzer *et al*. (2001:18), SCM can be defined as systemic, strategic coordination across traditional business functions aimed at improving the long-term performance of the entire chain. The Council of Supply Chain Management also asserts that SCM is a process that encompasses the arrangement and controlling of all activities involved in the acquisition of, processing, demand creation and fulfilment of all logistics management activities. Thus, it also includes coordination and collaboration among members, which can be suppliers, manufacturers, distributors and or end users. In essence, SCM integrates supply and demand within and across institutions. In *South Africa* (2005:4) SCM is regarded as an integral part of financial management that seeks to introduce internationally best accepted practices whilst addressing government's preferential procurement policy objectives. Marshall *et al.* (n.d.:4) add that SCM has recently been top of the agenda of both public and private sector enterprises with the main aim being to orchestrate demand and supply. They note, however, that though this principle may sound simple, it is actually very challenging to achieve. Nagy (2010:20)

claims that SCM is an integrative management philosophy that requires cooperation amongst partners to establish pioneering solutions so as to provide sound customer service. Lee, Kwon and Severance (2007:445) expand on Nagy's assertion by arguing that SCM is an integrated management tool for information and materials or services flow among different facilities and stakeholders. It can be deduced from the above that SCM pertains to the control of actors and business processes that contribute towards the fulfilment of customer's requirements. Therefore, SCM can be simply defined as a set of methodologies utilized to manage a SC (Du Toit and Vlok, 2014:28).

### 2.3.3 Efficiency

According to Lichocik and Sadowski (2013:124), efficiency is the desired quality of the management's strategic decisions that set up the institution's future operations which, if planned correctly and if logistics tasks are fulfilled correctly, may result in the improved performance of the entire institution. Bester (2007:7) argues that efficiency should be determined not only by measuring budget against expenditure, but rather on the ability of an institution to deliver on its goals and objectives within the currently available budget. According to Zeibicki (2013:103) efficiency is one of the basic categories for assessing actions. One jointly or independently examines various indicators to determine deviations from a determined function. Efficiency can thus be measured in terms of the relation between expenses relating to inputs and output. In general, a resource is said to be "efficient" if it possesses some of the characteristics of being cheap and fast, and reducing the production of waste.

### 2.3.4 Effectiveness

When systems are established, certain expectations are set. In fact, the potential benefits of new methods are the main reasons why new systems are adopted. The attainment of set expectations is derived from the effectiveness of the introduction of the new system. According to Isoraite (2005:240) "effectiveness is the measure of goal achievement." He further argues that a programme is said to be effective when it achieves what has been set out for it to achieve. If so, the effectiveness of an action is connected to outputs and outcomes of an action against inputs (Isoraite, 2005:240). The measure of effectiveness could therefore be the level to which a client's requirements are met. Lichocick and Sadowscki (2013:122-123) characterize effective SC as being cost effective, comprising minimal links with reduced processes, and

ensuring the high quality of the delivery of services that are socially responsible. Effectiveness can thus be defined as the realization of results. Li *et al*. (2006:111) argue that SCM efficiency and effectiveness are the basis of supply chain performance. They are the measures for SCM success. Success in the private sector is a synonym for good profit margins (Lee, Kwon and Severance, 2007:446), whilst public sector SCM success is associated with the timely delivery of public services at the lowest possible cost.

## 2.4 CONCEPTUAL FRAMEWORK IN RESPECT OF SUPPLY CHAIN EFFICIENCY AND EFFECTIVENESS

A conceptual framework may be defined as a theoretical structure of assumptions, principles, and rules that holds together the ideas comprising of broad concepts. It is usually accompanied by graphic or visual illustrations of major variables of the study. The SCM literature studied suggests that the efficiency and effectiveness of an action equate to good performance. For instance, according to Stock and Boyer (2009:700) good performance is a resultant effect of SCM practices adopted by an organization to effectively integrate its suppliers, manufacturers, distributors and customers. Thus, the better the SCM practices, the better the organizational performance (Kumar and Nambirajan, 2013:87). In support of the above, Estampe (2014:10) identifies effectiveness including efficacy as a criterion to be used in measuring the performance of a SC.

Thakkar, Kanda and Deshmukh (2009:706), however, contend that "superior" organizational performance is the result of functional collaboration amongst internal and external suppliers and customers. It is therefore clear that Supply Chain Managers within entities needs to pay particular attention not only to the internal processes and practices of their individual organizations but also to those of organizations within the entire chain (Baily *et al.,* 2008:69; Cagliano, Caniato and Spina, 2006:283). Supply chain practices are defined as a "set of activities aimed at improving the performance of the whole supply chain" (Chow *et al.,* 2008:671).

SC practices are informed by the Supply Chain Design (SCD) of an organization.

## 2.4.1 SUPPLY CHAIN DESIGN (SCD)

Data from several studies suggest that SCD resembles a network through which goods and services are distributed from their source of origin to end consumers. Melnyk, Narasimhan and DeCampos (2014:1889) define SCD as the taking of strategic decisions on the positioning of resources and processes for attainment of a desired output over time. Nel (2010:10) argues that SCD is a complex task, as it involves the alignment of customer needs with what the supply chain is capable of offering. According to Fawcett, Ellram and Ogden, (2007:216) SCD involves identifying key partners and their roles in an effort to add value to the product for end users. They argue that SCD is all about capacity building through cost saving, value adding, or a combination of the two (Christopher, 2005:7). Melnyk, Narasimhan and DeCampos (2014:1888) contend that the nature of SC is shaped by SCD. This, according to these authors affects SC investment decisions, which in turn determine the capabilities of a SC. Nonetheless, a chosen design should provide maximum assurance for a balance between efficiency and responsiveness to customers' needs. According to Moon (2004:20) it has been generally accepted that a supply chain structure influences supply chain performance. Therefore, a dysfunctional structure may be expected to yield dysfunctional results. Fawcett, Ellram and Ogden (2007:216- 217) identify a number of obstacles that may arise should an institution fail to design a proper SC. These include:

- an incompatible information system;
- a poor coordination of effort;
- long time-cycles;
- communication problems;
- customer service issues;
- excessive waste and environmental degradation;
- a relatively high inventory for the level of customer service achieved; and
- lower than optimal profit.

To overcome the above, it is imperative that each organization establish its SCD wherein a group of partnering entities possessing complementary competencies are identified and brought together (Fawcett, Ellram and Ogden, 2007:494). Nel (2010:12) indicates that there are three basic phases involved when designing a SC.

**2.4.1.1** Phase 1: Understanding the nature of the end-customer's needs and determining how to meet those needs

A new SCM paradigm that reported around 1980's brought about a shift from the old institutional designs that focused on optimising institutional processes to a focus on designing institutional processes that are aligned with end-user's needs (Christopher, 2005:56). McCullen *et al*. (2006:14) support this claim by arguing for the importance of aligning the SC with end-customer's demands.  As supply chain performance is finally judged by end users (Jeong and Hong, 2007:578), therefore they should be the starting point of any SCD (Christopher, 2005:56).  From the above, it is clear that for a SC to gain and sustain a competitive edge for the relevant institution it must be the product of knowledge and understanding of the requirements of its clients, and it must include measures to satisfy them (Harrison, 2001:2). Nel (2010:3) states that for an institution to be able to know and understand its clients, it should have some direct relationship with them. This will assist institutions to have inputs that are essential for designing value propositions that meet customer's needs.

**2.4.1.2** Phase 2: Selecting a Supply Chain Strategy

A supply chain strategy can be defined as a methodology adopted to incorporate suppliers, manufacturers, warehouses, and stores so that goods are made and disseminated in the right quantities, to the right location, and at the right time, so as to achieve cost-effectiveness. Once the customer's needs are known, a strategy must be selected (Raturi and Evans, 2005:207). The strategy must have adequate scope to direct goods and information across partners (Stank, Dittmann and Autry, 2011:942). The strategy must be of value add to customers and must be designed on the basis of core capabilities. It must also contribute to the achievement of business success (Tang and Gattorna, 2003:25-26) through balancing supply and demand (Chopra and Meindl, 2010:40-41). Melnyk, Narasimhan and DeCampos (2010:33) maintain that the main purpose of a supply chain strategy is to attain an improved responsiveness to the organization's customers. Raturi and Evans (2005:208) identify three main supply chain strategies, namely lean, agile and "leagile" (a combination of lean and agile). These will be discussed later in this chapter. According to Cohen and Rousell (2005:10) a SC strategy is part of a business strategy that is crafted on the basis of competition. It is also built around an organization's marketing strategy, the customers' needs, a product strategy and a power position (Ambe, 2012:106-107).

Furthermore, Ambe argues that SC strategies exist whether they were planned or not. According to Qrunfleh and Tarafda (2013:572), it is imperative for an organization to develop SC practices appropriate for their SC strategy for the attainment of SC plans and goals.

**2.4.1.3** Phase 3: Scoping the supply chain structure

Having a strategy alone without a support structure may render it null and void. Organizations need proper structural support to attain their strategic goals. According to Taylor (2004:284) a SC scope represents the formation of the SC's structure, practices and operations. Fawcett, Ellram and Ogden (2007:20) and Christopher (2005:57) identify SC partners, SC drivers and key performance indicators as support structures to the SC. According to Taylor (2004:284) organizations should identify the partners with whom they want to build relations. Their existence should be of value to both parties and more so to end-customers (Raturi and Evans, 2005:208). Sadler (2007:170) cites the importance of the decision on the type of partnership that will suit the relations that organizations intend to build. Furthermore, the duties of each partner should be well-defined (Fawcett, Ellram and Ogden, 2007:335). According to Raturi and Evans (2005:203) and Rafele (2004:281) Key Performance Indicators (KPI's) should be utilized as the basis for measuring the performance of key SC Drivers.

**2.5 SUPPLY CHAIN KEY PARTNERS**

As part of scoping the SC, the identification of key partners in the SC is significant. The identification should be coupled with determining the kind of relations (structural integration or collaboration) that member organizations will have. Nel (2010:93) cites the importance of recognizing the structure of a SC network, which in turn can result in improved performance (Quayle, 2006:105). According to Lambert (2006:12) structural relations can be either horizontal or vertical. Horizontal structural relations refer to spans of tiers across which services flow from their point of origin to the actual customer. Lambert mentioned that these are categorized into direct, extended and ultimate SC's. These are to be discussed later in this chapter. The vertical dimensions are determined by the number of customers or suppliers represented in each tier before the goods and services reach the actual customer (Nel, 2010:98).

The following are the key SC partners found in the literature.

**2.5.1** Suppliers

In business management, suppliers are commonly referred to as retailers. According to Hugos (2011:25), retailers keep a stock of items that they trade to the public in general in smaller quantities. In the entire chain this partner is closest to most customers and is more likely to have accurate information on customers' needs and preferences. However, according to Fawcett, Ellram and Ogden (2007:41) suppliers rely on distributors to keep stock that is relevant to customers' requirements, and distributors rely on manufacturers to produce as per customers' needs. Moreover these authors state that organizations are more likely to suceed if they share information about the customer. The importance of upstream communication therefore emerges.

**2.5.2** Manufacturers

According to Hugos (2011:24), manufacturers are those parties who produce the end products. This author identifies tangible or intangible end products. Tangible products are those products which we can touch and see, whilst intangible products are mostly in the form of services and cannot be touched or seen.

**2.5.3** Distributors

Distributors are usually referred to as wholesalers. They mainly possess bulk buying powers, either by means of finance, warehousing or networking capabilities. According to Hugos (2011:24), distributors stock items *en masse* and re-sell these to other businesses in bulk. Moreover, he asserts that distributors safeguard manufacturers, in a way, as they keep a stock of inventory that ameliorates the instabilities that result from the fluctuation in customers' demands. Moreover, distributors perform the overall "sale" function for the goods they chose to keep. They usually perform the work of finding end consumers, or they may even find mechanisms to stimulate the customers' sense of the "need to have" of their specific products (through advertising). Once the goods are sold, they transport them to their customers and further support their customers throughout the use of such products through post-sale service. As may be noted, not all inventories can be stocked in bulk by distributors, due to their nature.

In the light of this, this author notes that distributors do not only necessarily keep bulk stock but could serve as dealers who channel inventory from producers to customers.

### 2.5.4 Customers

Customers are those individuals who actually purchase and utilize a product. In fact all processes and links in a SC exist as a result of the need to satisfy customers' requirements. According to Fawcett, Ellram and Ogden (2007:41) a customer "takes the centre stage in SCM." All partners in a chain should understand customer's requirements thoroughly and thereafter strive to satisfy them. These authors mentioned that when customers are purchasing or taking ownership of goods and services, they are actually purchasing or taking ownership of "satisfaction." Satisfaction is achieved as a customer's needs are fulfilled when utilizing such goods and services. Hugos (2011:25) draws our attention to the fact that a customer may be a person who buys a product to consume or someone who buys it to subsequently incorporate it into a new product and further trade it to the next customer.

Fulfilment requires certain efforts from manufacturers, distributors and especially from suppliers. Fawcett, Ellram and Ogden (2007:39-41) identify customer service strategy, customer satisfaction strategy and customer success strategy as some of customer fulfilment strategies organizations adopt in their attempt to attract and keep their loyal customers. Customer service strategy is centred on strict adherence to set internal goals and the levels of service offered. By following their service strategies these organizations believe that the end-user requirements can be met. On the other hand, the organization's customer satisfaction strategy utilizes inputs and feedback from customers to set up its internal goals. Whilst organizations who adopt a customer service strategy utilize the approach to align themselves with customer expectations, organizations with customer success strategies strive to turn their customers into winners by gathering intelligence that helps them to better satisfy their customers' needs.

## 2.6 DRIVERS OF THE SUPPLY CHAIN

Chopra and Meindl (2010:59) assert that the performance of each SC is determined by its drivers. They identify facilities, inventory, transportation, information and sourcing as the main drivers of a supply chain.

**2.6.1** Facilities

The actual sites where goods and services can be obtained are referred to as "facilities." As defined by Nel (2010:149), the term "facilities" refers to actual locations where final products are kept. In a public sector domain, "facilities" may be associated with SC service delivery points, the actual offices that facilitate the provision of demand, acquisition, transport, and inventory or warehousing, as well as asset management for the benefit of end users. Furthermore, this author adds that the number and location of facilities should be decided upon when designing a SC. Raturi and Evans (2005:208-209) assert that even the amount of work to be centralized or decentralized to each facility must be defined at this stage. According to Ambe (2012:152) the greater the excess capacity of a facility, the greater the likelihood that the facility will be flexible and responsive to customer needs. Reid and Sanders (2007:316) stress the critical nature of decision-making regarding facilities, due to the fact that they result in long-term commitments accompanied by huge financial investments. For instance, deciding to have a SC facility in a specific area demands the sourcing of "office" space as well as human resources.

**2.6.2** Inventory

Inventory can be defined as stock that is surplus to current needs. It exists either intentionally to cater for future needs or unintentionally due to poor planning and poor SCM. According to Jacobs, Chase and Aquilano (2009:547), inventory should be seen as part of the resources of an organization. According to Nel and Badenhorst-Weiss (2010:21) it is a management decision to position the organization's SC with either efficiency or with responsiveness in mind. To attain responsiveness, more inventory must be kept at the SC service delivery points, which in turn increases storage costs and risks (Bowersox, Closs and Cooper, 2010:157) and which may compromise efficiency. These authors suggest that attainment of efficiency will demand that inventory be kept at a minimal level, which in turn may compromise responsiveness. As a result, Simchi-Levi, Kaminsky and Simchi-Levi (2008:30) argue that inventory management is a challenging task which has a bearing on both the costs of the SC and customer service levels, which in turn impacts on SC performance. Nel (2010:161) identify the challenges posed by inventory management as the risk of uncertainty. He argues that the upstream uncertainty is for an interruption in the flow of supplies from suppliers, whilst the

downstream uncertainties are associated with variations in demand. Therefore, it is crucial that inventory levels, types and location that will provide adequate responsiveness at a lowest possible cost are decided upon during SCD.

**2.6.3** Transportation

Transportation relates to the physical movement of inventory from one point to another. It is therefore a physical link between the organization, its customers, its suppliers, and other supply chain members (Langley *et al.,* 2009:271). An organization has to decide on the mode of transport for its inventory between points. According to Ambe (2012:48), decisions on the mode of transport should be taken on the basis of the actual costs of transport versus the indirect costs associated with the use of a specific mode of transport. Hugos (2011:6) affirms that whilst for instance the use of sea or rail shipment may be less expensive, it may be relatively slow and thus it can hold back huge volumes of stock, whilst air transport may be much faster but is more expensive. Many other forms of transportation exist that organizations may choose from, including road and rail. Each has its own advantages and disadvantages. Again, it is a matter of management's prioritisation of responsiveness or efficiency. The faster the availability of inventory per the use of a fast mode of transport, the more may be the responsiveness of an organization, and the use of a slower mode of transport may result in the achievement of efficiency whilst reducing responsiveness (Chopra and Meindl, 2010:6).

**2.6.4** Information

According to Nel (2010:173), managing SC's involves the management of the flow of volumes of information. This information is about the demand for the goods and services that the organization provides. Reliable, timely and accurate information about customer needs is more likely to result in efficient and effective SC's (Simchi-Levi, Kaminsky and Simchi-Levi, 2008:153; Ambe, 2012:48). Chopra and Meindl (2010:60) add that information flow concerns facilities, inventory, transportation, costs, prices, customer demand and suppliers, throughout the SC. Information technology is the fastest means commonly used to disseminate information amongst SC members.

**2.6.5** Sourcing

In the pursuit of efficiency and effectiveness, organizations should take strategic decisions about who will perform certain roles in the chain. A choice between internal and external resource utilization must be made. This decision should be guided by the capacity of the parties identified. According to Hines (2006:177), sourcing is a range of business processes employed to procure goods and services. Sourcing in all sectors is vital to the performance of an organization. It has key implications for organizational responsiveness and efficiency (Nel, 2010:178). Sourcing occurs when an organization embarks on a journey to obtain goods and services. This may be through insourcing or outsourcing. The author above defines insourcing as when an institution's own resources are used to render a service to the end customer, whilst outsourcing utilizes the resources of SC members outside of the organization to render a service. Burt, Petcavage and Pinkerton (2010:230) claim that outsourcing provides opportunities for a firm to gain access to the competencies of its partners. Bozarth and Handfield (2006:297-298), however, argue that insourcing enables the firm to develop its own core competencies. Deciding the nature of the sources to be utilised is thus a strategic matter. It is solely dependent on the firm, whether to insource or to outsource.

## 2.7 KEY PERFORMANCE INDICATORS

In order for an organization to assess the performance of its SC and SC members, it is imperative that it should devise sound measures to quantify performance during SCD. This is significant for improving performance (Taylor, 2004:173). According to Chan (2003:536), measuring performance serves as a feedback or information tool regarding the SC activities in satisfying end customers' needs and attaining strategic objectives. Therefore, performance indicators can be regarded as pointers to issues that require the organization's attention to enable it to satisfy the demands of its clients and attain its strategic goals. Performance indicators mark the progress made towards goal achievement. Evans and Collier (2007:363) maintain that key performance indicators (KPI's) can detect what and where to improve on the design and functioning of the SC. In fact, the manner in which SC performance measures are incorporated into the SCD plays an important role in determining the effectiveness of the SC (Sadler, 2007:179). A number of indicators have been documented in the literature since the inception of SC, and the following are regarded as crucial in measuring public sector SC performance:

**2.7.1** Costs

According to Elrod, Murray and Bande (2013:40), costs in accounting are defined as financial expenses incurred to procure either finished or unfinished goods or a service. These authors cite that organizations attempt to maximize returns at a minimum cost. Costs are thus crucial elements of efficiency for both public and private sector organizations. However, unlike private sector organizations, where costs are measured per expenses for all SC processes and efforts to create goods and services in relation to profit (Larson, 2009:223), public sector organizations base their efficiency on cost saving, wherein lessor funds are utilized to achieve more service delivery. Hence the phrase the "lowest acceptable quote" is always referred to when procuring goods and services in this sector. In fact, national treasury has even regulated the maximum spend per commodity purchased of certain goods and services, with which all public sector organizations shall comply. This has been put in place in the name of "cost containment." Burt, Petcavage and Pinkerton (2010:308) mention forecasting costs, administrative costs, transportation costs, inventory costs, manufacturing costs and costs to manage the supplier relationship and to actually render customer service as costs involved in a SC.

**2.7.2** Quality

Elrod, Murray and Bande (2013:43) define quality as a perception that the goods and services provided satisfy customers' needs. Ambe (2012:101) describes quality as "conformance to requirements or fitness for use." Therefore, the quality of goods and services is determined by their value addition to customers. This adding of value is solely in the view of such customers. Organizations have to create goods and services as per market expectations (Ambe, 2012:101) and it is the duty of all SC members to ensure this. Elrod, Murray and Bande (2013:43-44) identify, amongst others, the perceived value of goods, order accuracy, and the buyer-supplier relationship as measures of product quality. The perceived value of goods is concerned with establishing whether or not the services and goods produced satisfy the market. An organization may utilize a customer satisfaction survey to obtain feedback from clients about the goods and services it offers, and this can be used as a basis for improvement (Elrod, Murray and Bande, 2013:44).

**2.7.3** Flexibility

Flexibility refers to response time, the speed at which customers' needs are satisfied. It has to do with the ability to deliver, despite having to satisfy unexpected or unique demands (Wisner, Tan and Leong, 2008:490). According to Bozarth and Handfield (2006:29) flexibility is about how quickly an organization can respond to the exclusive needs of its clients. In the private sector, organizations compete through the speedy creation of new products to out-pace their competitors (Nel, 2010:188), whilst public sector flexibility can be based on the ability to satisfy ever-changing customer requirements. Labour, capacity utilization, volume and delivery flexibilities are measures, among others, that impact on flexibility (Elrod, Murray and Bande, 2013:47).

**2.7.**4 Supplier reliability

Although suppliers are external entities to a public service SC, they have a key impact on the efficiency and effectiveness of a SC as they supply goods and services that each SC uses to satisfy their customer needs. According to Bozarth and Handfield (2006:28), supplier reliability denotes the ability to deliver goods and services as per the undertaking rather than as quickly as possible. Therefore, an organization may have long lead times and still maintain reliability. Ambe (2012:103) cites billing accuracy, order accuracy and timely completion as some of key indicators of supplier reliability. Asset management efficiency and responsiveness are other indicators of performance that may possibly be used by government institutions, though their use might be a bit challenging.

**2.8 SUPPLY CHAIN PRACTICES**

As indicated earlier in the chapter, SC practices are day-to-day activities performed by SC partners in an effort to meet customer's expectations. The best SC practices should be identifiable through the scrutiny of various indicators. They increase service delivery efficiency by providing goods and services in a cost-effective manner, which results in cost saving and is regarded as an added value in the eyes of customers (Bizana, 2013:10)  Thus the better the SC practices, the better the possibilities for greater SC performance (Kumar and Nambirajan, 2013:86). Li *et al.* (2006:109) identified the three dimensions of SC practices, namely SC planning, just-in-time (JIT) production, and delivery practices. Cook, Heiser, and Sengupta

(2011:107-108) aver that material and supply management, operations efficiency, customer service and information-sharing are major issues that are likely to produce better SC performance. It is because of the above inconsistency and non-consensus about SC practices that Kumar and Nambirajan (2013:86) prefer to focus on analysing the cohesion that exists between the identified components. They further identify SC concerns and SC competencies as key components of SC performance and therefore of organizational performance.

## 2.9 SUPPLY CHAIN CONCERNS

SC concerns may be regarded as barriers to SC success as they adversely impact on SC performance. Chow *et al.* (2008:669-670) describe SC concerns as issues that impede the achievement of an organization's full SC potential. McMullan (1996:85) identifies technology, cost competitiveness, inventory management, and external infrastructure and regulations as the most important SC concerns. These, if not managed properly and not taken advantage of, could actually cause SC performance to decline. An inadequate flow of information, limited trust, limited know-how, a lack of flexibility, management problems, a lack of cost visibility, a lack of reliability, and products of inferior quality, as well as attempts to reengineer SC procedures are other issues of concern in SCM. Stank, Dittmann and Autry (2011:942) identify short-term operational thinking and a reluctance to replicate the best practices of firms outside the particular organization as issues that can adversely impact on SC performance. They cite the fact that in many instances an organization's strategic goals are not aligned with the SC and suggest that this can result in the failure of the entire organization. Many public institutions are examples of this. Stank, Dittmann and Autry (2011:942) add that organizations seem not to be ready for benchmarking i.e. to look at what has worked well with other members of the industry. As a result, they continue to "sink" despite the availability of solutions. Furthermore, they contend that this could be eliminated if SC managers were to pursue drastic innovative ways to achieve the full potential of the SCM phenomenon.

## 2.10 SUPPLY CHAIN COMPETENCIES

All organizations possess some proficiency that they pride themselves on. This distinguishes them from the rest of the players in the market. That is referred to as a competence. According to Kumar and Nambirajan (2013:88), SC competencies relate to organizational capability to manage SC processes and achieve good results despite having to cope with adverse internal

and external forces. Organizational competencies are gained over time through experience. According to Nel (2010:33), organizational core competencies have to be developed in the first phase of SCD after identifying the needs of the organization's clients. According to Stank, Dittmann and Autry (2011:940), an effective SC strategy should address five key pillars of excellence that form the foundation of the New Supply Chain Agenda. The five pillars are Talent, Technology, Internal collaboration, External collaboration, and Managing supply chain change.

**2.10.1** Talent. – It should be ensured that appropriate talent is in place to implement a strategy that is cross-functional and cross-organizational.

