

UNIVERSITY OF KWAZULU-NATAL

**AN ANALYSIS OF THE SUPPLY CHAIN MANAGEMENT PROCESS IN THE
KZN DEPARTMENT OF PUBLIC WORKS**

by

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Master of Business Administration**

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DECLARATION

I, **Nonhlanhla Pamela HLONGWA**, declare that

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“Ngiyabonga ningadinwa nangomuso”. God Bless.

ABSTRACT

Reforming public procurement has had the objective of making delivery of goods and services more effective and efficient, less expensive and capable of providing a better quality of service. These measures have not always been positively received by those mostly affected. The aim of this study was to determine the critical success factors underlying the efficiency and effectiveness of the Supply Chain Management processes that can provide competitive advantage in the procuring of goods & services and assist the Department to render an effective and efficient service delivery as well as ensure that the process complies with the requirements of the Constitution. At policy level, the dissertation seeks to provide a theoretical framework which will help in understanding the effect of supply chain variables in procuring goods & services, as well as the performance of the entire supply chain management processes. In order to obtain a management and officials perspective on the effectiveness of Supply Chain Management (SCM) processes in the Department, a dual approach was used, where qualitative and quantitative methods of data collection were used with a probability sample of 90 questionnaires distributed to Departmental officials and 50 interviews conducted with senior management with the aim of obtaining more insight information on Supply Chain Management processes in the Department. The study revealed that the Departments SCM policies are in line with the SCM Framework and other Regulatory documents, it further revealed that there are challenges in the implementation of SCM processes. Furthermore the study revealed that supply chain is affected by the quality of the relationship with suppliers and selection criteria. The comparative analysis of chapters that preceded this chapter was provided. Possible constraints were presented as findings. Recommendations that were provided include: the review of policies and processes to address the lead time and other challenges, performance management, supplier selection and support, implementation of electronic system in improvement processes and having the right human skill. Successful procurement management emanates from good planning, execution, monitoring and control processes. Although the department's procurement function plays a prominent role in the procurement of goods and services, the success of the contract depends largely on the performance of the contractor and its subcontractors. Therefore, it is essential that the contract procured through supply chain management policy is properly monitored and enforced.

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CHAPTER ONE

1.1 INTRODUCTION AND BACKGROUND INFORMATION

This chapter outlines the background to the study followed by the problem statement and a justification of why the study is important. The objectives and research questions were formulated in line with the problems statement highlighted in this chapter. A comprehensive literature review is presented on the existing body of knowledge in the supply chain management (SCM) area, followed by the methodology section that explicitly explains the quantitative and qualitative research methods to be employed in the study. As is common with other studies of this sort, limitations are outlined at the end of the chapter.

According to Villiers, Nieman and Niemann (2008) Supply Chain Management (SCM) is defined as the management of the flow of goods and services to end customers to satisfy their requirements. SCM is the integration of key business processes from original suppliers through to end-users. Ideal supply chain processes provide products, services and information that add value for customers and other stakeholders. Reforming public procurement has the objective of making the delivery of goods and services more effective and efficient, less expensive and capable of providing a better quality of service. These measures have not always been positively received by those most affected.

Since the inception of the procurement reform process in 1995, the Department of Public Works has been actively involved in conceptualizing and implementing procurement reform. Although the policies have good intentions, there are still a number of challenges in the system. The ineffective performance of staff or the inability to meet users' demands because of processes, quality, price, employee attitude, poor collaboration, planning and the method used are all factors which weaken the reform process. Furthermore, parties often lack information regarding the trustworthiness of the

procurement processes being followed or any information regarding the final decision. Parties therefore often refer to the fairness of procedures in decision-making to determine the trustworthiness of an authority or other party and tend to react positively if procedural fairness is present (Juttner and Maklan, 2011). The KwaZulu-Natal Provincial Department of Public Works SCM processes are not achieving their fullest potential because of the failure to change accordingly with recent practices. This may have a negative effect on service delivery.

The Department of Public Works in KwaZulu-Natal is a provincial government department that is responsible for the financial management and delivery of physical facilities for all other provincial departments, for example Department of Health, Education ectcetra. While the Department of Public Works is guided by the Act to give effect to numerous policy frameworks aimed at delivering the best service to its clients i.e. other departments, it has to enter into Service Level Agreement (SLA's) with its clients. Because the Department primarily contracts out its goods and services through Supply Chain Management processes, time, cost and quality are crucial to satisfying the client departments' needs.

1.2 PROBLEM STATEMENT

A Department's SCM strategies, innovations, and well-planned activities help it to achieve sustainable competitive advantage and hence improve its overall performance. SCM best practices include operating policies, linkages within supply chain firms, improved performance, information technology systems, strategic alliance, performance measures, goal orientation, guidelines and procedures, supplier selection and supplier evaluation. To bring about any intervention in the SCM process in KZN, it is critical to determine which supply chain factors best contribute to the Department's SCM performance, and which ones need strategic revision. This study stemmed from the realization that the Department continues to experience major challenges associated with poor contractor performance. These challenges cause delays in the completion of building infrastructure projects and leave the Department with no option but to cancel the

non-performing contracts. Management has expressed ongoing concern about the inefficient and ineffective procurement processes which are a result of a number of factors, including:

- the misalignment of policies;
- long cycle time; and
- the failure of the procurement section to buy goods and services to the right specifications, of the right quality, in the right quantities and at the right price.

These factors all contribute to higher total costs and delays in getting goods and services delivered. The weaknesses in the procurement policy and processes which result in leakages and corruption as well as the ineffective use of supplier database, remain inadequately addressed.

Section 217 (1) of the South African Constitution requires that when an organ of the state in any sphere of government is procuring goods and services, it must implement a procurement system which is fair, open, transparent, competitive and cost-effective. Mogame (2012) states that the Auditor General found that government and Provincial Departments as well as Public Entities misused vast amounts of public funds in 2012. More than R20 billion spent by National and Provincial Departments was found to have been unauthorized, irregular, wasteful and fruitless expenditure. Supply Chain Management, a division through which contracts and tenders are awarded at both national and provincial departments, was highlighted by the Auditor-General (AG) as a key problem area. The success behind the KZN Provincial Department of Public Works' performance can be attributed to the joint effect of the SCM core competencies, core capabilities, strategy and implementation. It is for this reason that this study seeks to identify the critical factors that contribute to the efficiency and effectiveness of the SCM processes and to recommend ways of improving the supply chain core competencies.

1.3 MOTIVATION OF THE STUDY

The main purpose of the study is to establish the critical factors underlying the efficiency and effectiveness of the Supply Chain Management processes being followed by the Department when procuring goods and services. The study further seeks to identify any inefficient and ineffective performances or inabilities to meet users' demands which are a result of processes, quality, price, employee attitude and poor collaboration planning. Challenges within the process were identified, with the aim of making recommendations that will address the inefficiencies and challenges which are identified and thus help eliminate unauthorized, fruitless and wasteful expenditure and improve service delivery in the Department as well as ensure that the process complies with the requirements of the Constitution.

The Department of Public Works needs to plan for effective Supply Chain Management, in order to gain competitive advantage. However, to ensure that effective Supply Chain Management contributes to business success, it was crucial to determine the critical success factors in Supply Chain Management that can provide competitive advantage in procuring goods and services, which is what this study seeks to do. Furthermore, once these critical success factors have been identified, recommendations will be made that can be conveyed to senior management in firms that want to have an effective Supply Chain Management programme. At policy level, the dissertation seeks to provide a theoretical framework which will help to understand the effect of supply chain variables on the procurement of goods and services, as well as the performance of the entire Supply Chain Management processes.

The findings of this study will benefit in the following ways:

- To assist in addressing any inefficiency in the Supply Chain Management processes followed by the Department when procuring goods and services and thereby reducing fruitless and wasteful expenditure and expediting service delivery,

- To improve officials' understanding of the Supply Chain Management processes in the Department and also to strengthen management's relationship with SCM practitioners, thus increasing efficiency in their service delivery as well as promoting integrated planning,
- To assess the implementation of supply chain strategies and to measure competitiveness relative to other Departments,
- To understand the needs of suppliers better (other directorates) as well as to improve their working relationship and ensure compliance with the principle of the Constitution,
- To empower other employees in the Department as all employees require certain goods and services in order to carry their so the findings will be of importance to them, and.
- To analyze, identify and understand performance gaps in the procurement of goods and services

1.4 FOCUS OF THE STUDY

The Supply Chain Management Directorate in the Department is a section that provides a support function within the Department in terms of the acquisition of goods and services i.e. it handles all the procurement functions within the Department. The main focus of the study is the Supply Chain Management processes being followed when acquiring these goods and services with the intention of determining the critical success factors that contribute to the effectiveness of SCM processes, as well as any challenges being experienced in order to make recommendations for improvement. The study begins with an overview of the Supply Chain Management legislation framework. Attention has been paid to the pillars and elements of the Supply Chain Management process as well as to the Constitutional principles that directly impact on the acquisition of goods and services (i.e. that the process should be carried out in a fair, transparent, equitable, cost efficient and competitive manner with main emphasis on the quality of the services delivered as well as the views of both internal and external users of the system).

1.5 OBJECTIVES OF THE STUDY

The research objective is to determine the critical success factors in Supply Chain Management that ensure effective and efficient delivery of Supply Chain Management processes as well as provide competitive advantage. The objectives of this study are to:

- Determine internal customer perception on Supply Chain Management processes.
- Analyze the efficiency of the Supply Chain Management processes.
- Determine the impact of Supply Chain Management processes on the Departments performance.
- Identify challenges to the smooth operation of the Supply Chain Management processes.
- Provide recommendations for improving Supply Chain Management Processes within the Department.

1.6 RESEARCH QUESTIONS

In fulfilling this objective, this study addresses the following research questions:

- What are the perceived factors that lead to the effectiveness and efficiency of the SCM within the Department?
- What are the critical success factors in Supply Chain Management within the Department with regards to procuring goods and services?
- What are the challenges or barriers associated with Supply Chain Management processes within the Department?
- How does Supply Chain Management impact on the Department's overall performance

1.7 CHAPTER OUTLINE

Chapter one: provided a background of the government's procurement reform process that started in 1995. The background drew attention to Section 217 (1) of the South African Constitution requires that when an organ of the state in any sphere of government is procuring goods and services, it must implement a procurement system which is fair,

open, transparent, competitive and cost-effective, highlights that the fact that the government's decentralization of the control of tenders away from the National Treasury and the State Tender Board was aimed at increased responsibility and accountability by the accounting officer of each. The chapter also introduced the problem statement.

Chapter two: this chapter contextualized historical public sector legislation background, SCM definition, processes. Critically reviewed the available literature on Supply Chain Management, firstly providing the definition in the context of Public Works and identifying similarities in definitions from various researchers. The chapter then outlines the difference between procurement and SCM, and explains SCM processes and key success factors. Lastly the chapter explains some of the barriers in the SCM process as well as suggested ways to overcome the barriers

Chapter three: presents the aims and objectives of the study, followed by the motivation and justification, research methodology questionnaire types to be used were explained, limitations of this research were addressed, and the structure of the dissertation was outlined. The two types of research methods, quantitative and qualitative, were discussed. Discussion on the target population, the sample, data collection process, data analysis, and design was made. In summary, this chapter established a foundation for the data collection and analysis.

Chapter four: concentrated on the presentation of data collected from selected respondents, explained research methods used to collect data and aim at interpreting the data in relation to the research problem

Chapter five: this chapter discusses the findings on literature, results on data collected and objectives of both quantitative questionnaires and qualitative data collected. . This chapter has provided an overview of the most salient findings obtained from the empirical analysis of the data.

Chapter six: conclusion is drawn with regard to the study and then makes recommendations.

1.8 SUMMARY

This chapter has outlined the introduction and background of the study with regards to the Supply Chain Management processes in KwaZulu-Natal's Department of Works. The chapter highlights the fact that the government's decentralization of the control of tenders away from the National Treasury and the State Tender Board was aimed at increased responsibility and accountability by the accounting officer of each department. However, there are flaws in the processes which are encompassed in the problem statement of this study. The chapter further explains the importance of the study in improving the SCM processes; not only in KwaZulu-Natal but also in other government departments. The objectives of the study, which are the basis for the questions to be answered by the study, are also outlined.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

To succeed in the competitive markets that make up today's economy; companies must learn to align their supply chain with the demands of the market they serve. Logistics and Supply Chain Management continue to transform the competitive landscape and have become one of today's key business issues. In addition to meeting today's requirements for the establishment of an efficient government, in government procurement Supply Chain Management, relevant laws and regulations needed to be improved.

This chapter reviews the relevant literature and is made up of several sub-sections. The review starts with a discussion on definitions and approaches to understanding Supply Chain Management. This is followed by the development of a theoretical framework and a discussion on contemporary approaches to competitive advantage. Next there is a discussion on Supply Chain Management, followed by an overview of Supply Chain Management systems. The last section concludes with a discussion on barriers and challenges to SCM, and the summary.

2.2 OVERVIEW OF SUPPLY CHAIN MANAGEMENT

While existing studies have extended the theoretical understanding of supply chain related issues and have highlighted the need for better interaction among the supply chain members, the question of whether the SCM practices are equally effective across all stages of the supply chain has not been explored beyond a few studies (Cook, Heiser and Sengupta, 2010). The following sections provide a comprehensive literature review on the Supply Chain Management factors, processes and barriers that play a role in the successful implementation in any Department, organization or company.

2.3 PROCUREMENT REFORM

After 1994 the South African Government initiated a series of budgetary and financial reforms in an attempt to modernize the management of the public sector to make it more people-friendly and more sensitive to meeting the needs of the communities. As part of this strategy, National Treasury together with the World Bank embarked on a process of analyzing the existing public sector procurement and contract management systems in South Africa and recommending suitable actions to improve the economy, efficiency, predictability and transparency of procurement and contract management process, Moroka (2006).

In terms of the Treasury Regulation, the most significant change brought about by the SCM regulations (16 A) was the abolition of the National State Tender Board and the implementation of bid adjudication committees accountable to the accounting officer. In September 2003 Cabinet adopted the Supply Chain Management (SCM) policy to replace outdated procurement practices. According to the Department of Public Works, SCM policy, the SCM framework is characterized by a number of key differences from procurement including:

- moving away from central control by National Treasury and the State Tender Board towards increased responsibility and accountability by the accounting officer of each department;
- introducing a preference point system to address socio-economic issues, value for money and the scoring of bids, thereby facilitating the move away from relying solely on the traditional practice of only accepting the lowest price bid;
- linking procurement practices to the planning and budgetary process through the introduction of demand management practices;
- assessing the value of an asset based on its contribution to service delivery and the return of public funds invested;
- introducing uniformity in bid documentation to reduce the level of uncertainty amongst bidders; and

- improving the uniformity in government's preferential procurement policies and processes.

The implementation of an integrated Supply Chain Management system contributed significantly towards the improvement of financial management in the public sector. Supply Chain Management also aims to create a consistent framework for achieving good governance and the Government's preferential procurement objectives. The Supply Chain Management Regulations are intended to modernize public sector procurement, provisioning and related functions

Organizations are faced with an array of challenges as they strive to compete in today's dynamic global markets. To remain competitive, organizations or Departments in this context must recognize the importance of supply chain practices that improve not only their own performance, but also coordinate with their supply chain partners to improve their joint performance. Despite the significant advances in research and practices, many organizations continue to struggle to understand the complex issues associated with the coordinated planning and supply activities amongst the members of their supply networks, Cook, Heir & Sengupta. (2010). According to Kotler (2001), time and technological developments have changed the marketplace in which organizations operate to the extent that the digital economy is impacting on Supply Chain Management practices. Between 1960 and 2000, the marketplace has evolved from focusing on lower price competition to a focus on quality, business process re-engineering, logistics, information technologies and ultimately the convergence of all these into the current market environment.

Over the past decade, there has been an increasing emphasis on Supply Chain Management as a vehicle through which firms can achieve competitive advantage in markets, Collin (2003). A large number of examples in the 1990s show how companies have made large investments to streamline their supply chains in order to improve customer satisfaction and increase their internal productivity. As Christopher (1998) states, it is not actually individual companies that compete with each other nowadays, rather the competition is between rival supply chains.

As companies or government departments in this context, seek to integrate decisions across supply chain functions, across geographically dispersed facilities, and across time, facts-based Supply Chain Management is crucial. The importance of facts-based Supply Chain Management is integrated planning and control, which has three important dimensions. The first dimension is functional integration involving decisions about purchasing, processing, and distribution activities within the Department or company and between the Department and its suppliers and customers. The second dimension is the geographical integration of these functions across physical facilities located in one or several provinces. The third dimension is inter-temporal integration of strategic, tactical, and operational supply chain decisions, Shapiro (2001). Borrowing from Shapiro (2001), in the context of the KZN Department of Public Works SCM, strategic planning and control are concerned with Department's resource acquisition, while tactical planning and control focus on resource allocation and refinement, and operational planning and control are concerned with business execution.

Lastly, SCM is important in Departments such as the KZN Department of Public Works because it improves product development, quality and delivery goals, and eliminates wastage. It enables firms to exploit supplier strengths and technologies to support new product development efforts, and to integrate logistics functions with transportation partners to deliver directly to the point of use, Tan, Vijay, Kannan, Handfield & Ghosh (2002).

2.4 DIFFERENCE BETWEEN SUPPLY CHAIN MANAGEMENT AND PROCUREMENT

According to Burt, Doubler & Starling (2003) Supply Chain Management involves the management of all the inter-linked activities within a value adding chain. These include, but are not limited to, Planning, Procurement, Manufacturing or Production Distribution and Customer Service. Also included are all the value adding linkages outside an organization. Procurement management, on the other hand, is one of the elements within a supply chain primarily focusing on the sourcing and purchasing of goods and services

within the supply value chain. In line with the views of the Chartered Institute of Purchasing and Supply (CIPS) and Council of Supply Chain Management Professionals (CSCMP), procurement can be described as one of the macro processes within a supply chain. It is the activity which plans, implements and controls the sourcing and purchasing of tangible or intangible goods.

With the implementation of Supply Chain Management in KZN Provincial Departments the shift was towards the integration of various functions, promoting uniformity in SCM processes and also in the interpretation of government's preferential procurement legislation and policies, which should themselves be seen in the context of other related legislative and policy requirements. Above all, it transfers responsibility and accountability for SCM-related functions to the accounting officers/authorities, (National Treasury (2003).

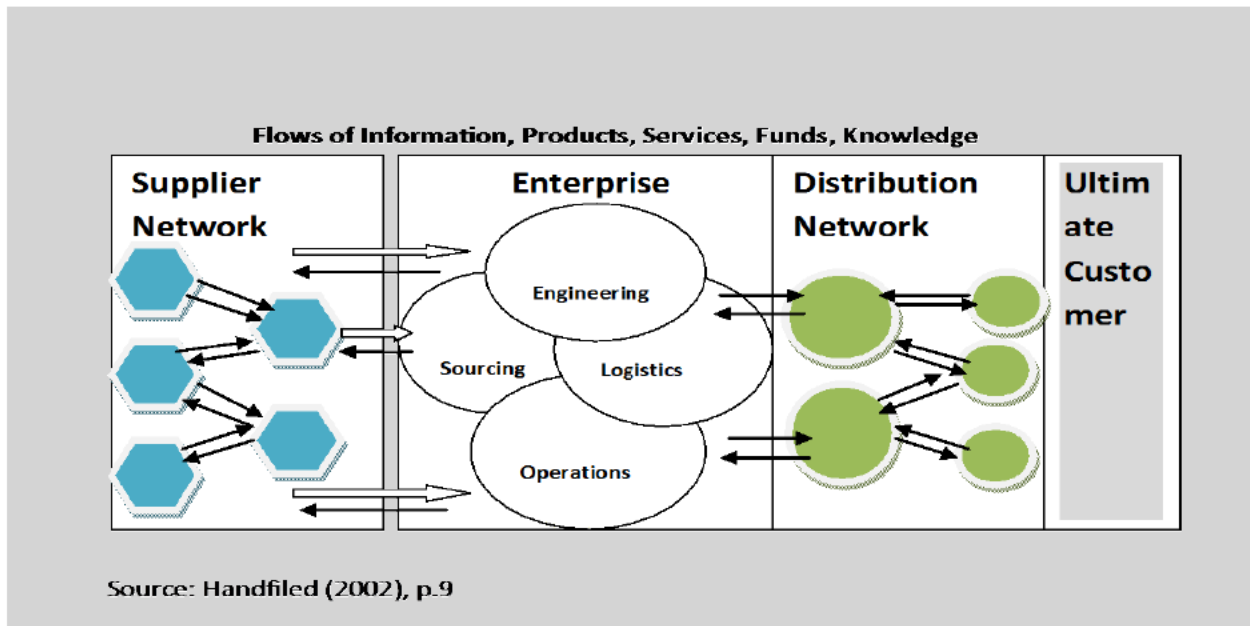
2.5 SUPPLY CHAINS

The supply chain may include internal divisions of the company as well as external suppliers that provide input to a focal company. Furthermore, supply chains are essentially a series of linked suppliers and customers which all play a role in ensuring that products reach the end user, Handfield (2002).

Depending on how complex the supply network is, Mentzer (2001) define three types of supply chains;

1. Direct supply chain, which consists of a company, a supplier and a customer.
2. Extended supply chain, which includes suppliers of the immediate supplier, as well as customers of the immediate customer.
3. Ultimate supply chain, which includes all the organizations involved in all the upstream and downstream flows.

Figure 2.1: Supply Chain Network



With regards to the above framework, Akintoye, McIntosh & Fitzgerald (2000) recommended that in managing the supply chain for total quality, the general contractor must develop an enabling structure and an efficient communication system for effective relationship management as part of project management. This is true in the context of the KZN Public Works Department. It is not only efficient communication and effective leadership, but also a collaborative action plan where senior and other employees participate in the SCM process equally.

2.6 DEFINITION OF MANAGEMENT

According to Rozman (2000), there are three processes in an organization which assure the rational achievement of goals: organizational processes, coordination processes, and decision making processes. Organizational processes are defined as goal-oriented processes which ensure the rationality of people's actions and behavior and a rational achievement of the social unit's goal. Rationality is achieved through coordination, which in turn is achieved by taking care of the problems and by making approximate decisions. Coordination in this context is the essence of achieving rational behavior within the KZN Department of Public Works. It encompasses the coordination of

activities, goals, interest, and relationships. Management is the process of controlling and organizing the work that a company or organization does. It is the coordination of divided activities (i.e. who does what) or managerial process or functions in an organization Rozman, (2000). According to Smit and Cronje (2007) management is the process undertaken by one or more individuals to coordinate the activities of others to achieve results not achievable by one individual acting alone.

2.7 SUPPLY CHAIN MANAGEMENT DEFINITION

There are different definitions of SCM, and there is a lack of consistency in the meanings available in literature. A generic definition given by Tan et al. (1999) is “the simultaneous integration of customer requirements, internal processes, and upstream supplier performance is commonly referred to as Supply Chain Management (SCM)”. They explain that a key element of successful supply base management involves the downstream integration of customers as well as the management of upstream suppliers Tan et al., (1999). A similar definition given by Christopher (1998) is that SCM is a network of relationships, with the goal to deliver superior value, i.e. “The management of upstream and downstream relationships with suppliers and customers to deliver superior value (in manufacturing products and services) at less cost to the supply chain as a whole”. You need a Page no for this quotation. Other researchers have provided broader definitions as follows:

“The delivery of enhanced customer and economic value through synchronized management of the flow of physical goods and associated information from sourcing through consumption”, Akintoye et al (2000).

“The integration and management of supply chain organizations and activities through cooperative organizational relationships, effective business processes, and a high level of information sharing to create high performing value systems that provide member organizations sustainable competitive advantage”, Handfield(2002).

“Supply chain management is defined as the management of the flow of goods and services to end customers to satisfy their requirements” Villiers, Nieman and Niemann, (2008).

“Supply chain management is the integration of key business processes from end-user through original supplies that provides product, services and information that add value for customers and other stakeholders. It is the identification, acquisition, access, positioning, and management of resources and related capabilities an organization needs in the attainment of its strategic objectives”, Harndfield, Manckza, Giunipero and Petterson, (2011).

The various definitions cited above indicate that SCM prescribes organizational restructuring, extended to the achievement of a company-wide collaborative culture, Akintoye et al (2000). The definitions summed up Supply Chain Management as the process of planning, implementing, and controlling the operations of the supply chain with the purpose of satisfying customer requirements as efficiently as possible. Furthermore, it encompasses the planning and management of all processes involved in sourcing, procurement, conversion and logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers and customers, Van Weele, (2005).

Its consist of all stages involved, either directly or indirectly, in fulfilling a customer request and involves the management of flows (products, information, and money) between and among stages in a supply chain to maximize total profitability, Chopra and Meindl, (2001). It aims at building trust, exchanging information on market needs, developing new products, and reducing the supplier base to a particular original equipment manufacturer so as to release management resources for developing meaningful, long term relationship (Berry et al, 1994).

2.8 SUPPLY CHAIN MANAGEMENT PROCESSES

According to Cooper, Lambert & Pagh (1997) SCM as a management philosophy takes a system approach to viewing the supply chain as a single entity. This means that the partnership concept is extended into a multi-firm effort to manage the flow of goods from suppliers to the ultimate user. Each firm in the chain directly or indirectly affects the performance of other supply chain members, as well as the overall performance of the supply chain. When a company adopts a certain philosophy, a set of management practices must be established to ensure across the board behavior which is consistent with the philosophy. SCM philosophy requires the extension of certain behavior to external partners (suppliers, customers) and in this context the philosophy of SCM turns into a set of activities that represent the philosophy. SCM implementation is therefore carried through by three primary elements: the supply chain network structure, the supply chain processes, and the management components.

According to the Department of Human Settlements SCM Procedure Manual (2006), Supply Chain management is an integral part of prudent financial management that introduces internationally accepted best practice principles and at the same time addresses government preferential procurement objectives. Integrated Supply Chain Management aims to add value at each stage of the process, from demand of goods or services to their acquisition, to managing the logistics process to disposal after use. SCM addresses deficiencies in the previous procurement system as well as obsolescence planning. It combines all parties both inside and outside the organization, which are involved in delivering the inputs, outputs or outcomes that will meet a specified public sector requirement. With regards to Public Works, Wong and Kanji (1998) cited in Akintoye et al, (2000) believed that construction SCM, when adopted along with partnering and total quality management, can successfully address major problems of the industry and its clients. They visualized a wider and clearer vision of project partnering and their view of the link to total quality management has been emphasized by other researchers. Akintoye et al. (2000) however noted that the construction industry has been slower to employ the concept, which has been embraced elsewhere, perhaps because of

the unique context in which SCM collaboration must be applied, i.e. an organizational structure consisting of individual elements in the nature.

Waller (1997) cited in Akintoye et al. (2000) stresses rigorous attention to quality, cost and lead or delivery times based on teamwork, co-operation and elective coordination throughout the organization in SCM. A study by Lambert et al. argued that senior management must address the process and they identified three closely inter-related elements to aid the SCM task, namely the supply chain network structure; the business processes; and the management components (Lambert et al., 1998 cited in Akintoye et al., 2000). An organization's supply chain is an integral part of its approach to market its service. The supply chain needs to respond to the market's requirements and do so in a way that supports the organization's business strategy. The business strategy the company uses, is based on the needs of the customers that the company serves or will serve. Depending on the needs of its customers, a company's supply chain must deliver the appropriate mix of responsiveness and efficiency.

In view of the above definitions, it is evident that Supply Chain Management is the integration of all supply chain functions and parties. According to Fredendall et al. (2001) the power of Supply Chain Management lies in supply integration. The integration of the customer into Supply Chain Management improves the information flow all along the supply chain. Although definitions of Supply Chain Management differ across authors, they can be classified in three categories (Mentzer, 2001): a management philosophy, the implementation of a management philosophy, and a set of management processes as explained in the following section.

2.9 SUPPLY CHAIN DEVELOPMENT AND MAIN INITIATIVES

In today's global economy, companies face increasing pressure to reduce costs while maintaining production and quality levels to deliver results. In order to achieve these goals, companies must successfully overcome a number of challenges.

Handfield (2002) summarizes drivers into:

- Ever increasing customer demand in terms of product and service costs, quality, delivery, technology, and cycle time brought about by global competition;
- The emergence and greater acceptance of higher-order cooperative inter-organizational relationships; and
- The information revolution.

The consequence of this development is that companies are putting more and more effort into developing new ways to increase their competitiveness on the market in terms of more efficient and effective Supply Chain Management. Cooper et al. (1997) argued that although most companies may express enthusiasm for cross-functional collaboration, both within the enterprise and with supply chain partners, in reality, very few companies have successfully implemented the practices and technologies needed to do it well.

2.10 SUPPLY CHAIN MANAGEMENT PILLARS

There are five pillars of Supply Chain Management. They are best described as pillars because if any one of them is broken, the procurement system falls down:

- Value for money;
- Ethics and fair dealing;
- Competition;
- Accountability; and
- Reporting.

2.10.1 Value for money

The Concept of Value for Money (VFM) in everyday life is easily understood as not paying more for an item or service than its quality.. In relation to public spending it implies a concern with economy (cost minimization), efficiency (output maximization) and effectiveness (full attainment of the intended results). What values are realized by the activities of public sector organizations? Whose values are they and how are they to be

measured? The practical conclusion is that policy makers must frame precise aims so that at least there are some criteria with which to compare results, Glendjinning, (1998). In procurement decision-making, the government aim is to secure the maximum improvement in public services from investment by maintaining an unbiased stance on which the procurement route will offer value for money in each case, Pitt, Collins and Walls, (2006).

2.10.2 Ethics and Fair Dealing

Ethical practice includes areas such as transparency, honesty, impartiality, due diligence, confidentiality and fidelity to professional codes of practice. Bribery, gift-giving and entertainment are being used to induce purchasing personnel to favor particular suppliers rather than being guided solely by factors such as price, quality and delivery. Business scandals decrease corporate credibility, reduce client loyalty and may lead to assimilation, dissolution or bankruptcy Benson, (2006). Ethics and fair dealing in public procurement are a mark and distinctive feature of professionalism. A general lack of regularity and discipline in a public procurement system attests to the inadequate professionalism in the workforce as a whole. To ensure ethics and fair dealing in public procurement, all public procurement personnel, particularly those dealing directly with suppliers or potential suppliers are required to recognize and deal with conflicts of interest or any potential traits of the same. Under such circumstances, they are morally required to reveal any personal interest that may impinge or might reasonably be deemed by others to impinge on any business dealings with the suppliers Wood, (1995).

2.10.3 Competition

The profitability of many firms depends on the competitive effectiveness of supply chains in which they are members. Supply chain management (SCM) seeks to enhance competitive performance by closely integrating the internal functions within a company and effectively linking them with the external operations of suppliers, customers, and

other channel members Walley, (1995). According to National Treasury's guidelines, Public Supply Chain Management requires:

- a framework of procurement laws, policies, practices and procedures that is transparent, i.e. they must be readily accessible to all parties;
- openness in the procurement process;
- encouragement of effective competition through procurement methods suited to market circumstances; and
- observance of the provisions of the Preferential Procurement Policy Framework policy.

2.10.4 Accountability and Reporting

Openness and transparency to external scrutiny through public reporting, is an essential element of accountability within the procurement framework:

- Heads of Departments are accountable to their Ministers for the overall management of procurement activities;
- Heads of Procurement and Senior Procurement Directors are accountable to Heads of Departments for various high-level management and co-ordination activities;
- Individual procurement officers are accountable to Heads of Procurement, and to their clients, for the services they provide; and
- All people exercising procurement functions must have regard for these guidelines and are accountable to management.

2.11 Public sector Supply Chain Management Approach

At national, supra-national and international levels, public procurement sits within legislative, administrative and judicial frameworks and much of those frameworks have been set by politicians. There is a fundamental and accepted difference between public

procurement and private sector procurement. However, at the national, regional and local levels, the public sector works within a narrower framework of democratic governance strategy and management. Local people exercise their right to determine how and by whom they should be governed through the “ballot box” Murray, (2009).

2.11.1 Public Sector Approach

Unlike private sector procurement, public sector procurement is more regulated and there are more rules to comply with, and more policy considerations to take into account. In the KwaZulu-Natal (KZN) Province, KZN Provincial Treasury is responsible for the enhancement of international Supply Chain Management principles of best practice in the Province by giving guidance to Provincial Departments, Municipalities and other State Institutions in the Province as well as for the promotion of uniformity in the processes relevant to the repealing of tender board legislation. The key principles underpinning procurement of goods and service in terms of Section 217 (1) of the Constitution require that an organ of the state in all sphere of government must implement a procurement system which is fair, open, transparent, competitive and cost-effective.

2.11.2 Fair and Equitable

Procedural fairness refers to the fairness of the actual decision-making process. It may exist as the consideration of one’s opinions, the ability to partially influence or voice opinions in the decision-making process, the consistency of the process in applying criteria, suppressing bias, using accurate information, ensuring ethical treatment, providing adequate representation in the decision-making process or timely feedback. It also plays a vital role in cooperative behavior amongst in-group members, as all parties in the group are motivated to achieve outcomes that are both efficient and equitable. To maintain a repeated social exchange based upon norms of reciprocity, the respective physical inputs of each partner must be perceived as fair by the other partner, Zhang and Jia, (2010). In public procurement fairness means that decision-making and action should be unbiased and there should be no preferential treatment given to individual or firms

when acquiring goods and services. All bids should be considered on the basis of compliance without unfair discrimination and all bidders and providers should be treated equally throughout the whole acquisition process and should be given access to the same information.

2.11.3 Transparent

Transparency is of utmost importance at every stage of the supply chain as it guarantees equal opportunity and access to stakeholders. The government of Malaysia is introducing and implementing e-procurement, i.e. the use of electronic methods in every stage of the purchasing process from the identification of requirements, through procurement to payment and potentially to contract management. It ensures greater transparency, and provides equal opportunity in bidding for government contracts. In the long run, effective practice of e-procurement provides a conducive environment for robust competition, attracting the best suppliers and resulting in money well spent (Hui, Othman, Omar, Rahman and Haron, 2011). It is an essential aspect of ensuring accountability and minimizing corruption, and requires government to adhere to higher standards of conduct by ensuring that conduct will be open to scrutiny.

