



**UNIVERSITY OF
KWAZULU-NATAL**

**INYUVESI
YAKWAZULU-NATALI**

School of Management, Information Technology and Governance

Faculty of Law and Management Studies

Title: Evaluating risks to supply chain sustainability in a KwaZulu-Natal hospital

**A dissertation submitted in partial fulfillment of the requirements for a Master's degree in
Supply Chain Management**

By:

Student name : Mbalenhle Pretty Gwala

Student number : 208508661

Supervisor : Professor Maxwell Phiri

Submission date : 19 July 2018

Declaration

I declare that this research project, submitted for a Master of Commerce in Supply Chain Management, has not been previously been submitted for a degree at this or any other university. I also declare that it is compiled from my own primary data collection and analysis and researched literature. All sources that have been used are indicated through acknowledgement by means of references.



M.P Gwala

19 July 2018

Date

Abstract

This study reports on an exploration of risks experienced in the field of supply chain management within the Republic of South African public sector with specific attention to the KwaZulu-Natal hospital. It has been noted with concern that Supply Chain Management section is experiencing inability to maintain sustainability through the affection of risks that are created within the operation of an organization. The study tends to conduct a scrutinization and evaluation of the procurement process at Inkosi Albert Luthuli Central Hospital with an intension to evaluate the risk to supply chain sustainability. The target population for the study are the officials that work in supply chain management and finance section. The nature of the methodology that was used to conduct the study is qualitative and data was collected through the interviews and observations. To gain more understanding on the study a literature review based on supply chain management practices was conducted through theoretical and integrated literature. Furthermore South African Hospital have the stipulated rules, regulations, policies and guidelines that govern the procurement process and that need to be followed in order to maintain compliance. These are highlighted in the study. The interviews were conducted at the hospital (Inkosi Albert Luthuli Central Hospital) and the observation was also done at the hospital. The report of finding from the respondent and the observation was displayed in order to accurately analyze the result. Data analysis was conducted through content analysis where the researcher scrutinize the finding and find out the common key response obtained from the participants. Among other things the result presentation led the researcher to be able to analyse primary data obtained from the literature review, this include what the theory is saying and secondary data which include what the officials are practically doing. After the analysis have been conducted the researcher was able to answer the research questions and fulfil the research objective even though this is an exploratory the problem statement cannot be total resolved but an awareness can be made available to SCM and Finance officials in order to mitigate risks. After the study analysis it has been recommended that monitoring and evaluation in supply chain management be taken into consideration in order to increase compliant and mitigate risks. The areas that can be considered for future research and investigation could be the impact of supply chain management to the community, looking at the service delivery perspective where an investigation can be based on the necessities required by the community.

Acknowledgement

It is my pleasure to acknowledge all those who assisted me with the compilation of this dissertation. Firstly I would like to thank my supervisor Professor MA Phiri for the guidance he offered to me throughout my research process.

Secondly, I would thank Mpho Mdletshe for allowing me to conduct my research at Inkosi Albert Luthuli Central Hospital Supply Chain Management section.

Thirdly thank you to Elizabeth Lutge and the KwaZulu-Natal Department of Health Research Team for allowing me to conduct a research at the department.

Finally, I would like to thank my parents and my husband for keeping me strong as well as my siblings for their positive attitude towards my work.

TABLE OF CONTENTS

<i>Contents</i>	<i>Pages</i>
Declaration.....	i
Abstract.....	iii
Acknowledgements.....	iv
List of tables.....	v
List of figures.....	v
List of abbreviations.....	vi
List of appendices.....	vii
Table of contents.....	x

CHAPTER ONE: - RESEARCH OVERVIEW: INTRODUCTION AND BACKGROUND

1.1 Introduction.....	1
1.2 Background of the research.....	1
1.3 The purpose of the study.....	3
1.4 Preliminary literature review.....	4
Risk	4
Supply chain sustainability	4
The KwaZulu-Natal Department of health Institutions (Hospital).....	5
Supply chain management in hospitals.....	6
1.5 Conceptual framework.....	7

1.6 Problem statement	9
1.7 Research methodology	9
1.8 Objectives.....	10
1.9 Research Questions.....	11
1.10 Ethical considerations.....	11
1.11 Limitations.....	12
1.12 Target population.	12
1.13 Sample size	13
1.14 Contribution of the study to the supply chain management field	13
1.15 Structure of the dissertation.....	14
1.16 Conclusion.....	16