**2.10.2** Technology. – The careful selection of technological support structures is key to a strategy.

**2.10.3** Internal collaboration. – There must be a clear vision of how internal partners will work together for the attainment of SC excellence.

**2.10.4** External collaboration. – There must be a clear vision of how an organization will relate to it suppliers and customers.

**2.10.5** Managing supply chain change. – A winning strategy should allow for awareness of cross-functional and cross-organizational SC initiatives.

## 2.11 THE THREE MAIN SUPPLY CHAIN STRATEGIES

In the discussion of SCD mention was made of the need for an organization to select a strategy that it will use as the basis of its developing a competitive edge. Organizations must position themselves so as to achieve a balance between efficiency and responsiveness (Taylor, 2004:279). Melnyk, Narasimhan and DeCampos (2010:33) support Taylor's argument that the main goal of a SC strategy is to improve the responsiveness of an organization's SC for the benefit of its end users. Boone *(*2007:594) adds that SC strategies target cost and the reduction of uncertainty, whilst meeting the needs of the clients. The choice of a best fit strategy is determined by many factors including the demand and supply characteristics of the goods or services to be supplied, market winners and market qualifiers, the product life-cycle, whether marketing should pull or push, manufacturing, the focus of the SC, the types of customers, the supply market, the demand patterns, the competencies and capabilities of the personnel, as well as manufacturing and production techniques (Ambe, 2012:11). Other academics cite the

importance of choosing a strategy on the basis of the types of goods and services offered in relation to their market (Sebastiao and Golicic, 2008:76).

As mentioned above, three SC strategies are identified by Raturi and Evans (2005):

**2.11.1** Lean Supply Chain

A lean SC is also referred to as an efficient SC, as the main concern is the expenses incurred in satisfying end customer's orders (Qrunfleh and Tarafdar, 2013:573). According to Ambe (2012:12), a lean strategy aims to utilize fewer resources to achieve more. This can be achieved through the effective management of inventories, coupled with means to improve quality whilst eliminating wastage (Huang, Uppal and Shi, 2002:191). According to Qi, Boyer and Zhao (2009:670), those who choose lean strategies utilize a JIT philosophy by delivering goods and services timeously and at the right place, as well as in the correct quantities. Secondly, low costs and good quality are used as the basis for selecting suppliers. They argue that lean strategy is best suited to a SC operation in a relatively stable environment (Qi, Boyer and Zhao, 2009:670).

**2.11.2** Agile supply chain

An agile SC is characterized by flexibility (Lin, Chiu and Chu, 2006:286; Ambe, 2009:119). It adjusts itself with speed to the fluctuations of customer needs (Lin, Chiu and Chu, 2006:286). To achieve this, an agile SC aligns its systems and operations to support its goal of rapid response towards customer needs (Ismail and Sharifi, 2006:432). Christopher (2005:284) supports the assertion of Ishmail and Sharifi when he adds that "agility embraces organizational structures, information systems, logistics processes and, in particular, minds set." Sharifi, Ishmail and Reid (2006:1080) add that agile SC's are focused not only on responding to changes but they also proactively forecast changes and seek ways to take advantage of coming opportunities. Given the above, an agile SC is characterised by responsiveness. It employs all available opportunities in the effort to achieve flexibility and responsiveness. "It has thus been generally accepted as a winning strategy for growth" (Ismail and Sharifi, 2006:432). According to Ayers (2004:46), agility is more suitable where supply and demand are ambiguous. Nel (2010:74) asserts that organizations that use an agile SC must employ capable resources. This is a "pull-based" approach with production based on orders.

**2.11.3** "Leagile" supply chain

The discussion above in respect of lean and agile SC's describes the key elements that each possesses. All of them involve efficiency and responsiveness, which are equally important to the performance of a SC. In fact, they can complement one another. Given this, the need for semi-lean semi-agile strategies becomes obvious. Hence the development of a "leagile" SC. This hybrid represents a SC strategy that possesses or adopts both lean and agile characteristics (Nel, 2010:79). According to Vinodh, Sundararaj and Devadasan (2009:573) "leagile" SC's were established exclusively to improve SC performance. They consist of the best characteristics of both lean and agile SC's (Towill and Christopher, 2002:300).

**2.12 COLLABORATION**

The term collaboration frequently featured in earlier discussions in which SC's were characterized as being dependant mainly on internal and external collaboration amongst its partners. Hence, there is a need to discuss this notion. Kohli and Jensen (2010:3) define collaboration as the working together of a group of entities towards common interests. It is described as a win/win arrangement that has the potential to produce better business for all parties concerned. according to these authors a number of benefits and challenges associated with collaboration have been documented in the past and recorded in the literature. These benefits and challenges include impressive decrease in costs, improved customer and customer relationships, shorter lead times, improved visibility of information and a clearer division of responsibility (Matopoulos et al, 2007:181-182). According to the authors, these benefits and challenges are associated with the general fear of failure towards the successful implementation of collaboration and exposure to competition.

In his contribution to this body of knowledge Talavera (2015) adds that SCM is founded on SCM partner relations. This author further acknowledges the importance of internal activities and those of external suppliers for the benefits of the end customer (Talavera, 2015:53). The level of integration is dependent on the complexity of the supply chain (Talavera, 2015:53). There are three main SC complexities as identified by Mentzer *et al.* (2001:4). These are: (1) a direct supply chain; (2) an extended supply chain and (3) the ultimate supply chain, as described below.

**2.12.1** Direct supply chain

This is a less complex kind of SC in which the downstream and upstream activities are only between the entity, its suppliers and its customer (Mentzer, 2001:4). According to Lysons and Farrington (2006:94), this arrangement doesn't necessarily refer to the "exact" supplier or customer. Instead it relates to those involved in the downstream and upstream activity of the SC. Table 2.1 below illustrate a direct SC model. The model links an organization only with its suppliers and customers.

**Figure 2.1**: Direct supply chain
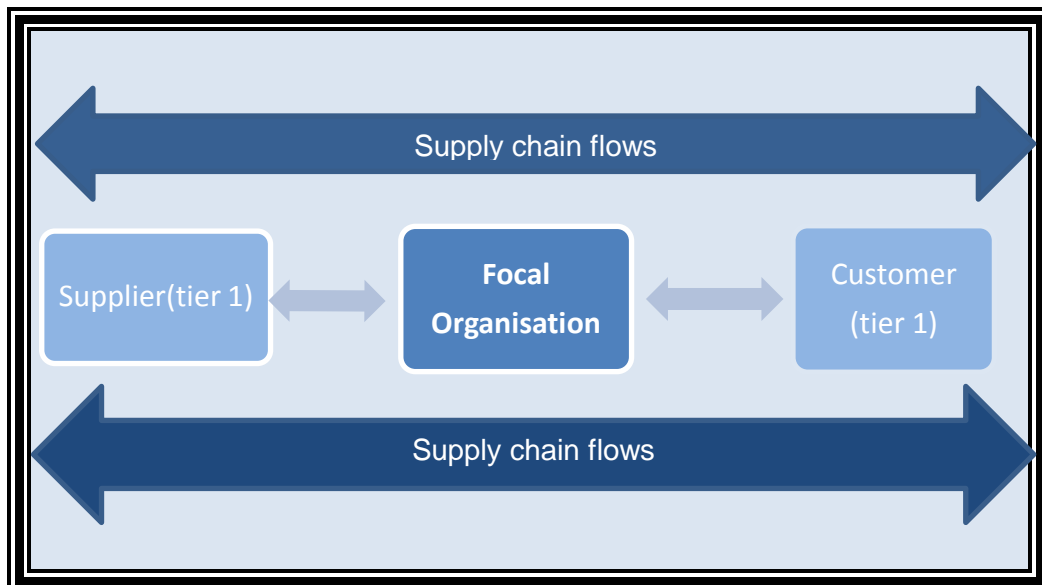


**Source:** Adapted from Lysons and Farrington (2006:94) and Hugos (2006:27)

**2.12.2** Extended supply chain

According to Nel (2010:94), an extended SC comprises all those organizations working further up or down the SC from the immediate suppliers and immediate customers. This SC involves the entity, its supplier's suppliers, and its customer's customers (Mentzer *et al.,* 2001:4). This is the current set-up of a public sector SC within the DOJ and CD. Figure 2.2 below represents an extended supply chain model.

**Figure 2.2:** Extended supply chain.
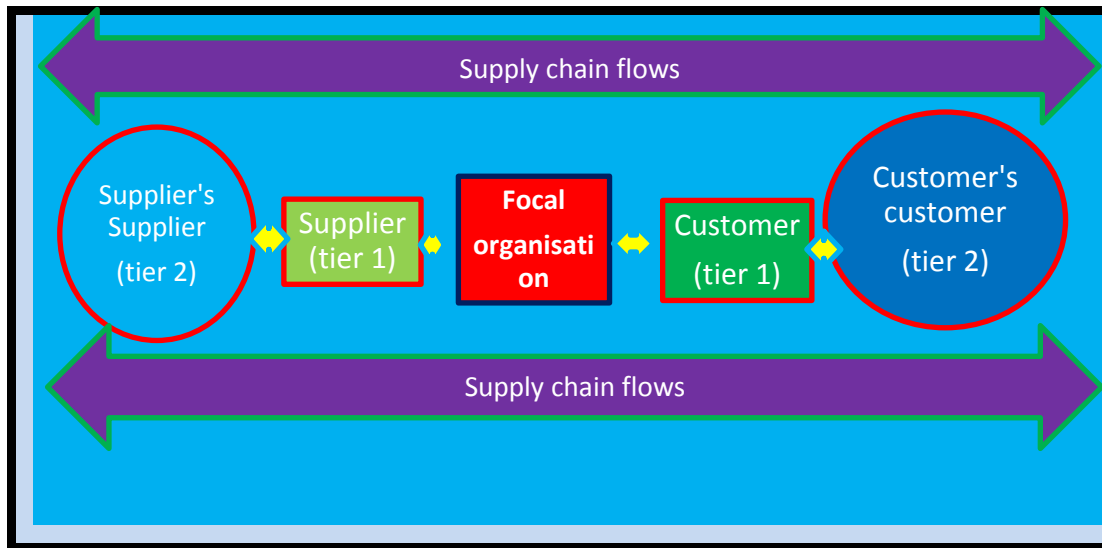


**Source:** Adapted from Lysons and Farrington (2006:94)

**2.12.3** Ultimate supply chain

This SC involves the organization, its extended SC, and all the other organizations involved in the company's operations. Nel (2010:95) proposes that the ultimate SC can become more complex as it comprises many organizations working together with many other different organizations. According to this author these links are referred to as tier, and immediate supplier and immediate customer of an organization are referred to as a 1st tier supplier or a 1st tier customer. Customers and suppliers of the 1st tier suppliers and customers are referred to as 2nd tier customers and 2nd tier suppliers (Bozarth and Handfield, 2006:8; Waters, 2009:9). Figure 2.3 below illustrates an ultimate SC. It is characterized by links of more than two suppliers and customers who collaborate to satisfy common goals.

**Figure 2.3:** Ultimate supply chain
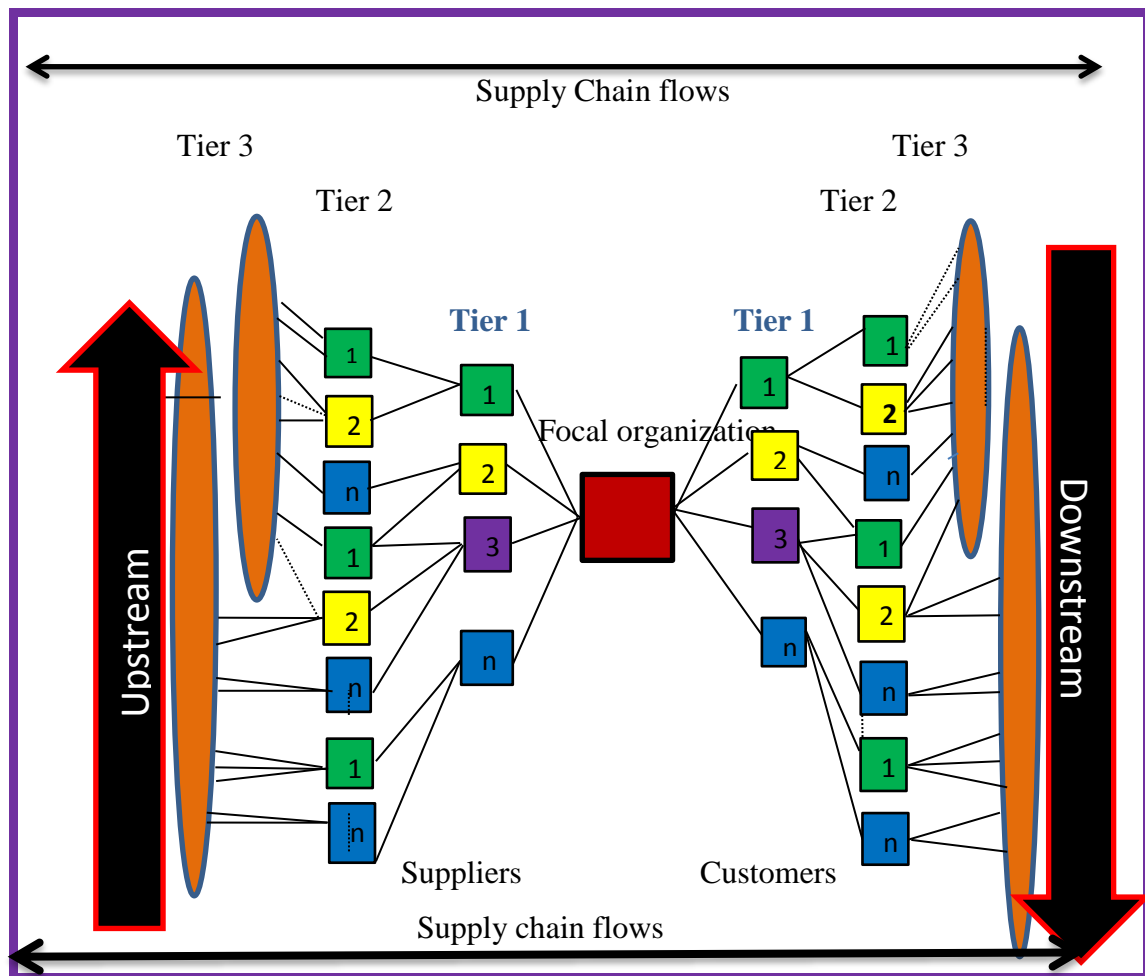
## 2.13 PURPOSE OF SUPPLY CHAIN MANAGEMENT

Although SCM processes are often invisible to public sector clients (Ambe and Badenhorst-Weiss, 2011:75) their importance to the institution's achieving its strategic and operational goals cannot be understated. According to South Africa (2005:49) SCM provides for the acquisition of goods and services, and the letting and disposal of state assets, including goods no longer required. For instances for the Department of Public Works to attain its infrastructural development goals, SCM should appoint reputable service providers to deliver services to the end users. The Council of Supply Chain Management Professionals (CSCMP) et al. (2013:4-9) argues that the purposes and goals of SCM range from ensuring that inventory is readily available to customers though a proper balance between supply and demand, cost reduction, meeting and even exceeding customer expectations, consistent and timely delivery, and receptiveness to transformation, as well as contributing to the financial success of the

organization. Moeti *et al.* (2007:12) add that SCM was introduced to combat fraud and corruption in SA. Furthermore, it appears that public and private sector SC's share the general goal of enhancing the competitive edge of entities (Okongwu *et al.,* 2011:50). Migiro and Ambe (2008:231) add that public sector SCM introduced procurement reforms that focused on two broad objectives, namely the elevation of the principles of good governance and the introduction of a preference system to address socio-economic objectives, whilst Ambe and Badernhorst-Wess (2012:246) contend that SCM is directed at adding value to all processes.

## 2.14 SUPPLY CHAIN MANAGEMENT AS A MEDIUM FOR GOOD GOVERNANCE

Governance is a decision-making and a decision-implementation process. It is regarded as good when it is characterized by elements of participation, transparency, responsiveness, consensus-orientation, equity and inclusiveness, accountability, efficiency and effectiveness and adherence to the rule of law. Good governance thus serves as an indicator of effective leadership and the effective management of public resources. Since a democratic government took control of the RSA, a number of policy initiatives have been taken. These policies direct how public finances should be utilized, and further guide conduct of public servants. The primary legislation on which the policies are based includes the *Constitution of Republic of South Africa Act No. 108 of 1996,* the *Preferential Procurement Policy Framework Act No. 5 of 2000 (PPPFA),* and the *Broad-Based Black Economic Empowerment Act No. 53 of 2000 (BBBEEA).* In relation to purchasing, these Acts prescribe adherence to principles of fairness, competitiveness, equitable administration, transparency and cost effectiveness when awarding works. Despite the existence of these laws, procurement remains problematic. It is beset by the erratic application of policies, fragmented processes, and structural and accountability deficiencies (Ambe and Badenhorst- Weiss, 2012:242-243).

Hence the need for reforms became urgent, and this prompted the greater use of SCM. SCM presented the potential to enhance service delivery (Okongwu *et al.,* 2011:50) by increasing operational efficiency and effectiveness (Shaffer and Dalton, 2012:100). The introduction of separate functions in the procurement process, i.e. demand management, acquisition management, logistics management and disposals management (*South Africa,* 2005:49) enforced a segregation of duties envisaged to minimize irregularities.

## 2.15 SUPPLY CHAIN MANAGEMENT AS A MEDIUM TO ADDRESS SOCIO-ECONOMIC OBJECTIVES

According to Tshamaano (2012:7) an estimated sum of R56 billion is utilized in the procurement of goods and services alone across the national, provincial and local spheres of government in the RSA. It can be deduced from this that the public sector is the key actor in the economy of the country, as it plays a crucial role in the economic growth and economic development of the country (Fourie and Poggenpoel, 2016:2). It will be recalled that the injustices of the past (prior to 1994) were perpetrated to advance the prosperity of only the few. To address this situation, the post-1994 government of the RSA sought to devise measures to ensure the equal distribution of wealth amongst its citizens. Hence the inception of the preference point system, in terms of which awards of tenders for any goods, services and works in excess of R30 000. 00 are subjected to the 80/20 or 90/10 point system.  This ensures that except for prizes, additional points are awarded to companies that are owned by individuals who never had businesses prior to 1994, such as companies owned by women and or physically challenged individuals (South Africa, 2008:3-8).

## 2.16 SUPPLY CHAIN MODEL: SOUTH AFRICA'S PUBLIC SERVICE

The introduction of the SCM within the public service necessitated a drastic change to the manner in which government conducts its business. It needed to introduce strategies that would give absolute assurance that this new SCM work. The SCM elements represented in figure 2.4 below were therefore introduced.

**Figure 2.4:** Supply chain model: South Africa's public service
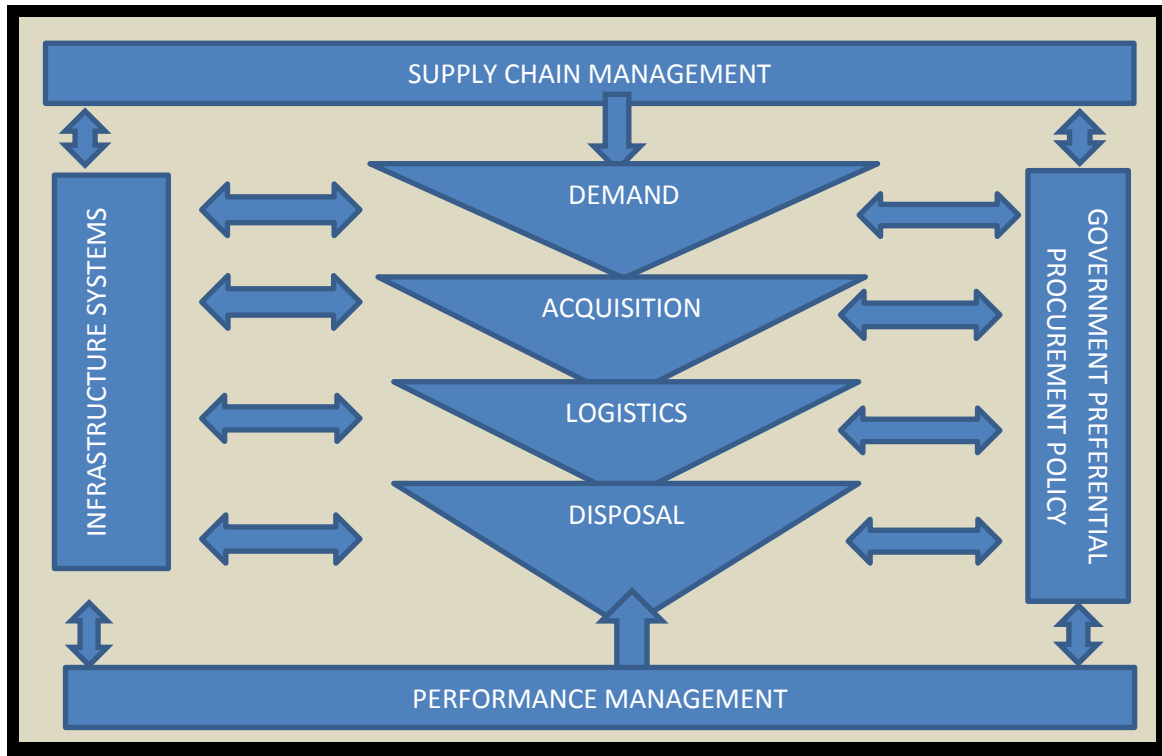


Source: Adapted from South Africa (2005: 20)

Figure 2.4 above represents the processes involved in the management of a SC in the public sector.

**2.16.1** Demand Management

Demand management depends on the use of a SC process, wherein needs assessment is conducted, precise specifications are drawn up, and a market analysis is conducted, followed by the compilation of a list of the goods and services required, with a budget (South Africa, 2004:10). The DoJ and CD views demand management as a system that translates annual performance plans into current and future needs, and then costs these out and budgets for them. Its function is to assess and forecast what resources are required to support the strategic and operational objectives of the institution and to further ensure that such resources are delivered at the correct time, at the right price, and to the right location, and that the quality and quantity satisfies the needs of the Department. With regard to internal processes, the end users in Regional Directorates, Lower Courts, Family Advocates, State Attorneys and Masters' offices perform this function, as they determine their needs and estimate budgets to meet those needs,

as per their procurement plans. The SCM conducts a needs analysis only of warehouse or stores-related inventory. Lysons and Farrington (2006:96) assert that managing demand balances the needs of internal and external customers with the capabilities of the SC. According to Ambe and Badenhorst-Weiss (2011:80) this phase brings together SCM practitioners, customers, the bid-specification committee, etc.

**2.16.2** Acquisition Management

Acquisition is the process of procuring goods and services. It is widely known as purchasing in the private sector. This is the second highest budget item within most public entities, after the compensation of employees. This is where a range of procurement processes occurs. Thus, acquisitioning must be properly managed. "Acquisition management refers to the management of procurement" (Migiro and Ambe, 2008:232). In the DoJ and CD SCM officers located at Lower Courts, Family Advocates, State Attorneys, and Masters of High Courts, and Regional Office officials initiate this process by obtaining quotations for the required goods and services. This is done in line with an approved available budget. Depending on the value of the case, all offers get accepted, evaluated and recommended by SCM practitioners on the basis of prices offered and their BBBEE status. A purchase order that serves as a commitment to buy from a prospective bidder is issued once the Regional Control Committee (RCC) has considered the quotations and the Regional Head approved such a purchase. According to Bizana (2013:45), acquisitions are vital to the realisation of preferential procurement system goals as they serve to ensure equal participation in the economy by all South African citizens. Acquisition is governed by five principles, as cited in Raga and Albrecht (2008:792). These are value for money, open and effective competition, ethical and fair dealing, accountability and reporting, and equity.

**2.16.2.**1 Value for money

Value for money is associated with the economical use of financial resources. It aims to source quality goods and services at the lowest possible cost. Bizana (2013:45) contends that the lowest cost does not necessarily equate to value for money. It is rather how well the cheapest items satisfy the customer's requirements. Raga and Albrecht (2008:793) note the importance of planning, contract management and the constant improvements of internal structural and procedural efficiencies so as to achieve value for money.

**2.16.2.2** Open and effective competition

Open and effective competition is part of the public sector effort to instil the principles of good governance through the introduction of the SCM system. It is in line with section 217 of the *Constitution of the Republic of South Africa*, which states that when an organ of the state contracts for goods and services, it shall do so in accordance with the system that promotes open and effective competition among other goals.

**2.16.2.3** Ethics and fair dealings

Ethics has to do with morality, whilst fairness has to do with being just. According to Bizana (2013:45) the *Constitution of the Republic of South Africa* stipulates that trading shall be carried out fairly, in a reasonable manner, and with integrity. In fact, ethics and fairness, including equity, cost effectiveness and transparency, have been at the top of the agenda of economic transformation since 1994 (Ambe, 2009:394). Much emphasis has been placed on the need for public sector SCM practitioners to be unbiased and to serve with integrity and without endangering the image of the state (Raga and Albrecht, 2008:794). Hence the enforcement of measures like the declaration of interest by all officials involved in procurement processes (Jones, 2007: 21) and lately the total prohibition of government employees conducting business with the state. Matolong (2015:3), however, concludes that the number of SC irregularities as shown in extant literature can be construed as indicators that there are flaws in the existing SCM system.

**2.16.2.4** Accountability and reporting

Accountability is associated with liability, and reporting can be defined as accountability towards a specific person or group of persons. Raga and Albrecht (2008:794) indicate that government officials are accountable to the appropriate authorities and citizens for their plans, actions and outcomes.