A lack of transparency in the sense of absence information on rules and practices could operate as a barrier to trade and may affect foreign suppliers more than local ones. Supply chain and procurement rules will ensure that goods and services are obtained at the most economic prices and thus lead to a reduction in costs. According to Rago (2001) the most important benefit of transparent and open procedures is the impact which their adoption may have on the level of corruption in countries where it is widespread. Transparency promotes trust by allowing stakeholders to see and judge the quality of government actions and decisions. The procurement process should be open and predictable and should afford each prospective bidder timely access to the same and accurate information.

2.11.4 Competitive

Competitive tendering is the means by which most goods and services are procured. Tikkanen and Kaleva (2011) described competitive tendering as the best method to use in procurement, as it aims at a more economical way to produce goods and services. It is also a strict process, which aims at selecting the most economically advantageous tender or the tender with the lowest possible price. The supplier's credibility in carrying out previous contracts, the price and the most competitive bid will be taken into account when awarding the tender. The most important information source for suppliers is the tender advertisement. For the contracting authorities, the bids submitted must be accurate as the provision of inaccurate data will result in misunderstandings and increased costs. The better the quality of information provided, the less likely an unsatisfactory purchase is. The selection must also include other valid criteria, which include experience, quality and financial affordability of the suppliers in addition to the lowest price. The evaluation criteria need to be open and transparent. Value for money is an essential test against which the Department must justify any procurement/acquisition outcome. It is, however, not the only factor to be considered when comparing the alternative solution. Other factors would include that the goods or service offered meet the requirements of the Department; Historical Disadvantage Individuals representatives and Black Economic Empowerment status of the company bidding; and the capacity of the company to deliver the required product/service within the specified period.

2.11.5 Cost Effective

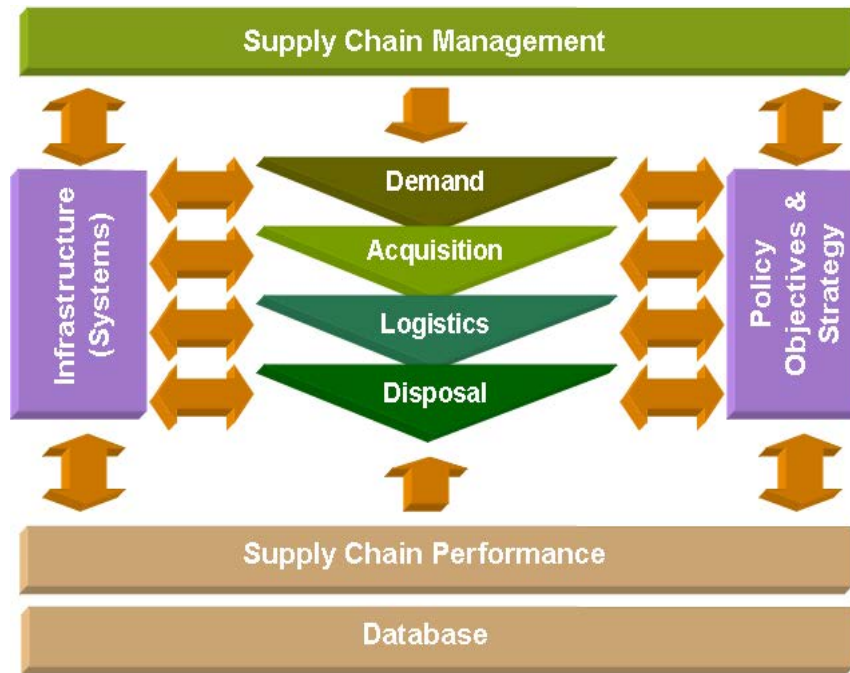
The system should strive for effectiveness and should carry out its procurement processes as cost-effectively as possible while meeting the commercial regulatory and socio-economic goals of government in a balanced manner appropriate to the procurement requirement. Value for money involves comparing alternative goods/services available in the specific market prior to a specific choice being made.

This means comparing the costs against the benefits to be obtained in that specific service. The benefits should compare favorably with the price that would be paid for those goods/services. Supply chain practitioners should at all times strive for good value for money when they procure goods or services.

2.12 Effective Supply Chain Management

Waller (1998) states that supply chain efficiency have become a dominant corporate paradigm, driving business models and, at least in the short-term, delivering improved profitability. Effective supply chain management requires proper supply, demand and logistics management. Supply management includes the effective management of suppliers, supplier networks and relationships with them. Demand management seeks to ensure the effective planning and management of information between buyers and suppliers for procurement, deliveries and processes in order to ensure a continuous flow of goods and services at the time, place and quantities in which they are needed. Logistics management focuses on the effective flow of goods from the point of origin, through the supply chain, to consumption (Burt et al., 2003). According to National Treasury (2005), an effective Supply Chain Management model for the public sector is as follows:

Figure 2.2: Government Supply Chain Management Model



Source: National Treasury (2004:18)

As indicated in the diagram above, public sector Supply Chain Management has five elements in its models, namely the Demand Management, Acquisition Management, Logistics Management, Disposal Management and Supply Chain Management Performance. Treasury Regulation 16A3.2 (d) further regulates the sixth element of Supply Chain Management which is Risk Management. These six elements are essential in managing the supply chain proactively to ensure delivery.

2.13 KEY SUCCESS FACTORS IN SCM

Successful management of the supply chain is the key to the long- term success of an organization, Tan et al., (1999). Factors of efficiency and effectiveness of the Supply Chain Management processes include the quality of service, closely followed by cost benefits to be derived from a supplier and the extent to which the relationship will lead to a simplification of the process, followed by reliability of supply, top management support and mutual interest, Akintoye et al.,(2000). Furthermore, the most important factor that a contractor considers when forming a supply chain relationship with a client, is the cost

benefits to be derived from such relationships, followed by the simplification of the processes of, tendering and design, Tan et al, (1999). Tan et al. (1999) argued that it was therefore imperative for managers to ensure that their quality and procurement implementation strategies, tactics, and measurements were correctly aligned with strategies in the areas of finance, operations, marketing, new product development, and sales. The following section outlines the key components necessary for the successful implementation of SCM in an organization or Government Department such as the KZN Public Works.

2.13.1 Key Components of SCM

The level of supply chain maturity drives both supply chain and financial performance. However, companies must select supply chain practices that are most aligned with their supply chain strategy and overall business. The following are critical best practices that will drive a company's strategic objectives forward, and underpin a framework for successful SCM. The core disciplines are to:

- view supply chain as a strategic asset (designed around a defined basis of competition to enable overall business strategy);
- develop end-to-end processes and systems to interface efficiently with the rest of the organization;
- design organizational and necessary skills required;
- build the right collaborative model based on core competences and selection of the right partners, to maximize focus and profitability; and
- Use metrics to measure the health of the process and identify problem areas.

Five Core Disciplines for Strategic Supply Chain Management framework can be fitted in government departments such as the KZN Department of Public Works, as it explains in summary management as planning (business and organization), leading and controlling. Organizational or Departmental planning is connected to developing end to end processes, designing organization and building the right collaborative model, while

metrics is related to controlling. Leadership is, on the other hand, one of the key components of successful implementation of those plans and is therefore the key skill of manager's, Cohen & Rousell, (2004)

2.13.2 Key Supply Chain Processes

No matter what strategy the company has chosen for their supply chain, the implementation of that strategy should include architecture details in processes, applications, and information. According to Cohen & Rousell (2004), effective supply chain processes in the Department should:

- Fit to supply chain strategy and support the basis of competition;
- Ensure end-to-end management, by having the same vision and set of shared objectives;
- Be simple and easy to understand to reduce complexity which adds to costs and decreases manageability, and
- Have an adequate level of integrity in terms of integrated applications, accurate data, and documented processes.

Cohen & Rousell et al. (2004) further indicates that the company must select state of the art practices and processes that really fit the strategy. This will ensure an improvement on the basis of competition and avoid the trap of choosing costly cutting edge practices that provide only marginal support. This means that when the government departments or organizations or companies are competing on excellent service, the processes that are critical are related to collaborative planning with customers, segmentation of customers to be able to satisfy different customer segment needs and the ability to adapt to customer demands which may change.

2.13.3 Design of SCM

The organization (structure and processes) needs to be reviewed periodically to ensure that strategic business development is supported and that the people who have been

assigned to different roles have the technical and managerial skills to execute their defined responsibilities effectively. Supply chain organization, as with any other organization, evolves constantly. Depending on changed business requirements or identified improvements initiatives; the roles and responsibilities might change, as well as goals and priorities. Effective supply chain organization must have the following characteristics, Cohen et al. (2004):

- Supports the overall business strategy and development goals;
- Provides skills and core competencies either internally or through strategic partnerships which are needed to execute all supply chain processes;
- Has metrics in place to measure performance; and
- Follows a set of practical design principles.

Organizations are increasingly faced with the reality that they cannot exist in isolation but are one piece of a complex chain of business activity (Tan et al., 1999). The lack of senior management commitment, the lack of appropriate support structures and the widespread ignorance of supply chain philosophy, must all be addressed if construction is to emulate other industries. Appropriate training and education, at all levels of the industry is required to overcome these barriers, Akintoye et al, (2000). Above all, enabling institutional arrangements are vital in the successful implementation of SCM, and the following section highlights relevant public sector legislative frameworks in SCM.

2.13.4 Demand Management

Demand Management is the first phase of Supply Chain Management. It is the action of assessing 'what' goods or services are needed, and then 'planning' when and how that product and/or service will be sourced. It is a stage where research and planning takes place and its objective is to ensure that the resources required fulfill the needs identified in the strategic plan of the organization and that delivery is made at the correct time, price, place and quality. It is also a stage that ensures that specifications are precisely

determined and the supplier industry is analyzed. The purpose of demand management is to ensure that resources to fulfill the needs that were identified in the strategic plan are delivered at the correct price, time, place, quantity and quality. In the public service demand management starts with the assessment of, and accepts inputs from:

- The department's strategic plan;
- Annual performance plan;
- Approved budget;
- Preferential procurement objectives/targets; and
- Existing contract register.

These inputs are then collated and it is this information that forms the basis of the Procurement Plan. Once the Procurement Plan is compiled, the next step would be to determine the optimal sourcing strategy for those goods and/or services when the need arises, i.e. requisitioning for goods and/or services. The sourcing strategy will also take into consideration the results of the market assessment that would have been conducted. This will determine what products are available, at what price and who is producing these goods and/or services.

Demand chain management attempts to analyze and understand overall demand for markets within the firm's current and potential product range. Supply chains, by contrast, emphasize efficiencies in the production and logistics processes, while the demand chain emphasizes effectiveness in the business. It analyze and helps management to improve an organization's processes by aligning the organization plan, improving coordination within the supply chain by using forecasts and plans, and exploiting the processes by understanding consumer demand and selecting those markets that best meet an organization's needs (Walters, 2006). Proper demand management practices allow the SCM unit to prepare itself and the supplier base to meet the need for services required.

2.13.5 Acquisition Management

According to Menter, Dewit. Kebbler, Min, Nix, Smith & Zacharia (2001), the word 'acquire' means to obtain or attain something which, in the Government context, may be a product and/or service that is required to fulfill a need. Acquisitions management thus refers to the management of the entire process of acquiring the particular product and/or service which satisfies the need. This process covers the acquiring of the goods and/or services by implementing the sourcing strategy determined by demand management and the administration thereof.

According to National Treasury, (2004) the primary objective of Acquisitions Management is to fulfill the demand determined by the Demand Management phase of Supply Chain Management. In the public sector Acquisition Management is thus driven by the Department's Procurement plan and refers to a process of establishing: what will be acquired, when, how and from where it will be acquired, how much is required and at what price, as well as contracting with the vendor. The desired outcome is a well-managed process of acquisition that results in satisfying the need that arose.

The purpose of acquisition management is multi-faceted. It must ensure that acquisition delegations are in place in the organization, that the market is assessed and a sourcing (procurement) strategy is determined. Furthermore, it is responsible for ensuring that bid documents are compiled, bids are solicited, and responses are received and evaluated. Finally, it assesses the bids and awards by the Bid Adjudication Committees in accordance with published criteria and ensures that proper contract documents are signed. Acquisition management considers the following, National Treasury, (2004):

- Decide on the manner in which the market will be approached.
- Establish the total cost of ownership of a particular type of asset.
- Ensure that bid documentation is complete, including evaluation criteria.
- Evaluate bids in accordance with published criteria.
- Ensure that proper contract documents are signed.

2.13.6 Logistics Management

Logistics management is the third element of Supply Chain Management and deals with the ordering and provisioning of goods and/or services within the Department. It is the process of determining when goods and/or services are procured, received, stored and distributed. This typically involves the processes of ordering, receiving, payment, provisioning and inventory management. Logistics management is the process of planning, implementing, and controlling the efficient and cost-effective flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption for the purpose of conforming to customer requirements (Chiu, 1995). Effective logistics management provides a major source of competitive advantage if it can control costs and enhance service differentiation (Goh and Pinaikul, 1993).

The purpose of logistics management is to place orders against contracts for goods and services, receive and distribute goods, code items, set inventory levels and manage stores or warehouses where stock are kept (including coding of items, setting of inventory levels), manage transport arrangements and monitor vendor performance. The logistic process must be geared to activate the financial system to generate payments against orders placed/received.

2.13.7 Disposal Management

According to Ericsson (2011), disposal management is when the institution must do away with the unserviceable, redundant or obsolete movable assets. The purpose of disposal management is to dispose of movable and immovable assets at the best value for money to the state. The SCMU is responsible for the following functions as it relates to disposal of movable assets:

- obsolescence planning;
- maintaining a data base of redundant material;
- inspecting material for potential re-use;

- determining a disposal strategy; and
- executing the physical disposal process.

2.13.8 Performance Management

This is a monitoring process which is undertaken as a retrospective analysis to determine whether proper processes have been followed and whether the desired objectives were achieved. Performance studies and models should be created so that organizational goals and the achievement of those goals can be measured, thus allowing the effectiveness of the strategy or techniques employed to be assessed (Gunasekaran, Patel and McGaughey, 2003). Monitoring and reporting represents a key component of the Supply Chain Management (SCM) framework. It interacts with each of the main functional areas represented in the framework and provides an overall snapshot of the performance of the Departments Supply Chain Management.

This process is aimed at developing and setting up periodic reports to management based on a limited number of well-chosen key performance indicators. These indicators will generally relate to cost savings that have been realized, supplier performance, lead-time reduction, inventory reduction, reduction of capital employed, and payment terms. In the purchasing reporting process, actual results will be compared against previously established goals and targets. In international companies some uniformity in reporting is mandatory to be able to allow for sufficient comparison among business units and purchasing units. Such reporting allows for effective management of purchasing as well as supplier performance. According to the National Public Works SCM policy (2006) some of the issues that may be reviewed are:

- compliance to norms and standards;
- cost efficiency of SCM process (i.e. the cost of the process itself);
- Achievements against Preferential Procurement Objectives (BEE Targets).
- Achievements against the Procurement Plan, more specifically:
 - Awards per municipal area;

- Awards per industrial sector;
- Actual award value versus cost estimate;
- Efficiency in process turnaround times.

2.13.9 Risk Management

As a systematic use of organization-wide processes to identify, assess, manage, and monitor risks so that aggregated information can be used to protect, release, and create value, risk management aims to provide decision makers with a systematic approach to coping with risk and uncertainty (Williams, Bertsch, Dale, Wiele, Iwaarden, Smith and Visser, 2006). This is a stage where risk assessment is facilitated to determine the material risks to which the Department may be exposed and to evaluate the strategy for managing those risks.

The high occurrence of procurement fraud requires the management of an enterprise, the risk manager of the enterprise and the internal auditor to address procurement fraud risks effectively within the enterprise risk management concept. The purpose of this is to explain a procurement fraud risk management process which will serve as a comprehensive framework for enterprise risk managers and for internal auditors to limit the enterprise's exposure to procurement fraud as far as possible. The study by Venter (2005) on which the article is based proposes a procurement fraud risk matrix which can be used to manage fraud risks within the procurement function efficiently. This matrix is based on the Committee of Supporting Organizations of the Tread way Commission's (COSO's) Enterprise Risk Management-Integrated Framework which is specifically applied to address the procurement fraud risk problem.

2.13.10 Enabling Conditions

Purchasing and supply chain strategies should support the overall business strategies of the company. Strategic priorities should be reflected in the incumbent purchasing strategies and plans. For strategic commodities it is not advisable that every business unit

creates its own priorities and individual supply plans. It is important that rules and guidelines are available on how to develop and implement such plans; therefore the templates to use as well as how to structure the process of decision-making should be used across the organization (Van Weele, 2010)

According to Fawcett, Magnan & McCarter (2008), professional purchasing relies on cross-functional teamwork. Purchasing strategies and plans need to be developed in close collaboration and shared between units and departments. In addition, training and education are mandatory in order to change the often traditional view on purchasing that is prevalent in companies. The cross-functional procurement team needs to be thoroughly trained on the core functions of the company and on their tasks and responsibilities. A company is as good as the people that work for it. HRM is responsible for defining the right competence profiles for the purchasing positions involved as well as for the recruitment, training and development of the employees meeting these profiles. Performance appraisals, defining a proper salary and remuneration policy and providing an attractive career path for those mature in organizations is the responsibility of the HR department. The competence profiles need to be changed and adapted when necessary because change is a constant factor in modern procurement organizations.

Van Weele (2010) proposed that to be able to produce effective purchasing management information, investments in advanced IT system are necessary. Purchasing information systems should be seamlessly integrated with incumbent ERP systems. These purchasing information systems should include specific procurement solutions aimed at simplifying order-to-pay transactions through electronic ordering and payment. This is one of the reasons why large companies have initiated standardization of their procurement processes based on international best practices.

These are the essential enabling tools that a company must balance and invest in. The similarity between strategic management and enabling processes is that that both need to be conducted in parallel in a company if that company want to create sustainable performance. If a company only invests in strategic management processes, the internal

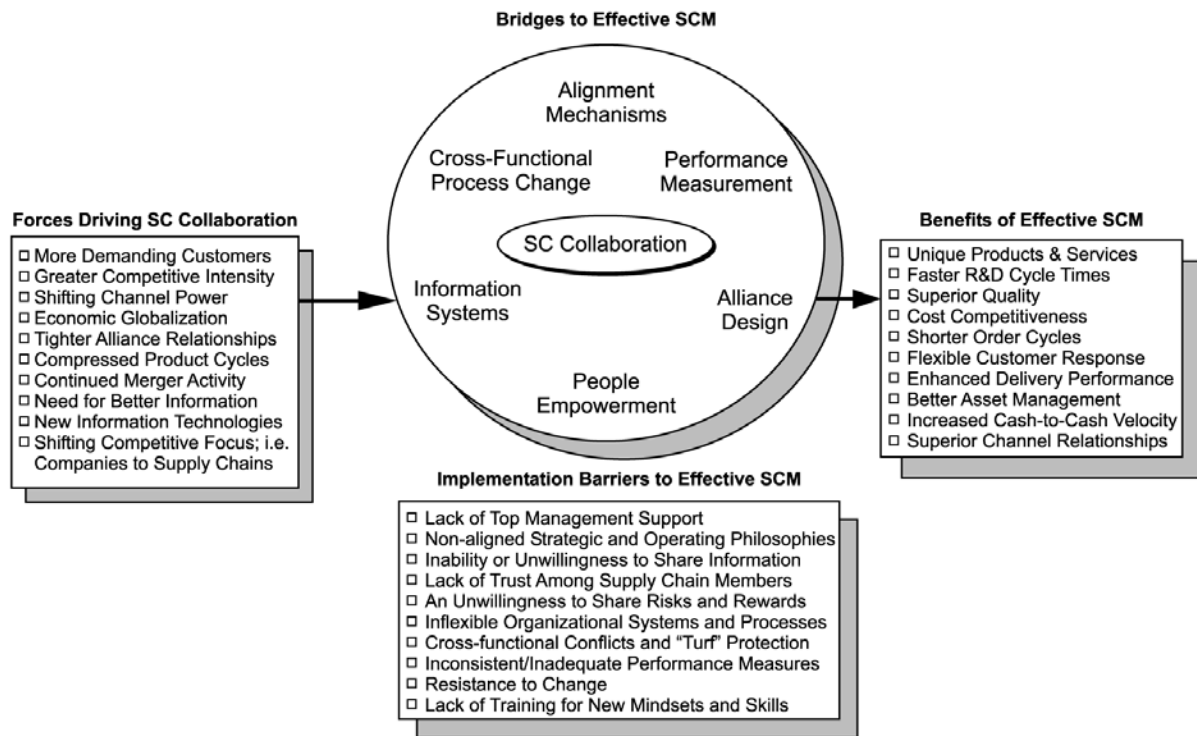
organizational structure and the lack of system and competent staff will impede a sustainable implementation.

2.14 BARRIERS TO EFFECTIVE SUPPLY CHAIN MANAGEMENT

Supply Chain Management is the integration of key business processes from end user through original suppliers that provide products, services, and information that add value for customers and other stakeholders remove communication barriers and eliminate redundancies through coordinating, monitoring and controlling processes. The integration of the supply chain has been described as being the equivalent of elevating the linkages within each component of the chain, facilitating better decision making to get all the links of the chain to interact in a more efficient way and therefore creating supply chain visibility and identifying bottlenecks (De Villiers, Nieman, and Niemann, 2008).

The strategic supply chain continues to be adopted by organizations as the medium for creating and sustaining a competitive advantage. The benefits of successful Supply Chain Management include improved service delivery and inventory management amongst others (Fawcett, Magnan and McCarter, 2008). Even though there are definite benefits there are still barriers in the system. For example, ineffective performance or the inability to meet customer demand as a result of quality, employee attitude and poor collaboration planning (Juttner and Maklan, 2011).

Figure 2.3: Contingency Framework



Source: Fawcett, Magnan and McCarter (2008)

Figure 2.3 above indicates a contingency framework of understanding SCM implementation. To ensure effective Supply Chain Management, an organization must scan the environment for the forces driving SCM to identify any potential barriers or resisting forces and implement bridges that enable supply chain to maintain competitive success in changing environments and become a successful strategic supply chain. These barriers can be classified into inter-organizational rivalry and managerial complexity. Inter-organizational rivalry is the misalignment of motives and behaviors among partners in the supply chain as a result of poor collaboration or lack of trust.

According to Gryna (2001), management of the supply chain is affected by the quality of the relationship with suppliers. Selection criteria and trends are moving towards partnerships in Supply Chain Management. These partnerships can be facilitated through joint economic and technological planning and cooperation in the execution of contracts. Joint economic planning should identify value adding activities rather than focusing on conformance to specifications to improve or maintain quality at lower costs. It should

reduce ownership costs by identifying costs over the life cycle of the product to identify opportunities to reduce these costs in the interest of both partners. Joint technological planning should strive for a shared understanding of all requirements (specifications and interpretations, processes, quality control and inspection requirements) and systems that are required to provide continuous and timeous feedback and responses. The above barriers can be broken down into management and organizational issues within an organization such as the KZN Department of Works and with other departments and external partners.

Fawcett et al. (2002) argued that the most common bridges that can help overcome barriers are: senior and functional management support, open and honest information sharing, good measurement systems, process documentation, education and training, and the use of a supply chain advisory council. Furthermore, nothing can be implemented without the right people with competencies that support the development and execution of the supply chain processes. Fawcett et al. (2002) concurred with Cohen et al. (2004) that to be able to manage the complex changes related to implementation of advanced Supply Chain Management principles, the use of external advisory councils is often crucial to overcome all the barriers of the implementation.

Evans and Lindsay (2002) on the other hand argued that proper measurement of the supplier, coupled with communication, feedback and awards, is critical. This requires the ongoing surveillance and rating of supplier quality with appropriate measures. These measures may include the percentage of product which does not conform; overall product quality; delivery against schedule; cost of defective products (including hidden cost) against purchase price, and other quantitative means that reflect critical supplier elements in relation to business outputs (Gryna, 2001).

2.15 SUMMARY

This chapter has critically reviewed the available literature on Supply Chain Management, firstly providing the definition in the context of Public Works and identifying similarities in definitions from various researchers. The chapter then outlines the difference between procurement and SCM, and explains SCM processes and key success factors. Lastly the chapter explains some of the barriers in the SCM process as well as suggested ways to overcome the barriers. In a nutshell the chapter sets the scene for the analysis and also identifies the gaps and opportunities for further research. The next chapter outlines the research methodology.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Today many important decisions are taken based on what is termed ‘research findings’. Managers in business are aware that the success of their organizations depends on well informed decision-making (reference). But how much can they rely on the research findings that are presented to them. What research skills should organizations possess if they are going to conduct valid research? Saunders et al. (2003) define research as something that people undertake in order to discover things in a systematic way, thereby increasing their knowledge. This chapter gives a detailed outline of the proposed methodology that was undertaken in this study. The study took a mixed method approach where quantitative research methods were used to complement the qualitative methods. The chapter covers issues related to the selection of the sample from the total sample, the instruments used and the rationale behind using them, the analytical approach and lastly the limitations to the study. Since the quality of empirical research is greatly influenced by research design, careful consideration was made of the design of the research methods. As Ghauri and Gronhaug (2002) stated, the research design gives the overall plan for relating the conceptual research problem to relevant and practicable empirical research.

3.2 AIM OF THE STUDY

The aim of the study was to establish the critical factors underlying the efficiency and effectiveness of the Supply Chain Management processes being followed within the KZN Department of Public Works when procuring goods and services. The study further sought to identify any inefficient and ineffective performances or inability to meet users’ demand as a result of processes, quality, price, employee attitude and/or poor collaboration planning.

3.3. PARTICIPANTS AND LOCATION OF THE STUDY

The Department of Public Works is a provincial government department that is responsible for the financial management and delivery of physical facilities for other provincial departments such as the Departments of Health, Education, etcetera. The Head Office is situated in Pietermaritzburg with four regional offices located in Ulundi, Ladysmith, Pietermaritzburg and Durban. This research was conducted in the Pietermaritzburg municipal area, so the Department's two offices operating within this municipal area (Head office and Pietermaritzburg Regional Office) participated in this study. The total study population was made up of 750 employees including senior managers. The Supply Chain Management Directorate in the Department is a section that provides a support function within the Department with regard to the acquisition of goods and services and as such it handles all the procurement functions of the Department. The research participants were all employees of the Department. They included senior managers as they are considered to be the Supply Chain Management clients within the Department. A further interview questionnaire was developed for senior managers, as they have particular knowledge and understanding of the situation that provided insight on the extent of the SCM efficiency and effectiveness, and provided scope for possible recommendations and solutions.

3.4 RESEARCH APPROACH

This research is exploratory in nature. According to Aaker, Kumar and Day (2007), exploratory research is used when one is seeking insights into the general nature of a problem, the possible decision alternatives, and relevant variables that need to be considered. In addition to being exploratory in the first instance, the study is also planned to be descriptive, which is used to profile and structure the marketplace. Based upon the nature and purpose of this study, quantitative research was primarily used while qualitative research was used to obtain deeper information on the perceptions and information on the research topic. Welman and Kruger (2002) suggested that a quantitative approach using a survey method was more suitable than a qualitative one. In

this research, the survey can be used for both exploratory and descriptive purposes (Babbie and Mouton, 2001). In this study, structured closed questionnaires were used as the primary data collection technique. These data were complemented and triangulated with qualitative methods of self-administered open-ended questionnaires, and key informant interviews.

3.5 ETHICAL CONSIDERATION

Prior to institutionalizing this research, authorization was received from the University of KwaZulu-Natal Research Ethics Committee. Sekaran and Bougie (2009) stated that ethics in business research refers to a code of conduct or expected societal norm of behavior while conducting research. Ethical conduct applies to the organization and the members that sponsor the research, the researchers who conduct the research and the respondents who supply them with relevant information. To maintain confidentiality, the respondents' personal details, including names, surnames, and addresses were not disclosed. In this study it was ensured that no one was harmed or suffered any adverse consequences from the research activities. The rights of the respondents were respected and protected and participation was voluntarily.

3.6 SAMPLING

It is not always possible to conduct research across an entire population. The target population is the complete group of specific population elements relevant to the research project (Zikmund, 2003). Sampling is the process of selecting a representative subset of observation from a population to determine the characteristics (i.e. the population parameters) of the random variable under study. The main motive for examining a sample rather than a population is the cost involved. Statistical inference permits us to draw conclusions about a population parameter based on a sample that is quite small in comparison to the size of the population (Keller, 2008).

According to Wegner (1993) there are two basic methods of sampling: the non-probability sampling method and the probability sampling method. Non-probability

sampling is any sampling method in which the observations are not selected randomly. In other words, not every element in the population has an equal chance of being selected. There is a greater opportunity for bias to enter the sample selection and therefore distort the findings of the study when this method is used. Probability sampling includes all selection methods where the observations to be included in a sample have been selected on a purely random basis from the population. In other words, each element of the population has an equal chance of being selected.

This study will use simple random sampling which is a probability sampling method where the sample is selected on a purely random basis. This gives a fair chance to all the elements in the population and is less biased than the non-probability sampling method. This method is ideal for the purposes of this study since the study populations (employees) are heterogeneous.

3.6.1 Sample Size

The focus of this study will be based on primary and secondary sources of information related to the topic. Primary information will be acquired by means of questionnaires. As Welman, Kruger and Mitchell (2005) suggested, as a general rule, it is not advisable to use any sample with less than 15 units of analysis, but preferably one with more than 25 units of analysis. A sample of 140 respondents, consisting of management as well as departmental officials, will be selected. This sample size will yield a margin of error which is less than 5%, statistically recommended for analysis at a 95% confidence interval.

Category	N
Senior Managers i.e. Managers and General Managers	40
Departmental Officials	90
Total	130

Table 3.1: Sample size

3.7 QUESTIONNAIRE ADMINISTRATION

Before the questionnaire was distributed it was submitted to the research supervisor for approval. After the questionnaire had been pilot tested it was then hand-delivered to certain of the participants and sent electronically to other participants. The questionnaire reached all ninety officials in the Department. All senior managers who, in the opinion of the researcher would have been able to provide meaningful responses to the study were interviewed.

3.8 DATA COLLECTION

Data collection is an important aspect of any type of research study. Inaccurate data collection can impact the results of a study and ultimately yield invalid results. According to Sekaran and Bougie (2010) there are two methods of data collection for research purposes, namely quantitative and qualitative methods. The quantitative method is objective, the outcome is often known and the research uses survey questionnaires. The qualitative method is subjective; the outcome is not always clear and is based on the interviews. For this study the quantitative method was used as it obtains information more efficiently in terms of research time, energy and cost. Based on the quantitative nature of this study, data will be collected both from primary and secondary sources.

A questionnaire is a common type of survey tool which was adapted to collect and analyze the data. According to Sekaran (2003), a questionnaire is a formulated written set of questions to which respondents record their answers, usually within rather closely defined alternatives. Questionnaires which were designed using closed questions were used to collect primary data from respondents. The respondents were provided with questionnaires and explained what the researcher aimed to accomplish. In addition to the questionnaire, interviews were conducted with the departments Senior Managers as decision makers in the department to obtain further clarify and additional information on the perception and effectiveness of supply chain management processes. They were deemed to have a particular level of knowledge and understanding on the issue that

provided additional insight into the extent of the SCM efficiency and effectiveness. This was useful when making possible suggestions on recommendations for solutions. The respondents were interviewed during working hours at their work stations at the Department of Public Works offices in Pietermaritzburg. The interviews were conducted by asking respondents the questions verbally and recording their responses.

3.8.1 Quantitative Methods

A structured questionnaire was designed to obtain data in the quantitative format. The questionnaire was pre-coded and pre-tested to aid with input and analysis of data for the final report. The basic questions covered in the questionnaire were derived from the literature review. A covering letter was attached to the questionnaire to ensure that the respondents were informed of the nature and purpose of the research. The questions included multiple-choice questions. The questionnaire was designed in English, as it was believed that most of the employees had a good understanding of English. The researcher distributed and administered the questionnaires personally to ensure that all respondents completely understood all the questions. The researcher also assisted the respondents with proper and accurate explanations where necessary.

3.8.2 Qualitative Interview Questionnaire

A semi-structured interview is a qualitative method of inquiry that combines a pre-determined set of open questions (questions that prompt discussion) which give the interviewer an opportunity for to explore particular themes or responses further. It does not limit respondents to a set of pre-determined answers (unlike a structured questionnaire) and also allows respondents to discuss and raise issues that may not have been considered in the guide. According to Cooper and Schindler (2003) an interviewer improves the quality of the responses by assisting in the interpretation of the questions. Face-to-face qualitative interviews were therefore conducted with the executive management to collect additional data. A structured self-administered interview questionnaire was designed and used to obtain further information from the department's

Executive and Senior Managers on their perceptions of the challenges and effectiveness of the supply chain management processes. These Executive and Senior Managers, with their particular knowledge and understanding, were interviewed to provide insight into the extent of the SCM's efficiency and effectiveness in order to gather possible suggests on recommendations for solutions.

3.9 DEVELOPMENT OF INSTRUMENT

According to Cooper and Schindler (2007) pilot testing is intended to reveal errors in the questionnaire's design. A pilot investigation is a small scale trial which is conducted before the main investigation and is intended to assess the adequacy of the research design and of the instruments to be used for data collection. Piloting the data collection instruments is essential, whether interview schedules or questionnaires are used (Sapsford and Jupp, 2008). A pilot study of the questionnaire was conducted in order to refine the questionnaire design. The questionnaire was tested on five respondents. The pilot participants were taken from the sample of the study. The overall feedback was positive except that there were a few questions which the respondents found ambiguous and that had to be corrected as their wording was confusing.

3.10 THE LIKERT SCALE QUESTIONS

The quantitative face-to-face structured questionnaire will mainly use a 5 point Likert type response scale (Strongly Agree, Agree, No Opinion, Disagree and Strongly Disagree) with each question anchored at both sides to limit response uncertainty. The main reason for using the 5 point Likert Scale technique is that it is considered by the researcher to be closer to the ideal 'truth' and free from communication noises or connotations to avoid the yes/ no answers and uses a more sophisticated approach that allows for variety of positives and negatives (Thiessen, 1993).