CHAPTER TWO: - LITERATURE REVIEW ON SUPPLY CHAIN MANAGEMENT PRACTICES

2.1 Introduction.....	17
2.2 Theoretical literature review on Supply chain management, supply chain risk and supply sustainability.....	18
2.2.1 Analysis of theoretical synopsis.....	22
2.3 Integrated literature review.....	24
2.3.1 Organisational operation.....	24
2.3.2 Supply chain risk management	25
2.3.3 Risk management structure.....	30

2.3.4 Risk mitigation and contingency.....	32
1. SCOR Model.....	32
2. Balanced scorecard	34
3. Performance measurement and management.....	36
4. Stakeholder relationship management (SRM).....	37
5. Monitoring and evaluation.....	38
2.3.5 Supply chain sustainability.....	39
2.4 Conclusion.....	43

CHAPTER THREE: - THE SOUTH AFRICAN PUBLIC SECTOR SUPPLY CHAIN MANAGEMENT OPERATION PROCESS

3.1 Introduction.....	44
3.2 Public sector supply chain management.....	45
3.3 Public Private Partnership (PPP, 3P OR P3).....	45
3.4 Supply chain management operation procedure for health institution.....	47
1. Acts.....	48
2. Regulations.....	55
3.5 Public sector (KwaZulu-Natal Department of Health) supply chain process.....	56
3.5.1 The Constitution of Republic of South Africa.....	57
3.5.2 The Public Finance Management Act.....	58
3.5.3 Treasury regulations.....	59
3.5.4 Provincial Practice Note.....	59
3.5.5 Interim SCM delegations.....	59

3.5.6 Procurement process (contract or quotations).....	60
3.5.7 End-user	
3.6 The main contributors to irregular expenditure.....	64
3.7 General directives and the standard operating procedures for KZN Department of Health.....	66
3.8 Conclusion.....	70

CHAPTER FOUR: - RESEARCH METHODOLOGY

4.1 Introduction	71
4.2 Nature of the methodology.....	71
4.3 Qualitative data.....	72
4.4 Source of data and participants.....	72
4.5 Sampling method.....	75
4.6 Data generation method: Document analysis and observation.....	75
4.7 Data collection method.....	76
4.7.1 Interviews.....	77
4.7.2 Observation	77
4.8 Ethical considerations.....	78
4.9 Data analysis method.....	79
4.9.1 Data reduction.....	79
4.9.2 Data display.....	81

4.9.3 Data conclusion.....	81
4.10 Validity of the research.....	81
4.11 Reliability of the research	82
4.12 Conclusion.....	82

CHAPTER FIVE: - DATA PRESENTATION AND ANALYSIS

5.1 Introduction.....	83
5.2 Findings	84
5.3 Data analysis.....	93
5.4 Conclusion	102

CHAPTER SIX: - DISCUSSION OF THE RESULTS

6.1 Introduction	103
6.2 Theoretical framework for overall primary and secondary data analysis.....	103
6.3 Review of findings on supply chain management policies and procedures from interviews and observation.....	103
6.4 Answers to the research questions	105
6.5 Objectives of the research.....	107
6.6 Conclusion.....	110

CHAPTER SEVEN- RECOMMENDATION AND CONCLUSION

7.1 Introduction	112
7.2 Analysis of problem statement.....	112
7.3 Validation of the findings	112
7.4 Recommendation.....	113
7.5 Value of the study.....	115

7.6 Areas for future research.....	115
7.7 Conclusion	116
LIST OF REFERENCES	117
LIST OF APPENDICES.....	124
Appendix A- Error in labeling.....	125
Appendix B- Manual inventory log book.....	126
Appendix C- Population distribution per district.....	127
Appendix D- Glossary.....	128
Appendix E- Interview Questions.....	134
Appendix F- Informed Consent letter cover.....	136
 APPROVAL LETTER FROM THE UNIVERSITY	
 ACKNOWLEDGEMENT LETTER FROM HEAD OFFICE	
 SUPPORT LETTER FROM THE HOSPITAL	
 GATEKEEPER LETTER FROM HEAD OFFICE	
 CONSENT LETTER	
 INDEMINITY LETTER	
 TURNIT IN REPORT	

LIST OF TABLES

Table 2.1: Literature review: Theoretical synopsis

Table 2.1: Options for private participation in public hospital

Table: 4.1: Main coding differences between three approaches to content analysis

Table 5.1: Number of participants involved in the study

Table 5.2: Human capital development

Table 5.3: Risk management

Table 5.4: Supply chain sustainability

LIST OF FIGURES

Figure 1.1: The supply chain background

Figure 1.2: Conceptual map

Figure 2.1: Balancing the potential harm and benefit from risk event

Figure 2.2: Supply Chain Operation Reference model

Figure 2.3: Balanced scorecard

Figure 2.4: Stakeholder relationship management (SRM)