**2.16.2.5** Equity

Equity, as noted above, is also amongst the chief items in the agenda for economic transformation in SA. According to Raga and Albrecht (2008:794) the SA state has shown commitment to implementing measures that aid economic growth, especially in support of the development of Small, Medium and Micro Enterprises (SMME's) and Historically Disadvantaged Individuals (HDI's). The promulgation of laws such as the *Preferential Procurement Policy Framework Act*, the *Broad-Based Black Economic Empowerment Act.*

**2.16.3** Logistics Management

According to Lakri, Dellary and Jemai (2015:17) logistics is that part of the SCM process that plans, implements and controls the efficient and effective flow and storage of goods, services and related information from the point of origin to the point of consumption in order to meet customers' requirements. Managing public sector logistics nowadays includes managing a fleet that is utilized for day-to-day travel, managing tangible and intangible assets that support the accomplishment of institutional objectives, and managing warehouses or inventory. According to National Treasury directives, SC policy must provide for a framework to manage logistics (*South Africa,* 2005:49). This framework must provide guidance in the setting of stores and stock levels, the management of warehouses, order placement and expediting, contract management, the receipt and distribution of inventories, transport management, and the management of supplier performance (Bizana, 2013:49).

**2.16.4** Disposal Management

Disposal management is the final stage in the SCM process. It becomes relevant when an institution intends to do away with unserviceable, redundant and obsolete items (South Africa, 2005:89). It is recommended that an accounting officer of an institution appoints a specific committee to deal with disposals. According to National Treasury various methods can be employed to dispose of state items. This could be per transfer to other entities/institutions, destruction, sale to staff, or auction.

**2.16.5** Risk Management

"Risk" refers to the unpremeditated results of an action or decision (Migiro and Ambe, 2008:233). Supply chain risks could rather be described as interruptions in the provision of goods and services. These could occur as a result of strikes or failures in processes or systems or individuals etc. According to Ali and Shukran (2016:335) risks occur everywhere and are inherent in all operations. It is important to acknowledge that SC risks may emanate not only from the core institution itself but may resort with other SC partners as well. Nonetheless, risk has to be managed. This involves the identification, assessment and prioritization of risks of different kinds. Tang (2006:453) argues that SC risks should be managed through collaborative efforts amongst the SC partners. This will assist in providing assurance the achievement of the goals of the SC. Managing risks requires certain capabilities, and those who are better able to manage diverse risks are better able to succeed than others who are less capacitated.

**2.16.6** Performance Management

This refers to a monitoring process that undertakes a retrospective analysis to determine whether or not proper processes were followed and whether or not the desired objectives were achieved (South Africa, 2005:12). It involves on-going, systematic, evidence-based decision-making that takes cognizance of organizational learning and relies on established accounting methods aimed to attain its goals. Efficiency and effectiveness are common indicators of excellence in performance (Dobler and Burt, 1996:763). Organizational performance in the public service is assessed per an annual internal audit and through audit by the Auditor General of South Africa (AGSA).

**2.17 THEORETICAL FRAMEWORK**

According to Nyaga (2015:240), a theory is a set of statements developed to explain a group of realities about a phenomenon, more so if it has been tested, or if it is widely accepted that it can be utilized to make predictions about a phenomenon. Touboulic and Walker (2015:20) define "theoretical frameworks as deep ontological commitments, which in turn affect the appreciation of and approach to a specific question or problem."

## 2.17.1 ORGANIZATIONAL THEORY

Sarkis, Zhu and Lai (2011:2) define organizational theory as management insight that aids organizational behaviour, and the strategies and structures of an organization. The academic exploration of the management of SC has already been undertaken extensively. It has been established that the management of various SC's could be founded on a number of theoretical underpinnings. For instance, Sarkis, Zhu and Lai (2011) and Carter and Easton (2011) identified and studied complexity, resource-based views, resource dependence and stakeholder theory, among others. Varsei *et al.* (2014:8) argue that these theories determine and facilitate the broad adoption and advancement of practices in a SC. They select four theories, namely resource-based, institutional, stakeholder and social network theories, that they believe have overlapping and complementary features to support multidimensional and strategic perspectives of sustainable SC's.

## 2.17.2 COMPLEXITY THEORY

The complexity of an institution is defined as a range of environmental aspects i.e. clients, service providers, government rules, and technological advancements (Sarkis, Zhu and Lai, 2011:3). These aspects have direct and indirect influence on the success of the institution. Sarkis, Zhu and Lai (2011:3) argue that as their complexity increases, organizations find it much more difficult to plan and predict their organizational actions. This suggests that organizations operate as systems with both order and disorder and that performance of organizations are dependent on connections between parties within their systems (Sarkis, Zhu and Lai, 2011:3-4). To meet the demands of the chain SC managers must be sensitive to the arrangement of their SCM systems as well as to how each role-player within their system interacts with the rest (Hearnshaw and Wilson, 2013:443). Colbert (2004:349) is also referenced with regard to complexity theory. This author argues that complexity theory is identified by a series of associations that are independent, interdependent and layered. He expands on complexity theory when he alludes to companies having "complex adaptive system" (CAS) features.  Complexity characterises a system with different agents operating autonomously and in cooperation with others (Colbert, 2004:349). The ability to adapt is the ability of each agent as well as that of the collective system to vigorously react to internal and external forces to their advantage and continued survival (Colbert, 2004:349). In brief,

companies with CAS features must be able to adjust their behaviour whilst managing complexity (Pathak *et al.,* 2007:549).

A typical public sector SC is a supply network characterized by complexity. It comprises various connections referred to as inter-firm relationships (Pathak *et al.,* 2007:548). It consists of suppliers, customers, SCM practitioners and interdepartmental relations. It is governed by public laws, and all of this impact on its success or otherwise. Hence, their connectedness ought to be managed. This need is particularly evident during the acquisition of goods and services, as SCM practitioners must abide by the legislative frameworks promulgated by the state. In the RSA conformance to the PPPFMA and the BBBEE Act is required, as is tolerance of the situations of other partners.

The economic and political situations impinge on the operation of a public sector SC. No system operates in a smooth environment, so there is a need for the management of constraints, as will be mentioned below. In their study of the postponement of SC risk management, Yang and Yang (2010) note that to respond to the environmental complexities of today, firms' systems have become increasingly complex. Yang and Yang (2010:1904) argue, however, that should complexity be minimized, companies would be able to reorganize their processes, eliminate waste and thereby enhance their overall performance. In Baum's article on *Supply chain future, a mastery of complexity* (2010) he claims that the external forces of economic downturn and recession in 2008/2009 led to the collapse of CD and DVD distribution by Woolworths in the United Kingdom (UK). This impacted negatively on retailers like Zavvi, who had recently outsourced their sole supply to Entertainment United Kingdom (EUK). This resulted in a complete shutdown (Baum, 2010:20). Contrary to the above account, a baby clothes company experienced growth during the recession (Baum, 2010: 20). Baum (2010: 21) concludes that complexity could be the source of gain, if a company possesses the relevant tools to take advantage of it (Baum, 2010:21).

## 2.17.3 THEORY OF CONSTRAINTS (TOC)

Constraints can be defined as obstacles to goal achievement. According to Ainapur, Singh and Vittar (2012:99) constraints hinder the attainment of organizational goals. The theory of Constraints (TOC) was first conceived of by Goldratts EM and emerged between the 1930's and the 1940's. Chou, Lu and Tang (2012:4687) refer to the TOC "as a managerial philosophy"

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that utilizes fundamental logic to identify key relations that impact on organizational performance. According to Hugos (2011:191) the TOC suggests that all systems have at least a single constraint that hinders the attainment of its goals. In support of this, Husby (2007:53) further identify equipment, procedures, policies, manpower, process stability and scheduled work time as some of the constraints in the system. Therefore, for a system to realize its goals it is best to manage such constraints rather than to attempt to minimize them. Hugos (2011:191) adds that when one constraint ceases to operate, another will occur in another part of the system due to the system's unequal capabilities. Hence, the monitoring and control or rather the management of constraints in any system becomes a continuous process.

Ainapur, Singh and Vittar (2012:99) support Hugo's assertion when they argue that the objectives of the TOC can be met only if an entity can devise a robust measuring, monitoring and controlling method using KPI's. This theory requires that a goal first be determined and then that performance indicators towards the attainment of the goal be defined and agreed upon (Hugos, 2011:191). As already said above, the primary goals of public sector supply chains are clearly defined. They include (a) the promotion of the principles of good governance and (b) the addressing of socio-economic objectives. Public sector supply chain performance is subjected to a huge number of administrative measures including those of the AGSA and public scrutiny. The above authors identify five phases which, if followed, may result in a system's goal fulfilment.

**2.17.3.1** Identify the limitation.

Although all systems are designed to better an organization's performance, it is believed that all of them will be subject to some limitations. Limitations occur when a system is unable to achieve certain goals. According to Hugos (2011:292) such bottlenecks should be identified.

**2.17.3.2** Exploit the limitation

Ainapur, Singh and Vittar (2012:104) claim that "exploit" means "get the most" out of a bottleneck without devoting more resources to dealing with it. An institution should decide on how to take advantage of these bottlenecks by seeking ways to maximize their capabilities, activities and operations (Hugos, 2011:292). Chou, Lu and Tang (2012:4687) add that waste and engagement in non-productive activities must be eliminated in a bottleneck.

**2.17.3.3** Subordination

Subordination occurs when part of the workload of a constrained member is delegated to his or her equivalent in status within the organization (Ainapur, Singh and Vittar, 2012:104). This is regarded as the most challenging stage in the TOC, as other members of the system are unlikely to support this. Chou, Lu and Tang (2012:4687) argue that measures to manage all other resources that are not utilized efficiently should be revised.

**2.17.3.4** Elevate the constraint

Husby (2007:54) feel that the company must take steps to maximize the potential of a bottleneck so that the efficiency of the entire system will be increased.

**2.17.3.5** Overcome inertia

Overcoming inertia in a system entails the continuous improvement of the system (Ainapur Singh and Vittar, 2012:102). Hugos (2011:292) adds that as the elimination of one bottleneck may result in the creation of another, upon arrival at stage five, step one must be repeated. This results in the process being continuous.

**2.17.4 INSTITUTIONAL THEORY**

Institutional theory attempts to foreground the fundamental worth of the structure or process. It is also concerned with corporate social responsibility. According to Grewal and Dharwadkar (2002:3) all businesses strive for "what they term" economic fitness and social fitness. The survival of all businesses is determined by their ability to claim their share of scarce resources as well as their legitimacy in the eyes of their stakeholders (Chen and Taylor, 2016:6). Lai, Wong and Cheng (2006:96) add that institutional theory examines how an organization's practices are influenced by the coercive, normative and mimetic pressures of the external environment referred to as isomorphic pressures.

According to Zsidisin, Melnyk and Ragatz (2005:3410) coercive isomorphic pressure is a consequence of both formal and informal pressures applied to organizations by other

organizations upon which they are dependent or may arise from social expectations in the society in which the organizations function (Sarkis, Zhu and Lai, 2011:7). Thus, pressure groups practically "force" the organization to adapt and to behave in a particular way in order to gain their support. Clients, regulatory bodies and other key partners are normative isomorphic pressure groups (Zsidisin, Melnyk and Ragatz, 2005: 3410), since without them an organization may cease to exist.

Mimetic isomorphism, also referred to as "reflective imitation", occurs due to environmental uncertainty that encourages imitation (Zsidisin, Melnyk and Ragatz, 2005:3410; McFarland, Bloodgood and Payan, 2008:66). Aerts, Cormier and Magnan (2006:306) confirm that the imitation of the industry's leading competitor refers to the copying of the practices that led to the leading competitor's success. This practice is regarded as the best option in times of uncertainty.

According to Kauppi (2013:1320) normative isomorphism is related to professionalization, a process in which members of a particular profession move towards defining the systems and conditions of their work. This emanates from interaction between these members that leads to a collective perception of what correct behaviour is in their profession (McFarland, Bloodgood and Payan, 2008:66). This results in the articulation of norms and standard operating procedures amongst such groups. McFarland, Bloodgood and Payan (2008:66) add that, other than the above members trying to validate the existence of their profession, this act could be prompted by the period that individuals have spent within similar organizational environments. The longer the period, the greater the likelihood that certain procedures will be re-enforced.

## 2.17.5 RESOURCE-BASED THEORY

Resource-based theory (RBT) was previously known as the resource-based view (RBV) (Barney, Ketchen and Wright, 2011:1303). It can be traced back to the period 1990 to 2000 (Francisco, 2015:50). According to Lockett, Thompson and Morgenstern (2009:10) an organization is determined by nature of assets and resources that are connected to it for a set period of time. These resources include but are not limited to physical assets, capabilities, organizational processes, information etc., and they may be classified as tangible or intangible resources. RBT's strategic goal is to enhance the role of these resources and capabilities in the interest of achieving a sustainable competitive advantage (SCA) for the organization

(Francisco, 2015:50) and improving performance (Yang, 2009:1260). Barney (1991) cited in Sarkis, Zhu and Lai (2011:4) describes these resources as treasured, uncommon, improperly imitable and non-substitutable.

Treasured resources are those that are used to exploit opportunities and or counteract threats to the organization while uncommon resources are those that are in limited supply and are difficult to be obtained by current and future competitors (Lockett, Thompson and Morgenstern, 2009:11). They add that imitability refers to the degree to which a product can be falsified, whilst the non-substitutability of resources implies that one resource cannot be simply swapped (or substituted) for another. Lockett, Thompson and Morgenstern, (2009:10) add that having resources is not adequate. Having a SCA is also dependent on the resources' functionality, their efficiency and effectiveness when combined, and their capacity to be created.

## 2.17.6 SYSTEMS THEORY

Systems theory (ST) is defined as a theoretical perspective that analyses a phenomenon as a whole rather than the parts in the whole (Mele, Pels and Polese, 2010:127). Systems theory suggests that various components of a complex supply chain (i.e. people, information, financial resources) should be brought together to form part of a subsystem that is part of a larger network. ST makes it possible to gain a perspective on the entire organization and thus to understand the internal and external factors that influence SC performance.

This study will be informed by RBT, which focuses on the need to improve the capabilities and the roles of the resources that the organization possesses (Francisco, 2015:50) According to Barney, Ketchen and Wright (2011:1299-1300) RBT is the most potent theory for understanding organizations, as it defines the capabilities and roles of the organizational resources in order to achieve a competitive advantage. Moreover, it endorses the significance of aligning the organization's resources with capabilities that influence competitiveness (Shaffer and Dalton, 2012:101).

This theory is chosen because it holds a greater potential than others to reveal the current state of SCM performance within the DoJ and CD and will help direct the study on the inhibitors and enablers of SCM performance. According to David and Rotish (2013:3), the competitive edge of an entity is dependent upon that entity's having key internal resources. It is crucial,

then, for each entity to ensure that such resources are identified, developed, deployed and protected, because without them the entity is likely to lose its competitive advantage.

Given the above theories, a scientific study to understand the efficient and effective perspective of SCM system makes sense enough to be based on the above theories. However, the researcher made the decision to underpin this study on the system theory. The system theory is very significant since SCM depends on multiple activities for services. For the SCM system to be fully functional, there is the need to rely on information, financial and various forms of resources including individuals. Simply stated, each function depends on another.

## 2.18 EMPIRICAL STUDIES OF SUPPLY CHAIN MANAGEMENT

A number of studies have been conducted on SCM since its inception, particularly with reference to the private sector. The section below provides an overview of some of the key studies conducted in the past few years.

During the 5 years after the inception of SCM, Migiro and Ambe (2008:230) conducted an evaluation of the implementation of public sector SCM and its challenges. They revealed that almost 80 per cent of the SCM officials in their study lacked skills in SCM as well as basic accounting and financial management skills. They found that the ineptitude of the SCM administrative officials hindered the successful establishment of cross-functional committees as per SCM prescripts. It was discovered that that lack of compliance with the applicable laws was still predominant within this new procurement reform. The alleged root causes included the ambiguity of the SCM guidelines and a lack of technical skills. Reported irregularities were issues pertaining to order split, supplier or official collusion, and the continued renewal of.

In her study Tshamaano (2012:46) supports the conclusion that there is a skill deficiency in SCM. Many officials indicated that they had limited or no skills in this field, often because they had simply been deployed to SCM with very little training in the competencies required in their new positions. The researcher adds that some of the SCM inefficiencies emanate from incompetent service providers who fail to fulfil their contractual agreements by abandoning projects or delivering goods and services of inferior quality. SCM's turnaround time is also questioned. Nepotism, favouritism, a lack of monitoring and evaluation and a lack of accountability are other issues that impact negatively on SCM.

Dlova and Nzewu (2014:5) investigated why public institutions fail to implement SCM policies and procedures. They reveal that although most participants were aware of SCM policies as they were issued with policy orientation documents when appointed, only 8 per cent participated in the policy review, and all of these were managers.

In their study of public sector inefficiencies, Fourie and Poggenpoel (2016:6) suggest that among others there are possible flaws in the effective and efficient management of financial resources. Unfair or uncompetitive procurement processes are followed. They also state that there is a lack of internal control in expenditure management, together with skills and capacity deficiencies in the public service. They allege that the above is associated with a lack of transparency, accountability and resource optimisation. The issue of noncompliance with regulations resurfaces continuously in this study. They indicate that there has been a recurrence of noncompliance findings from 2004 to 2011. It is feared that noncompliance may soon become a norm or even a culture in the public service.

## 2.19 BENEFITS OF SUPPLY CHAIN MANAGEMENT

As cited in Ambe and Badenhorst-Weiss (2011:76-77), the following are some of the benefits that are associated with SCM in the public sector.

- **Better risk allocation**

This refers to assigning risk to a party who possesses sufficient knowledge about it and who has the best probability of managing it.

- **Greater visibility**

The more transparent the public service tendering processes become, the more competition there will be and the more skilled organizations will participate in a public sector market space through means like subcontracting.

- **Greater opportunities for innovation**

The SC provides more possibilities for innovation, and this could contribute to faster delivery of better quality services.

- **Better defined requirements**

The early involvement of SCM, through its demand management function, shapes the needs of a business and thus presents the likelihood that the correct goods and services will be delivered.

- **Improved ability to identify risks and bottlenecks**

In contract delivery, greater authority creates an awareness of exactly how the contract is going to be implemented and the key SC dependencies. Moreover, if the SC is managed effectively this will result in improved efficiency, value for money and better quality services.

**Key benefits of SCM**

- The promotion of client relations and services;
- The enhanced delivery of the goods and services required by the end users;
- Improved business functions and an improved supply of goods and services;
- Reduced inventory and shipping costs;
- Reduced direct and indirect expenses;
- The improved timely distribution of the right goods to the right place;
- Enhanced control over warehouses, thus supporting the successful execution of just-in-time stock models;
- A greater likelihood that organizations will adapt to the challenges of globalization, economic disturbances, ever-increasing customer expectations and other related changes; and
- An enhanced likelihood of waste reduction, the driving down of expenses, and the attainment of efficiencies throughout the supply chain process.

## 2.20 KEY ENABLERS OF SUPPLY CHAIN MANAGEMENT

Although institutions are in a position to achieve so much as a result of SCM, as listed in par 2.20 above, it is important to recognise that the above cannot "just happen" on its own. Institutions must be positioned to take advantage of SCM, and many organizations still fail despite having adopted SCM. According to Handfied *et al.* (2011:19), these failures are the result of organizations failing to commit to the four enablers of SC excellence. They further argued that these enablers would provide support to make it possible to invent advanced strategies and methods for the betterment of an organization. Capable human resources, proper organizational design, information technology and measurement tools are identified as the four enablers of purchasing and SC excellence as identified. Figure 2.5 below lists the four key enablers of SCM.

**Figure 2.5**:  Key enablers of Supply Chain Management

| Capable Human Resources |
| Organisational Design |
| Information Technology |
| Measurements |
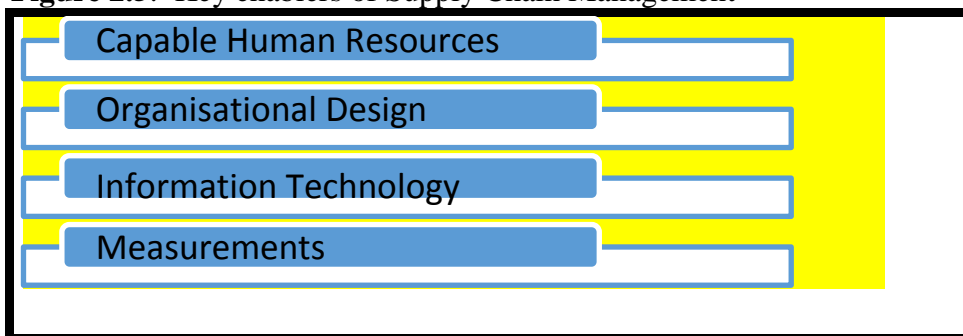
**Source:** Compiled by author.

**2.20.1.** Capable Human Resources

According to Handfield *et al.* (2011:21) the quality of an organization's employees determines the success of the organization. Certainly, the success of an organization's SC is also dependent on its employees. This is undoubtedly because of the possession of the skills and expertise required of the SC practitioners. These authors claim that the top five skills required of SC practitioners are supplier relationship management, supplier analysis, total costs analysis, procurement strategies, and competitive market analysis. Having close relations with internal and external ties is key to the coordination of the activities in the up- and downstream of a SC. Thus, the management of supplier relationships is the foundation of the procurement strategy. Costs are also a critical issue to the survival of any organization, and therefore those organizations that have employees with financial management skills will be best enabled to ascertain operating costs and to perform a competitive market scrutiny.

**2.20.2** Organizational design

Organizational design refers to the structure of an organization. The structure is usually coupled with processes and procedures for conducting specific tasks. It determines the capability of an organization to carry out tasks. Handfield *et al.* (2011:21) believe that organizational design informs formal communication systems, the division of labour, coordination, control, authority and the duties pertaining to the achievement of organizational goals. Having said that, teams remain a critical component of SCD, but their members must be chosen carefully and they must be led centrally. However, engaging in a team effort does not guarantee effectiveness.

**2.20.3** Information technology

Information technology systems provide real-time support to demand planning, order commitment, scheduling and production management. They also aid transportation and distribution planning as well as electronic data inter-change, including information flows amongst partners, in or almost in real time. Handfield (2011:28) cites the use of internet services to transmit data pertaining to various aspects of a business, such as lists of requirements to suppliers, and the use of global positioning systems to trace the location of goods in transit etc. Information technology certainly enables the better management of SC's.

**2.20.4** Measurements

Having correct measurement systems and metrics can enable SCM to achieve better results. However, it is noted that no consensus has been reached on the right SCM metrics to use. Ever-changing metric systems incompatible with old data inhibit the successful management of SCs. Handfield *et al.* (2011:28) comment that to overcome this, a company must know what it aims to measure, have the appropriate metrics to measure it with, and must have an effective way of analysing the data.

## 2.21 CHALLENGES FACING PUBLIC SECTOR SUPPLY CHAIN MANAGEMENT (THE INHIBITORS)

According to Ambe and Badenhorst-Weiss (2011:77-78) the following are some of the challenges facing public sector SCM:

**2.21.1** Tension between citizen and customer requirements

A public sector SC mainly provides goods and services that citizens cannot obtain from other sources. The clients of the public sector SC can therefore be defined as involuntary customers. They seek for the delivery of goods and services from a public sector SC because they have to do so and not necessarily that they choose to do so. The effort of the entire SC to gain preference by customers loses its weight in the public sector SC. Customer requirements here are determined by societal priorities at large rather than by their willingness to pay.

**2.21.2** Cost pressure in the supply chain

As a country's financial situation reaches an economic crisis, public sector SC's as major contributors to the economy are faced with severe challenges. Whilst public sector laws demand the economical use of financial resources (PFMA), SC's are faced with complex societal needs that ought to be satisfied. More pressure arises from the lack of an adequate relationship between public policies and public service strategies.

**2.21.3** Complexity of multidimensional supply chains

Although the public sector SC appears to be an example of a "direct supply chain" in actual fact it may be not. It may be a model, instead, of an extended SC or even an ultimate SC, as it consists of multiple players committed to the attainment of a single goal. It is also noted that public administration and political governance must be considered as factors in public sector SC's to curb impulsive and undesirable decisions that ignore their strategic implications.

Corominas (2013:6833-6834) identify the following as some of the challenges associated with SCs:

**2.21.4** Design

According to Melnyk, Narasimhan and DeCampos (2013:1888) there are no clear techniques to design SC's. As a SC involves tiers of various stakeholders for just a single operation, it becomes extremely difficult to configure an entire complex system (Corominas, 2013:6833).

**2.21.5** Uncertainty

Uncertainty is associated with imprecise knowledge about the demand for the goods and services that a company can provide. According to Corominas (2013:6833), uncertainty is also the result of limited knowledge about future technological advancement, future scarcity of resources, the future financial position etc. These areas of uncertainty may have a fundamental impact on the network design.

**2.21.6** Measure of performance

It is noted that consensus on defining the methods and measures to be utilized in assessing the performance of SCs has not been reached. It is thus still a challenging task to measure the performance of a SC.

**2.21.7** Teaching supply chain

Since a SC is a relatively new concept that is still evolving.  The author suggests that it would be helpful to revise the manner in which it is taught. He contends that using methods conceived many years ago will no longer suffice.