3.11 RELIABILITY TESTS

To measure the consistency of the scores obtained, and how consistent each individual's response was from one administration of an instrument to another and from one set of items to another, Cronbach's Alpha (a measure of the internal consistency of the questionnaire items) will be used. The key statistic in interpreting the reliability of the scale will be the alpha listed under the reliability co-efficient section at the end of the output. The value of coefficient alpha ranges from zero (no internal consistency) to one (complete internal consistency) so in order to enhance the interpretability of results, a Cronbach's Alpha >0.7 and above will be used at 5% significant level. The closer Cronbach's Alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale. It should also be noted that an alpha of 0.8 is probably a reasonable goal (Gliem and Gliem, 2003).

3.12 METHOD OF DATA ANALYSIS

After the interviews were completed, the contents were analyzed. The main goal of data analysis is to produce convincing conclusions and to eliminate alternative explanations for the findings. Data analysis involves reviewing, categorizing, tabulating, and recombining evidence to ascertain meaning which is related to the dissertation's initial aim and objective and to the research questions and issues (Miles and Huberman, 1994).

3.12.1 Quantitative Analysis

The data from the structured questionnaire was entered and analyzed using SPSS (Statistical Programme for Social Scientists) version 18.0 software and dealt mainly with the ranking of the variables based on mean values and frequency distributions. Descriptive statistics in form of Tables and graphs was presented with explanations of the trends in the Likert Scale responses. The statistics produced in the analyses included frequency distributions of the demographic and socio-economic characteristics of the respondents, the means and standard deviations of the Likert Scale responses as well as

correlations between certain variables. These responses determined the critical factors, and where possible, a principal component analysis was done in order to identify the most critical factors that are conducive to effective SCM in the Department.

3.12.2 Qualitative Analysis

The qualitative data in form of narratives and comments made by the participants was analyzed using NVivo software and interpreted. This involves grouping the data into thematic areas and re-coding it. NVivo is intended to help researchers organize and analyze non-numerical or unstructured data and allows classifying, sort and arranging information; and examining relationships in the data.

3.12.3 Analyzing the Likert Responses

The mean value of the Likert rating scale is the popular usage indicator for measuring a factor's importance. The higher the mean value, the more important the factor and for each question, the respondents will be provided with a 5 point Likert Scale. For these questions, a reliability test will be employed to determine the interpretability of the data. According to (Gregory 1996) reliability refers to the consistency in the instrument being able to produce repeatable results. Reliability refers to the accuracy of an instrument to be interpretable. A test must be reliable (Kerlinger, 1992). Reliability is important because decisions cannot be based on results that cannot be repeated.

3.13 LIMITATIONS

Due to time constraints and the sensitivity of the topic, the semi-structured questionnaire will be self-administered. De Vos *et al.* (2005) maintained that a self-administered questionnaire should be handed to the respondent to complete, but the researcher should be available to provide clarification when required to do so, which may be a constraint in terms of the researcher's time.

3.14 SUMMARY

The study is an investigation of an efficiency and effectiveness of supply chain management system with regards to procurement of goods and services in the provincial department of KwaZulu-Natal Public Works. This chapter presented the aims and objectives of the study, followed by the motivation and justification, research methodology questionnaire types to be used were explained, delimitations of this research were addressed, and the structure of the dissertation was outlined. The two types of research methods, quantitative and qualitative, were discussed. Discussion on the target population, the sample, data collection process, data analysis, and design was made. In summary, this chapter established a foundation for the data collection and analysis.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.1 INTRODUCTION

The previous chapter presented the research methodology used in this dissertation and established a foundation for the data collection and analysis. This chapter presents the results of data collected in the form of tables and figures such as bar graphs and pie charts. Metrics have been drawn up to summarize results and the complete statistical analysis on the research questionnaire and its responses are presented in the appendices. The results give insight into questions asked and provide a breakdown of the demographics of the respondents.

The results are then discussed and considered in line with the interview process, where senior managers were asked their point of views.

4.2 METHODOLOGY ADOPTED

The data was captured from semi-structured questionnaires with both qualitative and quantitative sections. The quantitative data from the completed survey questionnaires were coded and captured in SPSS (Statistical Package for Social Science) Version 20, for Windows and used for descriptive and inferential analysis, while the qualitative component was analyzed manually by grouping the issues into thematic areas.

Ninety questionnaires were distributed to the department officials for their responses. Only 85 completed questionnaires were returned and from the 50 targeted senior management members who were sampled, a total of 39 interviews self-administered questionnaires were received. The findings of the research are discussed in the light of the literature. By interpreting the statistical analysis of the data collected, the extent to which the research objectives are met and the research questions are answered is demonstrated. This chapter starts with the profiles of the respondents, followed by univariate analyses of the various dimensions of Supply Chain Management. This is

followed by multivariate analysis which aims at establishing the critical factors that determine successful and competitive Supply Chain Management processes. Qualitative analysis then follow, in which issues raised complement the quantitative responses, which were mostly in a 5 point Likert scale form. Finally the chapter concludes with a summary of the research findings. The demographic details of the respondents were recorded and included age, level of education, position at work and job category.

4.3 ANALYSIS OF SURVEY DATA

The following section gives an overview of the responses from the quantitative survey which was administered to staff and senior management in the KwaZulu-Natal Department of Public Works. The questions required that the respondents rate both the importance of each supply chain factor and the factor's perceived performance. This was done via a 5-point Likert Scale with the responses "Agree, Strongly Agree, Neither Agree nor Disagree, Disagree, and Strongly Disagree". The average or mean value of the Likert rating scale is the popular usage indicator for measuring a factor's importance, and in this case the higher the mean value the negative the rating is.

4.4 RELIABILITY ANALYSIS

The questions in the questionnaire were drawn up based on the literature review. Cronbach's Alpha was used to measure the issue of reliability in order to understand whether the questions in the questionnaire all reliably measured the same underlying variable. This reliability test has been employed to determine the interpretability of the data. Validity on the other hand is defined as whether or not an indicator (or set of indicators) that is devised to gauge a concept really measures that concept (Bryman and Bell, 2007:165). The following Tables show the reliability analysis results.

Table 4.2 Case Processing Summary
Case Processing Summary

		N	%
Cases	Valid	56	65.9
	Excluded	29	34.1
	Total	85	100.0

List wise deletion based on all variables in the procedure.

Table 4.3 Reliability Statistics

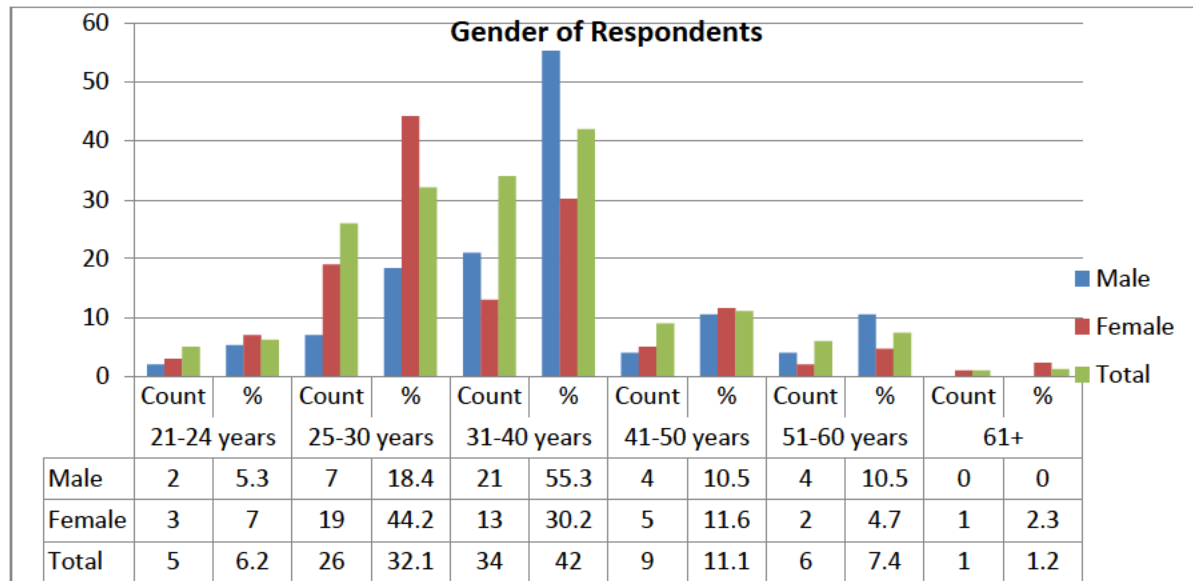
Cronbach's Alpha	N of Items
0.982	144

Cronbach's Alpha reliability coefficient normally ranges between 0 and 1. The closer Cronbach's Alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale. Cronbach's Alpha was calculated at 0.973 which is above 0.7, so the scale can be considered reliable with the samples (Pallant, 2007). In other words, the Cronbach's Alpha co-efficient of 0.973 shows that the questionnaire was sound.

4.5 PROFILE OF CASE RESPONDENTS

In order to make a meaningful interpretation of the results, it is important to first understand the respondents' social and demographic characteristics. The entire population information came from the KZN Provincial Department of Public Works in Pietermaritzburg and the details of the respondents were obtained from the demographical section of the completed survey questionnaires. Details such as gender, age, education, position at work and job category were measured.

Figure 4.4: Age and Gender of Respondents



Correlation (Pearson’s R=-159; p=0.156) not significant at 5% level

Table 4.4 shows that there were more female respondents than males (53% compared to 46.9%). The largest percentage of the respondents fell in the 31-40 years group (42%), followed by the groups 25-30 years (32%), 41-50 years (11.1%), 51-60 years (7.4%), 21-24 years (6.2%) and 61+ (1.2%). These results indicate that the management as well as departmental officials were mostly (74.1%) middle-aged.

Table 4.4: Respondents’ Education

q3_Education * Gender Crosstabulation				
		Male	Female	Total
Metric	Count	5	14	19
	Percent	26.32%	73.68%	100.00%
Diploma	Count	11	19	30
	Percent	36.70%	63.30%	100.00%
Degree	Count	18	6	24
	Percent	75.00%	25.00%	100.00%
Postgraduate Degree	Count	4	4	8
	Percent	50.00%	50.00%	100.00%
Total	Count	38	43	81
	Percent	46.90%	53.10%	100.00%

Correlation (Pearson’s R=-308; p=0.05) significant at 5% level

Table 4.4 indicates that the majority of the respondents had diplomas (n=30) with more females (63.3%) than men (36.7%). The next highest category was degree holders (n=24) with more males (75%) than females (25%), and then matric holders (n=19) with more females (73.68%) than males (26.32%). The minority of the respondents were postgraduates (n=8), with equal shares of males to females (50:50).

Table 4.5: Respondents' Position at Work

		Position * Gender Crosstabulation			
			Male	Female	Total
Position	Junior position	Count	19	29	48
		%	39.6%	60.4%	100.0%
	Middle management	Count	19	13	32
		%	59.4%	40.6%	100.0%
Total	Count	38	42	80	
	%	47.5%	52.5%	100.0%	

Correlation (Pearson's R=-.194; p=0.08) significant at 10% level.

With regards to the respondent's position at work, there were more junior positions with (n=48) with (60.4%) accounting for females and 39.4% accounting for males while middle management (n=32) accounted for 59.4% of males and 40.6% of females. These results however, cannot be generalized to the entire KwaZulu-Natal Department of Works, since the sample covered was less than the target.

Table 4.6: Respondents' Job Category

		Job * Gender Cross tabulation			
		Male	Female	Total	
Job	Technical/Operational	Count	21	18	39
		Percent	53.8%	46.2%	100.0%
	Managerial/Supervision	Count	14	20	34
		Percent	41.2%	58.8%	100.0%
Total		Count	35	38	73
		Percent	47.9%	52.1%	100.0%

Correlation (Pearson's R=127; p=286) not significant at 5 and 10% levels

Table 4.6 above shows the job categories of the respondents. Managerial positions (34) were outnumbered by the technical/operational category (n=39). Within the categories there was more male technical staff (53.8%) than female (46.2%). In the managerial or supervisory category, females (58.8%) outnumbered males (41.2%).

4.6 Descriptive Analysis of Survey Data

The following section gives an overview of the responses from the quantitative survey which was administered among staff in the KwaZulu-Natal Department of Works. The questions which required that the respondent rate both the importance of each supply chain factor and the perceived factor performance was done via a 5-point Likert Scale with the responses "Agree, Strongly Agree, Neither Agree nor Disagree, Disagree, and Strongly Disagree". The average or mean value of the Likert rating scale is the popular usage indicator for measuring a factor's importance, and in this case the higher the mean value, the more negative the rating is. The following section analyses the dimensions of legislation compliance, demand management, acquisition management, performance management, supplier selection and evaluation, and skills and capacity. Means and standard deviations of the Likert Scale individual responses are used to interpret the data and reliability test for each dimension is also calculated.

4.7 OBJECTIVE 1: TO DETERMINE INTERNAL CUSTOMER PERCEPTION ON SUPPLY CHAIN MANAGEMENT PROCESSES

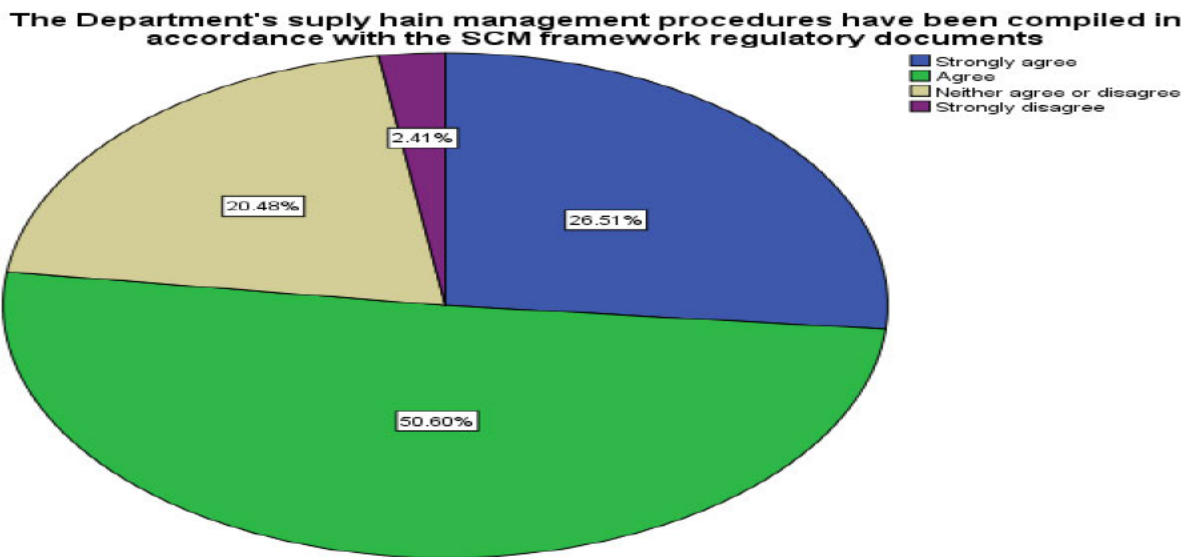
4.7.1 Legislation Compliance

4.7.1.1 The Department's Supply Chain Management Procedures have been Compiled in Accordance with the SCM Framework and Regulatory Documents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	22	25.9	26.5	26.5
	Agree	42	49.4	50.6	77.1
	Neither Agree nor Disagree	17	20.0	20.5	97.6
	Strongly Disagree	2	2.4	2.4	100.0
	Total	83	97.6	100.0	
Missing	Missing	2	2.4		
Total		85	100.0		

Table 4.7: The Department's Supply Chain Management Procedures have been compiled in Accordance with the SCM Framework and Regulatory Documents.

Figure 4.5:



Respondents were asked if the Department's Supply Chain Management procedures have been compiled in accordance with the Supply Chain Management framework. They were

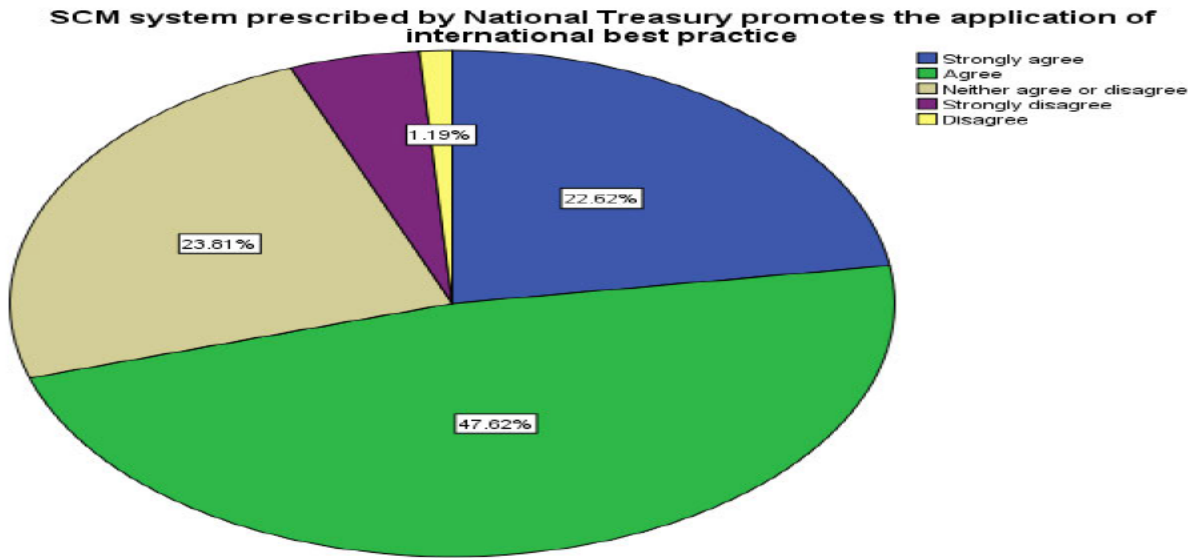
also asked for their opinion with regards to the current situation on the Department's compliance to the framework regulations. The above results indicate that half (50%) of the respondents agreed that the Department's SCM procedures had been compiled in accordance with the framework regulatory documents. A further 26.5% strongly agreed, and 20.5% were impartial. A minority (2.4%) of the staff felt otherwise, they strongly disagreed that the SCM procedures were in line with the framework regulatory documents in place. These results imply that the vast majority (76.5%) of respondents were positive that the Department's SCM procedures had been compiled in accordance with the framework regulatory documents. This means that the respondents generally agreed that the Department's SCM processes was legislatively in compliance with the SCM framework and other regulatory documents.

4.7.1.2 SCM system prescribed by National Treasury promotes the application of international best practice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	19	22.4	22.6	22.6
	Agree	40	47.1	47.6	70.2
	Neither Agree nor Disagree	20	23.5	23.8	94.0
	Strongly Disagree	4	4.7	4.8	98.8
	Disagree	1	1.2	1.2	100.0
	Total	84	98.8	100.0	
Missing	Missing	1	1.2		
	Total	85	100.0		

Table 4.8: SCM system prescribed by National Treasury promotes the application of international best practice

Figure 4.6



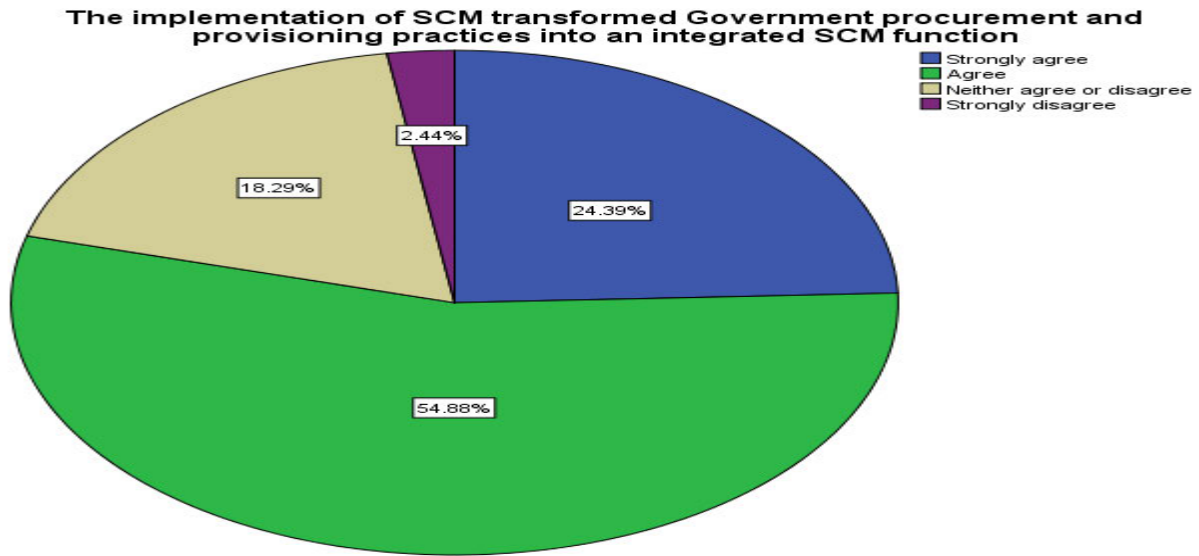
The Figure 4.6 and Table 4.8 indicate that the vast majority of respondents (70.2%) generally felt that the SCM system prescribed by National Treasury promotes the application of international best practice. This was made up of 47.6% who agreed and 22.6% who strongly agreed. This means that less than 1 in 3 of the respondents was not in favor of the statement, and 23.8% of these were those who neither agreed nor disagreed. These results indicate that 7 out of 10 respondents (70.2%) were positive that the SCM system prescribed by National Treasury promotes the application of international best practice.

4.7.1.3 The implementation of SCM transformed government procurement and provisioning practices into an integrated SCM function

		Frequency	Percent	Valid %	Cumulative
Valid	Strongly Agree	20	23.5	24.4	24.4
	Agree	45	52.9	54.9	79.3
	Neither	15	17.6	18.3	97.6
	Strongly Disagree	2	2.4	2.4	100.0
	Total	82	96.5	100.0	
Missing	Missing	3	3.5		
Total		85	100.0		

Table 4.9: The implementation of SCM transformed government procurement and provisioning practices into an integrated SCM function

Figure 4.7:



Slightly more than half of the respondents (54.9%) agreed that the implementation of the SCM transformed government procurement and provisioning practices into an integrated SCM function, followed by 24.4% who strongly agreed. This means that over 70% of the respondents were in agreement with the issue of SCM as a driver in government integrated procurement and provisioning practices.

4.7.2 Demand Management

Demand Management is the first phase of Supply Chain Management. It is the action of assessing ‘what’ goods or services are needed, and then ‘planning’ when and how that product and/or service will be sourced. It is a stage where research and planning takes place and its objective is to ensure that the resources required fulfill the needs identified in the strategic plan of the organization and that delivery is made at the correct time, price, place and quality. Respondents were asked to indicate their perception on the activities that applies under demand management in order to check their knowledge and understanding of SCM.

4.7.2.1 SCM is part of the strategic planning stage of the department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	18	21.2	22.0	22.0
	Agree	46	54.1	56.1	78.0
	Neither Agree nor Disagree	6	7.1	7.3	85.4
	Strongly Disagree	7	8.2	8.5	93.9
	Disagree	5	5.9	6.1	100.0
	Total	82	96.5	100.0	
Missing	Missing	3	3.5		
Total		85	100.0		

Table 4.10: SCM is part of the strategic planning stage of the department

Figure: 4.8

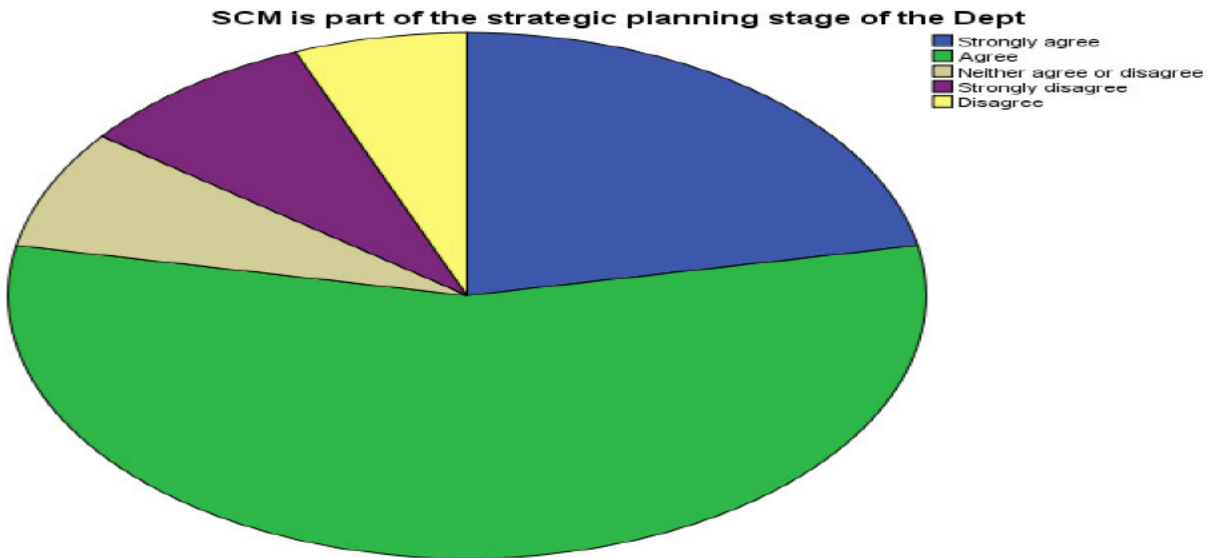


Table 4.10 and Figure 4.8 indicate that slightly over half (56.1%) of the respondents agreed that demand management existed in the Department, while about 22.0% strongly agreed, meaning that at least 7 out of 10 respondents were positive that SCM is part of the strategic planning stage of the department, leaving those who neither agreed nor disagreed (7.3%) and those who strongly disagreed (8.5%). These results could be

interpreted as meaning that as part of ensuring effectiveness on the SCM processes and systems, the department takes this as part of their strategic planning.

4.7.2.2 Department's needs assessment is conducted prior to procurement of goods and services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	11	12.9	13.8	13.8
	Agree	35	41.2	43.8	57.5
	Neither Agree nor Disagree	17	20.0	21.3	78.8
	Strongly Disagree	12	14.1	15.0	93.8
	Disagree	5	5.9	6.3	100.0
Total		80	94.1	100.0	
Missing	Missing	5	5.9		
Total		85	100.0		

Table 4.11: Department's needs assessment is conducted prior to procurement of goods and services

Figure 4.9

Department's needs assessment is conducted prior to procurement of goods & services

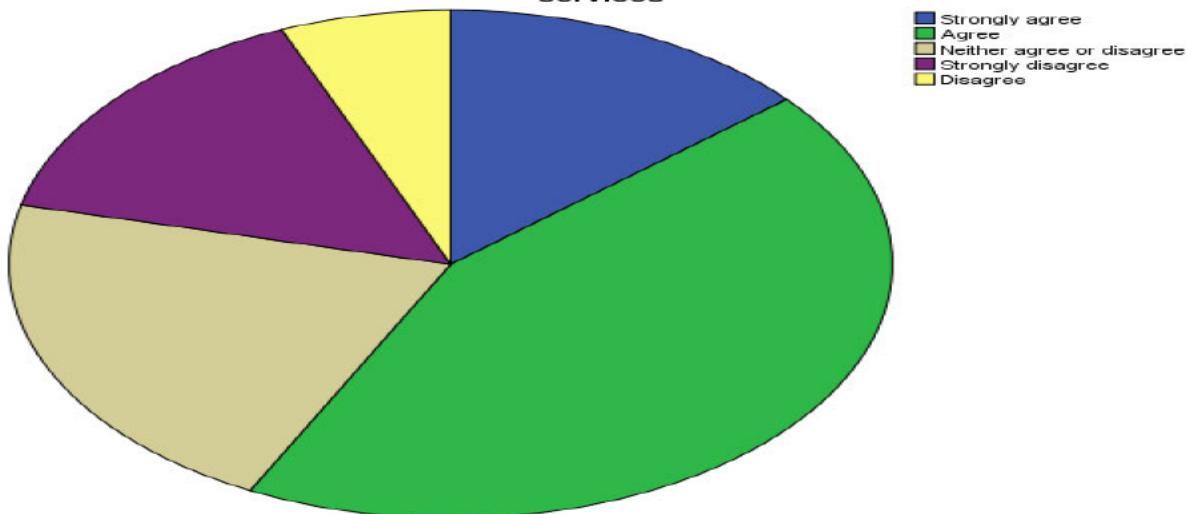


Table 4.11 and Figure 4.9 indicate that 1 in 4 (43.8%) of the respondents agreed that the Department's needs assessment is conducted prior to the procurement of goods and

services, and 1 in 10 (13.8%) strongly agreed. On the other hand, 1 in 5 (21%) of the respondents were impartial, followed by those who strongly disagreed (15.0%) and those who disagreed (6.3%). These results imply that slightly over half of the respondents (57.6%) were positive about the department's needs assessment being conducted prior to procurement of goods and services, while 42.4% were not in favor of the statement.

4.7.2.3 Market research is conducted in order to determine the correct specifications of goods and services required

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	16	18.8	19.3	19.3
	Agree	25	29.4	30.1	49.4
	ther Agree nor Disagree	23	27.1	27.7	77.1
	Strongly Disagree	14	16.5	16.9	94.0
	Disagree	5	5.9	6.0	100.0
	Total	83	97.6	100.0	
Missing	Missing	2	2.4		
Total		85	100.0		

Table 4.12: Market research is conducted in order to determine the correct specifications of goods and services required

Figure 4.10

Market research is conducted in order to determine the correct specifications of goods & services required

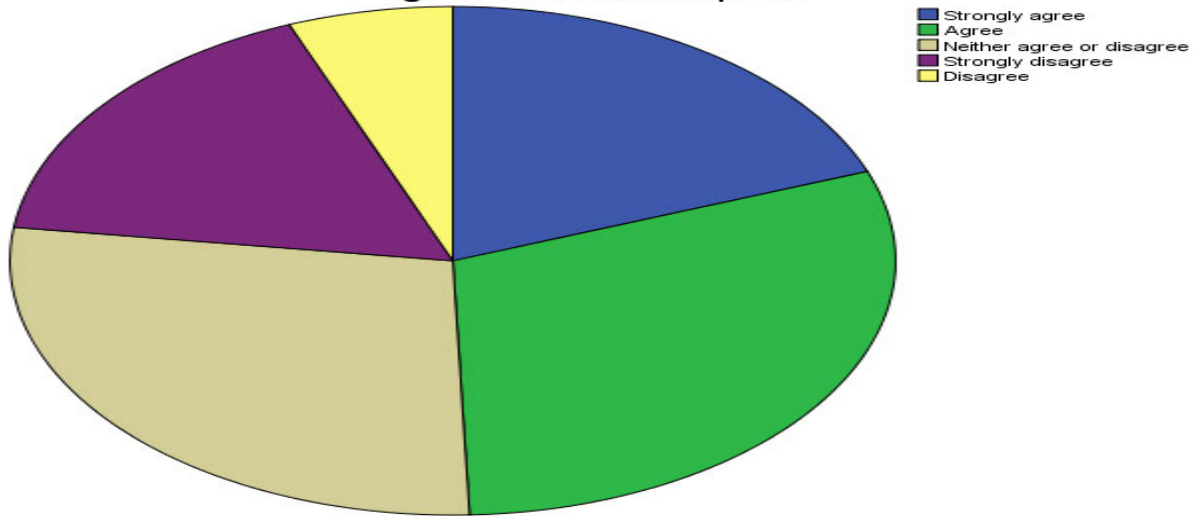


Table 4.12 and Figure 4.10 indicate that only 30% of the respondents agreed and 19.3% strongly agreed that market research is conducted in order to determine the correct specifications of goods and services required. Furthermore, 27.7% was neither in agreement nor disagreement with the statement, while 16.9 % strongly disagreed and a minority of 6% disagreed. Given that the percentage of those who were positive that market research is conducted in order to determine the correct specifications of goods and services required was less than half (49.3%), it could be implied that the respondents were not in favor of the statement as they may be did not know if the Department conducts the research or not.

4.7.2.4 The supplier industry is analyzed in order to identify market that meets the department's needs

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	15	17.9	18.3	18.3
Agree	21	25.0	25.6	43.9
either agree or Disagree	22	26.2	26.8	70.7
Strongly disagree	17	20.2	20.7	91.5
Disagree	7	8.3	8.5	100.0
Total	82	97.6	100.0	
Missing System	2	2.4		
Total	84	100.0		

Table 4.13: The supplier industry is analyzed in order to identify market that meets the department's needs

Figure 4.11:

The supplier industry is analyzed in order to identify market that meets the Departments needs

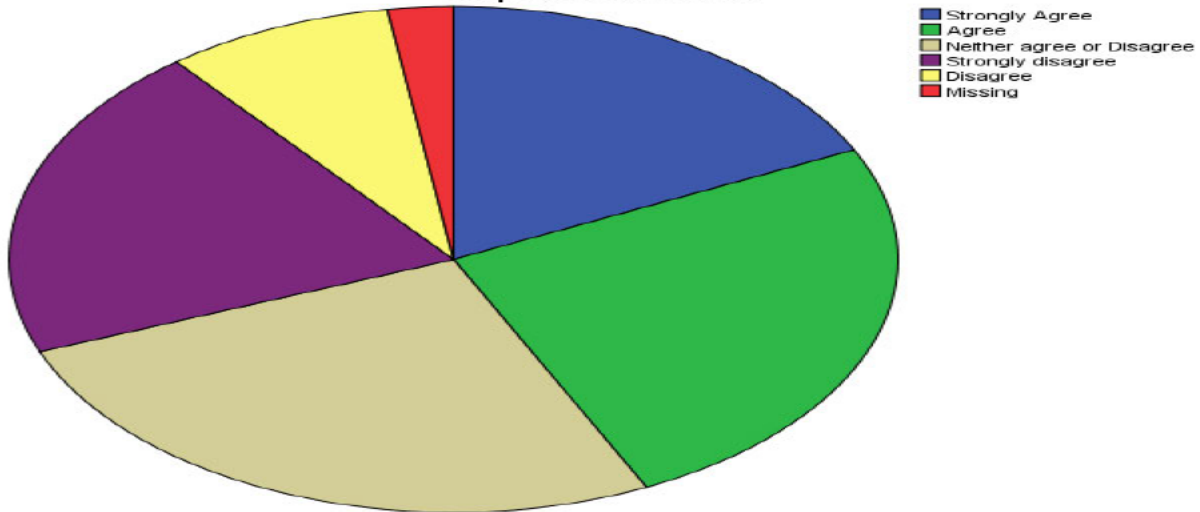


Table 4.13 and Figure 4.11 reveal the supplier industry is analyzed in order to identify market that meets the department's needs distribution of respondents. The largest percentages of the respondents neither agreed nor disagreed with a high level percentage of (26.2%), followed by agree at (25.0%), strongly disagree at (20.2%), disagree at (8.3%) and an unanswered percentage of (2.4%).