Figure 2.5: Practical steps in supply chain sustainability

Figure 3.1: Public sector supply chain management process

Figure 4.1: Steps to be followed during the study process

Figure 4.2: Three steps of qualitative analysis

Figure 5.1: Data presentation of participant's involvement

Figure 5.2: Human capital development: Frequency of sub-themes in percentages

Figure 5.3: Risk management: Frequency of sub-themes in percentages

Figure 5.4: Supply sustainability: Frequency of sub-themes in percentages

LIST OF ACRONYMS AND ABBREVIATIONS

3P/ PPP- Private-Public Partnership

AG SA- Auditor General of South Africa

AGE- Annual General Exemption

AO-Accounting Officer

BAS- Basic Accounting System

BBBEE- Broad Based Black Economic Empowerment

CFO- Chief Financial Officer

CHCs- Community Health Centers

CIDBA- Construction Industry Development Board Act

CIPS- Chartered Institute of procurement and supply

CSD- Central Supplier Database

DOH- Department of Health

DPP- Department Procurement Policy

DTI- Department of Trade and Industry

EMRS- Emergency Medical Rescue Services

EPMDS- Employee Performance Management and Development System

ERM- End-user Relationship Management

FM- Finance Manager

FMCMM- Financial Management Capacity Maturity Model

GOM- Green Operation Management

GTB- Government Tender Bulletin

HCD- Human Capital development

IALCH- Inkosi Albert Luthuli Central Hospital

IDMS- Infrastructure Delivery Management System

IDMS-Infrastructure Development Management System

ISCM- Internal Supply Chain Management

IT- Information Technology

JIT- Just in Time

KZN- KwaZulu-Natal

M&E- Monitoring and Evaluation

MFMA- Municipal Finance Management Act

NPSEs- Non-profit and Public Sector Enterprises

NSG- National School Government

O-CPO- Office of Chief Procurement Officer

OPD- Out-Patient Dispensary

PALAMA- Public Administration Leadership and Management Academy

PDI's- Previously Disadvantaged Individuals

PFMA- Public Finance Management Act

PFMCDS- Public Financial Management Capacity Development System

PPPFA- Preferential Procurement Policy Framework Act

PPR- Preferential Procurement Regulations

QSC- Quotation Specification Committee

SAQA- South African Qualification Authority

SARS- South African Revenue Services

SC- Supply Chain

SCM- Supply Chain Management

SCMS- Supply Chain Management System

SCOR MODEL- Supply Chain Operation Reference Model

SCRM- Supply Chain Risk Management

SCS- Supply chain sustainability

SITA- State Information Technology Agency

SLA-Service Level Agreement

SMMES- Small, Medium and Micro Enterprise

SOP- Standard Operating Procedure

SRM- Stakeholder Relationship Management

STBA- State Tender Board Act

TCC- Tax Clearance Certificate

TSS- Technical Support Services

VAT- Value Added Tax

LIST OF APPENDICES

Appendix A- Error in relabeling

Appendix B- Manual Inventory Logbook

Appendix C- Population Distribution per District

Appendix D- Glossary

Appendix E-Interview Questions

Appendix F-Informed Consent Letter Cover

Appendix G- Gatekeepers Letter

Appendix H- Indemnity Letter

Appendix I- Acknowledgement Letter

Appendix J- Ethical Clearance Letter

Appendix K- Turnit in Report

CHAPTER ONE

RESEARCH OVERVIEW: INTRODUCTION AND BACKGROUND

1.1 Introduction

In terms of section 217 of the Constitution of the Republic of South Africa (1996), when government contracts or procures goods and services, the procurement process and procedures must be conducted in a manner that is fair, equitable, transparent, competitive and cost effective. These aspects form part of the five pillars of supply chain management in a government sector. The main responsibility of supply chain management in any organisation, either private or public is to balance demand and supply, however in the case of public organisation this process must comply with the above mentioned constitutional requirements. Therefore a clear understanding and appropriate implementation of supply chain management is essential to procurement and contract management in an organisation's supply chain operation process. Risk is the main factor of life for any supply chain component, whether it is demand, acquisition, logistics, assets or Supply Chain Management compliance i.e. monitoring and evaluation section. There is always some element of risk which can impact the effectiveness and efficiency of the supply chain sustainability and a manner in which demand and supply is balanced within the organisation. In addressing the issue that health institutions are facing, a research titled "Evaluating risks to supply chain sustainability in the KwaZulu-Natal hospital" has been conducted. The background of the research is discussed in the next section 1.2 which specifies the initiatives that led to the creation of the studied matter.