**2.22 THE LEGISLATIVE FRAMEWORK REGULATING SUPPLY CHAIN MANAGEMENT IN SOUTH AFRICA**

**2.22.1** The Constitution of the Republic of South Africa Act No. 108 of 1996

When South Africa attained the status of being a truly democratic country, following general elections held in 1994, the need for transformation was of paramount importance. The new democratic government needed to devise means that would give absolute assurance that its

goals could and would be realized; hence the passing of the *Constitution of the Republic of South Africa Act No. 108 of 1996*. It serves as the supreme law of the country (SA). In the main, it seeks to build a nation, protect and advance the quality of life of all those residing in it, and to heal the wounds of the past. In so doing it creates pathways which inform how citizens and the public service should conduct themselves, by setting out each one's rights and responsibilities. For instance, the establishment and conduct of SCs, as part of public administration, are guided by Chapter 10, which provides for the minimum values and principles according to which all public servants must work. This includes requirements for transparency, fairness, ethics, economic probity, and the efficient and effective use of resources. Chapter 13 sets out how the public sector should manage its financial affairs. It is a clear requirement that when an organs of state contract for goods and services they must do so in accordance with a system that is fair, equitable, transparent, competitive and cost-effective. These matters are contained in par 2.16.2.1 to 2.16.2.5, which enunciates the foundation of all finance-related government strategies for the procurement of goods and services.

**2.22.2** Public Finance Management Act 1 of 1999 (PFMA) as amended

The PFMA was promulgated to give effect to Chapter 13 of the *Constitution of the Republic of South Africa*. This act provides the framework for the regulation of financial management in the national and provincial spheres of government. The DOJ and CD, as a National Department, is bound to comply with the stipulations of these regulations. They ensure that the revenue, expenditure, assets and liabilities of these spheres are managed in a manner that is transparent, effective and efficient. SCM accounts for most of the spending across the public service. It is part of the financial management system that is governed by the PFMA. The PFMA defines the roles and responsibilities of the various role-players in the national and provincial government in relation to financial management. For instance, it directs the accounting officers of organs of state to ensure that their entities have and maintain an appropriate procurement and provisioning system. This system must be fair, equitable, transparent, competitive and cost-effective. In addition, it requires an accounting officer to oversee the management and safe-keeping of assets. Other officials are also entrusted with similar responsibilities. All public service officials must exercise adequate control and care of assets and liabilities under their responsibility.

**2.22.3** Treasury Regulations

The treasury regulations direct the accounting officer of each organ of state to develop and implement a system of SCM for the purchasing, disposal or letting of state items that are no more required. In compliance with this, the DOJ and CD established a Departmental Financial Instruction (DFI) which governs the financial affairs of all its directorates and an SCM policy which serves as a guiding tool for the procurement of goods and services. This policy provides the guiding principles that govern the demand for and acquisition of goods and services, and the management of logistics, disposals, risk and performance. Like the Constitution, the treasury regulations stipulate that SCM policy should be fair, equitable, transparent, competitive and cost-effective. Moreover, it should be consistent with the requirements of the *Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000*) and the *Broad Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003).*

**2.22.4** Preferential Procurement Policy Framework (PPPFA) Act No. 5 of 2000

The introduction of this act was aimed at giving effect to Section 217(3) of the Constitution. It does so by providing a framework for the implementation of procurement preferences. It provides for the use of the 80/20 and the 90/10 principles in the award of bids by government institutions. Between 10 and 20 points are awarded to those individuals who never had a business before 1994. This policy assists to ameliorate the injustices of the past, as the previously disfavoured are now supposed to be given priority in the award of tenders. It was believed that this policy would somehow contribute meaningfully to improving the lives of all South African citizens.

**2.22.5** The Broad-Based Black Economic Empowerment Act (BBBEEA) No. 53 of 2000

This act is concerned with the transformation and structuring of the economy in a manner that enables participation by the majority of its citizens, mainly black citizens. It ensures that in the purchasing process, points are given to those companies that contribute meaningfully to the economy. It also ensures that these people are united, protected and receive equal opportunity and access to the market. In so doing it aims to increase employment, grow the economy, and induce equitable income distribution amongst South African citizens.

## 2.23 SUMMARY OF THE CHAPTER

This chapter has been concerned with public sector SC's and their management. It was noted that SCM is not new and that it is continually evolving. In fact it has not yet achieved its anticipated outcomes. The chapter noted that there is no "one-size-fits-all" methodology according to which to manage SC's. The nature of SCM is instead determined by the nature of the goods and services provided by the organization. Any chosen methodology gives rise to particular practices adopted by an organization, which in turn determine organization's capability for perform despite constraints. It also noted that certain factors and actors influence the success of a SC. Hence, they must be managed, particularly since SC's now serve as vehicles for organizations to achieve a competitive edge. The chapter proceeded to consider previous studies pertaining to SCM, which covered the benefits, enablers and inhibitors to SC performance, and it concluded with a brief discussion of the legislative framework governing public sector SC's.

# CHAPTER THREE

## RESEARCH DESIGN AND METHODOLOGY

### 3.1 INTRODUCTION

Chapter Three is concerned with the methodology used for this research. A methodology is a way of gathering data from which inferences may be drawn to apply to a research problem. This chapter begins by describing the research design, the target population, the way in which sampling was performed, and the data collection and analysis techniques. It will also deal with the piloting of the research, the limitations of the research, confidentiality, anonymity, validity and reliability, and the ethical considerations taken into account.

### 3.2 RESEARCH DESIGN

A research design is a plan of how the relevant data will be collected (Welman and Kruger, 2001:46) and analysed. Wagner, Kawulich and Garner (2013:21) argue that a research design is a plan of how a research project will be conducted. Wilson (2010:130) states that it serves as a guide to be followed through the research process. It can therefore be deduced that research designs are strategies and instruments used in pursuit of answers to research questions (Saunders, Lewis and Thornhill, 2012:118). A research design assists a researcher systematically to discover the "truth" about a subject, and thus to realise the objectives of the research. If it is good, the design assists the researcher to obtain more with less effort (Rugg and Petre, 2007:60). Creswell (2009:3) suggests that a research design is informed by the subject under investigation, the research audience, and the researcher's own personal experiences. It is important to acknowledge that different types of research designs are relevant to finding different truths. For instance, an exploratory research design may be appropriate if the researcher wants to gain insight into the nature of the problem (Ambe, 2012:167) whilst a descriptive research approach may be more suitable to describing people, situations or events (Khanyile, 2016:51).

**3.2.1.** Study design

After careful consideration of the various research tools that could have been utilized by the researcher to draw legitimate conclusions on the research topic, a case study design which is exploratory in nature was adopted in this research project, with the purpose of generating quantitative data, as discussed below.

**3.2.1.1** Case Study

According to Sekaran and Bougie (2009:30) a case study design involves the comprehensive and circumstantial investigation of events. Crowe *et al.* (2011:1) assert that a case study is likely to produce a comprehensive and multifaceted understanding of a complex subject in its real-life setting. Sekaran (2006:125), however, argues that it is useful in new theory generation, and that the new theory can thereafter be further tested. As has been noted SCM has been the focus of attention in both the public and the private sector establishments. Yet it has also been noted that not much academic research has been performed pertaining to public sector SCM. According to Sekaran and Bougie (2010:109) at times establishments are unwilling to disclose their specific problems. As a result, cases are commonly used as problem-solving techniques that could later be adapted to aid in the remedying of similar problems in other situations. As such, case study of the DOJ and CD has been used to discover in practice the level of success of a public sector SCM in comparison with what was projected in the literature survey. This is because of the fact that DoJ and CD was willing to take part of the study since the researcher in part of this establishment.

**3.2.1.2** Exploratory research

To explore is to learn more about a specific phenomenon. According to Kumar (2011:335) exploratory research designs are those undertaken when little is known about a phenomenon. Sekaran and Bougie (2009:103-104), however, contend that though an exploratory research approach is more common when little is known about a phenomenon as a result of its being under-researched, an exploratory approach could also be useful in excavating added information on a known phenomenon. The exploratory part of this research was aimed at the confirmation or rejection of assumptions and at gaining further, new and better insight into issues pertaining to SCM in the public service to date.

**4.2.1.3** Quantitative methodological approach

A methodology is desribed as quantitative when data is collected and analyzed through statistical methods (Wagner, Kawulich and Garner, 2013:161). Saunders, Lewis and Thornhill (2012:161) indicate that a quantitative research design is associated with numeric data. Maree (2007:145) adds that  objectivity, generalizability and numeric data are the three elements that most often characterize quantitative methodology.  In this research quantitative methods were employed to obtain and analyse data from the unit of analysis. Quantitative research relies on a positivist philosophy and engages in deductive theory testing (Saunders, Lewis and Thornhill, 2012:162). As this research attempts to establish how efficient and effective public sector SCs are, quantitative approach was chosen so that it would  provide a statistical ranking of the success or lack of success of SCM in the case studied with the prospect of establishing the causes of success or failure, and the possibility of proposing remedies where necessary to the SCM system in the DOJ and CD, that could be generalized to the South African public service as a whole.

**3.3 TARGET POPULATION**

Johnson and Christensen (2012:155) and Kumar (2011:65) define a research population as the entire group of subjects that the researcher has shown interest in, and from which he wishes to find the "truths" pertaining to the research phenomenon. These subjects or units should be relevant to the research. The researcher chooses a target population when designing research, based on who can provide the relevant data about a subject. Quinlan (2011:206) also notes that the researcher should take reasonable care in researching a population and should consider the practicability of conducting such research, considering the available temporal and financial resources. The unit of analysis (the target population) that was used in this research were DOJ and CD internal stakeholders situated in various offices located in the Province of KZN. These stakeholders are key beneficiaries to the SCM processes of the KZN region, and they also play a partial role as SCM practitioners at their respective offices. These elements were chosen as they fully understand SCM processes and would be the best subjects to rate the SCM system. This population consisted of approximately 232 individuals, as summarized in table 3.1 below. The population is located within 12 clusters of 79 offices in KZN Region. 79 offices were used

in the periphery of the entire population and therefore these were referred to as the population frame.

Table 3.1: Research population

| POSITION | NUMBER OF EMPLOYEES |
|---|---|
| Middle Management | 36 |
| Supervisory | 37 |
| Junior staff | 159 |
| Total | 232 |

**Source:** Researcher's own work.

## 3.4 SAMPLING TECHNIQUES

Unless the research project is a census of an entire population, sampling forms part of all research projects. A researcher selects certain subjects as "elements" to represent the entire population. In order to decide on a good sampling technique and the population size, the researcher needs adequate knowledge of the population and its location. According to Bryman and Bell (2011:176) a sample is a subgroup of a population. Neuman (2011:240) asserts that a sample is a small set of cases a researcher selects from a large pool in such a way that results can be generalized to the population. Sampling is a technique used to select an adequate number of subjects to participate in a research project (Sekaran, 2006:266).

A sample is commonly used in social science due to the fact that it is usually impractical to collect data from an entire population, as it is often too large (Quinlan, 2011:208). Often, also, there is limited time and limited financial resources (Saunders, Lewis and Thornhill, 2012:260). It has been noted that for new researchers it has always been a challenge to select a sample size (Sekaran and Bougie, 2009:268; David and Sutton, 2011:233). The confusion often arises as they think of the generalizability of their findings to the entire population. According to Wagner, Kawulich and Garner (2013:87), to enable generalisation of the results to the entire population, the charactersitics of the sample should equate to those of the population. David and Sutton (2011:226) also assert that as long as a sample is representative of the entire population the results can be generalized. Certain sections of the population should not be under- or over-represented (David and Sutton, 2011:227). Although a larger sample has been

reported to be more conducive to the generaliseability of results, this is not always the case (Matthews and Ross, 2010:162). In fact, a smaller sample size , *if selected with accuracy,* could be better representative than a bigger sample.  There are two broad categories of sampling methods that could be adopted by a researcher.  These are probability and non-probability sampling.  Non-probability sampling was the method adopted in this research, as is further discussed in point 3.8.2 below.

**3.4.1** Probability sampling

Probability sampling is the method of sampling in which all the subjects in a population have an equal chance of being selected to participate in a research project (Sekaran, 2006:269-270). Researchers' claim that the results derived from this form of sampling are generalizable to the entire population, as the entire population was represented (Quinlan, 2011:208). It uses a mathematical model to select a sample from the population (Quinlan, 2011:209). Bryman and Bell (2011:179) identify simple random sampling, systematic sampling, stratified sampling and cluster sampling as four types of probability sampling. In all the above types, a researcher has a complete list of the population.

**3.4.2** Non-probability sampling

In non-probability sampling the chances of each subject to be being included in the research are unknown (Wagner, Kawulich and Garner, 2013:92). Non-probability sampling mostly occurs when the total number or whereabouts of a population of interest is unknown or unstable. The researcher resorts to questioning those who s/he knows represents the population to be studied, those who are easy to find and those identified by other participants (Babbie and Mouton, 2001:166-167). This method is more cost-effective and convenient for a researcher (Wagner, Kawulich and Garner*,* 2013:92)*.*  The method may be risky and its findings may be difficult to generalize. Examples of non-probability sampling include convenient sampling, purposive sampling and snowball sampling (Bless, Higson-Smith and Sithole, 2013:172). Quota sampling is another type of non-probability sampling, but it differs from the above methods as it seeks for representativeness of the population (Babbie and Mouton, 2001:166), and it is different from probability sampling as it focuses only on representativeness in terms of gender and age (Bless, Higson-Smith and Sithole, 2013:172).

**3.4.3** Defining research sampling

In order to decide on the sampling technique, the study population ought to be understood by the researcher. There are 79 DoJ and CD "trading points" in KZN, excluding the Regional office. These include the Masters of High Courts, the office of the State Attorney, family advocates and lower courts. It was found that each trading point has at least two permanent staff members who serve as role-players in the SCM process headed by the KZN Regional office. Some have more staff, depending on the size and operation of the "trading point". The exact number of the SCM role-players in KZN was challenging to establish, as most of them were never appointed for SCM but inherited the function in different ways, and they change frequently. Thus, PERSAL could not be used for this purpose. The sample frame was thus head-counted by the researcher based on the information available in the Regional office at that time. The sampling method employed in this research was purposive (judgemental) sampling. Thus, the researcher chose respondents in various positions in areas (offices) which are typical units in the KZN Region, based on their size and operations.

According to Wagner, Kawulich and Garner (2013:93), researchers utilising this method select a sample that is regarded as representative, based on their own experience or previous researchers' findings. The sample here is thus based on the researcher's knowledge and opinions. David and Sutton (2011:232) believe that this is the best type of non-probability sampling, but the method has been challenged by Babbie and Mouton (2001:166) as non-generalizable to population, as it is alleged that it is not fully representative (Bless, Higson-Smith and Sithole, 2013:172). Bless, Higson-Smith and Sithole (2013:172) still maintain that if it is used by an expert person who is familiar with population of interest, it will have value.

**3.4.4** Sample nature and size

It should be noted that when a research project is planned, a decision has to be taken on the total number of subjects to participate in the research. This remains challenging for most research students and new researchers (Maree, 2007:178), since it is difficult to respond to the question "How big should a sample be?" (Bless, Higson-Smith and Sithole, 2013:174). According to David and Sutton (2011:233) a number of factors contribute to deciding the sample size. The factors could be statistical or based on practicalities. Maree (2007:178) maintains that the level of accuracy a research intends to achieve, the population diversity and

total quantity of variables for analysis are some of the factors that inform sample size. David and Sutton (2011:234) mention a clear research problem, population definition, and the availability of accurate sampling frame, a chosen probability sampling technique, anticipated non-response and bias in responses as some determinants of the size of a final sample. Wagner, Kawulich and Garner (2013:87) indicate that the research methodology adopted plays a major role in selecting the sample size. For instance, qualitative studies are more likely to select a smaller sample than quantitative studies. This is due to the fact that the descriptive processes of qualitative studies are likely to produce a great deal of data that may be very difficult to administer.

Nevertheless, a sample should never be too small to make it impractical to achieve data adequacy (Wagner, Kawulich and Garner, 2013:88). A sample needs to be big enough to allow a certain degree of confidence in the generalization of the results to the entire population (David and Sutton, 2011:235). The individuals sampled in this research project included all permanent staff that performs functions pertaining to fleet management, asset management, demand and acquisitions, as well as inventory management at various lower courts, the offices of the Master of the High Court, family advocates and state attorneys. The sample size of this research as shown in table 3.2 below:

**Table 3.2:** Sample size of the research

| Position | Number of sampled employees |
|---|---|
| Middle Management | 23 |
| Supervisory | 24 |
| Junior staff | 103 |
| **Sample total** | **150** |

**Source:** Researcher's own table.

## 3.5 PROCESS OF RECRUITMENT AND DATA COLLECTION

### 3.5.1 Recruitment process

Once the permission to conduct the research in the KZN DoJ and CD had been received (see Appendix A1), an email was circulated to all sampled employees of the Department a month before the research was undertaken, notifying them of the project (see Appendices A3 and A4)

and requesting their participation. They responded by completing and returning the informed consent form (see Appendix A5). The researcher also gave telephonic as well as verbal reminders as the research date approached. In addition, a poster was developed and placed on notice boards across "typical units" in the DOJ and CD in the KZN province as a means of stimulating interest (see Appendix A2).

**3.5.2** Data collection

Once it was known from which individuals the researcher intended to obtain data, the subsequent stage was to determine how such data would be obtained from such respondents (Sekaran and Bougie, 2009:126). According to Sekaran (2006:219) data may be collected either from primary or from secondary sources, utilizing various data collection methods (Sekaran and Bougie, 2009:184). Each has its own rewards and drawbacks (Welman and Kruger, 2001:127). Data is collected to measure a construct. Measurements can be defined as processes of quantifying events or phenomena (Wagner, Kawulich and Garner, 2013:74). According to Sekaran and Bougie (2009:126) to measure is to assign value to a subject in relation to predetermined set standards. Wagner, Kawulich and Garner (2013:74) acknowledge the challenge faced by social scientists of having to measure intangible items. They must find the most effective ways to measure these. Sekaran (2006:203-206) asserts that such tools must be reliable and valid, whilst Cooper and Schindler (2008:231) maintain that they must be practical.

According to Quinlan (2011:335) measurement validity relates to the level of relevancy or the applicability of the data collection method to achieve what it set out to achieve. Sekaran (2006:206) claims that in order to be reasonably confident that the instrument will measure what one intended to measure, content validity, and construct validity tests may be utilized to test measurement relevancy.

Reliability depends upon bias-free data collection (Sekaran, 2006:203). An instrument must be precise and accurate (Cooper and Schindler, 2008:231). Cooper and Schindler (2008:231) remark that issues like costs, convenience and interpretability (practicality) should be borne in mind when selecting a measuring instrument, and Sekaran and Bougie (2009:184) note that the use of a proper method is likely to increase the research value. Having examined different data

collection tools and having considered their strengths and weaknesses, this researcher opted for the the use of a questionnaire to gather primary data so as to draw conclusions about SCM.

**3.5.3** Questionnaires

Sekaran (2006:236) defines a questionnaire as a predesigned set of written questions to which subjects respond. Sekaran and Bougie (2009:197) argue that questionnaires are more useful when a researcher has a clear vision of what data are needed and how they will be measured. This researcher employed a postal or mailed questionnaire as the tool for data collection. This choice was made due to that the costs associated with this method are relatively small. This method is also convenient to both the researcher and participants because it is bias free. The researcher adopted both open-ended and closed-ended questions were asked. A 5-point Likert scale ranging from strongly disagrees to strongly agree was used to gather data.

The questionnaire was divided into six different sections marked A-F. Section A asked for the demographic information of the participants, section B was concerned with the participants' knowledge and understanding of SC management processes, sections C and D aimed to ascertain participants' views on SCM efficiency and effectiveness, and section E featured questions about the level of performance for each SC component, whilst section F consisted of open-ended questions. In the selection and compilation of the questionnaire, the researcher took account of the advantages and disadvantages of using questionnaires, as discussed below.

**3.5.3.1** Advantages of questionnaires

Data collection could be costly as a researcher might have to invest time and money in travelling from one area to the next, especially when the respondents are located in geographically dispersed areas. However, according to Sekaran (2006:257), the use of questionnaires makes data collection relatively cheap, as questionnaires can be mailed to all respondents with a single "click" of a computer tab, and dissemination can be achieved economically and in a way that also results in time saving in respect of administration (Bryman Bell, 2011:232). In addition, respondents have the freedom to respond honestly without feeling that they have to please the researcher. This method is thus bias free. It is convenient for respondents as they can answer the questions in their own time. Over and above this, anonymity

is assured due to the absence of face-to-face interaction between the researcher and the participant.

### 3.5.3.2 Disadvantages of questionnaires

One of the disadvantages arising from using questionnaires is that the researcher is not present to clarify questions where respondents are uncertain about them. Similarly, the researcher cannot ask the respondents to elaborate on their answers (Bryman and Bell, 2011:233). There is a practical restriction on the total number of questions that can be asked and on the kinds of questions that can be asked due to the fact that the respondents may be reluctant to write much (Saunders, Lewis and Thornhill, 2012:233) and may find the process of answering the questions boring. The use of a questionnaire is usually characterized by a low response rate, and even with responses received the researcher can never be certain that these were answered by the correct person (Bryman and Bell, 2011:233; Saunders, Lewis and Thornhill, 2012: 233).

## 3.6 DATA ANALYSIS

The term analysis can be defined as breaking down a multifaceted whole into small parts. In research conclusions are drawn based on the data collected and analysed. Data analysis is thus a conversion of raw data into meaningful information about a phenomenon. This view is supported by Khanyile (2016:59) where he argues that data analysis relates to the processing of collected data into usable information. Data analysis entails the researcher's examining, sorting, selecting and organising the data that were collected in order to gain insight into the research problem (Du Plooy-Cilliers, Davis and Bezuidenhoud, 2014:228).

### 3.6.1 Data analysis and interpretation

The main aim of a research project is to establish the truth about a phenomenon. Empirical research can generate a huge volume of data (Lancaster, 2005:155). Such data would usually make no sense to a reader. It requires a researcher to sift the data to establish its meaning, and to discard that which cannot be used in the research (Lancaster, 2005:155). This process is referred to as editing. Following this, the data must be decoded into computer language. In this research project the responses to the closed-ended questions were coded using numbers ranging from one to five. It can be deduced from the above that data analysis actually condenses large

amounts of data into manageable sets that can be used to draw conclusions about a subject (Nel, 2010:265). Truths can therefore be recognised only once fieldwork has been concluded and the data obtained have been analysed and interpreted. This marks a crucial stage in the research. The data analysis either confirms or rejects a researcher's hypothesis. According to the above author the choice of a type of data analysis is dependent on the nature of the data collection tool utilized by the researcher as well as on how the findings are to be used. In this research project the Statistical Package for the Social Sciences (SPSS) software was used to analyse data sets. The main aim of this was to obtain sufficient distribution of data. Volumes of such data were carefully examined to establish emerging themes and concepts. Words and sentences related to each theme were identified and coded for the purposes of further analysis. The quantitative data were used to ascertain the respondents' opinions of the current level of SCM efficiency and effectiveness within the public sector, whilst the descriptive data aided the researcher in obtaining an understanding of the underlying issues that impact on the current performance of SCM.

## 3.7 PRE-TESTING OF THE MEASURING INSTRUMENT

Khanyile (2016:58) states that despite all the caution taken by a researcher in designing a data collection tool, there is at least a small possibility of error. Errors in a data collection tool are flaws such as asking questions that are vague or using too much jargon. To obviate these errors, the data collection instrument should be tested before it is distributed to potential respondents (Babbie and Mouton, 2001:244-245). Therefore, pre-testing is about error detection and eradication. According to Kumar (2011:31) it aids in the development, refinement and eventual viability of the measuring tool. Cargan (2007:30) asserts that pre-testing provides some assurance of the validity of the questions asked and enhances the likelihood of the reliability of the data collected. The questionnaire in this research was piloted to twenty employees at the KZN Regional office to ensure the validity and reliability of all the questions. No major shortcomings were identified.

## 3.8 LIMITATIONS OF THE RESEARCH

Limitations are constraints that could negatively impact on the research (Du Plooy-Cilliers, Davis and Bezuidenhoud, 2014:275). These include issues such as a lack of time or resources or financial capability or access to information. This research encountered a delay in the receipt

of responses from the participants. Moreover, some respondents chose not to answer some of the open-ended questions, which therefore made it impossible to validate their responses to the closed-ended questions. As a result, some questionnaires had to be discarded. Again, the research was confined to the DoJ and CD in the KZN Region.

## 3.9 ANONYMITY AND CONFIDENTIALITY

All research projects must achieve some degree of confidentiality and anonymity, as discussed below.

### 3.9.1 Anonymity

Babbie and Mouton (2001:523) define anonymity as being secure when a response cannot be linked to a specific participant. Bless, Higson-Smith and Sithole (2013:32) add that data should not easily be linked to individual identity. Therefore anonymity is concerned with the protection of a participant's interests (Babbie and Mouton, 2001:523). This researcher ensured that the questionnaires distributed did not ask for personal details. All of the completed questionnaires received were alpha-numerically coded, which prevented their being directly linked to specific respondents. The information will be kept safe and will be destroyed in five years time. Code labels such as J1, J2 etc. were used to identify the responses from junior staff; S1, S2 etc. were utilized for supervisory personnel, whilst M1, M2 etc. were allocated to responses from members of the management.

### 3.9.2 Confidentiality

Du Plooy-Cilliers, Davis and Bezuidenhoud (2014:267-268) say that confidentiality is obseved when a respondent's details are known to the researcher but are not made available to anyone else. For instance, during the performance of this research the personal details of many respondents were known to the researcher as they were received via the incoming mail, but the researcher maintained confidentiality by not disclosing such information to anyone.