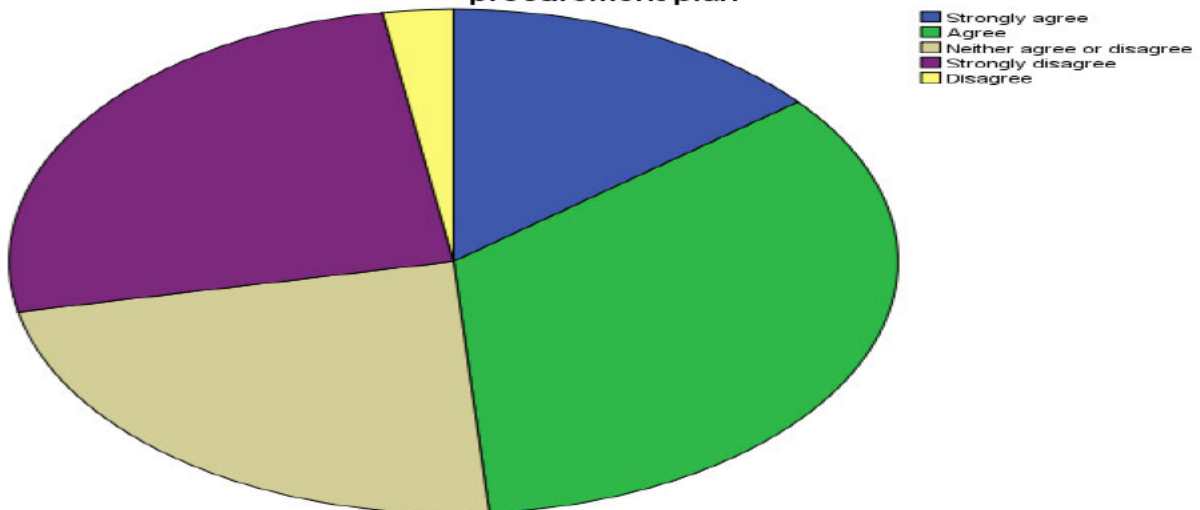
4.7.2.5 The Department's procurement of goods and services is in line with the procurement plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	11	12.9	14.1	14.1
	Agree	27	31.8	34.6	48.7
	Neither Agree nor Disagree	18	21.2	23.1	71.8
	Strongly Disagree	20	23.5	25.6	97.4
	Disagree	2	2.4	2.6	100.0
	Total	78	91.8	100.0	
Missing	Missing	7	8.2		
Total		85	100.0		

Table 4.14: the Department's procurement of goods and services is in line with the procurement plan

Figure 4.12

The department's procurement of goods and services is in line with the procurement plan



With regards to the department's procurement of goods and services being in line with the procurement plan, Table 4.14 and Figure 4.12 indicate that 34.6% and 14.1% of the respondents agreed and strongly agreed respectively. Those who strongly disagreed and disagreed accounted for 25.6% and 2.6%, while those who were impartial were slightly below a quarter (23.1%). This means that the respondents were generally negative about

the statement that the department's procurement of goods and services is in line with the procurement plan.

4.7.3 OBJECTIVE 2: TO ANALYZE THE EFFICIENCY OF THE SUPPLY CHAIN MANAGEMENT.

To assess the efficiency of the SCM processes, respondents were asked to indicate their views on the activities performed under acquisition management. Acquisitions management refers to the management of the entire process of acquiring the particular product and/or service which satisfies the need. This process covers the acquiring of the goods and/or services by implementing the sourcing strategy determined by demand management and the administration thereof. The primary objective of acquisitions Management is to fulfill the demand determined by the demand management phase of supply chain management. In the public sector Acquisition Management is thus driven by the Department's Procurement plan and refers to a process of establishing: what will be acquired, when, how and from where it will be acquired, how much is required and at what price, as well as contracting with the vendor.

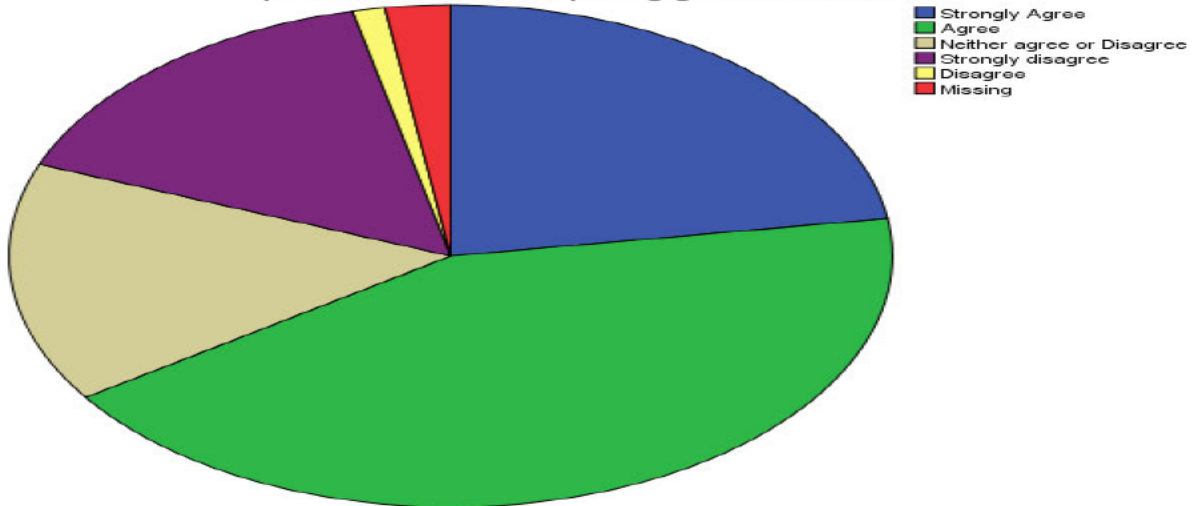
4.7.3.1 The Department has a clear policy and standard operating procedures on SCM processes when acquiring goods and services

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	19	22.6	23.2	23.2
Agree	36	42.9	43.9	67.1
Neither agree or Disagree	13	15.5	15.9	82.9
Strongly disagree	13	15.5	15.9	98.8
Disagree	1	1.2	1.2	100.0
Total	82	97.6	100.0	
Missing System	2	2.4		
Total	84	100.0		

Table 4.15: The Department has a clear policy and standard operating procedures on SCM processes when acquiring goods and services

Figure 4.13

The Department has clear policy and standard operating procedures on SCM processes when acquiring goods & services



The results indicated that the majority of respondents were positive about the Department's policy and standard operating procedures on SCM processes when acquiring goods and services. Table 4.15 and Figure 4.13 reveal the department has clear policy and standard operating procedures on SCM processes when acquiring goods & services distribution of respondents the majority (42.9%) Agreed and 22.6% Strongly

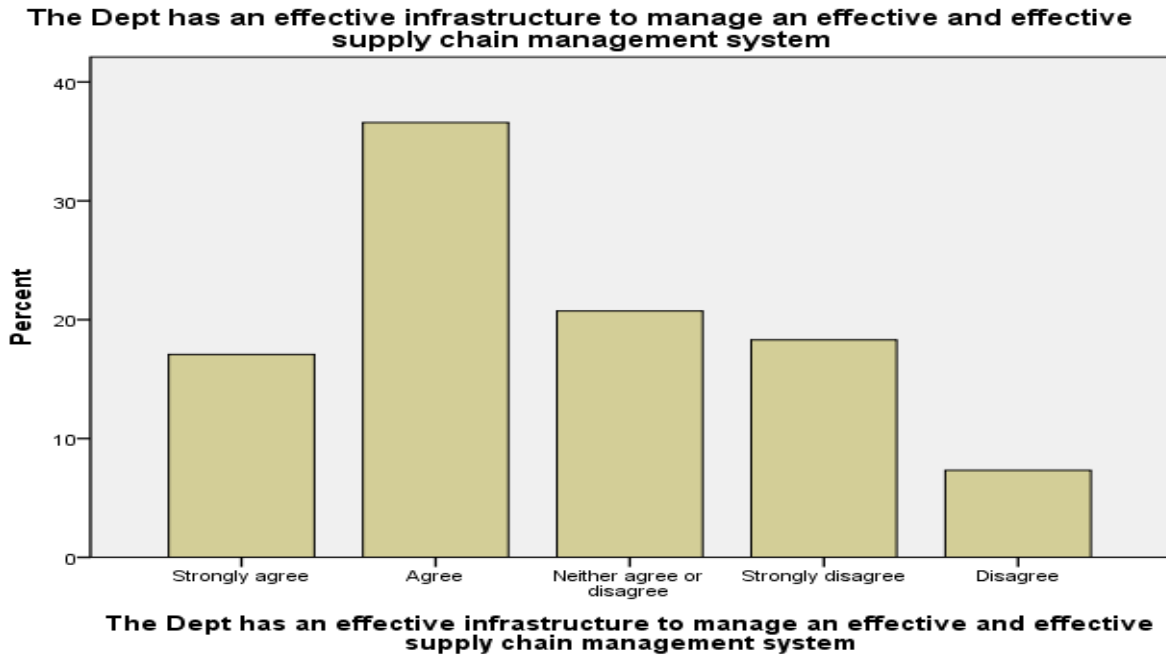
Agreed. On the contrary, 12.4% strongly disagreed and 1.2% disagreed, while 15.5% was impartial.

4.7.3.2 The Department has an effective infrastructure to manage an effective and efficient Supply Chain Management system.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	14	16.5	17.1	17.1
	Agree	30	35.3	36.6	53.7
	Neither Agree nor Disagree	17	20.0	20.7	74.4
	Strongly Disagree	15	17.6	18.3	92.7
	Disagree	6	7.1	7.3	100.0
	Total	82	96.5	100.0	
Missing	Missing	3	3.5		
Total		85	100.0		

Table 4.16: The Department has an effective infrastructure to manage an effective and efficient Supply Chain Management System.

Figure: 4.14:



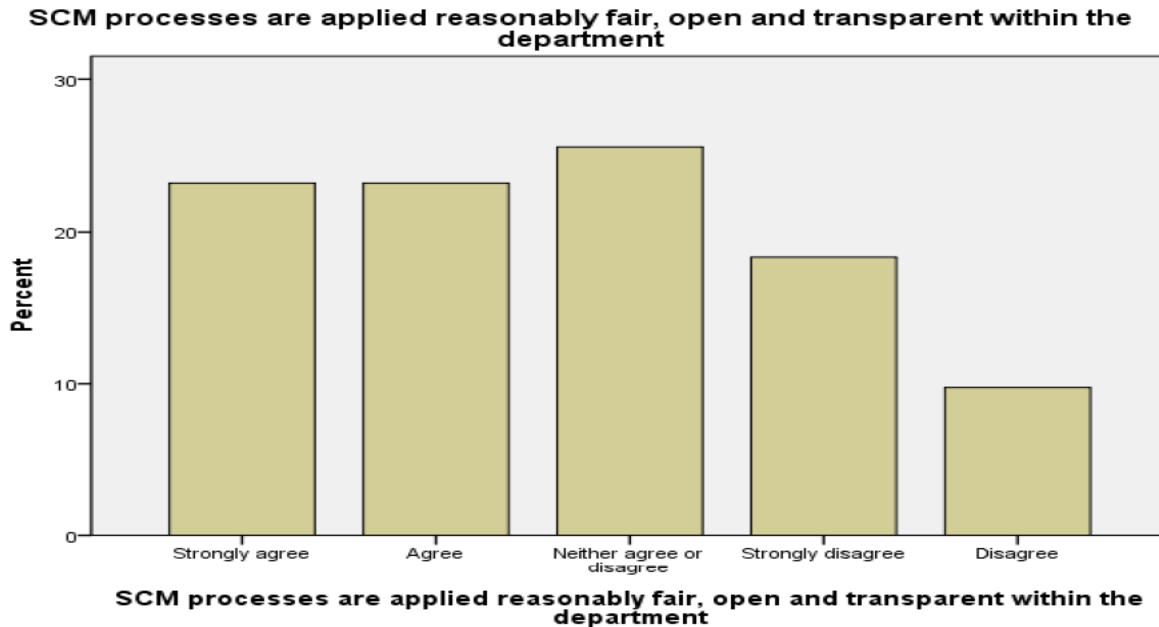
Respondents were asked to indicate if the Department has an effective system to manage an effective and efficient Supply Chain Management system. Table 4.17 and Figure 4.15 above indicate that 36.6% of the respondents agreed that the Department has an effective infrastructure to manage an effective and effective Supply Chain Management system, while 17.1% strongly agreed. Further results indicate that 20.7% neither Agreed nor Disagreed, while 18.3% and 7.3% strongly disagreed and disagreed respectively. This means that respondents felt that there was an effective infrastructure to manage an effective and efficient Supply Chain Management system in the Department, given the higher percentage of positive responses.

4.7.3.3 SCM processes are applied reasonably fairly, openly and transparently within the Department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	19	22.4	23.2	23.2
	Agree	19	22.4	23.2	46.3
	Neither Agree nor Disagree	21	24.7	25.6	72.0
	Strongly Disagree	15	17.6	18.3	90.2
	Disagree	8	9.4	9.8	100.0
	Total	82	96.5	100.0	
Missing	Missing	3	3.5		
Total		85	100.0		

Table 4.17: SCM processes are applied reasonably fairly, openly and transparently within the Department

Figure 4.15:



The results show that 23.2% of the respondents strongly agree and agreed respectively. About a quarter of the respondents (25.6%) neither agreed nor disagreed, followed by 18% of those who strongly disagreed and 9.8% who disagreed. The results could imply

that the respondents were not in favor of the statement that SCM processes are applied reasonably fairly, openly and transparently within the department.

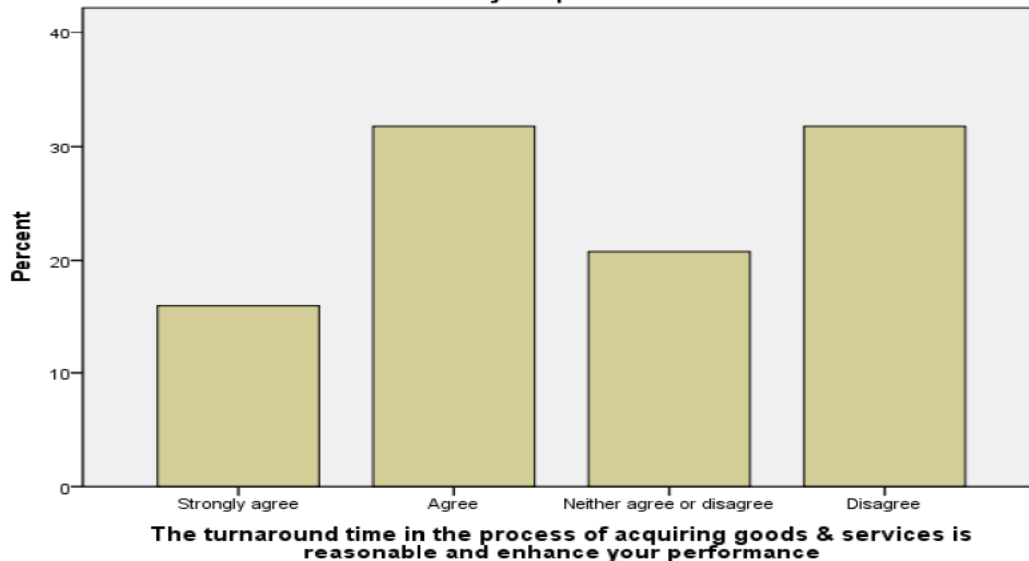
4.7.3.4 The turnaround time in the process of acquiring goods and services is reasonable and enhances your performance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	13	15.3	15.9	15.9
	Agree	26	30.6	31.7	47.6
	Neither Agree nor Disagree	17	20.0	20.7	68.3
	Disagree	26	30.6	31.7	100.0
	Total	82	96.5	100.0	
Missing	Missing	3	3.5		
Total		85	100.0		

Table 4.18: the turnaround time in the process of acquiring goods and services is reasonable and enhances your performance

Figure: 4.16

The turnaround time in the process of acquiring goods & services is reasonable and enhance your performance



The results show that 31.7 % of the respondents agreed, while 15.9% strongly agreed. About a fifth of the respondents (20.7%) neither agreed nor disagreed, followed by 31.7% of those who disagreed. The results clearly show that the respondents were not in

favor of the statement that the turnaround time in the process of acquiring goods and services is reasonable and enhances their performance.

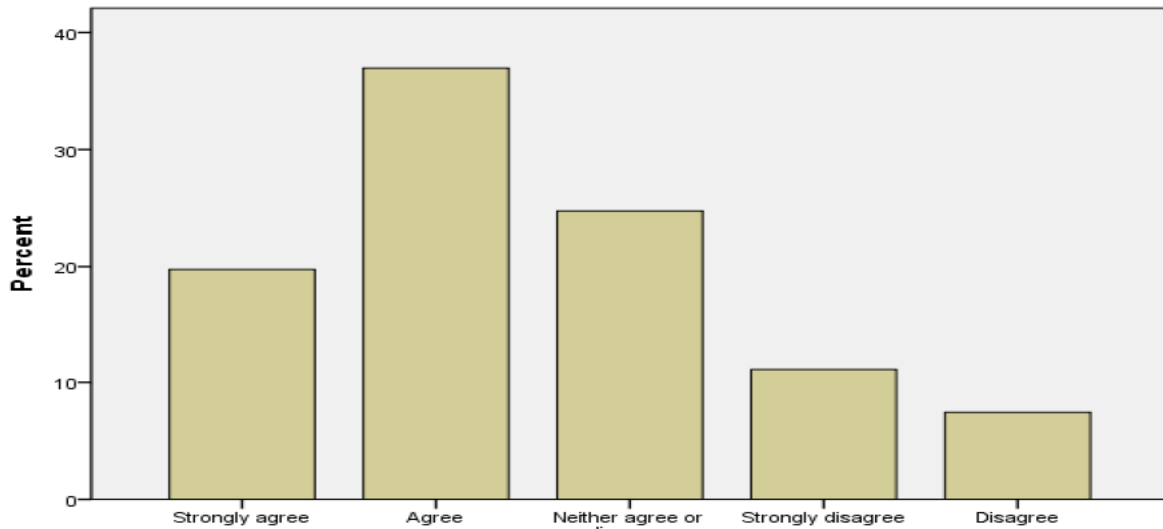
4.7.3.5 The department's bid/specification/evaluation/adjudication committees comprise of cross-functional teams

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	19	22.6	22.9	22.9
Agree	32	38.1	38.6	61.4
Neither agree or Disagree	18	21.4	21.7	83.1
Strongly disagree	9	10.7	10.8	94.0
Disagree	5	6.0	6.0	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.19: The department's bid/specification/evaluation/adjudication committees comprise of cross-functional teams

Figure 4.17:

The Dept's bids/specification/evaluation/adjudication committees comprise of cross-functional teams



The Dept's bids/specification/evaluation/adjudication committees comprise of cross-functional teams

Table 4.19 and Figure 4.17 show that 37.0 % of the respondents agreed, while 19.8% strongly agreed. About a quarter of the respondents (24.7%) neither agreed nor disagreed, followed by 11.1% of those who strongly disagreed and 7.4% who disagreed. The results could imply that the respondents were positive that the department's bids/specification/evaluation/adjudication committees comprise cross-functional teams (56.8% cumulatively Agreed).

4.7.3.6 The SCM processes do not compromise quality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	8.2	9.1	9.1
	Agree	19	22.4	24.7	33.8
	Neither Agree nor Disagree	18	21.2	23.4	57.1
	Strongly Disagree	22	25.9	28.6	85.7
	Disagree	11	12.9	14.3	100.0
	Total	77	90.6	100.0	
Missing	Missing	8	9.4		
Total		85	100.0		

Table 4.20: the SCM processes do not compromise quality

Figure 4.18

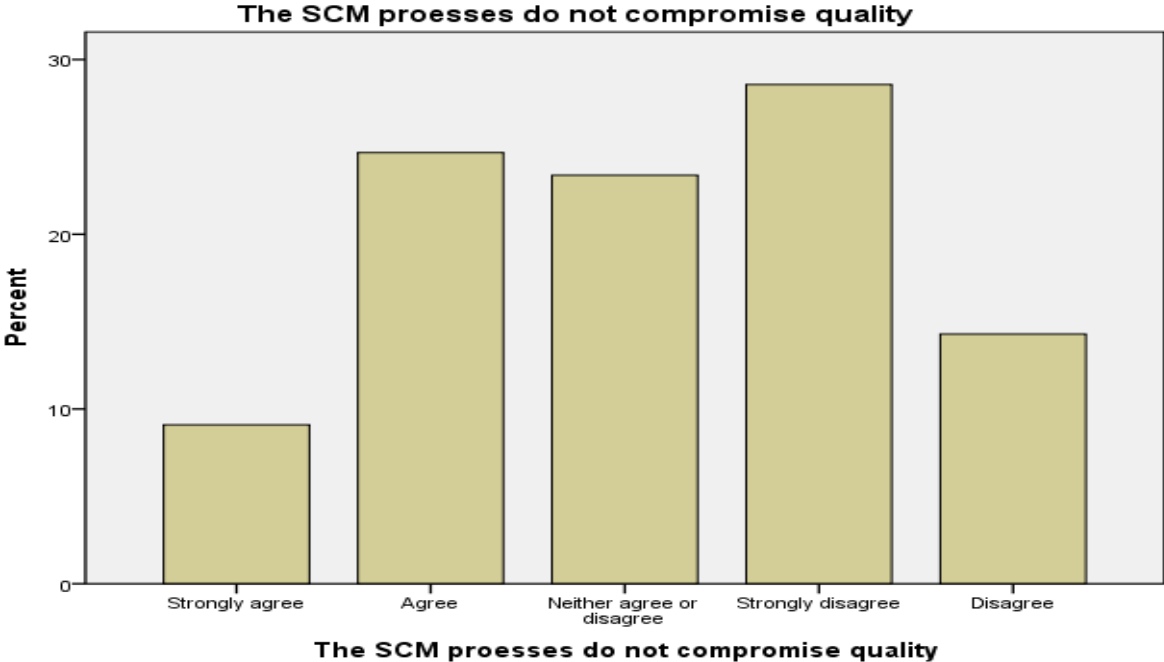


Table 4.20 and Figure 4.18 show that 24.7 % of the respondents agreed, while 9.1% strongly agreed. Furthermore, 23.4% neither agreed nor disagreed, followed by 28.6% of those who strongly disagreed and 14.3% who disagreed. The results mean that the respondents were negative that the SCM processes do not compromise quality, implying that the respondents felt there was quality compromise in the SCM processes.

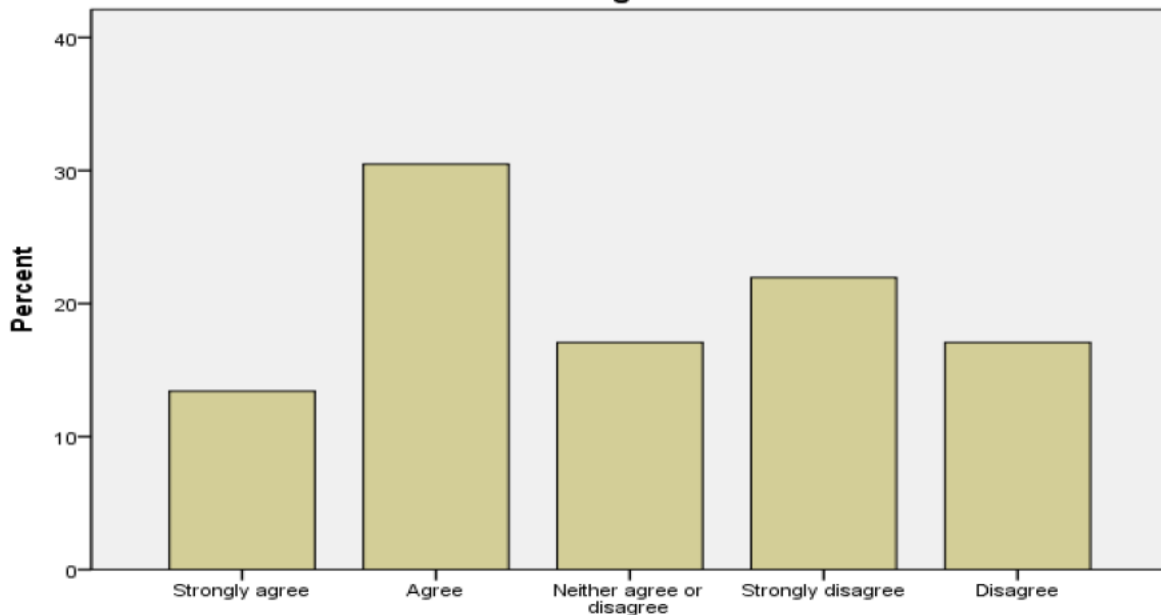
4.7.3.7 The SCM processes allow the Department to get the best value for money on the goods and services being delivered

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	11	12.9	13.4	13.4
	Agree	25	29.4	30.5	43.9
	Neither Agree nor Disagree	14	16.5	17.1	61.0
	Strongly Disagree	18	21.2	22.0	82.9
	Disagree	14	16.5	17.1	100.0
	Total	82	96.5	100.0	
	Missing	Missing	3	3.5	
Total		85	100.0		

Table 4.21: The SCM processes allow the Department to get the best value for money on the goods and services being delivered

Figure: 4.19

The SCM processes allow the Dept to get the best value for money on the goods & services being delivered



The SCM processes allow the Dept to get the best value for money on the goods & services being delivered

The respondents were asked whether the SCM processes allow the department to get the best value for money on the goods and services being delivered. Table 4.21 and Figure 4.19 indicate that 30.5 % of the respondents agreed, while 13.4% strongly agreed.

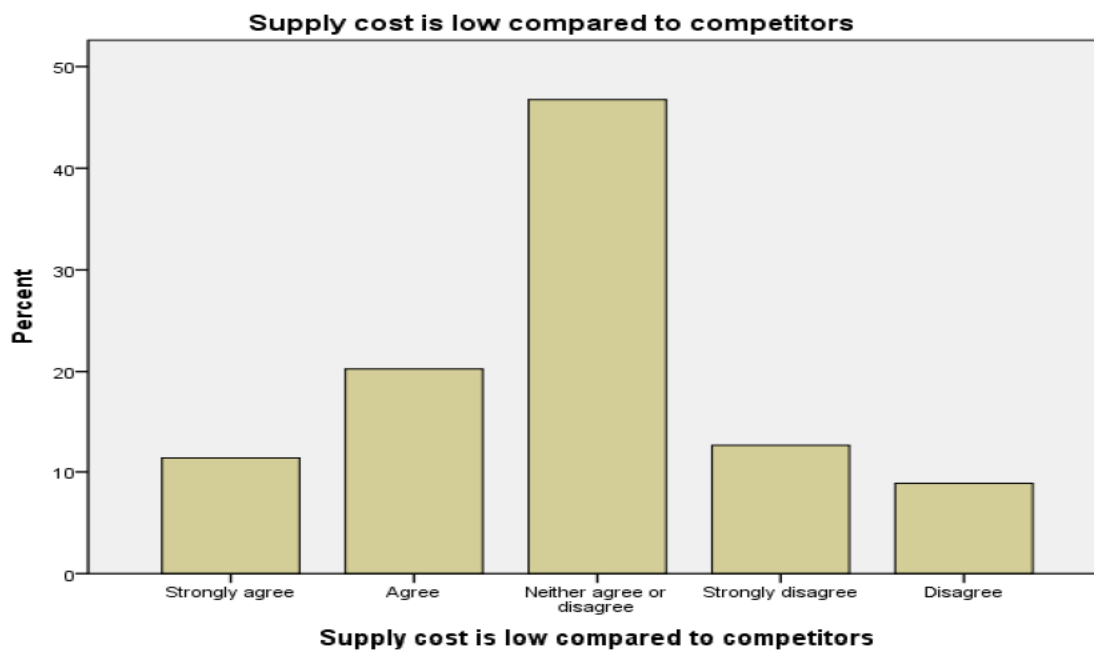
Furthermore, 17.1 % neither agreed nor disagreed, followed by 22.0% of those who strongly disagreed and 17.1% who disagreed. The results mean that on the whole, the respondents felt that the SCM processes allow the Department to get the best value for money on the goods and services being delivered.

4.7.3.8 Supply cost is low compared to competitors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	9	10.6	11.4	11.4
	Agree	16	18.8	20.3	31.6
	Neither Agree nor Disagree	37	43.5	46.8	78.5
	Strongly Disagree	10	11.8	12.7	91.1
	Disagree	7	8.2	8.9	100.0
	Total	79	92.9	100.0	
Missing	Missing	6	7.1		
Total		85	100.0		

Table 4.22: Supply cost is low compared to competitors

Figure 4.20:



The respondents were asked on whether supply cost was low compared to competitors. Table 4.22 and Figure 4.4.20 show that 20.3% of the respondents agreed, while 11.4% strongly agreed. A large number of respondents (46.8%) neither agreed nor disagreed, followed by 12.7% of those who strongly disagreed and 8.9% who disagreed. The results could mean that the respondents felt that supply cost was *not* low compared to competitors, or that the respondents did not have access to information pertaining the suppliers, hence the high percent of impartial responses.

4.7.3.9 SCM processes ensure that the goods and services delivered are of the right quantity and correct specifications

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Agree	15	17.9	18.3	18.3
Agree	28	33.3	34.1	52.4
Neither Agree nor Disagree	14	16.7	17.1	69.5
Strongly Disagree	16	19.0	19.5	89.0
Disagree	9	10.7	11.0	100.0
Total	82	97.6	100.0	
Missing System	2	2.4		
Total	84	100.0		

Table 4.23: SCM processes ensure that the goods and services delivered are of the right quantity and correct specifications

Figure 4.21:

SCM processes ensure that goods & services delivered are of the right quantity and correct specification

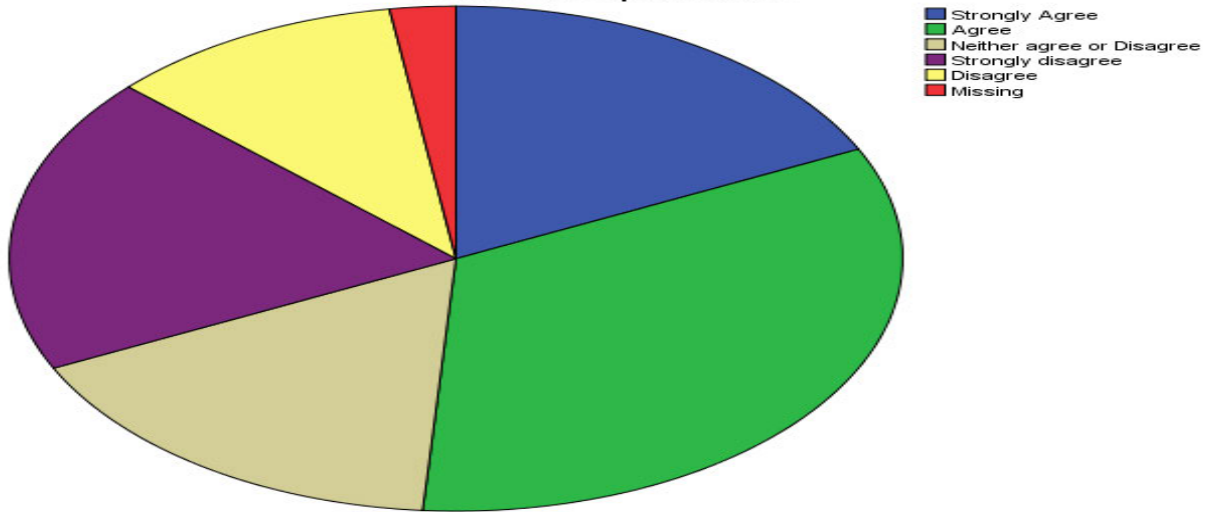


Table 4.23 and Figure 4.21 show whether SCM processes ensure that the goods and services delivered are of the right quantity and correct specifications. The largest percentages of the respondents agreed (33.3%), followed by strongly disagree at (19.0%), strongly agree at (17.9%), neither agree nor disagree at (16.7%), disagree at (10.7%) and an unanswered percentage of (18.0%).

4.7.4 OBJECTIVE 3: TO DETERMINE THE IMPACT OF SUPPLY CHAIN MANAGEMENT PROCESSES ON THE DEPARTMENT'S PERFORMANCE.

This is a monitoring process which is undertaken as a retrospective analysis to determine whether proper processes have been followed and whether the desired objectives were achieved. Monitoring and reporting represents a key component of the Supply Chain Management (SCM) framework. It interacts with each of the main functional areas represented in the framework and provides an overall snapshot of the performance of the Departments Supply Chain Management.

This process is aimed at developing and setting up periodic reports to management based on a limited number of well-chosen key performance indicators. These indicators will

generally relate to cost savings that have been realized, supplier performance, lead-time reduction, inventory reduction, reduction of capital employed, and payment terms

4.7.4.1 At the completion stage of each project the Department analyses whether proper SCM processes were followed and the desired objectives achieved

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Agree	8	9.5	9.6	9.6
Agree	31	36.9	37.3	47.0
Valid Neither Agree nor Disagree	22	26.2	26.5	73.5
Strongly Disagree	16	19.0	19.3	92.8
Disagree	6	7.1	7.2	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.24: At the completion stage of each project the Department analyses whether proper SCM processes were followed and the desired objectives were achieved

Figure: 4.22

The department analyzes at the completion stage of each project, whether proper SCM processes were followed and the desired objectives achieved

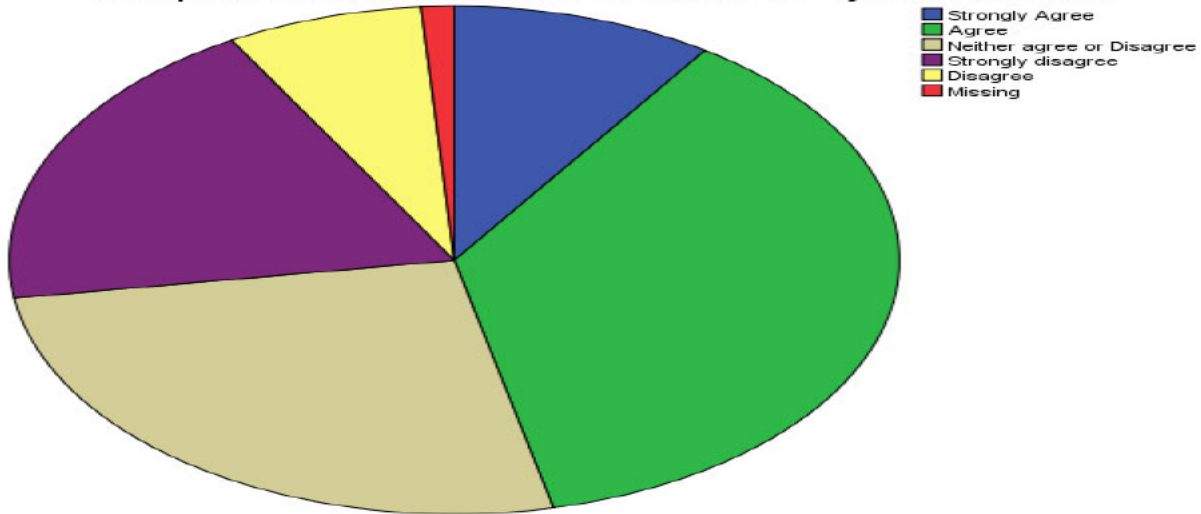


Table 4.24 and Figure 4.22 above revealed that at the completion stage of each project the Department analyzes whether proper SCM processes were followed and the desired objectives had been achieved. The largest percentages of the respondents agreed (36.9%), followed by neither agree nor disagree at (26.2%), strongly disagree at (19.0%), strongly agree at (9.5%), disagree at (7.1%) and an unanswered percentage of (1.2%).

4.7.4.2 The implementation of Supply Chain Management enhanced your section's ability to reach operational objectives

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	5	6.0	6.1	6.1
Agree	39	46.4	47.6	53.7
Neither Agree nor Disagree	20	23.8	24.4	78.0
Strongly Disagree	14	16.7	17.1	95.1
Disagree	4	4.8	4.9	100.0
Total	82	97.6	100.0	
Missing System	2	2.4		
Total	84	100.0		

Table 4.25: the implementation of Supply Chain Management enhanced your section's ability to reach operational objectives

Figure 4.23

The implementation of supply chain management enhanced your sections ability to reach operational objectives

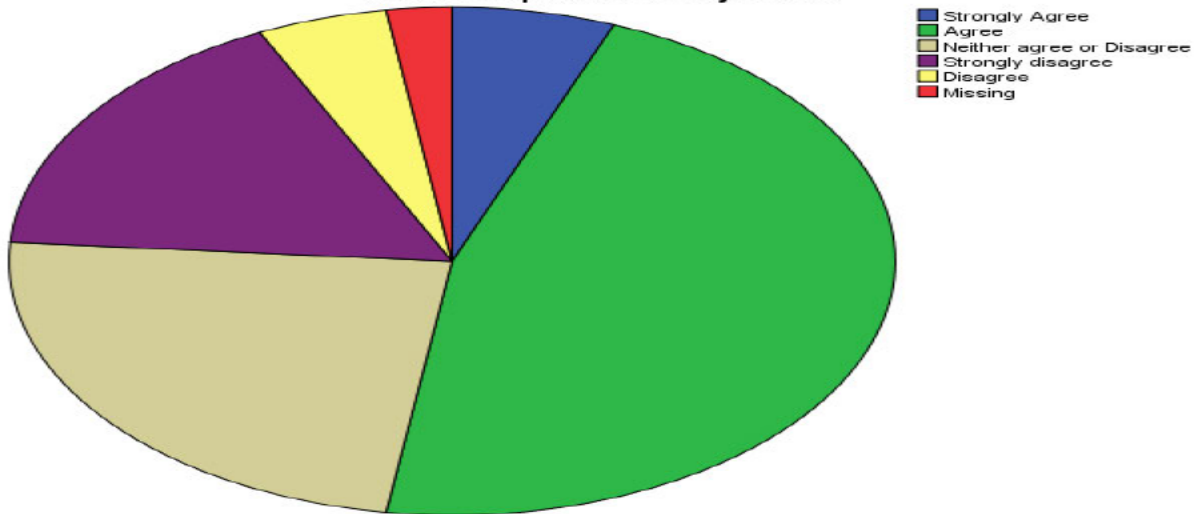


Table 4.25 and Figure 4.23 reveal the implementation of supply chain management enhanced your sections ability to reach operational objectives. The largest percentages of the respondents agreed (46.4%), followed by neither agreed nor disagree at (23.8%), strongly disagree at (16.7%), strongly agree at (6.0%), disagree at (4.8%) and an unanswered percentage of (2.4%).

4.7.4.3 My Department understands the competitive comparativeness throughout the supply chain better than 5 years ago

	Frequenc y	Percent	Valid Percent	Cumulative Percent
Strongly Agree	7	8.3	8.5	8.5
Agree	34	40.5	41.5	50.0
Neither Agree nor				
Disagree	28	33.3	34.1	84.1
Strongly Disagree	12	14.3	14.6	98.8
Disagree	1	1.2	1.2	100.0
Total	82	97.6	100.0	
Missing System	2	2.4		
Total	84	100.0		

Table 4.26 My Department understands the competitive comparatives throughout the supply chain better than 5 years ago

Figure 4.24:

My Dept understands the competitive comparatives throughout the supply chain than 5 years ago

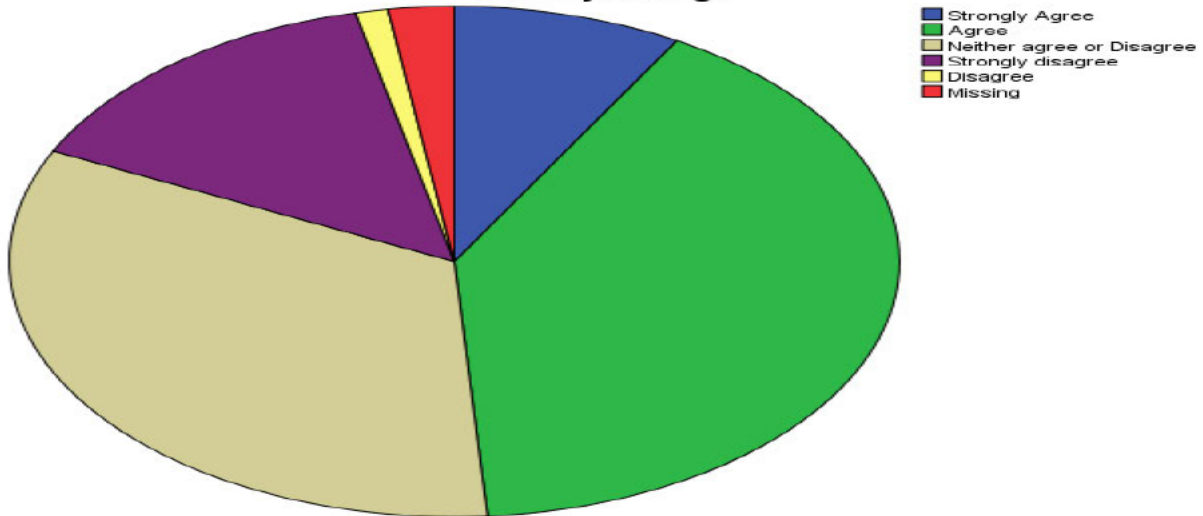


Table 4.26 and Figure 4.24 reveal whether the respondents' departments' understand the competitive comparatives throughout the supply chain better than they had 5 years ago. The largest percentages of the respondents Agreed (40.5%), followed by Neither Agree nor Disagree at (33.3%), Strongly Disagree at (14.3%), Strongly Agree at (8.3%), an unanswered percentage of (2.4%) and Disagree at (1.2%).

4.7.4.4 SCM performance contributes to better cash-flow of the Department

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	10	11.9	12.3	12.3
Agree	25	29.8	30.9	43.2
Neither Agree nor Disagree	30	35.7	37.0	80.2
Strongly Disagree	12	14.3	14.8	95.1
Disagree	4	4.8	4.9	100.0
Total	81	96.4	100.0	
Missing System	3	3.6		
Total	84	100.0		

Table 4.27 Supply chain performance contributes to better cash-flow of the Department

Figure 4.25:

Supply chain performance contributes to better cash-flow of the Department

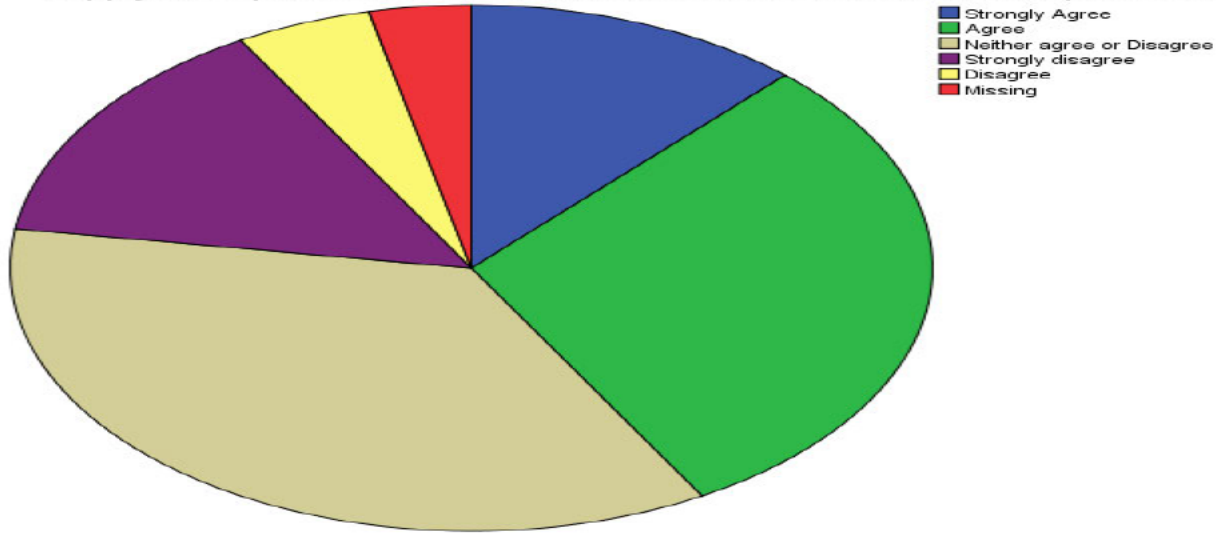


Table 4.27 and Figure 4.25 reveal that supply chain performance contributes to better cash-flow of the department. The largest percentages of the respondents fell into the category of neither agree nor disagree (35.7%), followed by agree at (29.8%), strongly disagree at (14.3%), strongly agree at (11.9%), disagree at (4.8%) and an unanswered percentage of (3.6%).

4.7.4.5 Customers are satisfied with the Department's supply chain capabilities

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	11	13.1	13.6	13.6
Agree	19	22.6	23.5	37.0
Neither Agree nor Disagree	26	31.0	32.1	69.1
Strongly Disagree	18	21.4	22.2	91.4
Disagree	7	8.3	8.6	100.0
Total	81	96.4	100.0	
Missing System	3	3.6		
Total	84	100.0		

Table 4.28: Customers are satisfied with the Department's supply chain capabilities

Figure 4.26:

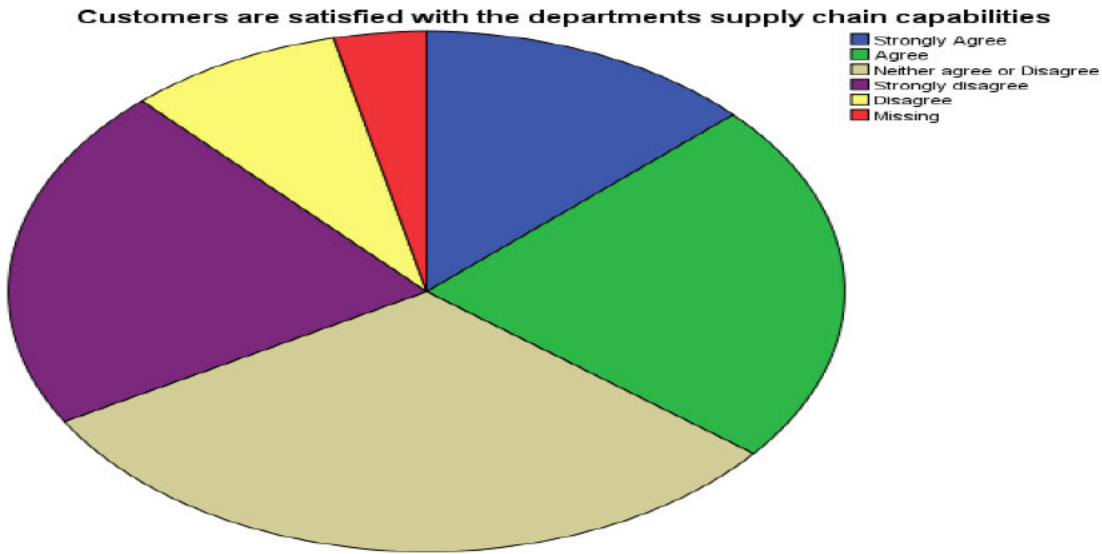


Table 4.28 and Figure 4.26 reveal whether customers are satisfied with the ‘departments supply chain capabilities. The largest percentages of the respondents neither agree nor disagree 31.0%), followed by agree at (22.6%), strongly disagree at (21.4%), strongly agree at (13.1%), disagree at (8.3%) and an unanswered percentage of (3.6%).

4.7.4.6 SCM performance is continually improving

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	8	9.5	9.6	9.6
Agree	30	35.7	36.1	45.8
Neither Agree nor Disagree	28	33.3	33.7	79.5
Strongly Disagree	12	14.3	14.5	94.0
Disagree	5	6.0	6.0	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.29: Supply chain performance is continually improving

Figure 4.27:

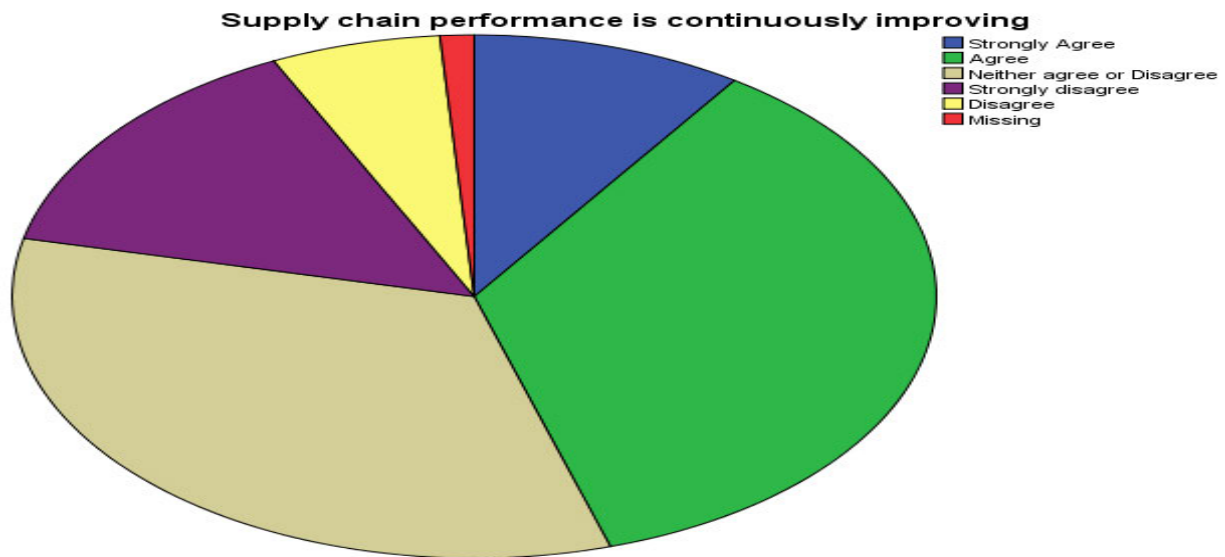


Table 4.29 and Figure 4.27 reveal whether supply chain performance is continually improving. The largest percentage of the respondents agreed (35.7%), followed by neither agree nor disagree at (33.3%), strongly disagree at (14.3%), strongly agree at (9.5%), disagree at (6.0%) and an unanswered percentage of (1.2%).

4.7.5 Risk Management

This is a stage where risk assessment is facilitated to determine the material risks to which the Department may be exposed and to evaluate the strategy for managing those risks. The purpose of this is to explain a procurement fraud risk management process which will serve as a comprehensive framework for enterprise risk managers and for internal auditors to limit the enterprise's exposure to procurement fraud as far as possible as well as ensure that there are strong internal controls to minimize risk.

4.7.5.1 There is strong internal control management within the SCM processes to minimize risk

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	13	15.5	15.9	15.9
Agree	28	33.3	34.1	50.0
Neither Agree nor Disagree	23	27.4	28.0	78.0
Strongly Disagree	14	16.7	17.1	95.1
Disagree	4	4.8	4.9	100.0
Total	82	97.6	100.0	
Missing System	2	2.4		
Total	84	100.0		

Table 4.30: There is strong internal control management within the Supply Chain Management processes to minimize risk

Figure 4.28

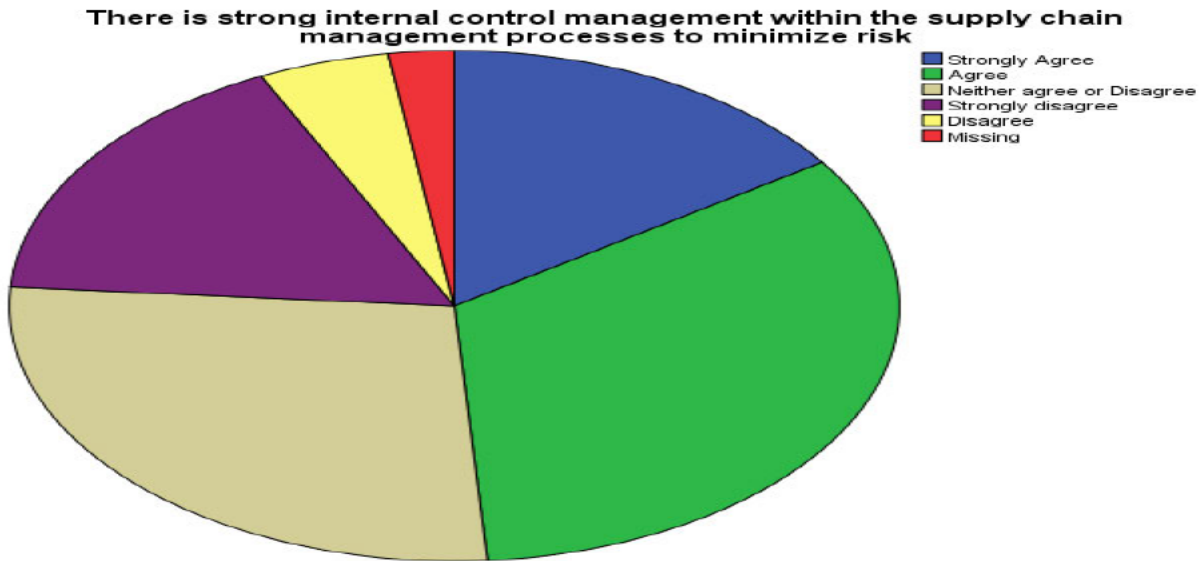


Table 4.30 and Figure 4.28 reveal whether there is strong internal control management within the supply chain management processes to minimize risk. The largest percentages of the respondents Agreed (33.3%), followed by neither agree nor disagree at (27.4%),

strongly disagree at (16.7%), strongly agree at (15.5%), disagree at (4.8%) and an unanswered percentage of (2.4%).

4.7.6 Supplier Selection and Evaluation

4.7.6.1 The Department has an effective database system in place

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	16	19.0	19.3	19.3
Agree	23	27.4	27.7	47.0
Neither Agree nor Disagree	21	25.0	25.3	72.3
Strongly Disagree	14	16.7	16.9	89.2
Disagree	9	10.7	10.8	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.31: The Department has an effective database system in place

Figure 4.29:

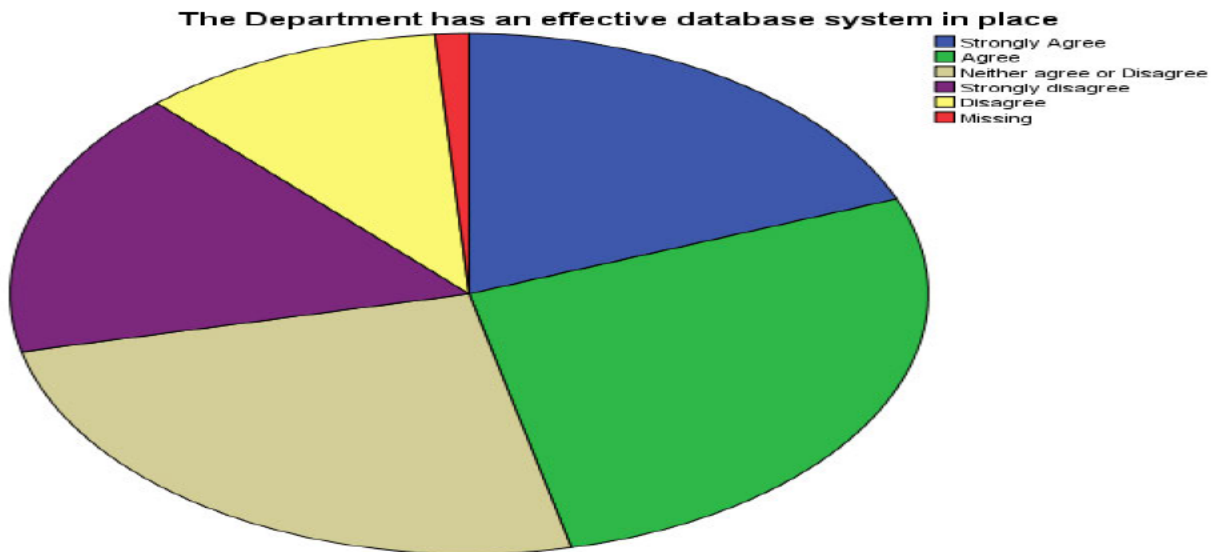


Table 4.31 and Figure 4.29 reveal whether the department has an effective database system in place. The largest percentage of the respondents agreed (27.4%), followed by

neither agree nor disagree at (25.0%), strongly agree at (19.0%), strongly disagree at (16.7%), disagree at (10.7%) and an unanswered percentage of (1.2%).

4.7.6.2 Suppliers are carefully screened and assessed before they are selected

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	12	14.3	14.5	14.5
Agree	23	27.4	27.7	42.2
Neither Agree nor Disagree	22	26.2	26.5	68.7
Strongly Disagree	19	22.6	22.9	91.6
Disagree	7	8.3	8.4	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.32: Suppliers are carefully screened and assessed before they are selected

Figure 4.30

Suppliers are carefully screened and assessed before they are selected than 5 years ago

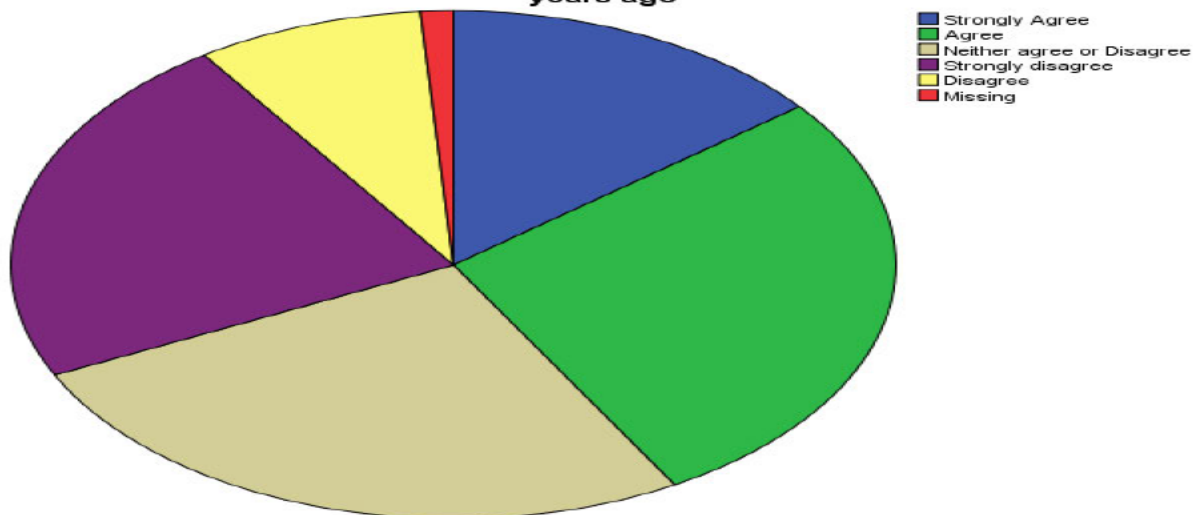


Table 4.32 and Figure 4.30 reveal whether suppliers are carefully screened and assessed before they are selected. The largest percentage of the respondents agreed (27.4%),

followed by neither agree nor disagree at (26.2%), strongly disagree at (22.6%), strongly agree (14.3%), disagree (8.3%) and an unanswered percentage of (1.2%).

4.7.6.3 The Department has adopted a key account approach for managing its best suppliers

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	10	11.9	12.0	12.0
Agree	20	23.8	24.1	36.1
Neither Agree nor Disagree	30	35.7	36.1	72.3
Strongly Disagree	20	23.8	24.1	96.4
Disagree	3	3.6	3.6	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.33 The Department has adopted a key account approach for managing its best suppliers

Figure 4.31:

The Dept has adopted a key account approach for managing its best suppliers

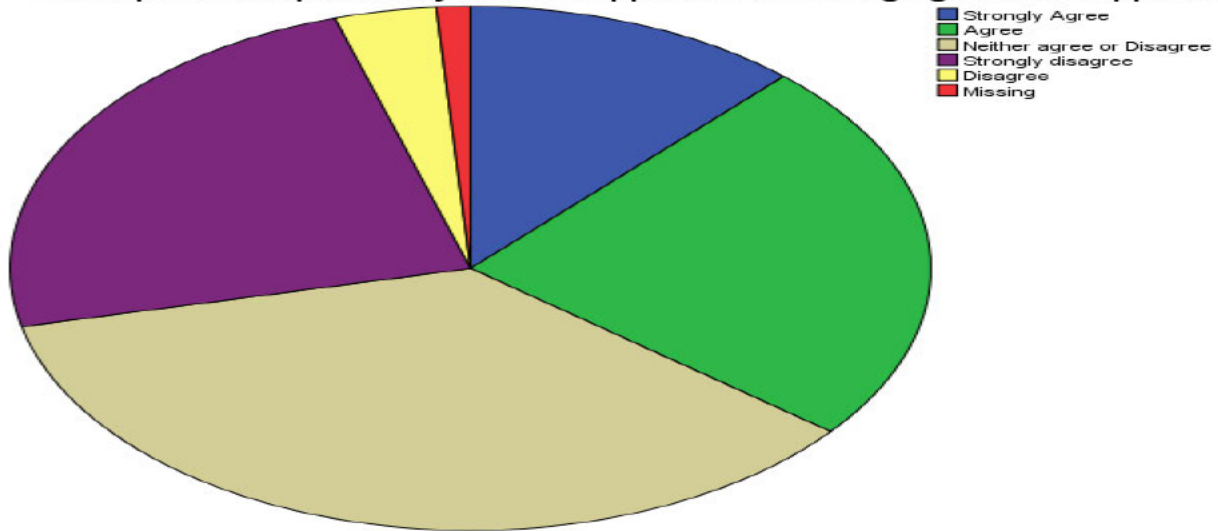


Table 4.33 and Figure 4.31 reveal whether the department has adopted a key account approach for managing its best suppliers. The largest percentage of the respondents neither agree nor disagree (35.7%), followed by agree at (23.8%), strongly disagree at (23.8%), strongly agree at (11.9%), disagree (3.6%) and an unanswered percentage of (1.2%).

4.7.6.4 Supplier performance is closely monitored and is the basis for future business

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	11	13.1	13.3	13.3
Agree	26	31.0	31.3	44.6
Neither Agree nor Disagree	24	28.6	28.9	73.5
Strongly Disagree	15	17.9	18.1	91.6
Disagree	7	8.3	8.4	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.34: Supplier performance is closely monitored and is the basis for future business

Figure 4.32:

Supplier performance is closely monitored and is the basis for future business than 5 years ago

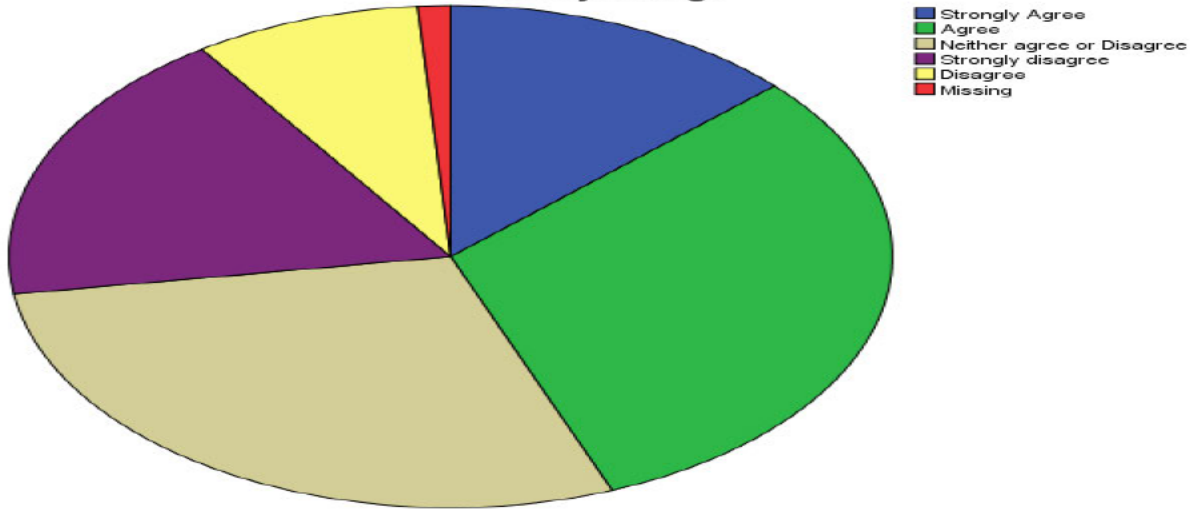


Table 4.34 and Figure 4.32 reveal whether supplier performance is closely monitored and is the basis for future business. The largest percentage of the respondents agreed (31.0%), followed by neither agree nor disagree at (28.6%), strongly disagree at (17.9%), strongly agree at (13.1%), disagree at (8.3%) and an unanswered percentage of (1.2%).

4.7.6.5 There is increased coordination with suppliers

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	11	13.1	13.6	13.6
Agree	23	27.4	28.4	42.0
Neither Agree nor Disagree	31	36.9	38.3	80.2
Strongly Disagree	10	11.9	12.3	92.6
Disagree	6	7.1	7.4	100.0
Total	81	96.4	100.0	
Missing System	3	3.6		
Total	84	100.0		

Table 4.35 There is increased coordination with suppliers

Figure 4.33:

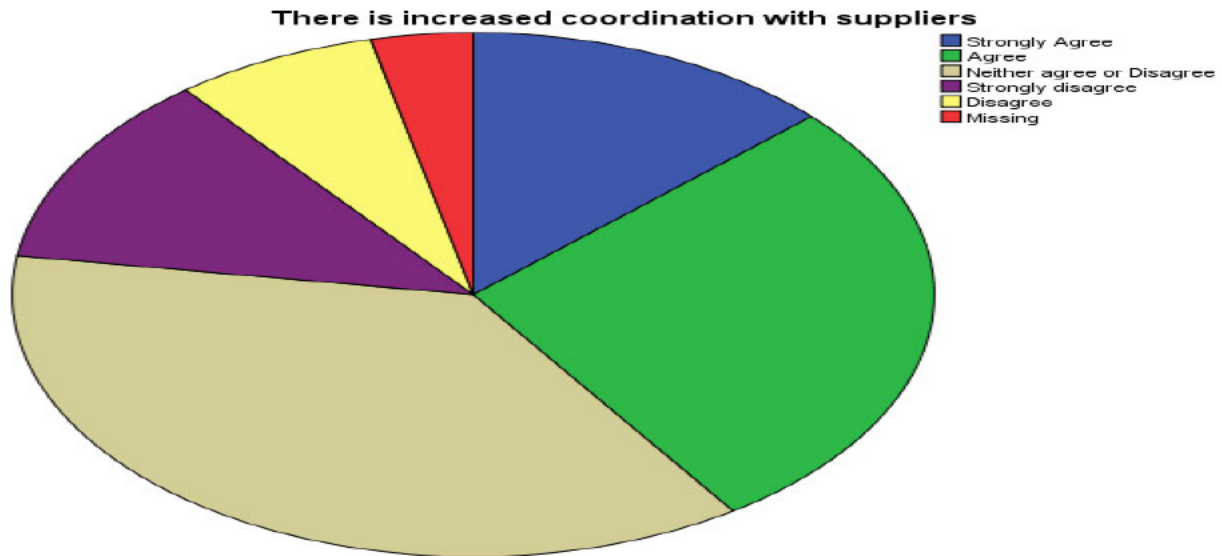


Table 4.35 and Figure 4.33 reveal whether there is increased coordination with suppliers. The largest percentage of the respondents neither agree nor disagree (36.9%), followed by agree at (27.4%), strongly agree (13.1%), strongly disagree at (11.9%), disagree at (7.1%) and an unanswered percentage of (3.6%).