## 3.10 VALIDITY AND RELIABILTY

As a researcher journeys in search of truths about a phenomenon, issues of validity and reliability come to the fore. Validity and reliability should already be thought of when designing a research project. The discussion below of validity and reliability focuses on the data collection procedures or instruments.

### 3.10.1 Validity

Validity is about "whether or not indicators devised to gauge a concept really measures the concept" (Bryman and Bell, 2011:159). According to Du Plooy-Cilliers, Davis and Bezuidenhoud (2014:256) validity is concerned with the reality of the results of the measured constructs. It can therefore be concluded that validity is concerned with the results obtained when utilising a chosen instrument to investigate a research problem; i.e. to what degree was a research problem answered when a specific instrument was utilized. The better the research question was answered, the more valid the research procedure and the research instrument were.

### 3.10.2 Reliability

Reliability is associated with trustworthiness of a measuring tool. According to Maree (2007:215) a measure is reliable if the findings it produces remain alike when it is used more than once and at different times with similar populations. Reliability determines an instrument's repeatability and consistency (Maree, 2007:215), which in turn defines the credibility of the research findngs (Du Plooy-Cilliers, Davis and Bezuidenhoud, 2014:254). Sekaran (2006:203) describes reliability as being associated with being error free. He contends that reliability is actually a measure of the "goodness" of a measuring tool.

According to Wagner, Kawulich and Garner (2013:81), a lack of reliability is a threat to research similar to a lack of validity. They make mention of issues like the health, the mood, the accuracy of the memory and the physical condition of the respondents as factors contributing to reliability. Kumar (2011:169) adds that the wording of questions, the nature of the interaction, the regression effect of the instrument, and the mood of both the researcher and the respondents impact on reliability. Wagner, Kawulich and Garner (2013:81), however,

assert that for researchers to ensure that they obtain results that are as reliable as possible, the researcher must apply rigour in the design and implementation of the measuring tool.

The validity and reliability of this research were ensured through the use of clear and precise questions that emanated from trends and suggestions found in the liturature. The questionnaire itself was structured and arranged in an progresive and ordely manner to allow for ease of understanding of the questions and the flow of responses. Moreover the researcher utilized language that the SCM roleplayers use on a day-to-day basis to enable proper answers. The questionnaire provided an opportunity for the respondents to agree or to disagree with the statements made, using responses that ranged from strongly disagree to strongly agree. It also allowed for emerging theories to be established, as it included some open-ended questions in response to which respondents could express their views on the causes and effects of whatever problems they perceived in the existing SCM, and to suggest remedies for the problems.

## 3.11 ETHICAL CONSIDERATIONS

Ethics comes from Greek word "ethos" which means one's character. Ethics are set standards for operating norms that guide one's actions (Cooper and Schindler, 2008:116). Babbie and Mouton (2001:520) assert that ethics emanates as a result of our interaction either with other people, with other beings or with the environment. In social research, a researcher is bound to relate with one or more of the above, and thus a need for ethics arises. In fact, the observance of ethical standards provides reasonable assurance against causing harm to any of the participants in the research (Buchanan, 2004:38). Du Plooy-Cilliers, Davis and Bezuidenhoud (2014:264-272) categorize ethical issues in research as those that affect participants as well as those that are associated with "falsifying" data analysis and with misrepresenting data. The ethical issues that were considered in this research included the following:

**3.11.1.** Informed consent and voluntary participation

Du Plooy-Cilliers, Davis and Bezuidenhoud (2014:264) state that informed consent is associated with making the participants in a research project aware of their involvement in it. In this particular project, authority to conduct the research was first obtained from the head office of the KZN DOJ and CD (see Appendix A1). The participants were thereafter notified in writing of their nomination to participate, per letter of information (Appendix A4) and were

requested to sign an informed consent letter (Appendix A5) as an indication of their acknowledgement of voluntary participation, as required by the Institutional Research Ethics Committee (IREC) of the Durban University of Technology (DUT). The information letter alluded to issues such as the duties and rights of participants as well as the risks and benefits involved in the research (Bless, Higson-Smith and Sithole, 2013:32). In addition, the researcher behaved with honesty and integrity throughout the performance of the project; the data were processed as received, without any manipulation. Anonymity and confidentiality, as discussed in point 3.9 above, were also observed in this research.

## 3.12 SUMMARY OF THE CHAPTER

This chapter has provided details of the methods adopted in the collection and analysis of the research data. The theories and concepts relative to the techniques chosen were discussed, including some of their benefits and shortcomings of the methods chosen. An account was given of how the shortcomings were to be remedied to allow for the valid and reliable attainment of the research objectives. The research took the form of a case study, with a focus on a single institution. A quantitative methodological approach involving the asking of both closed-ended and open-ended questions was used to obtain data from the subjects who were selected for participation using purposive sampling from the population of SCM role-players across all parts of the DoJ and CD in KZN. A questionnaire was used as the data collection tool, and thereafter the data collected were analysed and interpreted using SPSS. Various ethical issues such as informed consent, anonymity and confidentiality were observed during and after the performance of the research.

# CHAPTER FOUR

# DISCUSSION OF RESULTS OF THE EMPIRICAL STUDY

## 4.1 INTRODUCTION

The preceding chapter discussed at length the methodology that was applied in collecting data. This chapter presents the outcomes, discusses and interprets the data. The primary objective of this research was to assess the efficiency and effectiveness of SCM in the public sector. Thus, this chapter focuses on the presentation of the data through a 5-point Likert-scale questionnaire that was distributed to employees of the DoJ and CD in KZN. The employees were the target population from the DoJ and CD, a public organization in the Province of KZN of SA.

In total 150 employees were sampled from various offices in the organization, 129 responses were received back despite several written reminders per notice boards. 21 selected individuals opted not to participate. To ensure that the research instrument was free of errors, the questionnaire was piloted prior to distribution. For the findings to be credible, SPSS version 15 for Windows was applied to analyse the raw data received from the participants. This was quantitative research, so the data were analysed by means of descriptive statistics. The relationships among variables were established through running statistical tests. The results are therefore presented in various tables and figures.

## 4.2 RESPONSE RATE

Table 4.1 demonstrates the targeted sample per population group against the actual responses received, including the percentages thereof.

**Table 4.1: Response rate**

|  | Target | Frequency | Per cent |
|---|---|---|---|
| Middle management and above | 23 | 19 | 83% |
| Supervisor | 24 | 16 | 66% |
| Junior staff | 103 | 94 | 91% |
| Overall total | 150 | 129 | 86 % |

The respondents consisted of administrative clerks, chief administrative clerks, administrative officers, senior administrative officers and managers. In total 150 questionnaires were distributed amongst the respondents and 129 usable were returned, amounting to an acceptable response rate of 86%.

## 4.3 RESEARCH OBJECTIVES

The research objectives were as follows:

- To examine the SCM processes in the DoJ and CD in the KZN Region.
- To determine the level of customer satisfaction as a result of the introduction of SCM in the DoJ and CD in the KZN Region.
- To understand the SCM challenges that inhibits efficient and effective service delivery in the organization under study.
- To establish what promotes SCM efficiency and effectiveness in the organization under study.
- To make recommendations to improve the SCM processes and services in the organization under study.

## 4.4 RELIABILITY STATISTICS

The twin concepts of reliability and validity are the most significant aspects of a research process. Reliability is ascertained by computing several measurements on similar subjects. According to Welman, Kruger and Huysamen (2005:145), the various checks in terms of consistency can be put to use in order to determine if a measurement tool is reliable. The Cronbach's Coefficient alpha is the instrument that is applied to conduct these checks on the measuring instrument. A coefficient alpha of 0.70 or more is considered "acceptable" (Pederson, Andrew and McEvoy, 2011:49). Table 4.1 on the next page depicts the Cronbach's Coefficient alpha value for all the items that formed part of the questionnaire.

**Table 4.2: Cronbach's coefficient alpha**

| Cronbach's Alpha | N of Items |
|---|---|
| .850 | 32 |
| n | |

From table 4.2 above, it is clear that the overall reliability of measurement is more than the Cronbach's Coefficient alpha value of 0.70 as recommended. This is an indication that all the 32 items contained in the questionnaire are credible. Also, it is a sign of consistent measurement values for all the different items in every section of the questionnaire. Thus, each section has increasingly high values of reliability. Simply put, each of the constructs applied in the sections is of high relevance to determining the efficiency and effectiveness of SCM in the organization under study.

## 4.5 SECTION A: BIOGRAPHICAL DATA

- **Descriptive statistics**

The biographic information of the participants includes their gender composition, age group, highest level of education, number of years in SCM, and race. Throughout this section a brief description of the data is presented either in the form of a table or of a figure.

**4.5.1** Gender composition of participants

- **Purpose of the question**

The main purpose of question A1, Section A, as stated in the questionnaire (see Appendix A6) was to determine the split in the SCM role-players between the male and female respondents.

- **Results obtained**

Figure 4.1 below illustrates the gender composition of the participants in the study.

**Figure 4.1: Gender composition**
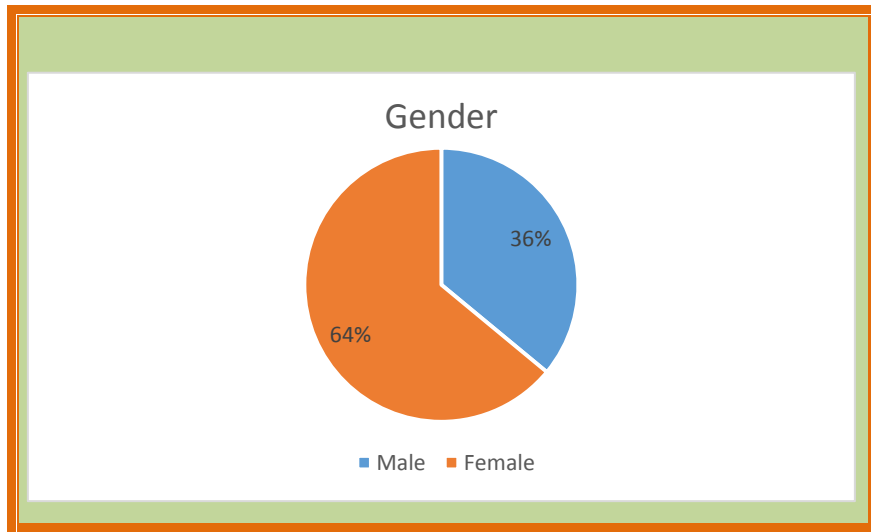


It can be seen in figure 4.1 above that (n=83; 64.3%) of those who participated in the research were females. Out of the 129 respondents, only (n=46; 35.7%) were male. This reflects the fact that the group of participants was dominated by females, as is the research population as a whole.

**4.5.2** Age group

- **Purpose of the question**

Question A2 of section A of the questionnaire (see Appendix A6) was designed to determine the extent to which participants' age impacts on their views on the efficiency and effectiveness of SCM in the KZN DoJ and CD.

- **Results obtained**

The age composition of the participants is reflected in figure 4.3.

**Figure 4.2: Age composition of participants**
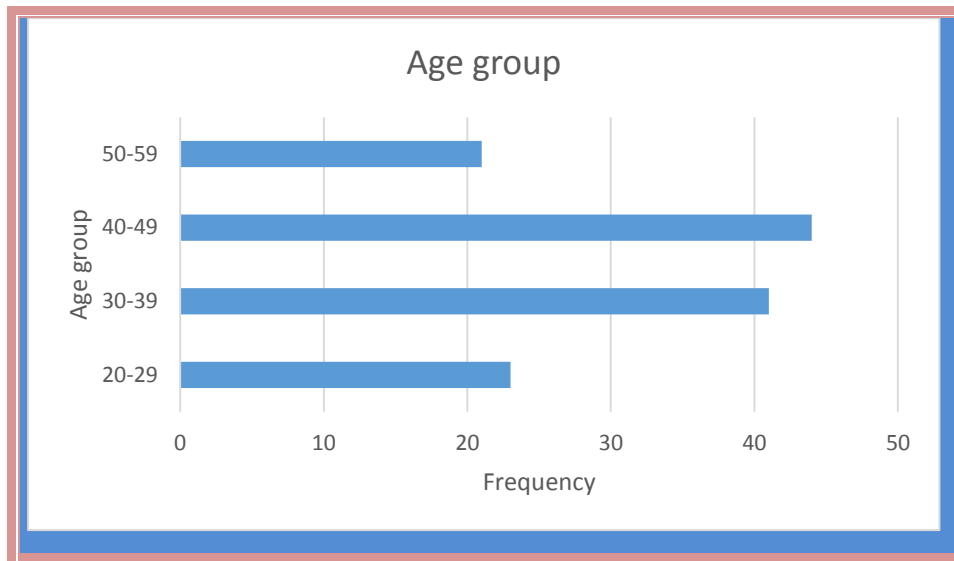


The greatest number (n=44; 34%) of the participants were in the age group 40-49 years. The next greatest number (n=41; 31.89%) was in the age group 30-39 years. The least represented age groups were 50-59 with only (n=23; 16.3%) members and 20-29, with only (n=21; 17.8%) members. It may be concluded that the majority of the SCM role players in the DoJ and CD in KZN are fairly mature people who are likely to have adequate understanding of and knowledge about the DoJ and CD, including SCM in the Department.

**4.5.3** Highest level of education

- **Purpose of the question**

Question A3 of section A of the questionnaire (see appendix A6) was structured to determine the impact of their level of education on the participants' views of the efficiency and effectiveness of SCM in the KZN DoJ and CD.

- **Results obtained**

The levels of education of the participants who provided data are stated in table 4.3 below.

**Figure 4.3: Highest level of education**
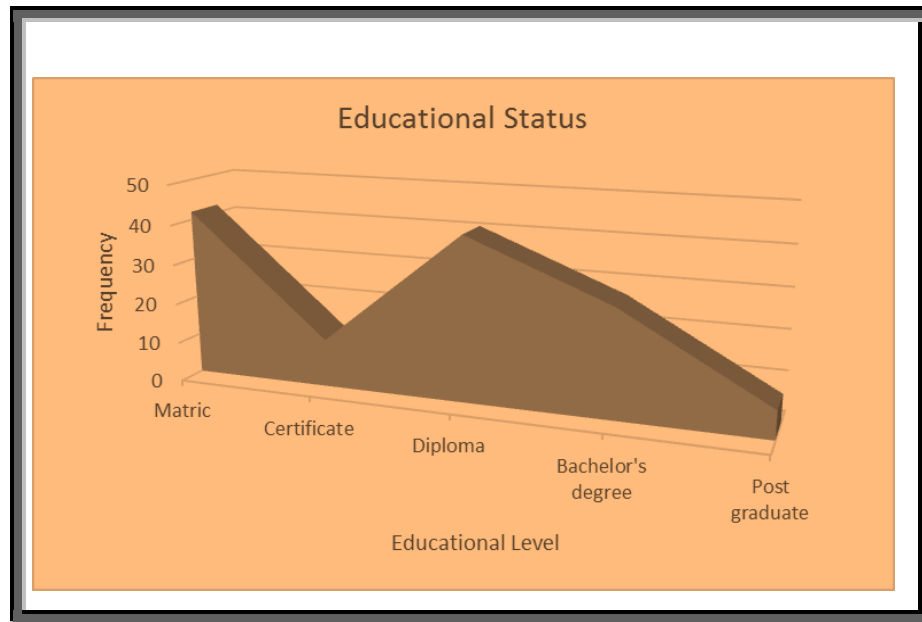


Figure 4.3 above shows that the biggest group (n=42; 33%) of the participants had matriculation as their highest level of education. The second largest group of (n=41; 32%) held a diploma, whilst holders of a postgraduate qualification were the least represented (n=7; 5%) of the group of participants. This could be an indication that the minimum entry requirement in the DoJ and CD is set at a matric level. Then again, for a managerial appointment one probably needs a National Diploma. It could also be that the establishment does not encourage its employees to improve their educational status.

**4.5.4** Race classification of the participants

- **Purpose of the question**

Question A4 of section A of the questionnaire (refer to Appendix A6) was designed to determine the extent to which the race of participants impacted on their views on the efficiency and effectiveness of SCM in the DoJ and CD in KZN.

- **Results obtained**

Figure 4.4 below presents the race classifications of the participants who responded to the research instrument.

**Figure 4.4: Race classification of respondents**
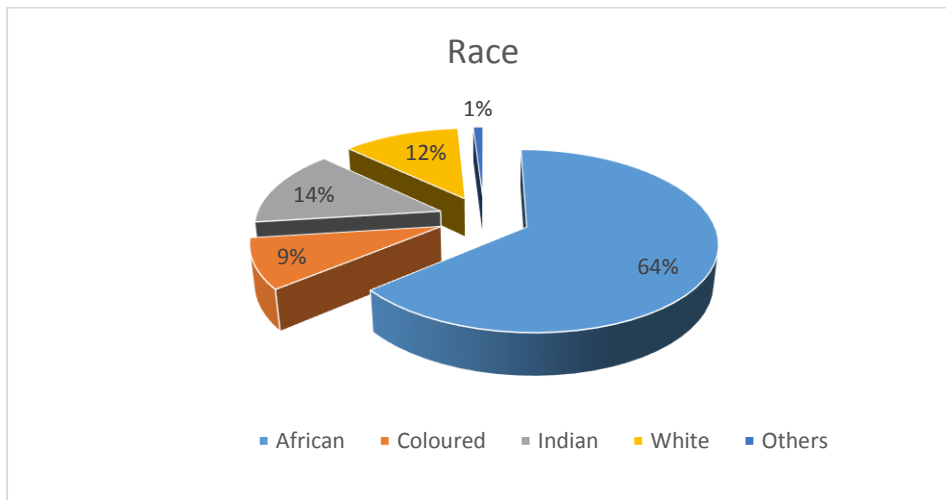


- **Analysis of results**

The majority (n=84; 65.1%) of the participants were Africans, while (n=18; 14%) were Indians. (N=15; 11.6%) were from the white population, and there were (n=11; 8.5%) coloureds. Only (n=1; 0.8%) participant was of another race.

**4.5.5** Number of years in SCM

- **Purpose of the question**

Question A6 of section A of the questionnaire (see Appendix A6) was to determine how long the participants had worked in the SCM.

- **Results obtained**

Figure 4.5 illustrates the number of years for which the participants had worked as role-players in SCM in the DoJ and CD.

**Figure 4.5: Participants' years of experience in SCM**
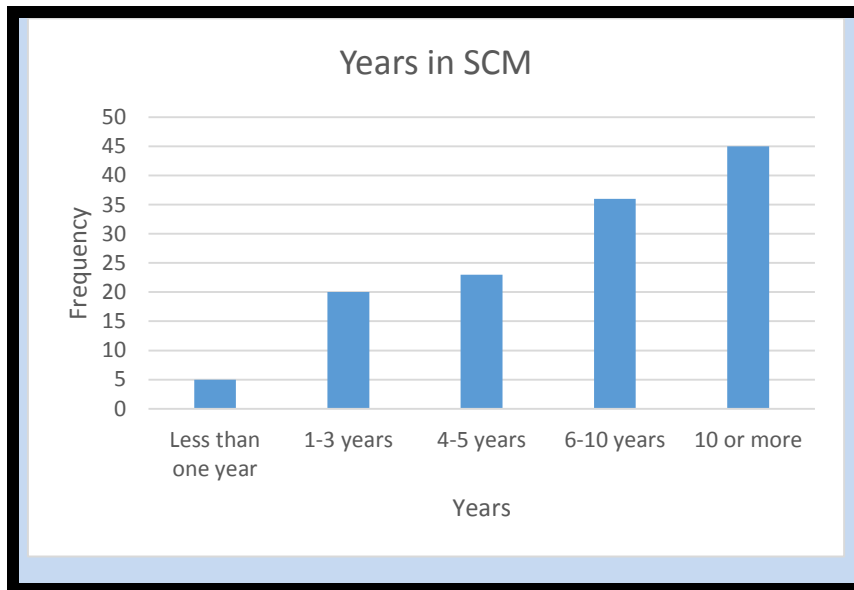


- **Analysis of results**

The largest group (n=45; 34.9%) of the participants had been employed in SCM for more than 10 years. This was followed by (n=36; 27%) and (n=23; 17.8%) participants who had worked as SCM role-players for 6-10 years and 4-5 years respectively. The least number of participants (n=5; 4%) had been employed in SCM for less than a year. Table 4.5 suggests that since more than half (n=81; 62.8%) of the participants had been working in SCM for a reasonable period of six years and more, quality responses would be received from them, and this would enhance the validity and reliability of the research outcomes.

**4.5.6** Descriptive statistics on the participants' position at the DoJ and CD in KZN

This section illustrates and analyses the research results regarding the participants' positions in the organization under study. This includes the position occupied by the participants at the time of this research. Through this analysis, information on the different levels of management was obtained, enabling the determination of the participants' roles relating to SCM.

- **Purpose of the question**

Question A6 of section A of the questionnaire (see appendix A6) was to determine participants' positions in the organization in order to know the individual SCM activities within the DoJ and CD in KZN.

- **Results obtained**

Figure 4.6 below depicts the positions held by the participants in the organization in terms of their SCM functions.

**Figure 4.6: Positions of participants**
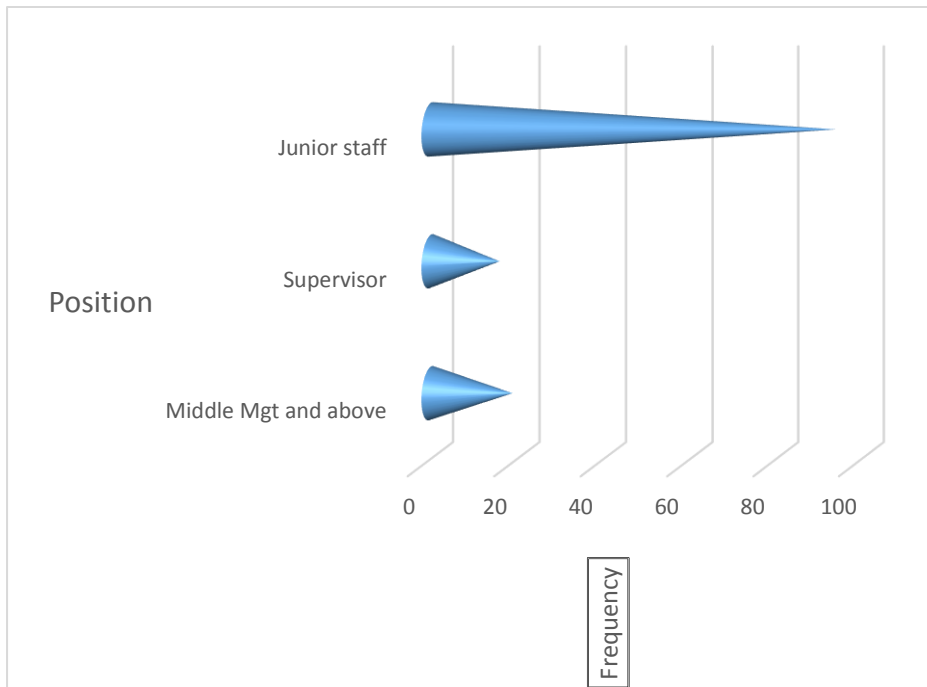


- **Analysis of results**

The majority (n=94; 73%) of the participants held junior positions. This was followed by middle managers, of whom there were (n=19; 15%). The least represented group (n=16; 12.4%) were in supervisory positions. This is in line with the researcher's plan to achieve adequate representation of the three groups of the population (See Table 3.1 and Table 3.2).

**4.6 SECTION B: UNDERSTANDING OF SCM**

- **Descriptive statistics**

Section B focuses on 7 items that were used to measure the participants' viewpoints on the processes and structure of SCM in the DoJ and CD in KZN. The average or the mean and standard deviation were applied to all the 7 items to measure the participants' responses.

- **Purpose of the question**

Questions B1 to B7 of section B, as stated in the questionnaire (see Appendix A6), were used to understand nature of SCM and its support structures in the DoJ and CD in KZN.

**Table 4.3: Understanding of SCM**

| Understanding of the supply chain management system | | Frequency Distribution | | | | |
|---|---|---|---|---|---|---|
| | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| B1. SCM came at a much desired time | Count | 0 | 4 | 21 | 54 | 50 |
| | % | 0% | 3.1% | 16.3% | 41.9% | 38.8% |
| B2. SC is well understood | Count | 6 | 26 | 14 | 75 | 8 |
| | % | 4.7% | 20.1% | 10.9% | 58.1% | 6.2% |
| B3. SCM is well implemented | Count | 8 | 33 | 21 | 61 | 6 |
| | % | 6.2% | 25.6% | 16.3% | 47.3% | 4.7% |
| B4. SCM has adequate human capital | Count | 21 | 44 | 20 | 37 | 7 |
| | % | 16.3% | 34.1% | 15.5% | 28.7% | 5.4% |
| B5. The role-players in SCM are adequately trained | Count | 16 | 65 | 24 | 19 | 5 |
| | % | 12.4% | 50.4% | 18.6% | 14.7% | 3.9% |
| B6. The role-players in the process have adequate knowledge | Count | 3 | 38 | 45 | 36 | 7 |
| | % | 2.3% | 29.5% | 34.9% | 27.9% | 5.4% |
| B7. SCM has positive outcomes | Count | 0 | 18 | 51 | 50 | 10 |
| | % | 0% | 14% | 39.5% | 38.8% | 7.8% |

- **Results obtained**

Table 4.2 above illustrates the participants' responses on each of the 7 items used to measure their opinions of the nature and structure of the SCM processes in the organization under study.