4.7.7 Capacity (Skills) and Resources

4.7.7.1 There is enough capacity (skills) for carrying out SCM functions in an effective manner in the Department

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	10	11.9	12.3	12.3
Agree	27	32.1	33.3	45.7
Neither Agree nor Disagree	20	23.8	24.7	70.4
Strongly Disagree	17	20.2	21.0	91.4
Disagree	7	8.3	8.6	100.0
Total	81	96.4	100.0	
Missing System	3	3.6		
Total	84	100.0		

Table 4.36: There is enough capacity (skills) for carrying out SCM functions in an effective manner in the Department

Figure 4.34:

There is enough capacity (skills) for carrying SCM functions in an effective manner in the Department

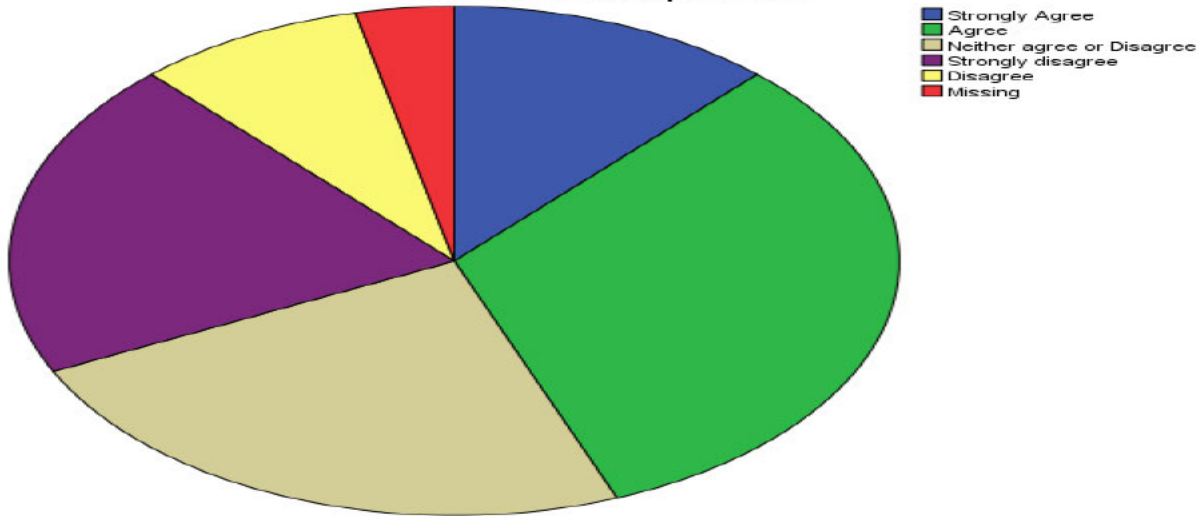


Table 4.36 and Figure 4.34 reveal whether there is enough capacity (skills) for carrying SCM functions in an effective manner in the Department. The largest percentages of the respondents agreed (32.1%), followed by neither agree nor disagree at (23.8%), strongly disagree at (20.2%), disagree at (8.3%) and an unanswered percentage of (3.6%).

4.7.7.2 The Department is giving sufficient ongoing training on SCM processes to address any challenges and updates of the processes

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	10	11.9	12.0	12.0
Agree	24	28.6	28.9	41.0
Neither Agree nor Disagree	22	26.2	26.5	67.5
Strongly Disagree	21	25.0	25.3	92.8
Disagree	6	7.1	7.2	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.37: The Department is giving sufficient ongoing training on SCM processes to address any challenges and updates of the processes

Figure 4.35:

The Department is giving sufficient ongoing training on SCM processes to address any challenges & updates of the processes

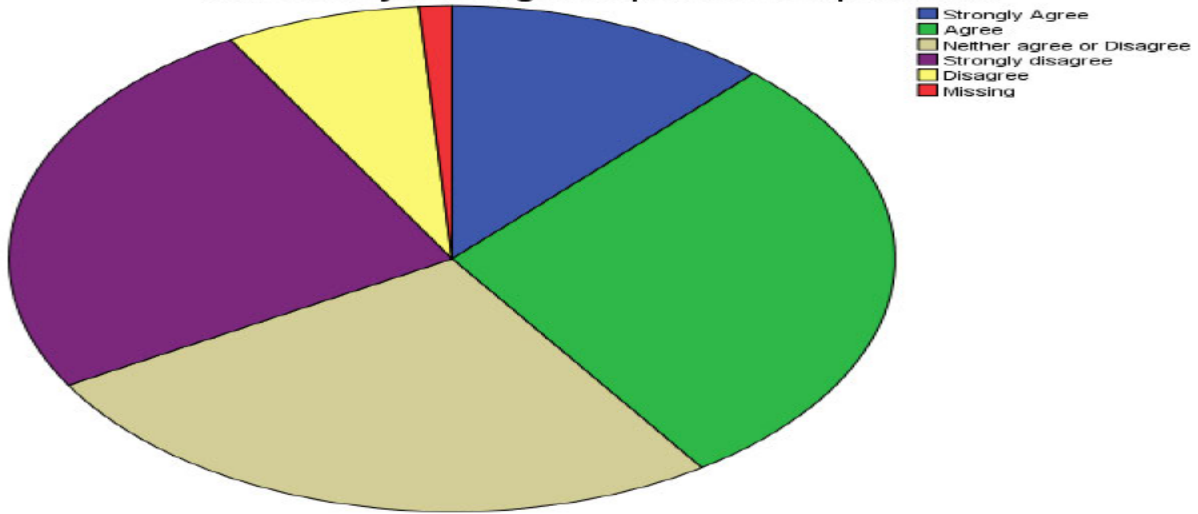


Table 4.37 and Figure 4.36 reveal whether the Department is giving sufficient ongoing training on SCM processes to address any challenges and updates of the processes. The largest percentages of the respondents agreed (28.6%), followed by neither agree nor disagree at (26.2%), strongly disagree at (25.0%), disagree at (7.1%) and an unanswered percentage of (1.2%).

4.7.7.3 Our SCM practitioners have sufficient training, knowledge and understanding of SCM processes

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	8	9.5	9.6	9.6
Agree	28	33.3	33.7	43.4
Neither Agree nor Disagree	22	26.2	26.5	69.9
Strongly Disagree	19	22.6	22.9	92.8
Disagree	6	7.1	7.2	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.38: Our SCM practitioners have sufficient training, knowledge and understanding of SCM processes.

Figure 4.36

Our SCM practitioners have sufficient training, knowledge and understanding on SCM processes

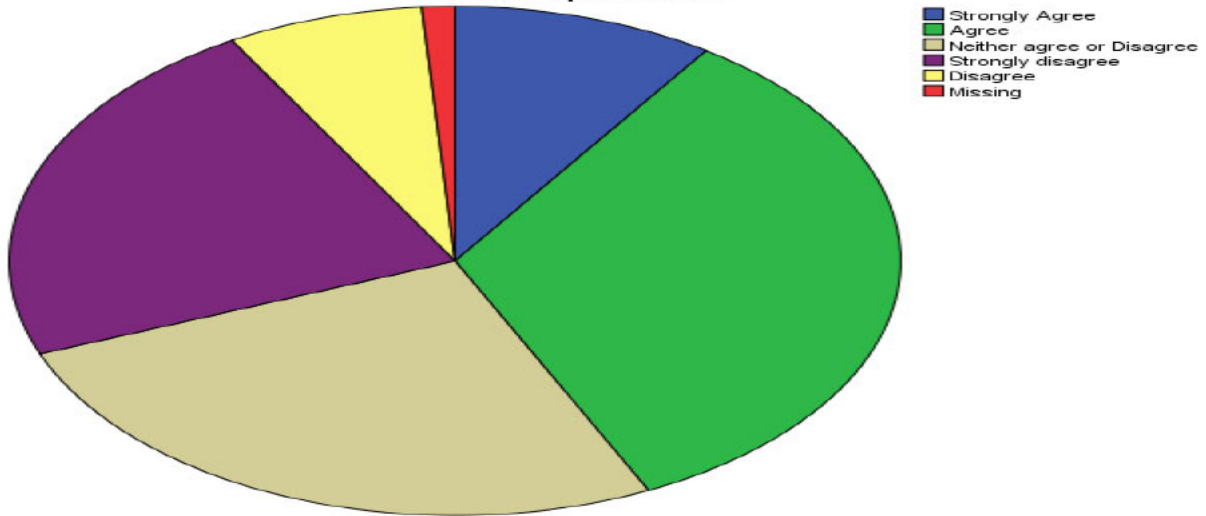


Table 4.38 and Figure 4.36 reveal whether the department’s SCM practitioners have sufficient training, knowledge and understanding of SCM processes. The largest percentages of the respondents agreed (33.3%), followed by neither agree nor disagree at (26.2%), strongly disagree at (22.6%), strongly agree at (9.5%), disagree at (7.1%) and an unanswered percentage of (1.2%).

4.7.7.4 The Department adequately collaborates with other SCM practitioners when needed

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	10	11.9	12.2	12.2
Agree	28	33.3	34.1	46.3
Neither Agree nor Disagree	29	34.5	35.4	81.7
Strongly Disagree	10	11.9	12.2	93.9
Disagree	5	6.0	6.1	100.0
Total	82	97.6	100.0	
Missing System	2	2.4		
Total	84	100.0		

Table 4.39: The Department adequately collaborates with other SCM practitioners when needed

Figure 4.37:

The Dept adequately collaborates with other SCM practitioners when in need of it

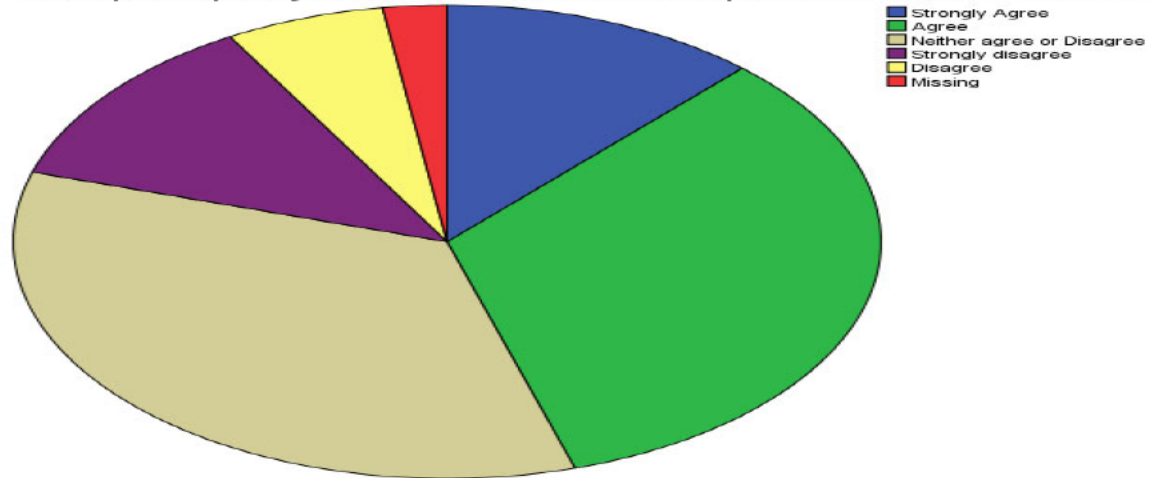


Table 4.39 and Figure 4.37 reveal whether the department adequately collaborates with other SCM practitioners when needed. The largest percentage of the respondents neither agree nor disagree (34.5%), followed by agree at (33.3%), strongly agree at (11.9%), strongly disagree at (11.9%), disagree at (6.0%) and an unanswered percentage of (2.4%).

4.7.7.5 There are sufficient required resources to support the effectiveness of the Supply Chain Management functions

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Agree	14	16.7	16.9	16.9
Valid Agree	25	29.8	30.1	47.0
Valid Neither Agree nor Disagree	22	26.2	26.5	73.5
Valid Strongly Disagree	16	19.0	19.3	92.8
Valid Disagree	6	7.1	7.2	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.40: There are sufficient required resources to support the effectiveness of the Supply Chain Management functions

Figure 4.38:

There are sufficient required resources to support the effectiveness of the supply chain management functions

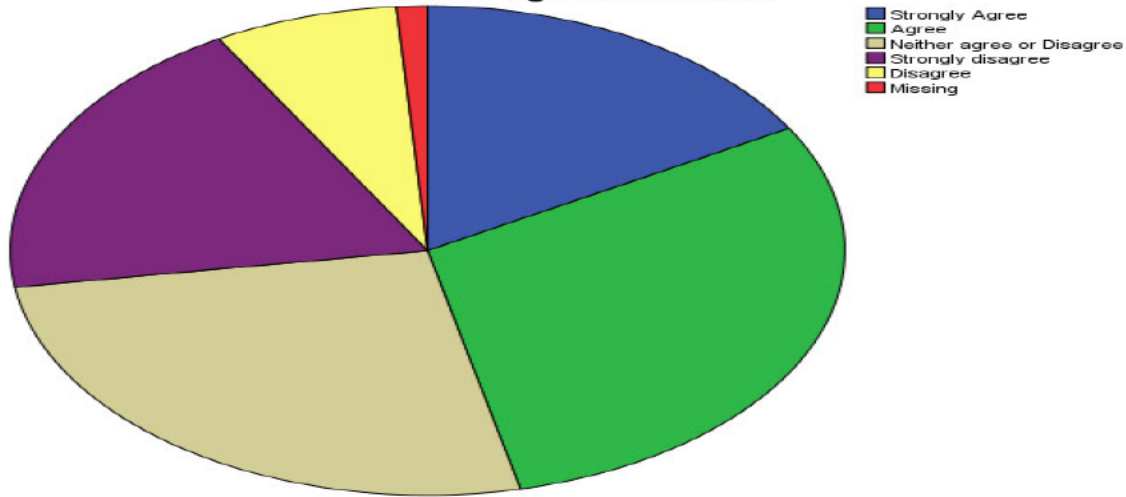


Table 4.40 and Figure 4.38 reveal whether there are sufficient required resources to support the effectiveness of the supply chain management functions. The largest percentages of the respondents agreed (29.8%), followed by neither agree nor disagree at (26.2%), strongly disagree at (19.0%), strongly agree at (16.7%), disagree at (7.1%) and an unanswered percentage of (1.2%).

4.7.7.6 There is strong buy-in from top management in promoting good governance on Supply Chain Management processes

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	9	10.7	10.8	10.8
Agree	31	36.9	37.3	48.2
Neither Agree nor Disagree	24	28.6	28.9	77.1
Strongly Disagree	13	15.5	15.7	92.8
Disagree	6	7.1	7.2	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.41: There is strong buy-in from top management in promoting good governance on Supply Chain Management processes

Figure 4.39

There is strong buy in from top management in promoting good governance on supply chain management processes

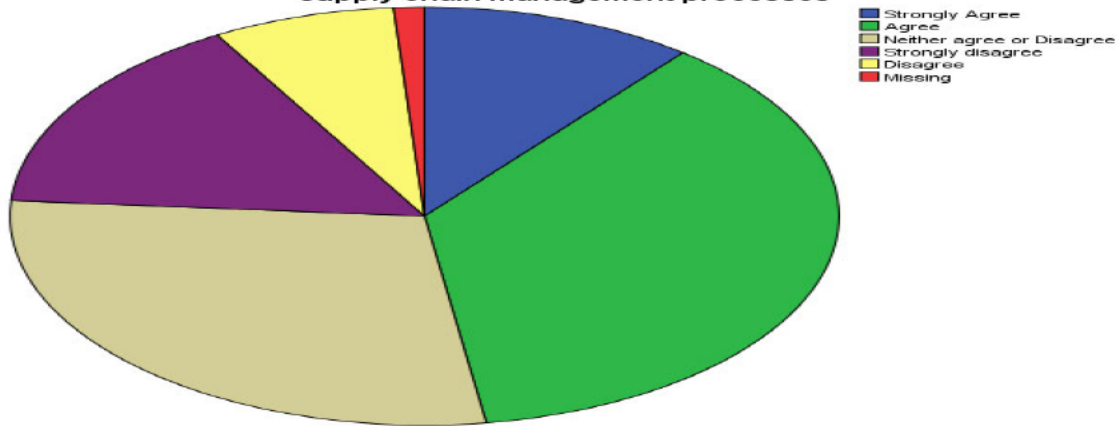


Table 4.41 and Figure 4.39 reveal whether there is strong buy-in from top management in promoting good governance on supply chain management processes. The largest percentages of the respondents agreed of (36.9%), followed by neither agree nor disagree at (28.6%), strongly disagree at (15.5%), strongly agree at (10.7%), disagree at (7.1%) and an unanswered percentage of (1.2%).

4.7.7.7 Middle managers are more empowered to make operation decisions in SCM processes

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	12	14.3	14.5	14.5
Agree	27	32.1	32.5	47.0
Neither Agree nor Disagree	20	23.8	24.1	71.1
Strongly Disagree	15	17.9	18.1	89.2
Disagree	9	10.7	10.8	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.42: Middle managers are more empowered to make operation decisions in the SCM processes

Figure 4.40

Middle managers are empowered more to make operation decisions in the SCM processes than 5 years ago

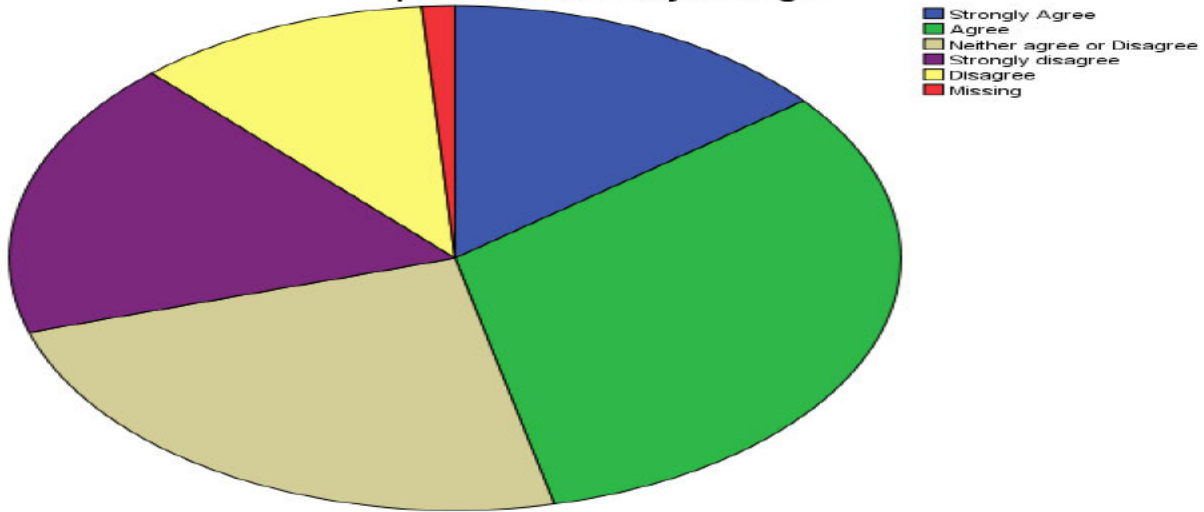


Table 4.42 and Figure 4.40 reveal whether middle managers are more empowered to make operation decisions in the SCM processes than 5 years ago. The largest percentages of the respondents agreed (32.1%), followed by neither agree nor disagree at (23.8%), strongly disagree at (17.9%), strongly agree at (14.3%), disagree at (10.7%) and an unanswered percentage of (1.2%).

4.7.7.8 Non-management employees are more empowered to make operating decisions than 5 years ago

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	7	8.3	8.4	8.4
Agree	24	28.6	28.9	37.3
Neither Agree nor Disagree	19	22.6	22.9	60.2
Strongly Disagree	17	20.2	20.5	80.7
Disagree	16	19.0	19.3	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

Table 4.43: Non-management employees are more empowered to make operating decisions

Figure 4.41:

Non-management employees are empowered more to make operating decisions than 5 years ago

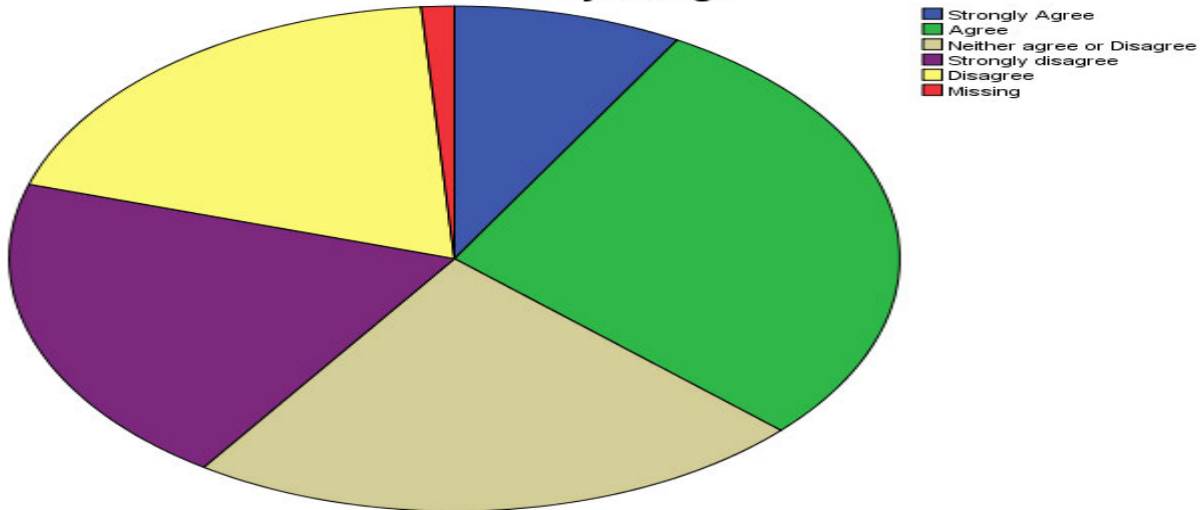


Table 4.43 and Figure 4.41 reveal whether non-management employees are more empowered to make operating decisions than 5 years ago. The largest percentages of the respondents agreed (28.6%), followed by neither agree nor disagree at (22.6%), strongly disagree at (20.2%), disagree at (19.0%), strongly agree at (8.3%) and an unanswered percentage of (1.2%).

4.8 Presentation of Interview results – self administered questionnaires for senior management

The following section provides the qualitative analysis, which is the result of analyzing the Senior Management’s self-administered interview questionnaire. The purpose of the qualitative responses is to complement the quantitative analysis and identify challenges that management foresee, the following are the responses.

The survey sought to discover how the respondents found SCM processes when procuring goods and services, with special emphasis on lead time, goods and services being delivered in the right specification, quality and price, how SCM processes impact on their sections performance, what practical problems were experienced relating to the processes and areas of improvement on the efficiency of SCM processes in line with the

requirements of the Constitution. Thirty-nine interview questionnaires captured and validated. The majority of the respondents indicated that the Department has proper policies and clear SCM processes that are being followed when acquiring goods and services. They also stated that the purchasing of goods was done according to the Procurement Plan as well as the budgetary and strategic objectives of the Department. The SCM processes impact positively, there is compliance and the officials are aware of what is expected of them. Equitable, cost effective and efficient SCM in line with Public Finance Management Act was also cited as a positive aspect of the SCM process in the Department of Public Works.

4.8.1 Objective 4: To identify challenges to the smooth operation of the Supply Chain Management processes.

Respondents' also highlighted areas that they felt are affecting the smooth operation of processes thus hindered efficiency and effectiveness of SCM processes and which are critical for the effectiveness of the processes. These include:

- a) ***Policies and Regulations: Policies:*** The respondents felt that the Constitution and other legislative framework apply to both private and public sector, yet private sector processes seem to be more efficient than in the public sector. They also noted that policies and procedures are in place but require application, monitoring and enforcement. Respondents indicated that even though the Department has the approved policies there are “too many policies governing SCM processes” and the problems mentioned were misalignment of objectives and a lack of flexibility in the implementation of SCM framework process which was perceived as a “one size fits all approach”. They admitted that there is a need to fight fraud and corruption through strict procedures and processes. The Government needs to re-look at all policies that govern SCM with a view to addressing misalignment and the “one size fits all” single approach as well as flexibility since there is no flexibility in processes.
- b) ***Turnaround Time of SCM processes:*** The vast majority (21 out of 39) of the respondents indicated that time was a constraint, from the time the process starts

to the time goods or services are delivered. As a result, projects do not get finalized as planned and there is no feedback on the status of the process. The overall turnaround time may not be known upfront. This results in SCM processes being viewed by end users as a hindrance on service delivery. The other problem that arises is when there has to be a re-advertisement or appeals, which leads to further delays in the project starting late. They further indicated that delays experienced in sourcing service providers to assist on projects had a serious impact on budget and expenditure spending for the section. General delays in payments were also cited. These were often due to misallocation of items when capturing goods or services purchased. They suggested that although procurement procedures need to be followed, they need to be innovative enough in order to ensure that the cycle of procuring goods and services is not delayed and there is a need to shorten lead time when acquiring goods and services. Perhaps looking at a sample of these organizations could assist in streamlining the Department's process. JSE-listed companies' processes and turnaround times could also be examined, as long as they conformed to the principles of the Constitution.

- c) **Specifications:** Some respondents mentioned that occasionally the specifications were not correct, and that checking compliance and quality issues was an area that needed improvement. They indicated that usually the goods and services that lacked the correct specifications would be sub-standard in quality and at times, were inflated in terms of price. Other respondents suggested that for successful and effective SCM processes, there should be correct specifications, and ample time to procure goods and services in the manner that would comply with the lead time of the project and would ensure proper delivery at the right time.
- d) **Quality:** The quality of goods and services delivered by service providers was not always of the required standards and this presented a major challenge to the Department. When the selected service provider delivered poor performance this resulted in delays in the completion of building infrastructure projects, leaving the Department sometimes with no option but to cancel the non-performing contracts.

This occurred when verification of the level of capacity and capability of the service provider on the quality of the work it could produce had not been done prior to the selection of that service provider. This can be avoided by ensuring that goods or services delivered are procured according to appropriate specifications and quality standards as stipulated in the tender document. This would ensure that goods delivered to the Department are good quality, cost effective and there is value for money. Furthermore, to ensure quality, all possible loopholes that may lead to fraud and corruption must be eliminated by ensuring that there are strong internal controls in the processes and there must be an improved communication amongst all stakeholders.

- e) **Higher Prices:** Because of the existence of “middlemen” in the SCM process, the Department often ends up paying more than if the goods had been sourced directly from the retailer. They suggested that even though the SCM process dictates that the lowest price bidder gets the contract, there must be other criteria that will test the reasonableness of the price in order to avoid service providers overcharging government.

- f) **Selection of Suppliers:** Service providers sometimes do not have adequate skills and capacity to produce quality goods and services. Pre-approval and vetting of suppliers and the development of a schedule of accredited suppliers will eliminate this shortcoming. They suggested that the Department can drastically shorten the procurement process by generating a pool of service providers who understand the needs of the Department. It could be worthwhile exploring the possibility of the SCM team visiting the service providers and finding out how much they charge for the service and decrease the one with the best product at reasonable cost. With a better-structured sourcing strategy the Department will be in a better position to ensure that it does not overload the system with suppliers that are trying to enrich themselves at the expense of the government. They suggested that only the best performing suppliers should be used and that corrupt officials should be rooted out of the system.

- g) ***Continuous Monitoring of the Process:*** There should be mechanisms in place to supervise, monitor and review the work done so that suppliers who failed to deliver on the expectations are removed from the system. This will go a long way in ensuring that the staff executes their duties in an unbiased manner. In order for this to work effectively, the government should create posts for SCM officials who will monitor quality of service and products from service providers.
- h) ***Lack of understanding of SCM processes:*** One of the critical success factors to ensure effective and efficient adherence to SCM processes is to get the buy-in from all officials: from the top to the bottom level i.e. top management to the most junior staff within the Department. It was mentioned that there is only minimal knowledge of the SCM processes within the Department. This lack of comprehensive understanding of current policies and the constant changes, coupled with inadequate communication between the Departments' SCM sections and end user on latest SCM practices causes problems. They suggested that officials need to be empowered and trained on SCM policies on regular basis so that they could understand that SCM revolves around policies, procedures and regulations. The respondents indicated that cases of fraud and corruption among government officials and suppliers also created problems in the implementation process and that at times there was deliberate omissions of specific rules and regulations with the intention of engaging in fraudulent activities. It was also mentioned that the lack of understanding of the SCM processes by the end users and suppliers could be due to insufficient awareness of what is required in the SCM implementation. It was suggested that regular workshops are held to enhance officials' knowledge and understanding of SCM processes. There is also the issue of an overlap of duties which means that too many people are involved in the process and all want their views to be heard. A few suggested that end users must understand the importance and critical nature of these processes involved in SCM prior to being involved in procuring goods.

- i) ***Insufficient personnel/capacity:*** The lack of competent staff members with the correct skills and knowledge, lack of adherence to policy and monitoring of process creates further delays. The department sometimes receives appeals that could have been avoided had there been an appropriate skill in place. In addition there are problems such as a lack of confidentiality, fraud/corruption, unfilled posts, lack of technical expertise and political interference, as well as too many uncoordinated people trying to perform the same duties-referred to as “*too much commentators*”. The managers mentioned that there should be sufficient personnel to handle the workload so that follow ups are done timeously. They suggested that SCM was one of the most important sections within the department and having adequate staff is crucial. The positive attitude of the staff was also mentioned as an important factor in the implementation of SCM processes. The department does not devote much in the staff complement and as a result, they are overloaded with work which makes them unable to execute the duties in an effective and efficient manner. This compromises service delivery. A few respondents, however, reiterated that if the performance of the section was to be improved, the section first needed to be educated on fraudulent and unlawful activities as well as on the misuse of taxpayer’s money. Whilst work is able to proceed in most cases, the impact on the morale of staff may be negative due to unnecessary frustration they experienced in having to constantly chase after service providers and in some instances the support and willingness of the procurement staff to follow up on services providers on goods or services delivered.
- j) ***Staff Training:*** As has been alluded above, in order to have an effective and efficient SCM there must be attitudinal change from the staff. For accountability purposes, first and foremost, there should be segregation of duties to avoid temptations. The Department should divide the duties among the staff accordingly, and each one should perform their duties and be held accountable for any discrepancies. Capacity building is an important issue because it keeps staff motivated and gives them information about their work thus boosting their self-

confidence and morale, which will ensure that they follow procedures. Staff training should be relevant to SCM processes, and the application of specific laws and regulations. Without a sound knowledge of SCM legislative rule, the staff are not able to apply the correct procedure in certain instances, e.g. they allude that “*Government departments are housed in shabby buildings because of applying section 90/10*”. The respondents also felt that honesty, and vigilant execution of duties by officers, would work against “*unscrupulous suppliers who want to give them bribes*”, and that a better service results from SCM staff being honest when dealing with the clients.

- k) ***Sensitization/Awareness of SCM Processes:*** The respondents suggested that workshops especially at service provider level were necessary to ensure that SCM processes, legislative frameworks and related issues are disseminated to the service providers. They could be made aware for example that “*the cheapest is not necessarily the best in terms of quality*”.
- l) ***Information Management Systems:*** The acquisition IT system is not adequately geared to promote the integration process within the Department.
- m) ***Process Related Issues:*** These are issues when there is loose adherence to the SCM requirements and the tendency to use the procurement system for political self-interest. They mentioned that continuous assessment or monitoring of processes and getting feedback from the service requestor once the service has been delivered was crucial to ensure successful and effective SCM implementation. Suppliers should also be educated on the process and how they can effectively compete, emerging contractors / services should be procured separated, and that not all goods need to be procured from an external company through the tender process e.g tea, coffee, or biscuits. In order to fast track the implementation process, there is need to ensure that the bid committee monitors cases to have them dealt with immediately. Furthermore, the Department should

avoid involving the government in financial losses by minimizing court cases brought against it by dissatisfied suppliers.

4.9 Summary

Chapter Four provides an explanation of the data set used and some descriptive statistics as well as the presentation of data. Chapter Five presents the discussion of results presented in Chapter Four.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

This chapter will summarize the findings on literature and objectives of both quantitative questionnaires and qualitative interviews from respondents. On the questionnaire, certain personal details were required from the respondents, for example age, gender, education, position at work and job category. The analysis of these personal details revealed that age, gender, education, position at work and job category had no bearing on the effectiveness of Supply Chain Management. This highlights the point that no matter how old or educated an employee is or what position or job category an employee occupies in the Department, if they not aware of the Supply Chain Management prescripts and procedures, they may not contribute positively to the critical success factors for an effective Supply Chain Management processes.

5.2 Findings based on Literature

The following findings below are based on the literature review on the research study:

5.2.1 Effective Supply Chain Management

According to Cooper et al. (1997) SCM as a management philosophy takes a system approach to viewing the supply chain as a single entity. This means that the partnership concept is extended into a multi-firm effort to manage the flow of goods from suppliers to the ultimate user. Each firm in the chain directly or indirectly affects the performance of other supply chain members, as well as the overall performance of the supply chain. When a company adopts a certain philosophy, a set of management policies and practices must be established to ensure across the board behavior which is consistent with the philosophy. Successful management of the supply chain is the key to the long- term success of an organization (Tan et al., 1999). Factors of efficiency and effectiveness of the Supply Chain Management processes include the quality of service, cost benefits to

be derived from a supplier and the extent to which the relationship will lead to a simplification of the process, as well as reliability of supply, top management support and mutual interest (Akintoye et al., 2000). Effective Supply Chain Management requires proper supply, demand, purchasing, logistics and performance management. Supply management includes the effective management of suppliers, supplier networks and relationships with them. Waller (1997 cited in Akintoye et al., 2000) stresses rigorous attention to quality, cost and lead or delivery times based on teamwork, co-operation and elective coordination throughout the organization in SCM.

In the public service, section 217 (1) of the South African Constitution requires that when an organ of the state in any sphere of government is procuring goods and services, it must implement a procurement system which is fair, open, transparent, competitive and cost-effective, thus the public sector Supply Chain Management has five elements in its models, namely the Demand Management, Acquisition Management, Logistics Management, Disposal Management and Supply Chain Management Performance. Treasury Regulation 16A3.2 (d) further regulates the sixth element of SCM which is Risk Management. These six elements are essential in managing the supply chain proactively to ensure delivery. The success behind the KZN Provincial Department of Public Works' performance can then be attributed to the joint effect of the SCM core competencies, core capabilities, strategy and implementation. The success behind the KZN Provincial Department of Public Works' performance can be attributed to the joint effect of the SCM core competencies, core capabilities, strategy and implementation.

Professional purchasing relies on cross-functional teamwork. Purchasing strategies and plans need to be developed in close collaboration and shared between units and departments. In addition, training and education are mandatory in order to change the often traditional view on purchasing that is prevalent in companies. The cross-functional procurement team needs to be thoroughly trained on the core functions of the company and on their tasks and responsibilities.

The benefits of successful Supply Chain Management include improved service delivery and inventory management amongst others (Fawcett, Magnan and McCarter, 2008). Evans and Lindsay (2002) on the other hand argued that proper measurement of the supplier, coupled with communication, feedback and awards, is critical. This requires the ongoing surveillance and rating of supplier quality with appropriate measures. These measures may include the percentage of product which does not conform; overall product quality; delivery against schedule; cost of defective products (including hidden cost) against purchase price, and other quantitative means that reflect critical supplier elements in relation to business outputs (Gryna, 2001).

5.2.2 Barriers to Effective Supply Chain Management

Even though there are definite benefits there are still barriers in the system. For example, ineffective performance or the inability to meet customer demand as a result of quality, employee attitude and poor collaboration planning (Juttner and Maklan, 2011). The lack of senior management commitment, the lack of appropriate support structures and the widespread ignorance of supply chain philosophy, must all be addressed if construction is to emulate other industries. Appropriate training and education, at all levels of the industry is required to overcome these barriers. (Akintoye et al, 2000). A lack of transparency in the sense of absence information on rules and practices could operate as a barrier to trade and may affect foreign suppliers more than local ones.

5.2.3 Conclusion on Literature Review

Fawcett et al. (2002) argued that the most common bridges that can help overcome SCM challenges: senior and functional management support, open, transparent and honesty, good measurement systems, process documentation, education and training. Furthermore, nothing can be implemented without the right people with competencies that support the development and execution of the supply chain processes. The organization (structure and processes) needs to be reviewed periodically to ensure that strategic business development is supported and that the people who have been assigned

to different roles have the technical and managerial skills to execute their defined responsibilities effectively. According to Kotler (2001), time and technological developments have changed the marketplace in which organizations operate to the extent that the digital economy is impacting on Supply Chain Management practices. Between 1960 and 2000, the marketplace has evolved from focusing on lower price competition to a focus on quality, business process re-engineering, logistics, information technologies and ultimately the convergence of all these into the current market environment. Van Weele (2010) proposed that to be able to produce effective purchasing management information, investments in advanced IT system are necessary. Purchasing information systems should be seamlessly integrated with incumbent ERP systems. In addition section 217 (1) of the South African Constitution requires that when an organ of the state in any sphere of government is procuring goods and services, it must implement a procurement system which is fair, open, transparent, competitive and cost-effective.

5.3 Discussion and Conclusion based on Fieldwork Results

5.3.1 Objective1: To determine internal customer perception on Supply Chain Management processes.

This objective sought to determine respondent perception in terms of their knowledge on SCM legislation and demand management as the first stage of SCM process.

Fieldwork: Respondents provided exceptional level of knowledge of SCM legislations that governs effective SCM, as most respondent generally agreed that the department's SCM processes were legislatively in compliance with the SCM Framework and other regulatory documents, as the vast majority (76.5%) of the respondents totally Agreed on the existence of compliance legislation, and (70.2%) were also positive that SCM promotes the transformation of Government procurement and provisioning practices into an integrated function through the SCM.

Respondents also agreed that the Department takes demand management as part of its strategic planning. A total of 57.6% of the respondents Agreed that the Department

conducted a needs assessment prior to the procurement of goods and services and that SCM is part of the strategic planning for the Department. This could mean that as part of ensuring effectiveness on the SCM processes and systems, the Department takes this as part of its strategic planning. Strategic planning is concerned with policy decisions which affect the entire organization, the overall objective being to position the organization to deal effectively with its environment. However, the study also revealed that less than 50% of the respondents did not agree that market research is conducted when determining the correct specification. This may result in poor quality or incorrect goods or services being delivered as well as in high costs being charged by service providers. The results also revealed that the Department's procurement of goods and services is not in line with the procurement plan.

Conclusion: Based on the responses it is clear that officials are aware of SCM policies and legislation governs the Department's SCM processes and the department take scm seriously as it part of its strategic planning, however the departments intervention of other factors of demand i.e. procurement plans market research requires revisiting the so that they are made relevant and appropriate for the Department's success in the Supply Chain Management process.

5.3.2 Objective 2: To analyze the efficiency of the Supply Chain Management processes.

This objective seeks to determine the key success factors of an effective SCM and whether the department's SCM processes are effective enough to satisfy the needs of its customers.

Fieldwork: Acquisition management process covers the acquiring of goods and/or services by implementing the sourcing strategy determined by demand management and the administration thereof, it is crucial that the Department ensures co-ordinated vertical and horizontal linkages within the transaction sphere of the goods and services, (Akintoye et al., 2000). The study also revealed three least popular factors mentioned as affecting the effectiveness of acquisition management were the turnaround time when

acquiring goods and services function were viewed as time delaying and hindrance in service delivery, (31.7%) respondents disagreed and (20.7%) were neither agree nor disagree, this is supported by the qualitative results where the vast majority (21 out of 39) indicated that time was a constraint. Quantitative and qualitative results revealed that SCM processes compromise quality and higher supply cost compared to competitors. Factors of efficiency and effectiveness of the Supply Chain Management processes include the quality of service, cost benefits to be derived from a supplier and the extent to which the relationship will lead to a simplification of the construction process, followed by reliability of supply, top management support and mutual interest (Akintoye et al., 2000)

The Department should understand that the consistency of the process in applying criteria, suppressing bias, using accurate information, ensuring ethical treatment, providing adequate representation in the decision-making process or timely feedback plays a vital role in co-operative behavior among in-group members. Both parties in the group are motivated to achieve outcomes that are both efficient and equitable. The most important benefit of transparent and open procedures is the impact which their adoption may have on the level of corruption in countries where it is widespread. Procurement process should therefore be open and predictable and should afford each prospective bidder timely access to the same and accurate information.

The results also revealed that 46.4% of the respondents Agreed that SCM processes are applied reasonably fairly, openly and transparently within the Department while 28.1% were not in agreement and about a quarter of the respondents (25.6%) neither Agreed nor Disagreed. This could imply that respondents were not in favor of the statement as the qualitative responses were also not positive on this issue. This could also be as a result of the lack of an electronic integrated system in the Department that is creating mistrust within the Department.

Conclusion: Whiles the department complies with legislation and have clear procedures, however the study revealed that there are challenges on the implementation that needs to

be looked at by the department, especially that addresses the challenges identified, mainly being the turnaround time, quality vs price of goods and services delivered.

5.3.3 Objective 3: To determine the impact of Supply Chain Management processes on the Department's performance.

This objective sought to determine the impact of SCM functions in the department service delivery as well as a measure of performance within the supply chain.

Fieldwork: The study revealed that performance management was perceived as unimportant factor in the effectiveness of SCM processes this was supported by the qualitative respondents who said that the Department did not have mechanisms in place to assess and blacklist those service providers that do not perform adequately. This implies that the analysis of the completion stage, operational goals and objectives, comprehension of competitive comparativeness, improvement of SCM, better cash flow, and customer satisfaction were perceived as unimportant factors in the Supply Chain Management processes in KwaZulu-Natal Department of Works. The policy implications are that the Department should try as far as possible to find ways to address why these factors are not taken into consideration as they play a significant part in the SCM processes.

The Department must understand that performance management is a monitoring process undertaken to do a retrospective analysis to determine whether proper processes have been followed and whether the desired objectives have been achieved. Monitoring and Reporting represents a key component of the Supply Chain Management (SCM) framework. It interacts with each of the main functional areas represented in the framework and provides an overall look at the performance of the Department's Supply Chain Management. In international companies some uniformity in reporting is mandatory to allow for sufficient comparison among business units and purchasing units. Such reporting allows for the effective management of purchasing as well as supplier performance

The study also revealed that that supplier selection is not effective. This is complemented by the qualitative results that reiterate the importance of selecting the best suppliers and not selecting on bias or based on self-interest or being influenced by political pressure. This has a huge impact on the Department's performance as indicated in the Department's annual report that major challenges with poor contractor performance causes delays in the completion of building infrastructure projects, leaving the Department with no option but to cancel contracts with the non-performing suppliers.

Two factors which were perceived to be having somewhat noticeable effect on Supply Chain Management were:

- Strong buy-in from top management was believed to be key in promoting Supply Chain Management processes by 47.6% of the respondents
- Greater empowerment of middle managers to plan and make operation decisions was cited by 47% of the respondents

However, both of these factors are concerned with managerial staff, rather than the technical staff who deal with the SCM processes on a daily basis, such as when they do follow ups etc. Appropriate training and education at all levels of the industry is required to overcome barriers within supply chain (Akintoye et al., 2000). Above all, enabling institutional arrangements are vital in the successful implementation of SCM. Qualitative results emphasize that increasing the staff numbers and capacity building of staff within the SCM Department is essential so that they are able to handle the workload efficiently. Furthermore, technical training is crucial as mentioned in the qualitative results. Very few staff members are trained on the actual SCM procedures and there are people who have been appointed as officers to the Departments without taking into consideration their skills and qualifications. The multivariate analyses confirm these results, where capacity, skills and resources were considered one of the most critical factors for effective Supply Chain Management.

5.3.4 Objective 4: To identify challenges to the smooth operation of the supply chain management processes.

According to Gryna (2001), management of the supply chain is affected by the quality of the relationship with suppliers and the selection criteria. He also proposed that trends are moving towards partnerships in Supply Chain Management and quality. Although the Department has proper policy and clear SCM processes that are being followed when acquiring goods and services, the qualitative results revealed the following challenges:

- i. ***Policies and Regulations:*** Policies and procedures are in place. They do, however, require monitoring and enforcement.
- ii. ***Turnaround Time of SCM processes:*** The vast majority (21 out of 39) of the respondents indicated that time was a constraint. They specifically cited the length of time from when the process starts to the time goods or services are delivered as being an obstacle. In some cases projects do not get finalized as planned and there is no feedback on the status of the process.
- iii. ***Specifications:*** Even though this was not a major challenge, the results indicated that a lack of correct specifications would result in sub-standard quality of goods and services and, at times with inflated prices.
- iv. ***Quality:*** Selected service providers were delivering poor performance causing delays in the completion of building infrastructure projects. This left the Department with no option but to cancel the non-performing contracts and start the whole process again.
- v. ***Higher Prices:*** The presence of “middlemen” in the SCM process meant that in some instances, the Department paid more for goods/services than it would have paid if they had been sourced directly from the retailer.

- vi. ***Continuous Monitoring of the Process:*** There was a lack of mechanisms to assess and blacklist the performance of suppliers who failed to deliver. Effective performance management of SCM to determine its effectiveness was also not done
- vii. ***Insufficient personnel/capacity:*** There was a lack of competent, correctly skill and knowledgeable personnel to ensure adherence to policy and monitor the process.
- viii. ***Sensitization to/Awareness of SCM Processes:*** The Department needs to create continuous awareness of all SCM processes and the associated legal requirements.
- ix. ***Information Management Systems:*** There is still a gap in the acquisition IT system that should be used to promote the integration process within the Department.
- x. ***Process Related Issues:*** Issues of adherence to the SCM requirements and eliminating the tendency to use the procurement system for political self interest need to be addressed.

5.3.5 Objective 5: to provide recommendations for improving Supply Chain Management Processes within the Department.

This objective sort to identify possible solutions on the challenges identified by the study and is presented below under recommendation

5.4 Supplier Selection and Evaluation

According to Gryna (2001), management of the supply chain is affected by the quality of the relationship with suppliers. Selection criteria and trends are moving towards partnerships in Supply Chain Management. Supplier selection and evaluation based on

quality is one of the critical factors in the supply value chain, since this has the potential to determine the quality and timeliness of the delivery and has a direct impact on the organization's performance. Supply management includes the effective management of suppliers, supplier networks and relationships with them.

The results did not come strong that supplier selection as a whole process may not be strong drivers of successful Supply Chain Management in the KwaZulu-Natal Department of Works. However, these factors were not perceived individually to be critical to the process: results which leave a lot to be desired. Multivariate results indicate that the supplier selection process is crucial and the results are complemented by the qualitative results that reiterate the importance of selecting the correct suppliers. Selection should not be based on bias or self-interest nor should it be influenced by political pressure. This has a negative impact on the Department's performance as indicated in the Department's annual report. Serious challenges with poor contractor performance cause delays in the completion of building infrastructure projects, leaving the Department with no option but to cancel the non-performing suppliers.

5.5 Capacity (Skill) and Resources

Two factors which were perceived to have somewhat of an effect on Supply Chain Management were that strong buy-in from top management was key in promoting Supply Chain Management processes (47.6% of the respondents), followed by that middle managers were more empowered to plan and make operation decisions (47%). However, both of these factors are dealing with managerial staff, rather than the technical staff who deal with the SCM processes, such as follow-ups etc. Appropriate training and education, at all levels of the industry is required to overcome barriers within the supply chain (Akintoye et al., 2000). Above all, enabling institutional arrangements are vital in the successful implementation of SCM. The qualitative results emphasize increasing the numbers of and the capacity building of staff within the SCM Department so that they are able to handle the workload efficiently. Furthermore, technical training is seen as crucial. Very few staff members are trained on the actual SCM procedures, and there have been

appointments of officers in the Department without taking into consideration their skills and qualifications. Multivariate analyses confirm these results, where capacity, skills and resources were considered the critical factors for an effective Supply Chain Management

5.6 Senior Managers Interview

The results indicate that there was general disapproval from senior management of overall factors to measure effectiveness of Supply Chain Management, with (39.24) who approved compared to 45.6% who felt the factors were bad to worse in terms of enhancing Supply Chain Management.

However, individual factors gave different results and were perceived very well to good indicators of effective SCM:

- acquisition management (57.6%);
- policies, guidelines and procedures (66.7%) and
- team work and organizational coordination (57.7%).

On the negative side, the following scored the least on the 5 point Likert Scale, implying that they were perceived as Bad to Worse in contributing to an effective Supply Chain Management:

- decision making and organizational factors that impact SCM (30.7%);
- use of information systems and technology (18.5%) and
- improving Supply Chain performance (7.6%)

5.7 Multivariate Analysis

Management and staff of the Department of Works perceived that performance management, supplier selection, and acquisition management were considered to be the three most critical factors in the effective Supply Chain Management implementation. Although performance management and demand management were lowly rated with regards to factors scores, they are worth considering as critical factors reported in this study.

On the other hand, the senior managers viewed customer relationship management, performance management and demand management to be critical factors in successful Supply Chain Management (SCM). It is interesting to note that the demand management dimension was ranked low by the rest of the staff. This may mean that there is a lack of knowledge and experience amongst both senior managers and officials as demand management is the first step in the Supply Chain Management processes because this is where the organization's needs are established. The multivariate analysis indicates that performance management was the only factor regarded as critical by both management and staff and the senior managers. It is clear from the analysis that senior managers are more concerned with customer relationship and demand management, which are attributes of the supply demand curve. They are more concerned about the value chain processes which are crucial in the transaction of SCM.

The policy implication is that these are the people who participate in the implementation of the SCM, and they are supposed to establish pathways that encourage demand-supplier interaction with minimal transaction costs. It is worrying to note that the use of IT in the SCM has not been cited as a critical factor in this study. Proper use of an IT system could be one way of cutting down the transaction costs of travel, communication, bidding etc. There is therefore a need for the Department to place emphasis on the use of IT and this could start by having an electronic database of suppliers that is regularly updated and current. Although both categories of respondents viewed performance management as critical in the SCM, it is up to the Department to ensure that such practices are applied and are operational, rather than just being documented in the policy and legislative frameworks.

According to Gryna (2001), management of the supply chain is affected by the quality of the relationship with suppliers and the selection criteria. He also proposed that trends are moving towards partnerships in Supply Chain Management and quality. Although the Department has proper policy and clear SCM processes that are being followed when acquiring goods and services, the qualitative results revealed the challenges as stated above.

5.8 Summary

This chapter has provided an overview of the most salient findings obtained from the empirical analysis of the data. It is quite evident that Supply Chain Management in the KZN Provincial Department of Public Works is marred by a number of problems, with the biggest problem being time taken to start the process and time goods and services are delivered. The quantitative results show that the that the Department has policies in place which are in compliance with legislation, however these does not support service delivery effectively in terms of implementation as majority of respondents felt that SCM processes in place were those that reflected negative service delivery or unsuccessful and ineffective SCM when individual components that forms the framework of the SCM were ask individually, this is substituted by the qualitative results. The vast majority (21 out of 39) of the respondents indicated that time was a constraint, from the time one starts the process and the time goods and services are delivered. In this regard it is critical that the Department puts in place measures that are geared towards shortening the turnaround time, and increase staff which should be well trained on SCM matters. . Chapter 6 will present the recommendations for further studies and also the conclusions.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The previous chapter dealt with the discussion of findings. In this last chapter, conclusion is drawn with regard to the study and then makes recommendations. A Department's SCM strategies, innovations, and well-planned activities help to achieve sustainable competitive advantage and hence improve its overall performance. SCM best practices include operating policies, linkages within supply chain sections, improved performance, information technology systems, strategic alliance, performance measures, goal orientation, guidelines and procedures, supplier selection and supplier evaluation.

6.2 Conclusion

Over and above the conclusions presented in the previous chapter, to remain competitive, departments must recognize the importance of supply chain practices that improve not only their own performance, but also coordinate with their supply chain partners to improve their joint performance. supply chain management is an integration of key business process from end user through original suppliers that provide products, services, and information that add value for customers and other stakeholders. Communication barriers must be removed and redundancies eliminated by coordinating, monitoring and controlling processes. The government's aim through procurement decision-making is to secure the maximum improvement in public services from investment through maintaining an unbiased stance on which procurement route will offer value for money in each case.

The study revealed that the Departments supply chain is affected by the quality of the relationship with suppliers and selection criteria. Proper measurement of the supplier, coupled with communication and feedback is critical. This requires ongoing surveillance and rating of supplier quality with appropriate measures. These measures may include the

percentage of product not conforming; overall product quality; delivery against schedule; cost of defective products (including hidden cost) against purchase price, and other quantitative means that reflect critical supplier elements in relation to business.

Selection criteria must be decided before the bids are returned by the bidders. This also means that in order to make an informed decision regarding the award of the contract, the criteria must not be solely based on (lowest) price; other criterion such as delivery time, lead time, quality, experience, etcetera must be considered. It is important that supplier performance measurement be conducted with a view to improving performance rather than as a stick to punish suppliers. After a supplier has been awarded a contract, performance measurement must be established. This will help to ensure that suppliers deliver as per contract. Timeous feedback must be given to suppliers so as to ensure corrective action from suppliers. Long term supplier partnerships must be fostered and cultivated with deserving and strategic suppliers. It must be ensured that all parties of the relationship stand to benefit, as failure to do so may lead to failure of the supplier relationship. Parties should not take advantage of each other since doing so may doom the relationship to failure.

Factors of efficiency and effectiveness of the Supply Chain Management processes include the quality of service, cost benefits to be derived from a supplier and the extent to which the relationship will lead to simplification of the construction process, followed by reliability of supply, top management support and mutual interest. Effective Supply Chain Management requires proper supply, demand and logistics management as well as effective management of suppliers, supplier networks and relationships with them. Demand management seeks to ensure effective planning and management of information for procurement, deliveries and processes, between buyers and suppliers, to ensure a continuous flow of goods and services at the time, place and quantities in which they are needed. Logistics management focuses on the effective flow of goods from the point of origin, through the supply chain, to the point of consumption

A company is only as good as the people that work for it. Carr & Smeltzer (2000) indicated that employees in the procurement division were traditionally placed without regard to the specific skills they possess. The trend is still true in most SA companies today. In order for procurement to unleash its latent potential it is required that procurement managers inculcate the spirit of innovation (doing things differently) amongst their employees. Nothing can be implemented without the right people with the competencies that support development and execution of the supply chain processes. Human Resource Management is therefore responsible for defining the right competency profiles for the purchasing positions involved, as well as for the recruitment, and training and development of the employees meeting these profiles. It is responsible for conducting performance appraisals, defining a proper salary and remuneration policy, and providing an attractive career path for those mature in organizations, the competence profiles need to be changed and adapted. As a consequence, change is a constant factor in modern procurement organizations. For procurement to be able to unearth its latent potential and occupy its rightful place in the boardroom, it will largely rely on well qualified and well motivated employees.

6.3 Limitations and Recommendations for Future Studies

This study was limited to employees working for the KZN Department of Public Works in Pietermaritzburg only and not in other areas. Suppliers that contract with the Department to deliver goods or services as well as Construction Industry Development Board (CIDB) were not included in the research. If the suppliers' perceptions and CIDB perception had also been discussed, it would have given a better indication on the critical success factors that contribute to an effective Supply Chain Management process. The following research areas could be considered for future studies:

- A study that will focus on all employees in other areas, like Ethekwini, Ulundi, Ladysmith. This study will enable one to determine if the effectiveness of Supply Chain Management processes is different in the other geographical areas.

A mixed research methodology with a qualitative component is recommended for future research in order to hear in respondent's own words how they encounter this problem.

6.4 RECOMMENDATIONS

- The Department must review its policies and procedures to ensure that all its procurement processes are in line with the procurement plan and that, in order to ensure value for money, market research is done to determine the correct specification and market related price that are available in the market, thus reduce the lead time.
- It is also recommended that the Department review its processes and be innovative enough in order to ensure that the cycle time involved when procuring of goods and services is not delayed.
- The government should consider the introduction and implementation of e-procurement as has been done in Malaysia, i.e. the use of electronic methods at every stage of the purchasing process from identification of requirements, procurement to payment and potentially to contract management. It ensures greater transparency, and provides equal opportunity in bidding for government contracts. In the long run, effective practice of e-procurement provides a conducive environment for robust competition, attracting the best suppliers and resulting in money well spent.
- It is recommended that the Department establish and implement a model of Performance Management that it will use to measure SCM so that its goals and the achievement of those goals can be measured. This will enable the department to quantify and check the impact of procurement on the department's business development. It will, most importantly, capacitate the department to find out if it really achieving its objectives through its supply chain management procurement policies and procedure. Supply chain and procurement rules will ensure that goods and services are obtained at the most economic prices and thus lead to a reduction in costs.

- It is also recommended that the department conduct a supplier appraisal. Supplier performance appraisal will allow the department to contribute to the development of suppliers by pointing out their weaknesses to them in an objective manner.
- In order to improve the chances of selecting suppliers with the required skills and expertise, it is recommended that a database reflecting a profile of contractors be created as the department does not have its own database. The current Provincial Treasury Database of Suppliers maintained by the KZN Treasury does not address department's needs since it was created for a different purpose, that is, to provide a pool of suppliers regardless of size and nature, which provincial government departments had to use to purchase or solicit products and services.

6.5 Summary

This chapter concentrated on summary, findings and recommendations. The comparative analysis of chapters that preceded this chapter was provided. Possible constraints were presented as findings. Recommendations that were provided include: the review of policies and processes to address the lead time and other challenges, performance management, supplier selection and support, implementation of electronic system in improvement processes and having the right human skill. Successful procurement management emanates from good planning, execution, monitoring and control processes. Although the departments procurement function plays a prominent role in the procurement of goods and services, the success of the contract depends largely on the performance of the contractor and its subcontractors. Therefore, it is essential that the contract procured through supply chain management policy is properly monitored and enforced.

REFERENCES

Anderson., D. L. (ed.). (1999) *Achieving supply chain excellence through technology*. Vol.1, Montgomery Research Inc., San Francisco.

Andersen, B., Fagerhaug T., and Schuldmaier J. (1998). *Benchmarking Supply Chain Management: finding best practices*. vol 14, no. 5, pp 378-389. Emerald Group Publication Limited [Online]

Akintoye, A., McIntosh, G. and Fitzgerald E. (2000). A Survey of supply chain collaboration and management in the UK construction industry. *European Journal of Purchasing and Supply Management*. Vol. 6 No. 159:168.

Burt, D.N, Dobler, D.W. & Starling, S.L. (2003). *World Class Supply Chain Management: The key to Supply Chain Management*. Seventh edition. Boston: McGraw – Hill

Bryman, A. and Bell, E. (2007). *Business research methods*. 2nd ed. Cape Town: Oxford University Press.

Christopher, M. (1998). *Logistic and supply chain management*. London, Pitmans Financial Times Professional Limited.

Cohen J., and Rousell, J. (2004). *Strategic supply chain management: the five disciplines for top performance*. New York: McGraw-Hill.

Collin, J. (2003). *Selecting the right supply chain for a customer in project business*. Helsinki: University of Technology.

Cook, L.S., Heiser, D.R. and Sengupta, K. (2010). *The Moderating effect of supply chain role on the relationship between supply chain practices and performance: an empirical analysis*. Vol. 41 No. 2, 2011, pp. 104-134. Emerald Group Publishing Limited [Online]

Cooper, M.C., Lambert, D.M., and Pagh, J.D. (1997). Supply chain management: more than a new name for logistics. *The International Journal of Logistic Management*, Vol 8, p.1-14

De Villiers, G., Nieman, G. and Niemann, W. (2008). *Strategic logistics management: a Supply Chain Management approach*. Pretoria: van Schaik Publishers.

De Vos, A.S., Strydom, H., Fouché, C.B. and Delport, C.S.L. (2005). *Research at grass roots: for the social sciences and human service professions*. 3rd Edition. Pretoria: van Schaik.

Moroka M. National Department of Public Works (2006e): *Supply Chain Management Policy*. Republic of South Africa.

Ericsson D. (2011). *Demand Chain Management – the implementation*. Vol 27, no. 2, pp 119-149. Emerald Group Publication Limited [Online]

Fawcett, S. (2001). *Achieving world-class supply chain alignment: benefits, barriers, and bridges*. America, Centre for Advanced Purchasing Studies.

Fawcett, S.E., Magnan, G.M. and McCarter, M.W. (2008). *Benefits, barriers, and bridges to effective supply chain management*. Vol 13, no. 1, pp 35-48. Emerald Group Publication Limited [Online]

Gliem, J.A. and Gliem, R.R. (2003). Calculating, interpreting, and reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales. Combustion, Ohio State University.

Hakanson, B. (1999). Supply chain management: where today's businesses compete. Vol 31, issue 1, pp 61-66. ACM New York, USA.

Handfield, R.B. (2002). *Supply chain redesign: converting your supply chain into an integrated value stream*. New York: Financial Prentice Hall.

Handfield, R.B. and Nichols, E.L. (1998). *An Introduction to supply chain management*. Upper Saddle River: Prentice Hall.

Handfield, R.B., Monczka, R.M., Giunipro L.C. and Patterson, J.L. (2011). *Sourcing and supply chain management*. 5th Edition. South-Western.

Hui, W.S., Othman, R., Omar, N.H. Rahaman, R.A and Haron, N.H. (2011). *Procurement issues in Malaysia*, Vol 24, no.6, pp. 567-593. Emerald Group Publication Limited [Online]

Jacobs, G.F. (2007). *The Impact of supply chain management on government institution*. Masters in Business Administration. Tshwane University of Technology. Tshwane.

Juttner, U. and Maklan, S. (2001). *Supply chain resilience in the global financial crisis: an empirical study*. Vol 16, no. 4, pp 246-259. Emerald Group Publication Limited [Online]

Keller. G. (2008). *Managerial statistics*. 8th edition.USA. South-Western Cengage Learning,

Kishore, R. (2001). *A Model for procurement management relationship between the provincial government of the Eastern Cape and the building industry*. Port Elizabeth: Bookbinding.

KwaZulu-Natal Provincial Department of Human Settlement. (2006). *Supply Chain Management Procedure Manual*. Version 1.0. Durban.

KwaZulu-Natal Provincial Treasury. (2006). *Guideline for Bid Committee Members, Practice Note number: SCM-03 of 2006*. Pietermaritzburg.

KwaZulu-Natal Provincial Treasury. (2006). *Preferential Procurement System, Practice Note number: SCM-06 of 2006*. Pietermaritzburg.

Luthuli, M.C. (2006). *An Exploratory study of the effectiveness of the Affirmative Procurement System as a strategy for economic empowerment of SMME's: Province of KwaZulu Natal*. Masters in Business Administration. University of KwaZulu-Natal, Westville.

Mentzer, J. (2001): Defining supply chain management. *Journal of Business Logistics*. Vol 22 (2), pp 1-25. Emerald Group Publication Limited [Online]

Miles, M.B. and Huberman, A.M. (1994). *Qualitative data analysis*. (2nd ed.) Thousand Oaks, CA: Sage.

Mokgoe, P.H.I. *Government procurement policy and SMME development-success and challenges*. Guest lecture Presentation-UFS MBS Programme, University of Free State. [Online]. Available www.treasury.gov.za/pdf. Accessed 20 July 2012

Mzulwini, N.D. (2006). Evaluating Ethekewini Municipality's targeted procurement policy in supporting its Black Economic Empowerment system. Masters in Business Administration. University of Natal, Westville.

Office of Government Commerce (OGC). (2005). Supply chain management in public sector procurement: a guide. Online http://www.ogc.gov.uk/document/scm_final_june05.pdf. Accessed 23 July 2012

Ordoobadi, S.M. and Wand, S. (2011). A Multiple perspective approach to supplier selection. Vol III, no. 4, pp. 629-648. Emerald Group Publication Limited. [Online]

Oyo, A. (2002): Creating successful private sector supply chains. a resource guide for rural water supply and sanitation practitioners. Washington DC, USA.

Pallant, J. (2007). *SPSS survival manual: a step by step guide to data analysis using SPSS for Windows*. (3rd ed). New York: McGraw Hill/Open University Press

Rozman, R. (2000): *Subject and method of organization*. Oxford University Press. Southern Africa

Sekaran, U. and Bougie, R. (2010). *Research methods for businesses*. (5th ed). Chichester: Wiley. UK.

Shapiro, J. (2001). Beyond supply chain optimization to enterprise optimization. *Ascet*. Volume 3, pp 196-206.

Storey, J., Emberson, C., Godsell, J. and Harrison, A., (2006). Supply chain management. Vol 26, no. 7, pp. 754-774. Emerald Group Publication Limited. [Online]

Tan K., Lyman B.L., and Wisner, D.W. (2002). Supply chain management: a strategic perspective. *International Journal of Operations and Production Management* Vol 22 No.6: pp 614-631.

Tan, K., Vijay, R., Kannan, V.R., Handfield, R.B., and Ghosh, S. (1999). *Supply chain management: an empirical study of its impact on performance*. Vol. 19, no. 108, pp. 1034-1052. Emerald Group Publication Limited [Online]

Tikkanen, I. and Kaleva, H. (2011). *contract award procedure and award criteria in the catering services in Finland*, Vol. 113, no. 8, pp. 952-964. Emerald Group Publication Limited [Online]

Van Weele, A.J. (2010). *Purchasing and supply chain management*. (5th ed.). Singapore: Seng Lee Press.

Wegner, T. 1993. *Applied business statistics methods and applications*. Cape Town: Juta and Co. LTD.

Zhang, Z. and Jia, M. (2010). *Procedural fairness and cooperation in public-private partnership in China*, vol. 25, no. 5, pp. 513-538. Emerald Group Publication Limited [Online]

Appendix 1

4.7 CORRELATION ANALYSIS

4.7.1 LEGISLATION

Table below illustrate the relationship between SCM processes and legislation compliance and requirements.

Table 4.44: Relationship between “The Department’s Supply Chain Management procedures being compiled in accordance with the Supply Chain Management framework regulatory documents” and “The Supply Chain Management systems prescribed by National Treasury

Correlations

The Department’s Supply Chain Management procedures have been compiled in accordance with the Supply Chain Management framework regulatory documents?	Pearson Correlation Sig. (2-tailed)	1	.418** .000
	N	83	83
Supply chain management system prescribed by National Treasury promotes the application of international best practices	Pearson Correlation Sig. (2-tailed)	.418** .000	1
	N	83	83

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

The correlation (r) between “The Department’s Supply Chain Management procedures have been compiled in accordance with the Supply Chain Management framework regulatory documents” and “The Supply Chain Management systems prescribed by

National Treasury promotes the application of international best practices” is 0.418. This coefficient shows that there is a strong and positive relationship between these two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 thus implying that there is a statistically significant relationship between them ($r=0.418$, $p<0.05$).

Table 4.45: The relationship between “The Department’s Supply Chain Management procedures being compiled in accordance with the Supply Chain Management framework regulatory documents” and “The implementation of Supply Chain Management transformed Government procurement and provisioning practices”.

Correlations

The Department’s Supply Chain Management procedures have been compiled in accordance with the Supply Chain Management framework regulatory documents (Policy, Circulars, General Conditions of Contract, and Guide for Accounting Officers)	Pearson Correlation Sig. (2-tailed) N	1 83	.673** .000 82
The implementation of Supply Chain Management transformed Government’s procurement and provisioning practices into an integrated Supply Chain Management function	Pearson Correlation Sig. (2-tailed) N	.673** .000 82	1 82

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

The correlation (r) between “The Department’s Supply Chain Management procedures have been compiled in accordance with the Supply Chain Management framework regulatory documents “ and “The implementation of Supply Chain Management transformed Government procurement and provisioning practices into an integrates Supply Chain Management function” is 0.673. This coefficient shows that there is a strong and positive relationship between these two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 thus implying that there statistically significant relationship between them ($r=0.673, p<0.05$).

4.7.2 DEMAND MANAGEMENT

Table below illustrate the relationship between Demand Management

Table 4.46: Relationship between “Market research is conducted in order to determine the correct specifications of goods and services required” and “The supplier industry being analyzed in order to identify market that meets the Department’s needs”.