- **Frequency of tables**

Table 4.3 above depicts the participants' responses in relation to the SCM system and its support structures. This section focuses on the how the participants viewed the SCM system in the DoJ and CD. The results thus far indicate that out of 129 participants (n=104; 80.7%) responded positively to the statement that SCM was introduced into the systems of the DoJ and CD at the right time (statement B1). Responding to the same statement, (n=2; 16.3%) of the participants were neutral, while (n=4; 3.1%) disagreed. Furthermore, (n=83; 64.3%) of the participants stated that SCM was well understood in the organization (statement B2). Only (n=32; 24.8%) disagreed with this statement.  Only (n=14; 10.9%) of the participants were unsure.

In relation to SCM implementation (statement B3), (n=61; 47.3%) were confident (agreed to the statement) that the SCM system was being well implemented in the DoJ and CD. Similarly, (n=6; 4.7%) strongly supported the same statement. This is in contrast to Dlova and Nzewu's (2014:5) assentation that public sector organizations fail to implement SCM properly. However, (n=33; 25.6%) of the participants disagreed with the statement, (n=8; 6.2%) of the participants disagreed strongly, and (n=21; 16.3%) were unsure.

According to table 4.3 only (n=37; 28.7%) agreed to the statement that there is adequate human capital in the organization (statement 4). Only (n=7; 5.4%) strongly agreed, (n=21; 16.3%) strongly disagreed while almost half (n=44; 34.1%) disagreed with the statement. This finding is in line with the findings of Fourie and Poggenpoel (2016: 6) that there is a capacity deficiency in the public sector.  This manpower deficiency, according to Husby (2007:53), is a constraint, which according to Ainapur, Singh and Vittar (2012:99) hinders the attainment of organizational goals. The major concern, however, is not the limited human resources. It is whether the DoJ and CD is aware of this constraint or limitation. If so, it is necessary to ask if they have effective measures in place to maximise their capacity through interventions like

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subordination, increasing aptitude and continuous system improvement. Again, this finding suggests a weakness in the SCD of the DoJ and CD. It appears that the Department's resources are not positioned well enough to attain the desired output over time, as suggested by Melnyk, Narasimhan and DeCampos (2014:1889). According to Narasimhan and DeCampos (2014:1889), during SCD an organization must make strategic decisions to align its resources and processes in such a way as to attain the desired output level over time. Table 4.3 tells us that only (n=19; 14.7%) participants stated that the SCM role-players were adequately trained. The same view was taken by (n=5; 3.9%) of the participants, who strongly agreed to the statement. However, slightly more than half of the participants (n=65; 50.4%) disagreed that sufficient training was provided (statement B5). This view was supported by (n=16; 12.4%) participants, who strongly disagreed that they had received adequate training. This finding too is a worrying factor, because according to Nkwanyana (2017:9) it is through training that the skills and competencies of employees can be promoted. Moreover, transforming the attitudes and behaviours of employees increases their capacity to work towards the realisation of organizational goals (Obi-Anikwe and Ekwe, 2014:68). It is clear that the DoJ and CD does not embrace the principles of RBT, which suggests that abilities of the human resources should be enhanced in the interest of achieving SCA.

This explains why (n=45; (34.9%) of the participants were uncertain if the role-players possess sufficient knowledge to carry out their tasks, while (n=41; 31.8%) believed that they had insufficient knowledge. On the other hand, (n=43; 33.3%) were confident (agreed and strongly agreed) that the role-players have sufficient knowledge. It is evident that the limited knowledge they have exists purely by "default", as a product of the reasonable amount of time that the majority of them (n=81; 61.9%) have spent in their positions. Nonetheless, a relatively reasonable number of participants (n=60; 46.6%) maintained that SCM has resulted in a remarkable positive outcome in relation to public service delivery, with a note of warning, however, in the fact that (n=51; 39.5%) of the participants were unsure of this, and (n=18; 14%) disagreed with this statement.

## 4.7 SECTION C: EFFICIENCY OF SCM

Section C focuses on and provides analysis of 6 items that were used to measure the participants' viewpoints on SCM's contribution to good governance, which in turn leads to efficiency.

- **Purpose of the question**

Questions C1 to C6 of section C, as stated in the questionnaire (see Appendix A6) were used to test if the SCM processes as adopted by the DoJ and CD contribute to the promotion of good governance.

- **Results obtained**

Table 4.4 below illustrate the participants' responses to each of the six items used to measure their viewpoints on the SCM processes in relations to good governance in the organization under study.

**Table 4.4: Efficiency of SCM**

| Efficiency of the Supply Chain Management System | | Frequency Distribution | | | | |
|---|---|---|---|---|---|---|
| | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| C1. SCM led to transparency | Count | 1 | 8 | 11 | 68 | 41 |
| | % | 0.8% | 6.2% | 8.5% | 52.7% | 31.8% |
| C2. SCM led to improved user consultation | Count | 0 | 15 | 22 | 61 | 31 |
| | % | 0% | 11.6% | 17.1% | 47.3% | 24% |
| C3. End-user participation | Count | 3 | 11 | 23 | 59 | 33 |
| | % | 2.3% | 8.5% | 17.8% | 45.7% | 25.6% |
| C4. SCM led to accountability | Count | 0 | 4 | 13 | 72 | 40 |
| | % | 0% | 3.1% | 10.1% | 55.8% | 31% |
| C5. SCM led to conformance to laws | Count | 0 | 6 | 13 | 73 | 37 |
| | % | 0% | 4.7% | 10.1% | 56.6% | 28.7% |
| C6. SCM responsiveness led to satisfaction of customer needs | Count | 1 | 11 | 18 | 83 | 16 |
| | % | 0.8% | 8.5% | 14% | 64.3% | 12.4% |

- **Frequency of tables**

A large number of participants (n=109; 84.5%) either strongly agreed or agreed with the statement that SCM resulted to transparency (statement C1). Only (n=1; 0.8%) was not in agreement with the statement, but (n=8; 6.2%) of the participants stated that SCM does not

lead to transparency in the DoJ and CD. It can be concluded, however, that SCM in the DoJ and CD is characterized by a high level of transparency and therefore is dissociated from the public sector transparency disorder reported in Poggenpoel (2016: 6). Instead, it complies with the basic requirements of the *Constitution of Republic of South Africa Act No. 108 of 1996,* the *Preferential Procurement Policy Framework Act No. 5 of 2000 (PPPFA),* and the *Broad-Based Black Economic Empowerment Act No. 53 of 2000 (BBBEEA),* which prescribes that SCM must be characterized by transparency, amongst other principles. According to Table 4.4, (n=92; 71.3%) of the participants believed that SCM led to improvement in user consultation (statement C2). In this regard only (n=15; 11.6%) disagreed, while (n=22; 17.1%) were neutral. Table 4.4 also shows that (n=59; 45.7%) agreed that SCM has led to better end-user participation. In addition, (n=33; 25.6%) of the participants strongly disagreed with the statement.

It is evident in Table 4.4 that SCM has resulted in conformity with the relevant laws, and in enhancing accountability (statement C4 and statement C5). (N=112; 86.8%) of the respondents thought that SCM has led to accountability, while (n=110; 85.3%) supported the statement that SCM resulted to policy conformity. Only a minority (n=4; 3.1%) of the participants were not in support of statement C4, while (n=13; 10.1%) were uncertain. Again only (n=6; 4.7%) of the participants disagreed with the statement that the introduction of SCM had enhanced conformity with the law, while (n=13; 10.1%) were unsure. It can be concluded, therefore, that the latter has thus rectified some of the shortcomings of previous purchasing models, namely a lack of accountability and non-adherence to the legal framework, which amount to regulatory flaws (Ambe and Badenhorst-Weiss, 2012:242-243; De Lange, 2011; Stemele, 2009:68). These findings contradict those of Migiro and Ambe (2008:236) and Tshamaano (2012: 48-51), who claim that there is still non-adherence to law and a lack of accountability in this new purchasing model.

Table 4.4 further illustrates that (n=83; 64.3%) of the respondents were of the view that the adoption of SCM had resulted in responsiveness to customer needs (statement C6). Similar views were expressed by another (n=16; 12.4%) of the participants, while (n=18; 14%) of them disagreed. These results suggest that the existing SCM strategy of the DoJ and CD has been successful in promoting responsiveness to end-customer needs. It can therefore be concluded that SCM in the DoJ and CD has achieved one of its goal, the elevation of principles of good governance.

## 4.8 SECTION D: EFFECTIVENESS OF SCM

Section D focuses on and provides an analysis of seven items that were used to measure the participants' viewpoints on service delivery outcomes as well as their satisfaction regarding the SCM system.

- **Purpose of the question**

Questions D1 to D7 of section D, as stated in the questionnaire (see Appendix A6), were used to establish the impact of SCM on service delivery as well as end-users' level of satisfaction in this regard.

**Table 4.5: Effectiveness of SCM**

| Effectiveness of the Supply Chain Management System | | Frequency Distribution | | | | |
|---|---|---|---|---|---|---|
| | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| D1. Improvement in relevance | Count | 0 | 5 | 12 | 90 | 22 |
| | % | 0% | 3.9% | 9.3% | 69.8% | 17.1% |
| D2. Improved quality | Count | 1 | 6 | 13 | 94 | 15 |
| | % | 0.8% | 4.7% | 10.1% | 72.9% | 11.6% |
| D3. Timely delivery | Count | 2 | 13 | 24 | 71 | 19 |
| | % | 1.6% | 10.1% | 18.6% | 55% | 14.7% |
| D4. Goods and services are rendered to the correct people | Count | 0 | 0 | 18 | 81 | 30 |
| | % | 0% | 0% | 14% | 62.8% | 23.2% |
| D5. Trust | Count | 0 | 22 | 40 | 58 | 9 |
| | % | 0% | 17% | 31% | 45% | 7% |
| D6. Performing well | Count | 0 | 53 | 32 | 37 | 7 |
| | % | 0% | 41.1% | 24.8% | 28.7% | 5.4% |
| D7. Remain with the current SCM system | Count | 6 | 6 | 24 | 37 | 56 |
| | % | 4.7% | 4.7% | 18.6% | 28.7% | 43.3% |

- **Results obtained**

Table 4.5 above illustrates the participants' responses to each of the seven items used to measure the impact of SCM on service delivery in the organization under study.

Table 4.5 above illustrates that (n=90; 69.8%) and (n=22; 17.1%) of the participants strongly agreed and agreed to the statement that relevant goods and services are now received as a result of SCM. Only (n=5; 3.9%) and (n=12; 9.3%) were in disagreement or uncertain, respectively. The majority (n=94; 72.9%) of the participants agreed to the statement that with SCM's introduction the quality of goods and services received had improved (statement D2). Table 4.5 also shows that (n=15; 11.6%) supported the view that the quality of goods and services had improved as a result of the introduction of SCM, thus improving the operational effectiveness of this organization (Lichocick and Sadowscki, 2013:122-123). (N=6; 4.7%) of the participants were in disagreement with the statement while (n=13; 10.1%) expressed their neutrality. As in Migiro and Ambe's study (2008:235), it is found that deliveries as more timely as a result of SCM. (N=71; 55%) of the participants supported this view. A similar sentiment was expressed by (n=19; 14.7%) of the participants, who strongly agreed to the statement (statement D3). (N=24; 18.6%) of the participants were not sure about this, while only (n=13; 10.1%) disagreed with the statement.

The table also reveals that (n=81; 62.8%) of the participants are of the view that goods and services are now correctly rendered (statement D4), and (n=30; 23.2%) support that view strongly. Only (n=18; 14%) of the participants were unsure. The overall performance indicators such as quality, timely receipt and the relevance of goods and services, as discussed above, suggest that SCM has been effective within the DoJ and CD. This effectiveness could be as a result of the appropriate management of various SCM drivers. For instance, it can be concluded that there is a smooth flow of information about customer needs. Such information is successfully utilized to source desirable goods and services for end customers. It is unclear, though, whether SCM is generally trustworthy as a system, as there are almost identical counts for those who opted for the neutral view, those that completely disagreed and those who agreed to statement D5.

(N=40; 31%) expressed a neutral view while (n=22; 17%) disagreed. Then again, (n=58; 45%) of the participants agreed to the statement whilst (n=9; 7%) strongly agreed, and almost half the participants (n=53; 41.1%) do not believe that the SCM system is operating or performing well in meeting with the demands of end users (statement D6). (N=44; 34.1%) are in support of this statement while (n=32; 24.8%) are unsure. Nonetheless, (n=93; 72%) of the participants maintained that, despite all, they preferred the current SCM system. Only a minority group of

(n=12; 9.4%) disagreed with this view, while (n=24; 18.6%) remained neutral. These results support the ideas of Ambe (2009:73) and Dlova and Nzewu (2014:8), who report that SCM holds a promise to improve public purchasing systems and to become a cornerstone of public service delivery.

## 4.9 SECTION E: PERCEIVED PERFOMANCE OF EACH SCM ELEMENTS

Section E provides an analysis of the participants' views on the elements of SCM; specifically on their level of performance.

- **Purpose of the question**

Question E1 to E6 of section E, as indicated on the questionnaire (see Appendix A6), were asked to determine the degree of performance of selected elements of SCM in the organization.

- **Results obtained**

Table 4.6 below itemises selected elements of SCM and the participants' responses to each of them. The aim of this section was to determine the viewpoints of the participants regarding the performance of each SCM elements in the organization under study. In order to determine the level of performance of SCM elements, the results are supplied from the highest to the lowest mean scores.

**Table 4.6: Participants' viewpoints on selected SCM elements**

| Elements of the Supply Chain Management System | | Frequency Distribution | | | | |
|---|---|---|---|---|---|---|
| | | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
| E1. Demand management satisfies customer needs | Count | 4 | 20 | 44 | 56 | 5 |
| | % | 3.1% | 15.5% | 34.1% | 43.4% | 3.9% |
| E2. Acquisitions management satisfies customer needs | Count | 0 | 8 | 16 | 86 | 19 |
| | % | 0% | 6.2% | 12.4% | 66.7% | 14.7% |
| E3. Logistics management is carried out appropriately | Count | 1 | 8 | 22 | 78 | 20 |
| | % | 0.8% | 6.2% | 17.1% | 60.5% | 15.5% |
| E4. Disposal management is conducted adequately | Count | 2 | 10 | 21 | 73 | 23 |
| | % | 1.6% | 7.8% | 16.3% | 56.6% | 17.8% |
| E5. Risk is managed appropriately | Count | 7 | 19 | 54 | 39 | 10 |
| | % | 5.3% | 14.7% | 41.9% | 30.2% | 7.8% |
| E6. Performance management is conducted well | Count | 9 | 19 | 54 | 40 | 7 |
| | % | 7% | 14.7% | 41.9% | 31% | 5.3% |

From table 4.6 above, it is apparent that the highest performing elements of SCM include Acquisitions, Logistics and Disposals management respectively. This has been evident with the majority of participant's agreement to statement E2, E3 and E4. Ranging from a high scoring of (n=105; 81.4%), (n=98; 76%) and (n=96; 74.4%) respectively. According to table 4.6 only (n=8; 6.2%) participants disagreed with that acquisitions management performs better in satisfying customer needs against (n=105; 81.4%) of those that supported the statement while (n=16; 12.4%) of those were unsure. Again only (n=9; 7%) participants disagreed that logistics are managed to their best benefit, (n=22; 17%) were neutral versus (n=98; 76%) participants who view logistics management as beneficially to them.

Similarly, the statement that disposals management was adequate was supported by a majority of (n=96; 74.4%) as opposed to (n=9; 7%) and (n=22; 17.1%) who were in disagreement and uncertain respectively. This reflects the fact that the current SCM strategy utilized by the DoJ and CD adds value to end customers. It can be assumed that the SC practices adopted by the DoJ and CD are best, as they have increased service delivery efficiency (Bizana, 2013:10).

Demand management was the fourth ranked element. According to Table 4.6, almost half (n=56; 43.4%) of the participants were of the view that demand management impacts positively on the needs of customers being fulfilled. This view was supported by only (n=5; 3.9%) who strongly agreed with statement E1. (N=24; 18.6%) opted to disagree with the statement, while (n=44; 34.1%) maintained a neutral view. These outcomes do not give a clear indication of whether or not this function at the DoJ and CD is fully effective. Therefore despite the acquisitions, the disposals and the logistics management, it cannot be attested if all purchasing work is done in accordance with operational plans and budget. Performance and risk management were rated as being most uncertain in relation to enhancing customer service. As with performance management, (n=54; 41.9%) of the participants opted for a neutral view of risk management, (n=19; 14.7%) disagreed with both statement E5 and E6, while (n=7; 5.3%) and (n=9; 7%) strongly disagreed with the statements respectively. These are worrying outcomes in relation to the current and future achievement of SCM goals.

The respondents' uncertainty and disagreement in this respect could be because there is no formal risk and performance management strategy in place in the organization under study. Also, it could be because the existing strategy (if available) has not been well communicated and is not known by all role-players in the chain. This in turn means there is no collaborative effort by all SC partners directed to risk management, as recommended in Tang (2006:453). Again, the fact that there are no continuous retrospective tests of the system can be damaging. The organization could be working in a direction opposite to that needed if the goals of SCM are to be achieved, without even knowing it. Only a relatively small number of participants, (n=49; 38%) and (n=47; 36.3%), agreed to both statements respectively.

## 4.10 SUMMARY OF THE CHAPTER

This chapter has presented the outcomes of the research in detail. The results show that there is a dominance of females (n=83; 64.3%) over males (n=46; 35.7%) in the field of SCM in the organization under study. Moreover, the majority (n=85; 65.89%) of the participants were older, aged 30-49 years and more, and (n=81; 61.9%) had been serving as SCM role-players for a period of six years and more. The majority (n=94; 73%) of the participants were junior staff, whilst the level of education was characterized by almost even split between those with matric certificates (n=42; 33%) and those with national diplomas (n=41; 32%). In relation to SCM processes and structure, the results suggest that the SCM system has added value to the

organization under study, as it was introduced at an appropriate time, it is well understood, it is well implemented, and it has delivered positive outcomes. There are concerns, though, pertaining to the lack of or the limited training of human resources. As a result, it is unclear whether or not the role-players possess adequate knowledge to perform their tasks, as there is almost equal split (n=45; 34.9%, n=41; 31.8%, and n=43; 33.3%) for uncertainty, disagreement and agreement respectively for statement B6. Throughout the study it has been evident that SCM in the DoJ and CD is characterized by an acceptable degree of efficiency and effectiveness with the exception of the few issues of concern. Acquisitions, logistics and disposals management were factors contributing the most to this performance. Chapter five below makes recommendations and concludes this research report.

# CHAPTER FIVE

# RECOMMENDATIONS AND CONCLUSIONS

## 5.1 INTRODUCTION

This study investigated the contributions towards enhanced service delivery made thus far by the introduction of SCM into the DoJ and CD. This was done through an assessment of the efficiency and effectiveness of the SCM system in the organization under study. The previous chapter presented data analysis performed in terms of the research instrument. Based on this analysis, this chapter provides an in-depth summary of research outcomes and the key recommendations to enhance the effectiveness and efficiency of SCM in achieving better service delivery in the DoJ and CD. Conclusions are drawn from the data analysis as well as from the final interpretations.

## 5.2 CONCLUSIONS

This section primarily focuses on the presentation of conclusions reached with respect to the objectives set out in Chapter One. The findings pertaining to the subject matter presented in the literature and empirical studies in Chapter Two and Chapter Four will also be discussed.

## 5.2.1 RESEARCH OUTCOMES FROM LITERATURE

The outcomes of the literature study are presented in relation to the stated objectives, as below.

**5.2.1.1** To examine the SCM processes within the DoJ and CD in the KZN Region.

Objective One of the study sought to understand the efficiency and effectiveness of the SCM processes and structure in the DoJ and CD in the KZN Region. The literature available thus far indicated that an organization attains efficiency and effectiveness as a result of adopting SCM practices (Shaffer and Dalton, 2012:101). According to the literature this can be achieved through the management of strategic decisions that are aligned towards the future of the organization and its operations (Lichocik and Sadowski, 2013:124). The implications are that related logistics activities need to be properly fulfilled for the realisation of better performance.

The SCM practices themselves are informed by the SCD of the organization. The SCD makes tactical choices on the setting up of resources and processes (DeCampos, 2014:1889). At this time, partnering bodies are selected and their roles are determined in an effort to add value to customer services (Fawcett, Ellram and Ogden, 2007:216). According to Melnyk, Narasimhan and DeCampos (2014:1889) SCD impacts investment decisions which in turn inform the capabilities of the SC. It can be concluded that SCD is all about capacity building, which according to Fawcett, Ellram and Ogden (2007:39-41) could be achieved either through cost saving or value adding, or a combination of the two. Bester (2007:6) suggests that efficiency is not solely determined by less spend on the budget, but also by how much an organization achieves despite the limitation of resources like budget.

**5.2.1.2** To determine the level of customer satisfaction as a result of the introduction of SCM inception into the DoJ and CD in the KZN region.

The second objective was to determine the customer satisfaction level due to the introduction of SCM in the organization. Customers are those individuals who take possession of and utilize the end goods and services. When they do so, they are taking ownership of satisfaction (Fawcett, Ellram and Ogden, 2007:216). Mbanje and Lunga (2015:3) argue that it is through collaborative planning that better customer services can be ensured. It becomes a duty for all key partners to work towards the satisfaction of customer needs. This, according to Nagy (2010:18), they do independently but jointly. Fawcett, Ellram and Ogden (2007:41) assert that customers therefore "take the centre stage in SCM." Handfield *et al.* (2011:7) add that in fact, to satisfy customer needs, organizations should have relations with their customers, including their suppliers and distributors.

The literature reveals that timely deliveries, responsiveness, information sharing, cooperation and the use of customer needs to formulate specifications are some of the items that are more likely to lead to customer satisfaction. The satisfaction of customers is attained when SCM achieves the goal of fulfilling their needs. Various strategies could be employed to satisfy customers' needs. These include, among others, the identification of customer service strategy, customer satisfaction strategy, and customer service strategy (Fawcett, Ellram and Ogden, 2007:39-41).

**5.2.1.3** To understand the SCM challenges that inhibits efficient and effective service

      delivery in the organization under study.

The third objective was designed to establish what prevents SCM from achieving enhanced service delivery in the organization. According to the literature, the financial instabilities of the country impact negatively on public sector SC's. Customers expect a great deal but the financial resources available to satisfy their needs are scarce (Ambe and Badenhorst-Weiss, 2011:77-78). Corominas (2013:6833) identifies design, performance measures, uncertainty and lack of staff training in the supply chain process as some of the major challenges facing SCM's success. He alleges that the uncertainty about the future technology and a scarcity of resources impact on performance. Moreover, there is no standard SC design and no standard tools to measure the performance of a SC. Because SCM is a new concept and because it is evolving, there is a need to educate people in it in a different way, as the older methods seem no longer to work. Other challenges presented as concerns in the literature include inventory management, external infrastructure, regulations, inadequate information flow, limited trust and know-how, a lack of flexibility, inferior quality, and reluctance to imitate the best practice of other organizations (Stank, Dittmann and Autry, 2011:942; McMullan, 1996:85).

**5.2.1.4** To establish what promotes SCM efficiency and effectiveness in the

      Organization under study.

The fourth objective was designed to establish what promotes efficiency and effectiveness of SCM in the organization. The literature suggests that some key factors that enhance an organization's performance include SC practices, SC partners, SC drivers, SC competencies, and collaboration. According to Kumar and Nambirajan (2013:86) organizational performance is associated with the SC practices adopted by the organization. They contend that the better the practices, the better the organizational performance.

Again, mention was made of the need to select key partners during SC scoping. Roles should be allocated to the key partners and they should be chosen on the basis of their having complementary competencies (Fawcett, Ellram and Ogden, 2007:494). Support structures such as facilities, inventory, information, transportation and sourcing were identified as drivers of SC (Chopra and Meindl, 2010:59). Kumar and Nambirajan (2013:86) organizational competencies as one of the factors an organization can use to gain a competitive edge. These

include its treasured resources, which it will have acquired over time through exposure and experience.

## 5.2.2 RESEARCH OUTCOMES FROM THE EMPIRICAL STUDY

### 5.2.2.1 BACKGROUND DATA

The results of the empirical study indicate that a large number (n=83; 64.3%) of the participants were females. Only (n=46; 35.7%) were males. In terms of the participants' age, the majority (n=41; 31.89%) were in the age group 30-39 years. The results revealed that most of the participants were mature enough to be efficient role-players in SCM. In addition, the participants had to be sufficiently knowledgeable to be effective in their tasks. Over half (n=81; 62.8%) of the participants in the study had been employed as SCM role-players for six years and more. Out of the total number of participants only (n=5; 4%) had worked for less than a year as SCM role-players. Thus, the bulk of the SCM employees in the DoJ and CD are experienced enough to perform their duties efficiently.

### 5.2.2.2 UNDERSTANDING OF SCM

The research suggests that SCM was introduced at an appropriate time. A large number of participants (n=104; 80.7%) positively agreed to statement B1. Equally (n=83; 64.3%) of the participants indicated that SCM is well understood in the DoJ and CD. Furthermore (n=67; 52%) reacted positively to the statement that SCM is well implemented in this organization. The findings of the study, however, indicate that not much effort has been devoted by the DoJ and CD to aligning supporting structures for the attainment of SCM's strategic goal. 65 (50.4%) participants reacted negatively to B4, which was the question pertaining to the availability of human capital. Fewer than half (n=37; 28.7%) of the respondents supported this statement. Again, not much care is taken to build capacity through training. N=81; 62.8%) participants rejected the statement that role-players are being adequately trained.