Correlations

		Market research is conducted to determine correct specifications	Supplier industry is analyzed to identify market that meets the Department’s needs
Market research is conducted in order to determine the correct specifications of goods and services required	Pearson Correlation Sig. (2-tailed) N	1 83	.769** .000 82
The supplier industry is analyzed in order to identify market that meets the Department’s needs	Pearson Correlation Sig. (2-tailed) N	.769** .000 82	1 82

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

The correlation (r) between “Market research is conducted in order to determine the correct specifications of goods and services required” and “The supplier industry is analyzed in order to identify market that meets the Department’s needs” is 0.769. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 thus implying that there is a statistically significant relationship between them ($r=0.769$, $p<0.05$).

Table 4.47: Relationship between “Supply Chain Management is part of the strategic planning stage of the Department” and “Supply Chain Management system prescribed by National Treasury promotes the application of international best practices”

Correlations

		Supply Chain Management is part of the strategic planning stage of the Department	Supply chain management system prescribed by National Treasury promotes the application of international best practices
Supply Chain Management is part of the strategic planning stage of the Department	Pearson Correlation Sig. (2-tailed) N	1 82	.359** 82
Supply chain management system prescribed by National Treasury promotes the application of international best practices	Pearson Correlation Sig. (2-tailed) N	.359** .001 82	1 83

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

The correlation (r) between the “Supply Chain Management is part of the strategic planning stage of the Department” and “Supply Chain Management system prescribed by National Treasury promotes the application of international best practices” is 0.359. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.001 is less than 0.05 thus implying that there statistically significant relationship between them ($r=0.359, p<0.05$).

4.7.3 ACQUISITION MANAGEMENT

Table below rates whether there is a relationship between various acquisition management functions.

Table 4.48: Relationship between “The Department has clear policy and standard operating procedures on SCM processes when acquiring goods and services” and “The Department has an effective system infrastructure to manage an effective and efficient Supply Chain Management system”.

Correlations

		The Department has clear policy and standard operating procedures	effective system infrastructure to manage an effective and efficient
The Department has clear policy and standard operating procedures on SCM	Pearson Correlation Sig. (2-tailed) N	1 82	.491** .000 82
The Department has an effective system infrastructure to manage an effective and efficient SCM	Pearson Correlation Sig. (2-tailed) N	.491** .000 82	1 83

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

The correlation (r) between “The Department has clear policy and standard operating procedures on SCM processes when acquiring goods and services” and “The Department has an effective system infrastructure to manage an effective and efficient Supply Chain Management system” is 0.491. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 thus implying that there statistically significant relationship between them ($r=0.491$, $p>0.05$).

Table 4.49: Relationship between “I feel that SCM processes are applied reasonably fairly, openly and transparently within the Department” and “The turnaround time in the process of acquiring goods and services is reasonable and enhances your performance”.

Correlations

		I feel that SCM processes are applied reasonably fairly, openly and transparently within the Department	Turnaround time in the process of acquiring goods and services is reasonable and enhances your performance
I feel that SCM processes are applied reasonably fairly, openly and transparently within the Department	Pearson Correlation Sig. (2-tailed) N	1 82	.799** .000 82
The turnaround time in the process of acquiring goods and services is reasonable and enhances your performance	Pearson Correlation Sig. (2-tailed) N	.799** .000 82	1 83

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

The correlation (r) between “The SCM processes are applied reasonably fairly, openly and transparently within the Department” and “The turnaround time in the process of acquiring goods and services is reasonable and enhances your performance” is 0.799. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 thus implying that there statistically significant relationship between them ($r=0.799$, $p<0.05$).

Table 4.50: Relationship between “The Department's bid/ specification/ evaluation/ adjudication committees comprise cross-functional teams” and “Supply chain cost is low compared to competitors”.

Correlations

		The Department's bid/specification/evaluation/adjudication committees comprise cross-functional teams	Supply chain cost is low compared to competitors
The Department's bid/specification/evaluation/adjudication committees comprise cross-functional teams	Pearson Correlation	1	.547**
	Sig. (2-tailed)		.000
	N	83	79
Supply chain cost is low compared to competitors	Pearson Correlation	.547**	1
	Sig. (2-tailed)	.000	
	N	79	79

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

The correlation (r) between “The Department's bid/specification/evaluation/adjudication committees comprise cross-functional teams” and “Supply chain cost is low compared to

competitors” is 0.547. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 thus implying that there statistically significant relationship between them ($r=0.547, p>0.05$).

Table 4.51: Relationship between “The SCM processes do not compromise quality” and “SCM processes allow the Department to get the best value for money on the goods and services being delivered”

Correlations

		The SCM processes do not compromise quality	The SCM processes allow the Department to get the best value for money on the goods and services being delivered
The SCM processes do not compromise quality	Pearson Correlation	1	.798**
	Sig. (2-tailed)		.000
	N	80	80
The SCM processes allow the Department to get the best value for money on the goods and services being delivered	Pearson Correlation	.798**	1
	Sig. (2-tailed)	.000	
	N	80	83

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

The correlation (r) between “The SCM processes do not compromise quality” and “SCM processes allow the Department to get the best value for money on the goods and services being delivered” is 0.798. This coefficient shows that there is a strong and positive

relationship between the two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 implying that there is a statistically significant relationship between them ($r=-0.798$, $p>0.05$).

Table 4.52: Relationship between “The SCM processes allows the Department to get the best value for money on the goods and services being delivered” and “SCM processes ensure that the goods and services delivered are of the right quantity and correct specifications”.

Correlations

		The SCM processes allow the Department to get the best value for money on the goods and services being delivered	SCM processes ensure that goods and services delivered are of the right quantity and correct specification
The SCM processes allow the Department to get the best value for money on the goods and services being delivered	Pearson Correlation Sig. (2-tailed) N	1 83	.793** 82
SCM processes ensure that goods and services delivered are of the right quantity and correct specification	Pearson Correlation Sig. (2-tailed) N	.793** .000 82	1 82

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

The correlation (r) between “The SCM processes allowing the Department to get the best value for money on the goods and services being delivered” and “Ensuring that goods and services delivered are of the right quantity and correct specifications” is 0.793. This

coefficient shows that there is a strong and positive relationship between these two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 implying that there is a statistically significant relationship between them ($r=0.793$, $p<0.05$).

4.7.4 PERFORMANCE MANAGEMENT

Table 4.53: Relationship between “The Department analyzes at the completion stage of each project, whether proper SCM processes were followed and the desired objectives were achieved” and “The Department understands the competitive comparatives throughout the supply chain better than 5 years ago”

Correlations

		The Depart analyzes at the completion stage of each project, whether proper SCM processes were followed and objectives achieved	My Department understands the competitive comparatives throughout the supply chain better than 5 years ago
The Department analyzes at the completion stage of each project, whether proper SCM processes were followed and the desired objectives were achieved	Pearson Correlation Sig. (2-tailed) N	1 83	.669** .000 82
My Department understands the competitive comparatives throughout the supply chain	Pearson Correlation Sig. (2-tailed) N	.669** .000 82	1 82

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

The correlation (r) between “The Department analyzes at the completion stage of each project, whether proper SCM processes were followed and the desired objectives

achieved” and “My Department understands the competitive comparatives throughout the supply chain better than 5 years ago” is 0.669. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.001 is less than 0.05 implying that there is statistically significant relationship them ($r=0.669$, $p<0.05$).

Table 4.54: Relationship between “The implementation of Supply Chain Management enhanced my section’s ability to reach operational objectives” and “Supply chain performance is continuously improving”.

Correlations

		The implementation of Supply Chain Management enhanced your sections ability to reach operational objectives	Supply chain performance is continuously improving
The implementation of Supply Chain Management enhanced your sections ability to reach operational objectives	Pearson Correlation	1	.750**
	Sig. (2-tailed)		.000
	N	82	82
Supply chain performance is continuously improving	Pearson Correlation	.750**	1
	Sig. (2-tailed)	.000	
	N	82	83

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

The correlation (r) between “The implementation of Supply Chain Management enhanced your section’s ability to reach operational objectives” and “Supply chain performance is continuously improving” is 0.750. This coefficient shows that there is a

strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 implying that there is a statistically significant relationship between the implementation them ($r=0.764$, $p>0.05$).

Table 4.55: Relationship between “The implementation of Supply Chain Management enhanced your section’s ability to reach operational objectives” and “Supply chain performance contributes to better cash-flow of the Department”.

Correlations

		The implementation of Supply Chain Management enhanced your sections ability to reach operational objectives	Supply chain performance contributes to better cash-flow of the Department
The implementation of Supply Chain Management enhanced your sections ability to reach operational objectives	Pearson Correlation Sig. (2-tailed) N	1 82	.764** 80
Supply chain performance contributes to better cash-flow of the Department	Pearson Correlation Sig. (2-tailed) N	.764** .000 80	1 81

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

The correlation (r) between “The implementation of Supply Chain Management enhanced your section’s ability to reach operational objectives” and “Supply chain performance contributes to better cash-flow of the Department” is 0.764. This coefficient shows that there is a strong and positive relationship between the two factors. The

probability (p) of this correlation coefficient which is 0.000 is less than 0.05 implying that there is a statistically significant relationship between them ($r=-0.764$, $p>0.05$).

Table 4.56: Relationship between “The customers are satisfied with the Department’s supply chain capabilities” and “Supply chain performance is continuously improving”.

Correlations

		Customers are satisfied with the Department’s supply chain capabilities	Supply chain performance is continuously improving
Customers are satisfied with the Department’s supply chain capabilities	Pearson Correlation	1	.784**
	Sig. (2-tailed)		.000
	N	81	81
Supply chain performance is continuously improving	Pearson Correlation	.784**	1
	Sig. (2-tailed)	.000	
	N	81	83

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

The correlation (r) between “The customers are satisfied with the Department’s supply chain capabilities” and “Supply chain performance is continuously improving” is 0.784. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 implying that there is a statistically significant relationship between them ($r=0.784$, $p>0.05$).

Table 4.57: Relationship between “The Department’s Supply Chain Management procedures being compiled in accordance with the Supply Chain Management framework regulatory documents” and “There is strong internal control management within the Supply Chain Management processes to minimize risk”.

Correlations

		The Department’s SCM procedures have been compiled in accordance with the Supply Chain Management framework regulatory documents	There is strong internal control management within the Supply Chain Management processes to minimize risk
The Department’s Supply Chain Management procedures have been compiled in accordance with the Supply Chain Management framework regulatory documents (Policy, Circulars, General Conditions of Contract, and Guide for Accounting Officers etc.)?	Pearson Correlation Sig. (2-tailed) N	1 83	.204 .066 82
There is strong internal control management within the Supply Chain Management processes to minimize risk	Pearson Correlation Sig. (2-tailed) N	.204 .066 82	1 82

The correlation (r) between “The Department’s Supply Chain Management procedures have been compiled in accordance with the Supply Chain Management framework regulatory documents” and “There is strong internal control management within the Supply Chain Management processes to minimize risk” is 0.204. This coefficient shows that there is a weak relationship between the two factors. The probability (p) of this correlation coefficient which is 0.066 is greater than 0.05 implying that there is no statistically significant relationship between them ($r=-0.204, p>0.05$).

4.7.6 RISK MANAGEMENT

Table 4.58: Relationship between “There strong internal control management within the Supply Chain Management processes to minimize risk” and “The Department has adopted a key account approach for managing its best suppliers”

Correlations

		There is strong internal control management within the Supply Chain Management processes to minimize risk	The Department has adopted a key account approach for managing its best suppliers
There is strong internal control management within the Supply Chain Management processes to minimize risk	Pearson Correlation Sig. (2-tailed) N	1 82	.583** 82
The Department has adopted a key account approach for managing its best suppliers	Pearson Correlation Sig. (2-tailed) N	.583** .000 82	1 83

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

The correlation (r) between “There is strong internal control management within the Supply Chain Management processes to minimize risk” and “The Department has adopted a key account approach for managing its best suppliers” is 0.583. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 implying that there is a statistically significant relationship them ($r=0.583, p<0.05$).

4.7.7 SUPPLIER SELECTION AND EVALUATION

Table below show whether there is a relationship between various supplier selection and evaluation

Table 4.59: Relationship between “The Department has an effective database system in place” and “Suppliers are more carefully screened and assessed before they are selected than they were 5 years ago”

Correlations

		The Department has an effective database system in place	Suppliers are more carefully screened and assessed before they are selected than they were 5 years ago
The Department has an effective database system in place	Pearson Correlation	1	.668**
	Sig. (2-tailed)		.000
	N	83	83
Suppliers are more carefully screened and assessed before they are selected than they were 5 years ago	Pearson Correlation	.668**	1
	Sig. (2-tailed)	.000	
	N	83	83

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

The correlation (r) between “The Department has an effective database system in place” and “Suppliers are more carefully screened and assessed before they are selected than they were 5 years ago” is 0.668. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.001 is less than 0.05 implying that there is a statistically significant relationship between them ($r=0.668, p>0.05$).

Table 4.60: Relationship between “Supplier performance is more closely monitored and is the basis for future business than it was 5 years ago” and “There is increased coordination with suppliers”

Correlations

	Supplier performance is more closely monitored and is the basis for future business than it was 5 years ago	There is increased coordination with suppliers
Supplier performance is more closely monitored and is the basis for future business than it was 5 years ago	Pearson Correlation Sig. (2-tailed) N	1 .791** 83
There is increased coordination with suppliers	Pearson Correlation Sig. (2-tailed) N	1 .791** 81

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

The correlation (r) between “Supplier performances is more closely monitored and is the basis for future business than it was 5 years ago” and “There is increased coordination with suppliers” is 0.791. This coefficient shows that there is a strong and positive

relationship between these two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 implying that there is a statistically significant relationship between them ($r=-0.791$, $p>0.05$).

CAPACITY SKILLS AND RESOURCES

Table below rates whether there is a relationship between various functions on capacity skill and resources.

Table 4.61: Relationship between “There is enough capacity (skills) for carrying SCM functions in an effective manner in the Department” and “The Department is giving sufficient on-going training on SCM processes to address any challenges and updates of the processes”

Correlations

		There is enough capacity (skills) for carrying SCM functions in an effective manner in the Department	The ongoing training on SCM processes to address any challenges and updates of the processes
There is enough capacity (skills) for carrying SCM functions in an effective manner in the Department	Pearson Correlation Sig. (2-tailed) N	1 81	.542** .000 81
The Department is giving sufficient ongoing training on SCM processes to address any challenges and updates process	Pearson Correlation Sig. (2-tailed) N	.542** .000 81	1 83

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

The correlation (r) between “There is enough capacity (skills) for carrying SCM functions in an effective manner in the Department” and “The Department is giving sufficient on-going training on SCM processes to address any challenges and updates of the processes” is 0.542. This coefficient shows that there is a strong and positive relationship between these two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 implying that there is a statistically significant relationship between them ($r=0.542, p<0.05$).

Table 4.62: Relationship between “Our SCM practitioners having sufficient training, knowledge and understanding on SCM processes” and “The Department adequately collaborates with other SCM practitioners when in need of it”

Correlations

		Our SCM practitioners have sufficient training, knowledge and understanding on SCM processes	The Department adequately collaborates with other SCM practitioners when in need of it
Our SCM practitioners have sufficient training, knowledge and understanding on SCM processes	Pearson Correlation Sig. (2-tailed) N	1 83	.695** .000 82
The Department adequately collaborates with other SCM practitioners when in need of it	Pearson Correlation Sig. (2-tailed) N	.695** .000 82	1 82

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

The correlation (r) between “Our SCM practitioners have sufficient training, knowledge and understanding on SCM processes” and “The Department adequately collaborates

with other SCM practitioners when in need of it” is 0.695. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 implying that there statistically significant relationship between them ($r=0.695, p<0.05$).

Table 4.63: Relationship between “There are sufficient required resources to support the effectiveness of the Supply Chain Management functions” and “There is strong buy-in from top management in promoting good governance on Supply Chain Management processes”

Correlations

		There are sufficient required resources to support the effectiveness of the Supply Chain Management functions	There is strong buy-in from top management in promoting good governance on Supply Chain Management processes
There are sufficient required resources to support the effectiveness of the Supply Chain Management functions	Pearson Correlation Sig. (2-tailed) N	1 83	.808** .000 83
There is strong buy-in from top management in promoting good governance on Supply Chain Management processes	Pearson Correlation Sig. (2-tailed) N	.808** .000 83	1 83

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

The correlation (r) between “There are sufficient required resources to support the effectiveness of the Supply Chain Management functions” and “There is strong buy-in

from top management in promoting good governance on Supply Chain Management processes” is 0.808. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.000 is less than 0.05 thus implying that there statistically significant relationship between them($r=0.808$, $p<0.05$).

Table 4.64 Relationship between “Middle managers are more empowered to make operation decisions in the SCM processes than they were 5 years ago” and “Non-management employees more empowered to make operating decisions than they were 5 years ago”

Correlations

		Middle managers are more empowered to make operation decisions in the SCM processes	Non-management employees are more empowered to make operating decisions
Middle managers are more empowered to make operation decisions in the SCM processes than they were 5 years ago	Pearson Correlation Sig. (2-tailed) N	1 83	.713** .000 83
Non-management employees are more empowered to make operating decisions than they were 5 years ago	Pearson Correlation Sig. (2-tailed) N	.713** .000 83	1 83

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

The correlation (r) between “Middle managers are more empowered to make operation decisions in the SCM processes than they were 5 years ago” and “Non-management employees are more empowered to make operating decisions than they were 5 years ago” is 0.713. This coefficient shows that there is a strong and positive relationship between the two factors. The probability (p) of this correlation coefficient which is 0.001 is less than 0.05 implying that there is a statistically significant relationship between them ($r=0.713, p>0.05$).

Appendix 2

STANDARD DEVIATION AND MEAN ANALYSIS

Table 4.65

Demand Management	Mean	Std. Deviation
SCM is part of the strategic planning stage of the Department	2.21	1.074
Department's needs assessment is conducted prior to procurement of goods and services	2.56	1.101
Market research is conducted in order to determine the correct specifications of goods and services required	2.60	1.158
The supplier industry is analyzed in order to identify the market that meets the Department's needs	2.80	1.191
The Department's procurement of goods and services is in line with the procurement plan	2.68	1.087

Cronbach's Alpha=0.904

The above Table 4.65 indicates that there is general uncertainty among respondents on demand management issues within the Department's Supply Chain Management systems, except for in the area of strategic planning. Most of the respondents indicated No Opinion (mean score=3; SD=1), results that may imply that generally there is lack of demand management in the Department with regards to *needs assessment, market research, and procurement, and supplier industry*. This is confirmed by the results that generally indicate that slightly over half (55%) of the respondents Agreed that demand management existed in the Department, while about 23% Disagreed and 22% were impartial. Strategic planning (78.1%) has the most agreeable respondents, followed by needs assessment (56.6%), while the rest of the elements within the dimension scored between impartial and disagreement responses.

Table 4.66

Acquisition Management	Mean	Std. Deviation
The Department has clear policy and standard operating procedures on SCM processes when acquiring goods and services	2.25	1.022
The Department has an effective infrastructure to manage an effective and effective Supply Chain Management system	2.62	1.183
SCM processes are applied reasonably fairly, openly and transparently within the Department	2.68	1.285
The turnaround time in the process of acquiring goods and services is reasonable and enhances your performance	3.00	1.499
The Department's bids /specification/ evaluation/ adjudication committees comprise cross-functional teams	2.49	1.152
The SCM processes do not compromise quality	3.14	1.211
The SCM processes allow the Department to get the best value for money on the goods and services being delivered	2.99	1.329
Supply cost is low compared to competitors	2.87	1.067
SCM processes ensure that goods and services delivered are of the right quantity and correct specs	2.73	1.337

The results indicate that the respondents clearly believed that the Department has clear policy and standard operating procedures on SCM processes when acquiring goods and services (mean score=2; SD=1). For the rest of the factors, the respondents were impartial (mean score=3; SD=1), which makes it difficult to come to a conclusion on their general perceptions. The implication of these results is that SCM processes do not compromise quality, and that the respondents were not really sure whether SCM

processes are applied reasonably fairly, openly and transparently within the Department and whether supply cost is low compared to competitors. These results are confirmed by the results which show that apart from standard operating procedures (67.5%) and to some extent, infrastructure (53.7%), which was perceived as contributing to acquisition management. For the rest of the factors less than 50% of respondents agreed with the statement. The two least popular factors mentioned as being positive contributors to acquisition management are compromise of quality (33.8%) and low supply cost compared to competitors (31.5%), which confirm the above results

Table 4.67

Performance Management Summary	Mean	Std. Deviation
At the completion stage of each project the Department analyzes whether proper SCM processes were followed and the desired objectives were achieved	2.77	1.092
The implementation of Supply Chain Management enhanced your section's ability to reach operational objectives	2.68	1.047
The Department understands the competitive comparativeness throughout the supply chain more than 5 years ago	2.57	.907
Supply Chain performance contributes to better cash-flow of the Department	2.70	1.036
Customers are satisfied with the Department's supply chain capabilities	2.94	1.169
Supply Chain performance is continuously improving	2.70	1.045

Cronbach's Alpha=0.924

Generally the respondents were impartial (mean scores=3) on all factors except for the factor pertaining to the implementation of SCM in enhancing the Department's ability to reach operational objectives. This was perceived as a strong driver of performance management by about half (51.6%) of the respondents. The rest of the factors did not prove to be critical and effective within this dimension of SCM performance

management. These results could imply that performance of the SCM in KZN Department of Works may be viewed as not being significant to the effectiveness of the Department's supply chain capabilities, implied by the higher percentage of those who were impartial and those who disagreed. The other factor that showed the most positive support as that the Department understands the competitive comparativeness throughout the supply chain more than 5 years ago. The strength of this factor is reflected by the lowest standard deviation (SD=0.907).

Table 4.68

Supplier Selection	Mean	Std. Deviation
The Department has an effective database system	2.75	1.238
Suppliers are carefully screened and assessed before they are selected	2.81	1.194
The Department has adopted a key account approach for managing its best suppliers	2.80	1.068
Suppliers performance is more closely monitored than 5 years ago and is the basis for future business	2.83	1.167
Increased coordination with suppliers	2.81	1.141

Cronbach's Alpha=0.912

The respondents were impartial on the Department's database systems, supplier screening process, key account approach, supplier performance, and coordination (mean score=3).

Table 4.69

Capacity Skill and Resources	Mean	Std. Deviation
There is enough capacity (skills) for carrying out SCM functions in an effective manner	2.84	1.199
The Department is giving sufficient ongoing training on SCM processes to address any challenges and updates	2.84	1.121
SCM practitioners have sufficient training, knowledge and understanding on SCM processes	2.88	1.098
The Department adequately collaborates with other SCM practitioners when in need of it	2.68	1.041
Sufficient required resources to support the effectiveness of the SCM functions	2.73	1.180
There is a strong buy-in from top management in promoting good governance on SCM processes	2.76	1.106
Middle managers are more empowered to make operation decisions in the SCM processes than 5 years ago	2.82	1.261
Non management employees are more empowered to make operation decisions in the SCM processes	3.16	1.250

The results point to the fact that the respondents were mostly impartial, with a bias towards agreement. The three factors with the lowest scores are:

- adequate collaboration with other SCM practitioners (2mean score=2.7; SD=1.0),
- sufficient required resources to support the effectiveness of the SCM functions (mean score=2.7%; SD=1.2); and
- strong buy-in from top management in promoting good governance on SCM processes (mean score=2.8; SD=1.3).

SCM practitioners have sufficient training, knowledge and understanding on SCM processes (mean score=2.9; SD=1.1) and non-management employees empowerment to make operation decisions in the SCM processes (mean score=3.16: SD=1.3) had the

highest scores, implying they were negatively perceived as drivers in the Supply Chain Management processes.

Table 4.70

	Mean	Std. Deviation
Legislation Compliance	2.03	.663
Demand Management	2.62	.952
Acquisition Management	2.73	.932
Performance Management	2.74	.910
Risk Management	2.60	1.07
Capacity(Skill) Resources	2.90	.946
SupplierSelection	2.83	.991

Cronbach's Alpha=0.913

The Table above provides a summary of the results of the section on the Likert Scale responses. Generally, the reliability was recommendable (alpha=0.913) and the standard deviations were minimal, with general consistency of responses across the questions. The general picture is that the respondents totally Agreed on compliance legislation as a critical factor towards successful Supply Chain Management processes (mean score=2.03: SD=0.66). The lowest standard deviation confirms the consistency of the responses. The rest of the dimensions enlisted and enquired in the study had responses which were somewhat neutral but biased towards agreeing (mean score>2=<3), implying a positive attitude among staff towards how the Supply Chain Management processes are being handled in the Department of Works in KwaZulu-Natal.

Appendix 3

UNIVERSITY OF KWAZULU-NATAL GRADUATE SCHOOL OF BUSINESS & LEADERSHIP

MBA Research Project

Researcher: Name (Telephone number)

Supervisor: Name (Office Telephone number)

Research Office: Ms P Ximba 031-2603587

AN ANALYSIS OF THE SUPPLY CHAIN MANAGEMENT PROCESS IN THE KZN DEPARTMENT OF PUBLIC WORKS

The purpose of this survey is to solicit information from identified respondent such as you on your perception on effectiveness of Supply Chain Management Processes within the Department. The information and ratings you provide will go a long way in helping identify areas of improvement. The questionnaire will only take **10-15** minutes to complete. In this questionnaire, you are asked to indicate what is true for you, so there are no “right” or “wrong” answers to any question. Work as rapidly as you can. If you wish to make a comment please write it directly on the booklet itself. Make sure not to skip any questions.

Demographic Characteristics

You are kindly requested to provide the following information about yourself. Please write the appropriate number corresponding to your answer in the box.

		Response Code
Q1	Gender 1=Male 2=Female	
Q2	Age 1=21-24 2=25-30 3=31-40 4=41-50 5=51-60 6=61+	
Q3	Level of Education 1=Below Matric 2=Matric 3=Diploma 4=Degree 6=Postgraduate Degree	
Q4	Position at work 1=Junior staff 2=Middle management	
Q5	Job Category 1=Managerial/Supervisory 2=Technical/Operational	

SECTION B

The following statements reflect perceptions regarding the functioning of the supply chain management processes.

To what extent would you agree or disagree with the following statements

1	Strongly agree					
2	Agree					
3	Neither agree or disagree					
4	Strongly disagree					
5	Disagree					
		1	2	3	4	5
Legislation Compliance	The department's supply chain management procedures have been compiled in accordance with the supply chain management framework regulatory documents (Policy, Circulars, General Conditions of Contract, and Guide for Accounting Officers etc.)?					
	Supply chain management system prescribed by National Treasury promotes the application of international best practices					
	The implementation of supply chain management transformed Government procurement and provisioning practices into an integrated supply chain management function					
Demand Management	Supply Chain Management is part of the strategic planning stage of the Department					
	Department's needs assessment is conducted prior to procurement of goods & services.					
	Market research is conducted in order to determine the correct specifications of goods & services required.					
	The supplier industry is analyzed in order to identify market that meets the Departments needs.					
	The department's procurement of goods and services is in line with the procurement plan.					
Acquisition Management	The Department has clear policy and standard operating procedures on SCM processes when acquiring goods & services					
	The Department has an effective system infrastructure to manage an effective and efficient supply chain management system					
	I feel that SCM processes are applied reasonably fair,					

	open and transparent within the Department					
	The turnaround time in the process of acquiring goods & services is reasonable and enhances your performance					
	The department's bid/specification/evaluation/adjudication committees comprise of cross-functional teams.					
	The SCM processes do not compromise quality					
	The SCM processes allow the Department to get the best value for money on the goods & services being delivered					
	Supply chain cost is low compared to competitors					
	SCM processes ensure that goods & services delivered are of the right quantity and correct specification					
Performance Management	The department analyzes at the completion stage of each project, whether proper SCM processes were followed and the desired objectives achieved.					
	The implementation of supply chain management enhanced your sections ability to reach operational objectives					
	My Dept understands the competitive comparatives throughout the supply chain than 5 years ago					
	Supply chain performance contributes to better cash-flow of the Department					
	Customers are satisfied with the departments supply chain capabilities					
	Supply chain performance is continuously improving					
Risk Management	There is strong internal control management within the supply chain management processes to minimize risk					
Supplier selection and evaluation	The Department has an effective database system in place.					
	Suppliers are carefully screened and assessed before they are selected than 5 years ago.					
	The Dept has adopted a key account approach for managing its best suppliers					
	Supplier performance is closely monitored and is the basis for future business than 5 years ago					
	There is increased coordination with suppliers					

Capacity, Skill and Resources	There is enough capacity (skills) for carrying SCM functions in an effective manner in the Department					
	The Department is giving sufficient ongoing training on SCM processes to address any challenges & updates of the processes					
	Our SCM practitioners have sufficient training, knowledge and understanding on SCM processes.					
	The Dept adequately collaborates with other SCM practitioners when in need of it.					
	There are sufficient required resources to support the effectiveness of the supply chain management functions.					
	There is strong buy in from top management in promoting good governance on supply chain management processes.					
	Middle managers are empowered more to make operation decisions in the SCM processes than 5 years ago					
	Non-management employees are empowered more to make operating decisions than 5 years ago					

End of the Questionnaire

Thank you for taking the time to complete the questionnaire.

Appendix 4

**UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS & LEADERSHIP**

MBA Research Project

Researcher: Nonhlanhla Pamela Hlongwa (0829510833)

Supervisor: Dr Ian Nzimakwe (031-2603587)

Research Office: Ms P Ximba 031-2603587

**AN ANALYSIS OF THE SUPPLY CHAIN MANAGEMENT PROCESS IN THE
KZN DEPARTMENT OF PUBLIC WORKS**

SECTION C

INTERVIEW QUESTIONS FOR SENIOR MANAGEMENT

The purpose of this self-administered interview questionnaire is to solicit information from Senior Management with regard to challenges that hinder the effectiveness of Supply Chain management processes as well as the overall perception thereof. The information you provide will go a long way in helping identify areas of improvement as the study is not a fault finding exercise. The interview will take **15** minutes to complete. In this interview, you are asked to indicate your view, so there are no “right” or “wrong” answers to any of your answers.

1. How do you find SCM processes when procuring goods and services, with special emphasizes on lead time, goods & services being delivered in the right specification, quality, quantities and price?

2. How SCM processes impact on your sections performance?

3. What do you think are the problems relating to practical implementation of SCM processes?

4. What do you see as hiccups to the smooth operation of the SCM processes, especially in fulfilling the implementation of supply chain management policy (skills, capacity, finance, power to control, policies, etc....)

5. How can we improve the efficiency of SCM in line with the requirements of section 217 (1) of the constitution that says procurement system must be fair, equitable, transparent, competitive and cost-effective?

6. Rank the following supply chain categories

Supply Chain Category	Rank 1=Very Good, 2=Good, 3=No opinion, 4=Bad 5=Worse
Demand Management Needs identification, market analysis, planning and collaboration	
Acquisition Management Drawing of specification, selection of procurement method, quotation & bidding processes, supplier database, committee management, cycle time, timeous delivery of goods & services, capacity with relevant skills and knowledge.	
Performance Management Meeting of customer's objectives and needs, supplier performance its capability to deliver the required goods & services at the right time, price, quantity & quality. Overall efficiency and effectiveness of supply chain management processes.	
Risk Management	
Policies, guidelines and procedures,	
Customer Relationship Management	
Use of Information Systems and Technology Integrated system, and order management	
Decision making and organizational factors that impact	

supply chain management Top management commitment, Employees skills & understanding of supply chain concepts and management	
Teamwork and inter-organizational coordination	
Improving Supply Chain Performance	
Any Comment(s) (including your perception on critical success factors)	

End of the Interview Questionnaire

Thank you for taking the time to complete the interview



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INYUVESI
YAKWAZULU-NATALI

25 October 2012

Mrs Nonhlanhla Pamela Hlongwa 951002675
Graduate School of Business and Leadership
Westville Campus

Dear Mrs Hlongwa

Protocol reference number: HSS/0568/012M

Project title: An Analysis of the Supply Chain Management Processes in the KZN Department of Public Works

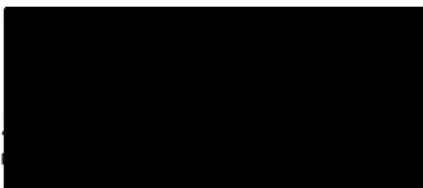
Expedited approval

I wish to inform you that your application has been granted Full Approval through an expedited review process.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully



/px

cc Supervisor Dr TI Nzimakwe
cc Academic leader
cc School Admin. Ms Wendy Clarke

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INSPIRING GREATNESS





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University of KwaZulu-Natal

To whom it may concern

NONHLANHLA HLONGWA, STUDENT NO. 951002675 : PERMISSION TO CONDUCT A RESEARCH

Ms N Hlongwa, student no. 951002675 is a registered student at the Graduate School of Business and Leadership, University of KZN, Westville campus and is registered for her Master of Business Administration dissertation.

Supply Chain Management falls under the Chief Financial Officer in the Department of Public Works and Ms Hlongwa has approached myself requesting permission to conduct a research on the KZN Department of Public Works' Supply Chain Management processes.

The request was considered and approval is hereby granted by myself in my capacity as the Chief Financial Officer of the KZN Department of Public Works for Ms Hlongwa to conduct a research on the Department's Supply Chain Management processes.

CH



Proofreading and Correcting

TO WHOM IT MAY CONCERN:

This letter serves to state that I have proofread a copy of the following Dissertation/ Thesis/ Journal Article and have made suggestions to the researcher in terms of corrections which s/he may choose/choose not to put into effect in the final copy:

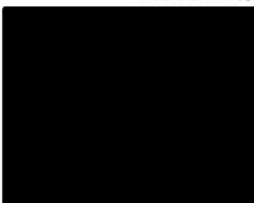
TITLE: *An Analysis of the Supply Chain Management Process in the KZN
Department of Public Works*

RESEARCHER: **Nonhlanhla Hlongwa**

The general areas covered in this proofreading include:

- Spelling - with special reference to English UK spellings of specific words.
- Correction of grammatical errors: syntax, concord etc.
- General editing to improve the language and vocabulary used and to, where necessary, adjust to make the work more academic in tone and style.
- Comments on general layout in terms of consistency in style: bullet lists, Figure and Table headings, Chapter headings and sub-headings.
- Comments and corrections of the Reference List entries

Date: 15 November 2012



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