As such, the majority of the participants (n=45; 34.9%, and n=41; 31.8%) were either unsure of or disagreed with the statement that sufficient knowledge about SC's is available in the DoJ and CD. This finding poses questions in respect of the capabilities of the organization's human resources. Such capabilities, according to Handfied *et al.* (2011:19), are one amongst four

enablers of SC excellence that if an organization fails to commit to its SCM is positioned to fail. Surprisingly, though, (n=60; 46.6%) participants believed that the introduction of SCM had resulted in a positive outcome, whilst (n=51; 39.5%) and (n=18; 14%) were unsure and in disagreement respectively.

From the above, it can be concluded that although the introduction of SCM has resulted in an identifiable improvement in purchasing practice of the DoJ and CD, much is still required from the authorities of the organization in terms of aligning and capacitating their human capital so as to take advantage of SCM for enhanced service delivery.

## 5.2.2.3 EFFICIENCY OF THE SCM SYSTEM

According to the research findings, the SCM system of the DoJ and CD is characterised by a high level of accountability, conformance to the relevant laws, transparency, responsiveness, consultation and participation. A high score in the above characters ranging from (n=112; 86.8%) to (n=92; 71.3%) was attained by the participants. Most of the participants (n=112; 86.8%) felt that the introduction of SCM into this organization had led to accountability. Conformance to laws was ranked second highest, at (n=110; 85.3%), whilst transparency received the third highest score at (n=109; 84.5%). Again, (n=99; 76.6%) participants believed that the introduction of SCM was timely and responsive to their needs, whilst the same number (n=92; 71.3%) felt that the introduction of SCM had led to their being consulted and participating in decision-making that affected them.

Overall, it was noted that SCM in the DoJ and CD satisfied the basic requirements of good governance. It can therefore be concluded that it has achieved one of its goals, which is promotion of the principles of good governance.

## 5.2.2 EFFECTIVENESS OF THE SCM SYSTEM

Throughout the study there was a perceptible feeling that SCM is effective. 112 (86.8%) participants indicated that relevant goods are delivered as a result of the introduction of SCM. Quality goods (n=109; 84.5%) are delivered to the correct people (n=111; 86%), according to the participants. In respect of responsiveness, relatively similar results (n=90; 69.7%) were obtained regarding timely delivery. Surprisingly, there was a sudden drop in the score relating

to trust. Only (n=67; 52%) indicated that they had trust in the current SCM system, (n=41; 31%) were unsure whilst (n=22; 17%) had no confidence in the system.  The lack of confidence was further sustained by the (n=53; 41.1%) participants who rejected the statement that the SCM system was doing well in satisfying their needs. N=32; 24.8%) remained neutral in this regard. However, (n=92; 72%) still maintained that that if given a choice they would opt to remain with the current SCM system.

It can be concluded that although the system has not made its expected impact, which may be why there is still doubt about it, it has actually enhanced service delivery.

## 5.2.2.5 PERFORMANCE OF EACH SUPPLY CHAIN ELEMENT

It has been noted that SCM involves a series of phases that are conducted to satisfy end customers. Having noted that, the study needed to establish the performance of each of the SCM elements. The empirical study revealed that the three elements of SCM, namely Acquisitions, Logistics and Disposals, contributed immensely to the level of success attained to date.   Most of the participants were in consensus that these tasks were carried out appropriately in satisfying their needs. Demand management received a positive ranking of just less than half (n=61; 47.3%) in the matter of its contributing meaningfully to satisfying customer needs. In relation to risk and performance management, a large number (n=54; 41.9%) opted for a neutral view in this regard, whilst (n=26; 20%) and (n=28; 21.7%) rejected the notion that these elements contributed to their benefit.

The research findings that can be drawn in relation to these issues are that the DoJ and CD should be applauded for its achievements in the three key elements of SCM. These three are the core functions in service delivery.

## 5.3 RECOMMENDATIONS

Based on the objectives of the study as well as its findings, the following are presented as recommendations for enhancing the efficiency and effectiveness of SCM in the DoJ and CD. The recommendations are distilled from both the literature and the empirical research.

**5.3.1** Enforce SC planning

Planning is a very crucial element of goals achievement. It allows for an optimal balance between demands and available resources, as it presents an opportunity to assess, arrange, re-arrange and direct efforts to where they are most required. For the DoJ and CD to improve on the current SCM performance it will have to devise drastic measures to ensure that SC planning is in place and operational. The plans should emanate from a list of customer requirements. The limited resources necessary for the fulfilment of the said objectives, such as funds and time, should be assigned and coordinated within plans. As this is being done, financial resource management and accountability in the organization must be taken care of, thus establishing the optimal use of scarce resources in the organization with the aim of providing enhanced services. Moreover, there should be measures to track progress in respect of success in the attainment of set goals.

**5.3.2** Re-alignment of SCD

The DoJ and CD authorities should consider redesigning a complete structure in relation to their SC's. It is suggested that a complete revamp of resource allocation be done. A practical solution would be to reduce the number of "service points" when it comes to SC's. Instead of 79 offices performing SCM functions, the structure could be to keep 12 cluster offices as administrative offices pertaining to SCM. The estimated 232 officials located at various courts should be cut down to about half that number (perhaps about 144) and the others should be absorbed to formulate sound SC components at cluster offices. These employees should solely serve SCM functions. Thereafter all acquisitions, logistics and disposal tasks should be administered through these cluster offices. This will reduce the current geographical gap between the Courts and the Regional Office, KZN. This would save costs in relation to the compensation of employees. Moreover, it would also allow for capacity-building in terms of the available workforce, create expertise through specialisation by individuals in specific tasks, and improve general performance.

**5.3.3** Conduct skills audit

A complete skills audit of all role-players who perform SCM tasks should be conducted. The main focus should be on their formal educational qualifications, years of experience in SCM,

and where possible individual performance with reference to their contributions to SCM in the period for which they have served in their posts. Decisions should be taken about a possible new structure, employees should to be engaged where relocations are necessary, and the new structure should be finalized. The skill deficiencies identified in different individuals should be noted and addressed.

**5.3.4** Capacity building through training

Like finances, skills represent one of the greatest assets of organizations. Consideration of the provision of training of all members of staff with critical skill deficiencies is recommended. Training should also be provided to fill all identified gaps in knowledge.

**5.3.5** Supplier education

Suppliers are the partners to public sector SCM. They supply goods and services required. These partners operate in a different regulatory domain, thus the need to educate them on the basic requirements to partake to public sector SC's becomes pivotal.

## 5.4 EMPIRICAL AND PRACTICAL IMPLICATIONS

Based on the views expressed by the participants, the research has shed new light on SCM and added to the existing body of knowledge on SCM. Simply put, the study highlighted issues relating to the efficiency and effectiveness of SCM in a particular organization. Much is expected from management to enhance performance. For instance, management should provide the necessary platforms for SCM skills development, increase its supervisory roles at all levels, increase its control over resources and accountability, and its practical contribution to SCM tasks. This requires participatory decision-making amongst management and all stakeholders. Providing adequate skills to employees in particular would help to create efficient and effective SCM services.

The study has attempted to shed light on a grey area of many organizations. In particular, SCM services are critical to the survival of organizations countrywide. It is therefore significant that resources be used sparingly to obtain optimal outcomes. The implications of this study also

extend to decision makers, who according to the recommendations made here should consider restructuring as well as skills enhancement.

## 5.5 STRATEGIES TO IMPROVE SCM SERVICES

- One of the key strategies to apply in order to stimulate the efficiency and effectiveness of SCM is to adopt inclusive planning processes across the organization. This will induce a feeling of the ownership of plans by all the role-players concerned.

- SCM services are provided as a result of coordinated effort. It is therefore important to build a strong team amongst the stakeholders. Senior, supervisory and junior employees should form part of the team. This would allow information sharing, avoid wastage, and lead to timely service delivery.

- Strong partnerships between stakeholders should be built. That would ensure that all stakeholders understood the challenges. Monitoring and evaluation strategies are critical to determining the depth of service efficiency.

## 5.6 SUGGESTIONS FOR FUTURE RESEARCH

Throughout of the study, there were growing areas of concern which provide opportunities for additional research work.

- Future research should consider including businesses as a population under study so as to ascertain what impact has SCM made thus far in relation to addressing socio economic objective.

- Future research should consider interviews as data collection method to gain much insight on the SCM phenomenon.

## 5.7 SUMMARY OF THE CHAPTER

The purpose of this study was to assess the efficiency and effectiveness of SCM in the public sector with reference to the DoJ and CD as a model organization. The study established that efficiency and effectiveness are synonymous with performance, and that the performance of an organization is informed by the SC practices adopted by the organization. The SCM practices themselves are informed by SCD. SCD makes strategic decisions on the positioning of resources and processes to achieve set goals. The results show that the SCM processes in the DoJ and CD are characterised by strong adherence to the principles of good governance. Moreover, it appears that delivery of end-customer goods and services in the DoJ and CD has improved since the introduction of the SC, as it is characterised by being timely, qualitative and relevant. However, the SCD has been found to be weak, as it has been unsuccessful in the reasonable alignment and enhancing of skills and knowledge among those who constitute its human resources. As a result, there is a lack of trust in the system. The study recommends that the DoJ and CD authorities look again at their SC and rebuild its capacity through proper structures and skills enhancement.

# BIBLIOGRAPHY

Acevedo, G.L., Rivera, K., Lima, L. and Hwang, H. 2010. Challenges in monitoring and evaluation: an opportunity to institutionalize M & E systems. Washington, DC: The International Bank for Reconstruction and Development.

Aerts, W., Cormier, D. and Magnan, M. 2006. Intra-industry imitation in cooperate environmental reporting: An international perspective. *Journal of Accounting and Public Policy, 25(1):* 299-331.

Ainapur, B. Singh, R.K. and Vittar, P. 2012. Strategic Study on Enhancement of Supply Chain Performance. IJBIT, 5(1): 98-106.

Ali, I. and Shukran, K. 2016. Managing supply chain risks and vulnerabilities through collaboration: present and future scope. *The Journal of Developing Areas, 50(5):* 335-343.

Ambe, I. 2009. An exploration of supply chains management practices in the central district municipality. Educational Search and Review, 4(9): 427-435.

Ambe, I. 2012. Determining Supply Chain practices and strategies of light motor vehicle manufacturers. Doctorate, University of South Africa.

Ambe, I.M and Bardenhorst-Weiss, J.A. 2011. Managing and controlling public sector supply chains. In Tech, University of South Africa.

Ambe, I.M. and Badenhorst-Weiss, J.A. 2012. Procurement challenges in South African public sector. *Journal of Transport and Supply Chain Management*, 242-261.

Ayers, J. 2004. Supply chain project management: A structured collaborative and measurable approach. Boca Raton, FI: St Lucie Press.

Babbie, E.C. and Mouton, J. 2001. The practices of social research. New York: Oxford University Press.

Baily, P., Farmer, D., Crooker, B., Jessop, D. and Jones, D. 2008. Procurement principles and management. Harlow, England: Prentice Hall.

Barney, J.B., Ketchen, D.J. and Wright, M. 2011. The Future of Resource-Based Theory: Revitalization or Decline? *Journal of Management*, 37(5): 1299-1315.

Baum, J. 2010. Supply Chain Futures: the master of complexity. MHD Supply chain solutions, 20-21.

Bester, A. 2007. Efficiency in the public sector: An analysis of performance measurements employed by Western Cape Provincial Treasury. Masters, University of Stellenbosch.

Bizana, N. 2013. Improving service delivery by Local government: A case for improved Supply Chain Performance Management. Masters, University of KwaZulu Natal.

Bizana, N., Naude, M.J. and Ambe, I.M. 2015. Supply chain management as a contributing factor. *Journal of Contemporary Management*, 664-683.

Bless, C., Higson-Smith, C. and Sithole, S.L. 2013. Fundamentals of social research methods: An African perspective. 5th edition. Cape Town: Juta.

Boateng, D. 2008. Government service delivery lies in supply chain management, not centralized procurement, smart procurement. Available from: www.smartprocurement.co.za (accessed: February 2016).

Boone, C.A., Craighead, C.W. and Hanna, J.B. 2007. Postponement: An evolving supply chain concept. *International Journal of Physical Distribution and Logistics Management*, 37(8): 594-611.

Bowersox, D.J., Closs, D.J. and Cooper, M.B. 2010. Supply chain logistics management. 3rd edition. Singapore: McGraw-Hill.

Bozarth, C.C. and Handfield, R.B. 2006. Introduction to operations and supply chain management. Upper Saddle River, NJ: Pearson Prentice Hall.

Bryman, A. and Bell, E. 2011. Business research methods. 3rd edition. New York: Oxford University Press.

Buchanan, E. 2004. Readings in Virtual Research Ethics: Issues and controversies. 1st ed. Hershey: Information Science Publishing.

Burt, D.N., Petcavage, S.D. and Pinkerton, R.L. 2010. Supply management. Boston: McGraw-Hill.

Cagliano, R., Caniato, F. and Spina, G. 2006. The linkage between supply chain integration and manufacturing improvement programmes. *International Journal of Operations and Production Management*, 26(3): 282-299.

Cargan, L. 2007. Doing Social Research. 1st edition. Lanham: Rowman and Littlefield.

Carter, C.R. and Easton, P.L. 2011. Sustainable supply chain evolution and future directions. *International Journal of Physical Distribution and Logistics Management.* 41(1): 46-62.

Chan, F. 2003. Performance measurement in supply chain. *The international Journal of Advanced Manufacturing Technology*, 21(7): 534-548.

Chopra, S. and Meindl, P. 2010. Supply Chain Management: Strategy, Planning and Operation (4th ed.). United State of America: Pearson Education.

Chow, W.S., Madu, C.N., Kuei, C.H., Lu, M.H., Lin, C. and Tseng, H. 2008. Supply chain management in the US and Taiwan: An empirical study. International Journal of Management Science, Omega (36): 665- 679.

Chou, Y.C., Lu, C.H. and Tang, Y.Y. 2012. Identifying inventory problems in the aerospace industry using the theory of constraints. *International Journal of Production Research*, 50(16), 4686–4698.

Christopher, M. 2005. Logistics and supply chain management: Creating value-adding networks . Harlow, England: Prentice Hall .

Cohen, S. and Rousell, J. 2005. Strategic supply chain management: the five disciplines for top performance. New York: McGraw-Hill.

Colbert, B. 2004. The complex resource based view: Implications for theory and practice in strategic human resource management. *Academy of Management Review*, 29 (3): 341-358.

Cook, L.S., Heiser, D.R. and Sengupta, K. 2011. The moderating effect of supply chain role on the relationship between supply chain practices and performance: An empirical analysis. *International Journal of Physical Distribution & Logistics Management*, 41(2): 104 - 134.

Cooper, D. R. and Schindler, P.S. 2008. Marketing Research. New York: McGraw-Hill.

Corominas, A. 2013. Supply Chain: What they are and the new problems they raise. *International Journal of Production Research*, 51(23–24): 6828-6835.

Council of Supply Chain Management Professionals. (2016, August 16). Supply Chain Management and Logistics Management Definitions. Durban, KwaZulu Natal, South Africa.

Council of Supply Chain Professionals, Gibson, B.J., Hanna, J.B., Defee, C.C. and Chen, H. 2013. Definitive Guide to Integrated Supply Chain Management, Optimize the Interaction between Supply Chain Processes, Tools, and Technologies. Indianapolis: Pearson F.T Press.

Creswell, J. W. 2008. Research Design: Qualitative, Quantitative and Mixed Approaches. 3rd Edition. California: Sage Publications, Inc.

Crowe, S., Creswell, K., Robertson, A., Husby, G., Avery, A. and Sheikh, A. 2011. The case study approach. 1-9.

David, M. and Sutton, C.D. 2011. Social research: An introduction. London: Sage.

David, M.N. and Rotish, G. 2013. The effects of inventory stock piling on security operations: A case study of the administration police service in Kenya. *International Journal of Social Sciences and Entrepreneurship*, 1(7): 525-544.

De Lange, S. 2011. Irregular State Expenditure Jumps 62%. . Business Day (accessed on July 2016).

Dlova, V. and Nzewu, O. 2014. Developing and institutionalising Supply Chain Management Procedures: A case study of the Eastern Cape Dept of Roads and Public Works. Africa's Public Service Delivery and Performance Review, 3-160.

Dobler, D. and Burt, D. 1996. Purchasing and Supply Management – Texts and Cases. 6th Edition. Singapore: McGraw-Hill.

Du Plooy-Cilliers, F., Davis, C. and Bezuidenhoud, R.M. 2014. Research matters. Cape Town: Juta & Company LTD.

Du Toit, D. and Vlok, P.J. 2014. Supply Chain Management: A framework of understanding. *South African Journal of Industrial Engineering*, 25(3): 25-38.

Elrod, C., Murray, S. and Bande, S. 2013. A review of performance metrics for supply chain management. *Engineering Management Journal*, 25(3):39-50.

Estampe, D. 2014. Supply chain performance and evaluation models. London: ISTE.

Evans, J.M. and Collier, D.A. 2007. Operations management: An integrated goods and service approach. Mason, OH: Thompson South Western.

Fawcett, S.E., Ellram, L.L. and Ogden, J.A. 2007. Supply chain management: from vision to implementation. Upper Saddle River: NJ: Prentice Hall.

Fourie, D. and Poggenpoel, W. 2016. Public sector inefficiencies: Are we addressing the route cause? *South African Journal of Accounting Research*, 2376-3891.

Francisco, J. 2015. Resource-based view and dynamic capabilities: achieving competitive advantage through internal resources and competences. 50-61.

Ganescu, M.C., Asandei, M., Gnagone, A. and Chirila, C. 2013. Performance determinants for responsible supply chain management in the European emerging countries. Amfiteatru Economics, 15(33): 154-169.

Grewal, R. and Dharwadkar, R. 2002. The Role of the Institutional Environment In Marketing Channels. The Pennsylvania State: Institute for the Study of Business Markets.

Handfield, R.B., Monczka, R.M., Giunipero, L.C. and Patterson, J.L. 2011. Sourcing and Supply Chain management, 5th ed. South-Western: Cengage Learning.

Harrison, F. 2001. Supply chain management workbook. Woburn, MA: Butterworth Heinemann.

Hearnshaw, E. J.S. and Wilson, M.J.S. 2013. A complex network approach to supply chain network theory. *International Journal of Operations and Production Management*, 33(4): 442-469.

Hines, T. (2006). Supply chain strategies: customer-driven and customer focused. Boston: Elsevier.

Huang, S.H., Uppal, M. and Shi, J. 2002. "A product driven approach to manufacturing supply chain selection". Supply Chain Management: *An International Journal,* 7(4): 189 - 199.

Hugos, M. 2006. Essentials of supply chain management. 2nd edition. Canada: John Wiley and Sons.

Hugos, M. 2011. Essentials of supply chain management. 3rd edition. Hoboken, M.J: Wiley.

Husby, P. 2007. Competition or complement: Six Sigma and TOC. Process excellence, 51-55.

Ismail, H.S. and Sharifi, H. 2006. A balanced approach to building agile supply chains. *International Journal of Physical Distribution & Logistics Management*, 36(6):431–444.

Isoraite, M. 2005. Evaluating efficiency and effectiveness in transport organizations. *Transport Journal*, XX(6) 240–247.

Jacobs, F.R., Chase, R.B. and Aquilano, N.J. 2009. Operations and supply management. New York: McGraw-Hill Irwin.

Jeong, J.S. and Hong, P. 2007. Customer orientation and performance outcomes in supply chain management. *Journal of Enterprise Information Management,* 16(5): 578-594.

Johnson, B. and Christensen, L. 2012. Educational Research: Quantitative, Qualitative and Mixed Approaches. 4th edition. Thousand Oaks: SAGE.

Jones, D. 2007. Public Procurement in South East Asia: Challenges and Reform. *Journal of Public Procurement*, 7(1): 3-33.

Kauppi, K. 2013. Extending the use of institutional theory in operations and supply chain management research. *International Journal of Operations and Production Managemen*t, 33(10): 1318-1345.

Khanyile, M. 2016. Evaluation of financial accountability, financial control and financial reporting at Umtshezi Municipality: a case study. Masters. Durban University of Technology.

Kohli, A.S. and Jensen, J.B. 2010. Assessing Effectiveness of Supply Chain Collaboration: An empirical study. Supply Chain Forum: *An International Journal,* 11(2): 2-16.

Kumar, C.G. and Nambirajan. 2013. Supply Chain Management Components, Supply Chain Performance and Organizational Performance: A Critical Review and Development of Conceptual Model. 86-96.

Kumar, R. 2011. Research methodology: a step-by-step guide for beginners. 3rd edition. London: Sage Publication LTD.

Lai, K.H., Wong, C.W.Y. and Chang, T.C.E. 2006. Institutional isomorphism and the adoption of information technology for supply chain management. *Computers in Industry*, 57(1): 93-98.

Lakri, S., Dallery, Y. and Jemai, Z. 2015. Measuring and Managing of Supply Chain performance: Practices of today's large companies. Supply Chain Forum, *An international Journal*, 16(4): 16-30.

Lambert, D. 2006. Supply Chain Management processes, partnership, performance. Florida: supply chain management institute, 1-24.

Lancaster, G. 2005. Research methods in management: A concise introduction to research in management and business consultancy. Great Britain: Elsevier Butterworth-Heinemann.

Langley, C.J.(Jr), Coyle, J.J., Gibson, B.J., Novack, R.A. and Bardi, E.J. 2009. Managing Supply Chains: A logistics approach. Canada: South-Western Cengage.

Larson, P. 2009. Public vs Private sector perspectives on supply chain management. *Journal of Public Procurement*, 9(2): 222-247.

Lee, C.W., Kwon, I.G. and Severance, D. 2007. Relationship between supply chain performance and degree of linkage among supplier, internal integration and customer. Supply Chain Management: *An International Journal*, 12(6): 444-452.

Li, S., Nathan, B.R., Nathan, T.S.R and Rao, S.S. 2006. The impact of supply chain management practices on competitive advantage and organizational performance. An international Journal of Management Science, 107-204.

Lichocik, G. and Sadowski, A. 2013. Efficiency of Supply Chain Management: Strategies and Operational approach. *Scientific Journal of Logistics,* 9 (2): 119-125.

Lin, C.T, Chiu, H. and Chu, P.Y. 2006. Agility index in the supply chain. International *Journal of Production Economics,* 285-299.

Lockett, A., Thompson, S. and Morgenstern, U. 2009. The development of the resource-based view of the firm: A critical appraisal. *International Journal of Management Reviews*, 1468-2370.

Lysons, K. and Farrington, B. 2006. Purchasing and supply chain management. Harlow: Prentice Hall-Financial Times.

Maree, K. 2007. First steps in Research. Pretoria: Van Schaik.

Marshall, R.E., Gooley, T.B.,Waynne, M., Frazelle, E., Hammer, M.M., Finley, J. (Dr). n.d. Supply chain management : Analysing industry and air force metrics global logistics support-the GLSC: operational supply chain management. *Air Force Journal of Logistics*, xxxi(3): 1-16.

Matolong, M. 2015. Guidelines for establishing an effective supply chain management framework for local municipalities. Masters, North West University.

Matopoulos, A., Vlachopoulou, M., Manthou, V. and Manos, B. 2007. A conceptual framework for supply chain collaboration: Empirical evidence from the agri-food industry. Supply chain management: *An International Journal,* 12(3): 177-186.

Matthews, B. and Ross, L. 2010. Research methods: A practical guide for the social sciences. England: Pearson Education Limited.

Mazibu, B. 2012. The assessment of Supply Chain Management System Policy at King William's Town District of the Buffalo City Metro Municipality, and its affects to service delivery of the Eastern Cape. Masters, University of Forthare.

Mbanje, S. and Lunga, J. 2015. Fundamentals principles of Supply Chain Management. Pretoria: Van Schaik Publishers.

McCarthy, N. 2006. Report of the Auditor-General. Free State, Bloemfontein. .

McCue, C. and Pitzer, J.T. 2005. Fundamentals of Leadership and Management in Public Procurement. Herndon: National Institute of Government Purchasing.

McCullen, P., Saw, R., Christopher, M. and Towill, D. 2006. The F1 supply chain: adapting the car to the circuit - the supply chain to the market. Supply chain forum: *An International Journal*, 7(1): 14-23.

McFarland, R.G., Bloodgood, J.M. and Payan, J.M. 2008. Supply chain contagion. *Journal of Marketing*, 63-79.

McMullan, A. 1996. Supply Chain Management practices in Asia Pacific today. *International Journal of Physical Distribution and Logistics Management*, 26(10):78-95.

Mele, C., Pels, J. and Polese, F. 2010. A brief review of systems theories and their managerial applications. Service Science, 2(1-2): 126-135.

Melnyk, S.A., Narasimhan, R. and DeCampos, H.A. 2014. Supply chain design: issues, challenges, frameworks and solutions. 1887-1896.

Mentzer, A. D. 2001. Defining supply chain management. *Journal of Business Logistics*, 22(2): 1-25.

Mentzer, J.T., DeWitt, W., Keebler, J.S., Min, S., Nix, N.W., Smith, C.D. and Zacharia, Z.G. 2001. Defining supply chain management. *Journal of Business Logistics*, 2(22): 1-25.

Migiro, S.O. and Ambe I.M. 2008. Evaluation of the implementation of public sector supply chain management and challenges: A case study of Central District Municipality, North West province, South Africa. *African Journal of Business Management,* 2 (12): 230-242.

Moeti, K., Khalo, T., Nsingo, S. and Makonda, T. 2007. Public finance fundamentals. 1st edition. South Africa: Juta Academic.

Moon, S. 2004. The relationships among manufacturer product strategy, supply chain structure and supply chain inventory. *Asia Pacific Journal of Marketing and Logistics*, 16(2): 20-45.

Nagy, J. 2010. Types of Supply Chains and tools for management- Empirical study. Doctorate, Corvinus University of Budapest.

Nel, J. 2010. Developing a conceptual framework to analyse supply chain design practices. Doctorate, University of South Africa.

Nel, J.D. and Badenhorst-Weise, J.A. 2010. Supply chain design: some critical questions. *Journal of Transport and Supply Chain Management*, 4(1): 198-223.

Nengwekhulu, R. 2009. Public service delivery challenges facing the South African Public Service. *Journal of Public Administration*, 44(2): 341-363.

Neuman, W. 2014. Social research methods: qualitative and qualitative approaches. 7th edition. United States: Pearson Education Inc.

Nkwanyana, B. 2016. An analysis of training and development in the public sector: A case study of Government Communication and Information System in the KwaZulu Natal Province. Masters. University of KwaZulu Natal.

Nyaga, J. 2015. Non-Financial Reward and Employee Retention in Private Primary Schools in Kenya (Kiambu County). *International Journal of Management and Commerce Innovations*, 3(1): 240-254.

Obi-Anike, H. and Ekwe, M. 2014. Impact of training and development on organisational effectiveness. Evidence from selected public sector organizations in Nigeria. *European Journal of Business and Management*: 66-75.

Okongwu, U., Deschamps, J.C., Lauras, M. and Francois, J. 2011. Impact of the Key Determinants of a Distributed Planning Process on the Performance of a Supply Chain. Supply Chain Forum: *An International Journal*, 12(4): 50-61.

Pathak, S.D., Day, J.M., Nair, A., Sawaya, W.J. and Cristal, M.M. 2007. Complexity and Adaptivity in Supply Networks: Building Supply Network Theory Using a Complex Adaptive Systems Perspective. Decision Sciences Institute, 38(4): 547-580.

Pauw, J. 2011. Public procurement and supply chain management, study guide in Public Procurement and Supply Management. University of South Africa, 5 February 2011.

Pederson, D.P.S., Andrew, D. and McEvoy, C.D. 2011. Research methods and design in sport management. United States. Human kinetics.

Qi, Y., Boyer, K.K. and Zhao, X. 2009. "Supply chain strategy, product characteristics, and performance impact: evidence from Chinese manufacturers". Decision Sciences, 40(4): 667-695.

Qrunfleh, S. and Tarafdah, M. 2013. Lean and agile supply chain strategies and supply chain responsiveness: the role of strategic supplier partnership and postponement. Supply Chain Management: *An International Journal*, 18(6): 571 - 582.

Quayle, M. 2006. Purchasing and supply chain management: Strategies and realities. London: Idea group.

Quinlan, C. 2011. Business research methods. United Kingdom, Hampshire: Cengate Learning EMEA.

Rafele, C. 2004. Logistics service measurement: A reference framework. *Journal of Manufacturing Technology Management*, 15(3): 280-290.

Raga, K. and Albrecht, W. 2008. Determining an ethical basis for public sector procurement management: the South African local sphere of government. *Journal of Public Administration*, 43(1): 781-797

Raturi, A.S. and Evans, J.R. 2005. Principles of operations management. Mason, Ohio: South-Western.

Reid, R.D. and Sanders, N.R. 2007. Operations management: An integrated approach. Hoboken, N.J: John Wiley.

Rugg, G. and Petre, M. 2007. A gentle guide to research methods. England: McGraw-Hill.

Sadler, I. 2007. Logistics and supply chain integration. London: Sage.

Sarkis, J., Zhu, Q. and Lai, K. 2011. An Organizational Theoretic Review of Green Supply Chain Management Literature. *International Journal of Production Economics*, 130(1): 1-15.

Saunders, M., Lewis, P. and Thornhill, A. 2012. Research methods for business students. Italy: Pearson.

Sebastiao, H.J. and Golicic, S. 2008. Supply chain strategy for nascent firms in emerging technology markets. *Journal of Business Logistics*, 29(1): 75- 91.

Sekaran, U. 2006. Research methods for business: A skill building approach. New Dhelhi, India: Joh Wiley and Sons.

Sekaran, U. and Bougie, R. 2009. Research methods for business: a skill building approach. 5th ed. United Kingdom: John Wisely and Sons LTD.

Shaffer, K.J. and Dalton, P.M. 2012. Can adopting Supply Chain Management practices improve supply chain efficiency? *International Journal of Business, Marketing and Decision Sciences*, 2(2) fall: 99-120.

Shaida, E. 2013. Investigation into causes of service delivery protest in municipalities: A case study of Nelson Mandela municipality. Doctorate, Nelson Mandela Metropolitan University.

Sharifi, H., Ismail, I.S. and Reid, I. 2006. Achieving agility in supply chain through simultaneous "design of" and design for supply chain. *Journal of Marketing Technology Management*, 17(8): 1078- 1098.

Simchi-Levi, D., Kaminsky, P. and Simchi-Levi, E. 2008. Designing and managing the supply chain: Concepts, strategies, and case studies. Boston: McGraw-Hill.

Smart Procurement. 2011. SA public procurement: poor value for money. Available: http://www.smartprocurementworld.com (accessed on 3 March 2016).

South Africa. 1996. The Constitution of the Republic of South Africa Act 104 of 1996. Pretoria: Government Printer.

South Africa. 2004. National Treasury Guide for accounting authorities. Pretoria: Government Printer.

South Africa. 2005. National Treasury Regulations. Pretoria: Government printer.

South Africa, Department of Public Works. 2008. Supply Chain Policy. Pretoria: Government Printer.

Stank, T.P., Dittmann, J.P. and Autry, C.W. 2011. "The new supply chain agenda: a synopsis and directions for future research". *International Journal of Physical Distribution and Logistics Management*, 41(10): 940 - 955.

Stemele, B. M. 2009. Assessing good governance in procurement at Lejweleputswa District Municipality. Masters. University of Stellenbosch.

Stock, J.R. and Boyer, S.L. 2009. Developing a consensus definition of supply chain management: a qualitative study. *International Journal of Physical Distribution & Logistics Management,* 39(8):690-711.

Talavera, M. 2015. Supply Chain Management Practices and Challenges: Case Studies of Four Supply Chains. Philippine Management Review, 22: 53-74.

Tang. 2006. 'Perspectives in supply chain risk management'. *International Journal of Production Economics*, 103(2): 452- 488.

Tang, M. and Gattorna, J.L. 2003. Developing an aligned supply chain operating strategy, in J.L. Gattorna. Gower Handbook of supply chain management, Burlington, VT: Gower: 25-35.

Taylor, D. 2004. Supply chains: a manager's guide. Boston: Addison-Wesley.

Thakkar, J., Kanda, A. and Deshmuck, S.G. 2009. Supply chain performance measurement framework for small and medium scale enterprises. Benchmarking: *An International Journal*, 16(5): 702-723.

Touboulic, A. and Walker, H. 2015. Theories in sustainable supply chain management: a structured literature review". *International Journal of Physical Distribution and Logistics Management,* 45(1-2): 16-42.

Towill, D.R. and Christopher, M. 2002. The supply chain strategy conundrum: To be lean or agile or to be lean and agile?. *International Journal of Logistics: Research and Applications,* 5(3):299–309.

Tshamaano, V. 2012. Impact of Supply Chain Management on service delivery: the case of provincial department of Economic, Development, Environment and Tourism in the Limpopo Province. Masters, University of Limpopo, 1-81.

Varsei, M., Soosay, C., Fahimnia, B. and Sarkis, J. 2014. "Framing sustainability performance of supply chains with multidimensional indicators". Supply Chain Management: *An International Journal*, 19(3):242-257.

Vinodh, S., Sundararaj, G. and Devadasan, S.R. 2009. Total agile design system model via literature exploration. Industrial Management & Data Systems, 109(4): 570-588.

Wagner, C., Kawulich, B. and Garner, M. 2013. Doing social research: a global context. McGraw-Hill Education: a global context.

Waters, D. 2009. Supply chain management: An introduction to logistics. London: Palgrave Macmillan.

Welman, J.C. and Kruger, S.J. 2001. Research methodology. 2nd edition. Cape Town: Oxford university press.

Welman, J.C., Kruger, F and Huysamen, G.K. 2005. Research methodology. Cape Town. Oxford university press.

Wilson, J. O. 2010. Essentials of business research: A guide to doing your research project. Sage.

Wisner, J.D., Tan, J-C. and Leong, G.K. 2008. Principles of supply chain management: A balanced approach. Mason-OH: South-Western Cengage Learning.

Wisner, J.D., Tan, K.C. and Leong, G.K. 2012. Principles of Supply Chain Management: A Balanced Approach. Las Vegas: Cengage Learning.

Yang, B. and Yang, Y. 2010. Postponement in supply chain risk management: a complexity perspective. *International Journal of Production Research,* 48(7): 1901-1912.

Yang, Y. 2009. An investigation of group interaction functioning stimulated by transformational leadership on employee intrinsic and extrinsic job satisfaction: An extension of resource based theory perspective. Social behaviour and personality. *An International Journal,* 37(9): 1259-1278.

Zeibicki, B. 2013. Relationship between organizational effectiveness and efficiency in the public sector units. Problems of the Management in the 21st Century, 102-110.

Zsidisin, G.A., Melnyk, S.A. and Ragatz, G.L. 2005. An institutional theory perspective of business continuity planning for purchasing and supply management. *International Journal of Production Research*, 43(16): 3401-3420.

Appendix A1

**the doj & cd**
Department:
Justice and Constitutional Development
REPUBLIC OF SOUTH AFRICA
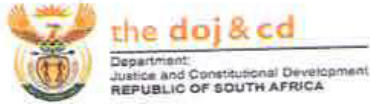
**NATIONAL OFFICE**

PRIVATE BAG X81, PRETORIA, 0001. Momentum Centre, 329 Pretorius Street
PRETORIA      Tel (012) 315 4840,

Ref: HRD/11/16
Enq: (012) 315 4840
E-mail: MLebaka@justice.gov.za

**TO WHOM IT MAY CONCERN**

This serve to confirm that the Department of Justice and Constitutional Development has granted Ms N.S Nkwanyana permission to conduct Academic Research in the Department.

Ms N.S Nkwanyana's research topic is: : "An assessment of efficiency and effectiveness of supply chain management in the Public Sector, a case study of the Department of Justice and Constitutional Development, KwaZulu Natal Region".

Ms N.S Nkwanyana's approval is on condition that:

(a)   She only collects information that is relevant to her academic research.
(b)   She should only share the information obtained from the Department for academic purpose only.
(c)   She maintains, uphold and stick to strict confidentiality and ethical behaviour on all information obtained from the Department.
(d)   She should not publicly publish the findings and recommendations of the research without prior approval of the Department. The publishing should only be limited to the Academic Institution's requirements.
(e)   She must share her findings and recommendations of her research with the Department.

Best regards,

6/12/2016
Date

Dr Moses Lebaka
Director: Human Resource Development

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**Faculty of Management Sciences.**

**Invitation to Participate in a Research Study**

**Title of the Study: An assessment of efficiency and effectiveness of Supply Chain Management in the public sector, a case study of the Department of Justice and Constitutional Development, KZN Region.**

- ➢ Are you permanently employed in the Department of Justice and Constitutional Development in the province of KwaZulu Natal and plays a part in the Supply Chain Management processes?

- ➢ If so, you are cordially invited to participate by providing responses to a questionnaire for the research study.

**We want to know and understand your experiences of Supply Chain Management in your department.**

**Contact:** S'lindile Nkwanyana on 071 280 4536/ 031 372 3042/ SNkwanyana@justice.gov.za for more info.

MPA candidate at the Faculty of Management Sciences

**Date of availability of questionnaires:**

**Response due date:**

**Participation is voluntary and confidentiality will be strictly upheld. Dr AT Agbenyegah of Faculty of Management Sciences, supervises this research.**

**Recruitment letter for research project**

Faculty of Management Sciences

Dear KZN Department of Justice and Constitutional Development employee

**SUBJECT**: **INVITATION TO PARTICIPATE IN A STUDY: AN ASSESSMENT OF EFFICIENCY AND EFFECTIVENESS OF SUPPLY CHAIN MANAGEMENT IN THE PUBLIC SECTOR, A CASE STUDY OF DEPARTMENT OF JUSTICE AND CONSTITUTIONAL DEVELOPMENT**

The above matter bears reference

As an employee of Department of Justice and Constitutional Development in KwaZulu-Natal, you are hereby invited to take part in the above mentioned study. You have been selected for this study as you are a role player in the Supply Chain Management processes of KwaZulu-Natal, Department of Justice and Constitutional Development. Your participation will involve giving responses to a questionnaire regarding your experiences pertaining Supply Chain Management processes employed by this department. The study will take between 20 to 30 minutes of your time. Your participation is valued and would enrich the study as conclusions on the how Supply Chain Management phenomenon has impacted service delivery will be drawn based on your insights and experiences.

Kind regards. ……………………………………

**S'lindile Nkwanyana**

**Tell: 031 372 3042**

**Cell: 071 280 4536**

**Fax: 086 477 11 55**

**Email: SNkwanyana@justice.gov.za**

**LETTER OF INFORMATION**

**Title of the Research Study:** An assessment of efficiency and effectiveness of Supply Chain Management in the Public Sector: a case of Department of Justice and Constitutional Development in KwaZulu Natal Region.

**Brief Introduction and Purpose of the Study:** The study is aimed at assessing efficiency and effectiveness of Supply Chain management within the public sector. It will do so by establishing customer satisfaction level and level of conformance to applicable laws and regulations will be used as a basis for efficiency and effectiveness.

**Outline of the Procedures:** Participants will be required to honestly rate SCM, it functions as well as it partners through distributed questionnaires in satisfying customer needs. Participants will be chosen through purposive sampling and questionnaires will be given.

**Risks or Discomforts to the Participant:** None.

**Benefits:** Participants and their institute will benefit in finding truths on SCM system's efficiency and effectiveness and furthermore it policy makers will get insights on what areas requires urgent interventions and what are possible improvement actions they could implement to better performance.

**Reason/s why the Participant May Be Withdrawn from the Study:** Incomplete information submitted and non-signing of consent form will constitute to exclusion of potential participants in the research however no negative actions will be taken against potential participant.

**Remuneration:** Participation will purely be voluntary and no remuneration will be provided to participants.

**Costs of the Study:** Participants will incur no financial loss and they are not expected to pay any fees towards carrying out of the study.

**Confidentiality:** Information including names of participants and personal responses will strictly be treated confidential and will not at any stage revealed without prior consent of participant.

**Research-related Injury:** None

**Persons to Contact in the Event of Any Problems or Queries: NS Nkwanyana @ 071 280 4536 General:**

Potential participants must be assured that participation is voluntary and the approximate number of participants to be included should be disclosed. A copy of the information letter should be issued to participants. The information letter and consent form must be translated and provided in the primary spoken language of the research population e.g. isiZulu

## CONSENT

**Statement of Agreement to Participate in the Research Study:**

I hereby confirm that I have been informed by the researcher, (name of researcher), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: **231/16FREC**

• I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.

• I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.

• In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.

• I may, at any stage, without prejudice, withdraw my consent and participation in the study.

• I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.

• I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.


_____          _____          _____
**Full Name of Participant**          **Date**          **Signature/Time&Right Thumbprint**

**Nontuthuko S'lindile Nkwanyana**     **2017/05/29**     _____
**Full Name of Researcher**          **Date**          **Signature**


_____          _____          _____
**Full Name of Witness (If applicable)**   **Date**          **Signature**


_____          _____          _____
**Full Name of Legal Guardian (If applicable) Date**          **Signature**

*Please note the following:*

Research details must be provided in a clear, simple and culturally appropriate manner and prospective participants should be helped to arrive at an informed decision by use of appropriate language (grade 10 level - use Flesch Reading Ease Scores on Microsoft Word), selecting of a non-threatening environment for interaction and the availability of peer counselling (Department of Health, 2004)If the potential participant is unable to read/illiterate, then a right thumb print is required and an impartial witness, who is literate and knows the participant e.g. parent, sibling, friend, pastor, etc. should verify in writing, duly signed that informed verbal consent was obtained (Department of Health, 2004).If anyone makes a mistake completing this document e.g. wrong date or spelling mistake a new document has to be completed. The incomplete original document has to be kept in the participant file and not thrown away and copies thereof must be issued to the participant.

**References:**

Department of Health: 2004. *Ethics in Health Research: Principles, Structures and Processes* http://www.doh.gov.za/docs/factsheets/guidelines/ethnics/

Department of Health. 2006. *South African Good Clinical Practice Guidelines*. 2nd Ed. Available at: http://www.nhrec.org.za/?page_id=1

**Questionnaire on assessment of efficiency and effectiveness of Supply Chain Management system in the public sector, A case study of Department of Justice and Constitutional Development in KwaZulu Natal Region.**

| PLEASE NOTE |
| --- |
| This questionnaire should only be completed by employees of the Department of Justice and Constitutional Development in the province of KwaZulu Natal, who are involved in the Supply Chain Management processes. |

All information will be treated with utmost **CONFIDENTIALITY** and will only be used for academic purposes.

**Instructions for participants**

1. Please answer the questions as objectively and honestly as possible.
2. Place a cross (x) in the space provided **using a pen,** at each question which reflects your answer very accurately.

Use the following key: **1** = Strongly disagree; **2** = Disagree; **3**= Neutral view; **4** = Agree **5** = Strongly agree.

| | | Strongly disagree | Disagree | Neutral view | Agree | Strongly agree |
| --- | --- | --- | --- | --- | --- | --- |
| **E1** | | 1 | 2 | 3 | 4 | 5 |

3. Please answer all the questions, as this will provide more information to the researcher so that an accurate analysis and interpretation of data can be made.

**Thank you for your participation. We hope that you will find the questionnaire interesting and stimulating**

**SECTION A**
**Demographic information**

The personal information is required for statistical analysis of data of respondents. All your responses will be treated with utmost confidence it deserves. The researcher appreciates your support in providing this important information.

**Mark the applicable block with a cross (X). Complete the applicable information.**

| A1 | Please state your gender | |
| --- | --- | --- |
| | Male | (1) |
| | Female | (2) |

| A2 | Please indicate in which age group are you? | 19 years or less | 20-29 | 30-39 | 40-49 | 50-59 | 60 years or more |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | (1) | (2) | (3) | (4) | (5) | (6) |

| A3 | What is your highest level of educational qualification? | |
| --- | --- | --- |
| | Matric | (1) |
| | Certificate | (2) |
| | Diploma | (3) |
| | Bachelor's Degree | (4) |
| | Post Graduate Diploma/ Degree | (5) |

| A4 | From the year groups below, please state number of years as a role player in Supply Chain Management within the public sector. | |
| --- | --- | --- |
| | Less than one (1) year | (1) |
| | 1-3 years | (2) |
| | 4-5 years | (3) |

| | | | |
|---|---|---|---|
| | 6-10 years | | (4) |
| | 10 years or more | | (5) |

| A5 | Indicate your population group | African | Colored | Indian | White | Others |
|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) |

| A6 | What is your present position at Department of Justice and Constitutional Development | |
|---|---|---|
| | Middle Management and above | (1) |
| | Supervisor | (2) |
| | Junior Staff | (3) |

## SECTION B
Please indicate your viewpoint regarding the understanding of Supply Chain Management system within your organization.

Please indicate to what extent do you agree or disagree with the statements. Mark the applicable block with a cross (x)

| | | Strongly Disagree | Disagree | Neutral view | Agree | Strongly agree. |
|---|---|---|---|---|---|---|
| B1 | Supply Chain Management during its inception in 2003 came about at a much desired time. | 1 | 2 | 3 | 4 | 5 |
| B2 | Supply Chain Management is well understood. | 1 | 2 | 3 | 4 | 5 |
| B3 | Supply Chain Management is well implemented. | 1 | 2 | 3 | 4 | 5 |
| B4 | Supply Chain Management is adequately resourced in terms of human capital. | 1 | 2 | 3 | 4 | 5 |
| B5 | All role players in Supply Chain Management are adequately trained. | 1 | 2 | 3 | 4 | 5 |
| B6 | All role players in Supply Chain Management process possess adequate knowledge to carry out own tasks. | 1 | 2 | 3 | 4 | 5 |
| B7 | Overall, Supply Chain Management has resulted to a remarkable positive change in service delivery in this organization. | 1 | 2 | 3 | 4 | 5 |

## SECTION C
Please indicate your viewpoint regarding the efficiency of Supply Chain Management system in your organization.

Please indicate to what extents do you agree or disagree with the statements. Mark the applicable block with a cross (x)

| | | Strongly Disagree | Disagree | Neutral view | Agree | Strongly agree. |
|---|---|---|---|---|---|---|
| C1 | Supply Chain Management system brought about transparency to end users in respect of planning. | 1 | 2 | 3 | 4 | 5 |
| C2 | Consultation with end users on issues that affect them is improved though Supply Chain Management processes. | 1 | 2 | 3 | 4 | 5 |
| C3 | Supply Chain Management system allows for participation by end users on decisions that affects them. | 1 | 2 | 3 | 4 | 5 |

| | | Strongly Disagree | Disagree | Neutral view | Agree | Strongly agree. |
|---|---|---|---|---|---|---|
| C4 | Supply Chain Management promotes accountability for actions and non-actions by all those involved. | 1 | 2 | 3 | 4 | 5 |
| C5 | Supply Chain Management enhances conformance to applicable laws. i.e. PFMA | 1 | 2 | 3 | 4 | 5 |
| C6 | Supply Chain Management system resulted to responsiveness to customer needs. | 1 | 2 | 3 | 4 | 5 |

**SECTION D**

Please indicate your viewpoint regarding the effectiveness of Supply Chain Management system within your organization**.**

| Please indicate to what extent do you agree or disagree with the statements. Mark the applicable block with a cross (x) |
|---|

| | | Strongly Disagree | Disagree | Neutral view | Agree | Strongly agree. |
|---|---|---|---|---|---|---|
| D1 | There has been an improved relevancy of goods supplied through inception of Supply Chain Management. | 1 | 2 | 3 | 4 | 5 |
| D2 | There has been an improved quality of goods and services as a result of Supply Chain Management. | 1 | 2 | 3 | 4 | 5 |
| D3 | Goods and services are received in time as a result of Supply Chain Management. | 1 | 2 | 3 | 4 | 5 |
| D4 | Goods and services are rendered to the correct people. | 1 | 2 | 3 | 4 | 5 |
| D5 | Overall, I have trust in Supply Chain Management satisfying my needs. | 1 | 2 | 3 | 4 | 5 |
| D6 | Overall, I rate Supply Chain Management as performing well in satisfying customer needs. | 1 | 2 | 3 | 4 | 5 |
| D7 | If given another option, I would choose to remain with the current Supply Chain Management system. | 1 | 2 | 3 | 4 | 5 |

**SECTION E**

Please indicate your viewpoint on the performance of each of the following elements of Supply Chain Management system in your organization.

| Please indicate to what extent do you agree or disagree with the statements. Mark the applicable block with a cross (x) |
|---|

| | | Strongly Disagree | Disagree | Neutral view | Agree | Strongly agree. |
|---|---|---|---|---|---|---|
| E1 | Demand Management contributes meaningfully in satisfying customer needs in this organization. | 1 | 2 | 3 | 4 | 5 |
| E2 | Acquisitions management performs better in satisfying customer needs in this organization. | 1 | 2 | 3 | 4 | 5 |
| E3 | Logistics Management is carried out appropriately in benefitting end users. | 1 | 2 | 3 | 4 | 5 |

| E4 | Disposals Management is conducted adequately to satisfy customer requirements. | 1 | 2 | 3 | 4 | 5 |
|----|---|---|---|---|---|---|
| E5 | Risk is managed appropriately to minimise it impact to end users. | 1 | 2 | 3 | 4 | 5 |
| E6 | Management of performance is conducted to the benefit of end customers. | 1 | 2 | 3 | 4 | 5 |

**SECTION F**

Please describe at least two (2) actual 'items' that has resulted to your rating of SCM system in part 1 in order of their criticalness.

F1. What have been your worst experiences in the current Supply Chain Management system utilized by your organization?

(1)_____
(2)_____
(3)_____
(4)_____

F2. What have been your best experiences in the current Supply Chain Management system utilized by your organization?

(1)_____
(2)_____
(3)_____
(4)_____

F3. In your view, what enhances/promotes performance of current Supply Chain Management system in your organization?

(1)_____
(2)_____
(3)_____
(4)_____

F4. In your view, what hinders performance of current Supply Chain Management in your organization?

(1)_____
(2)_____
(3)_____
(4)_____

F5.What are the things you believe will better current states of Supply Chain Management in your organization.

(1)_____
(2)_____
(3)_____
(4)_____

F6. Please describe any other issues you wish to bring before researcher's attention that was *not mentioned anywhere above*

_____
_____
_____
_____
_____

**THANK YOU VERY MUCH AGAIN FOR YOUR PARTCIPATION**

## Appendix A7

TO WHOM IT MAY CONCERN

25 March 2018

I hereby certify that I have edited the language of a dissertation by Nontuthuko S'lindile Nkwanyana titled "An Assessment of the Efficiency and Effectiveness of Supply Chain Management in the Public Sector: a Case Study of the Department of Justice and Constitutional Development in KwaZulu Natal Region."

I am Professor Alan Brimer, DLitt (UPE), Professor Emeritus of UKZN.


Yours faithfully,

Alan Brimer