1.2 Background of the research

Within the KwaZulu-Natal Department of Health (KZN DoH) institutions are experiencing difficulties in their supply chain sustainability especially in the procurement section, such as irregular expenditures, fruitless and wasteful expenditure as well as audit queries. According to the KwaZulu-Natal Department of Health Annual Reports (2013/14:193) the annual financial statements as well as the management report that was compiled by the Auditor General of South Africa (AG SA) indicates that there are notifications of weaknesses in the process and procedures of supply chain management within the Department.

The weaknesses are located in the areas of contract and procurement management as well as in the expenditure of the Department, leading to the creation of risk to supply chain sustainability. This research intends to evaluate and identify the supply chain risks roots and the risks that are created and further lead to affecting supply chain sustainability. The organisation need to adhere to SCM prescripts in order to contribute toward an improved SCM and to develop the level of compliance regarding the utilization as well as the application of policies and procedures that are stipulated by the government of the Republic of South Africa, the Preferential Procurement Policy Framework Act (PPPFA) and Public Finance Management Act (PFMA). Procurement in the public sector requires a government-approved procedure to be aligned with the process in order to ensure compliance and supply chain sustainability within the institution. Inkosi Albert Luthuli Central Hospital has been categorized as a non-complying institution due to its failure to adhere to the required policies and procedures of its operating process within the 3P (Private Public Partnership) sector, under which it is categorized. The main responsibility of supply chain management within any organisation is to maintain a balance between demand and supply. To maintain procurement best practices, a specified supply chain management system was adopted in South Africa in 2003. The procurement process was granted constitutional status and has been utilized to address previously inequitable and ineffective policies and practices. The reform processes were instituted due to inconsistency in policy application and a lack of accountability and supportive structures. Section 217 of the constitution of the Republic of South Africa (1996) assist in giving guidelines on how a public sector should maintain and operate supply chain in a required and acceptable manner, therefore the utilization of this section of the constitution assist in mitigation of risk to supply chain sustainability. Non-compliance issues can lead to emergence of risks within the organisation, which also affect supply sustainability. According to Auditor general of South Africa there have been notifications of weaknesses in the processes and procedures of supply chain management within the organization or the Department. This in an essence opens a gap for risk to affect supply chain sustainability. The studied research has used an exploratory research method to answer the research questions and also to fulfil the objectives of the study. Public sector supply chain management (SCM) is specifically concerned with operating according to five pillars derived from the Constitution of the Republic of South Africa. These five pillars are: value for money, open and effective competition, ethics and fair dealings, accountability and reporting as

well as equity. According to the National Treasury, (2005:5), deficiency and fragmentation in the governance, interpretation and implementation of the Preferential Procurement Policy Framework Act (PPPFA) No. 5 of 2000, resulted in the introduction in 2003 of supply chain management as a policy tool in the public sector. In this study an evaluation of the risks to supply chain sustainability highlighted the challenges that are incurred by an organisation that lead to non-compliance. The study findings revealed that there are instances of non-compliance within the research site selected that needs to be addressed. A future study can be based on remedying the risk to supply chain sustainability. This therefore led to the study of the evaluation of risk to supply chain sustainability that was developed become a success with a hope that it would be beneficial to all the public sectors out there not only to the health institutions but the entire South African government sectors.

1.3 The purpose of the study

The purpose of this study is to provide an in-depth study through evaluating the risks to supply chain sustainability. Furthermore policies and procedures of supply chain management can assist the levels of supply chain sustainability in hospitals, taking into special consideration the requirement of the public sector supply chain management. The study consist of the examination of risks that can be created and further lead to negative impact on supply chain sustainability in the KwaZulu-Natal Health institution. Health institutions undertake a significant amount of procurement because of the service they provide to large group of the population which is the community. Appendix A, indicates the population level in KwaZulu-Natal Province and the Inkosi Albert Luthuli Central Hospital is the largest Provincial hospital that admit a large number of patients, therefore the procurement problem and non-compliant have been identified in their operating process. Furthermore the purpose of the study is to evaluate and highlight the risks that can affect the sustainability of supply chain management and also identify risks as well as non-compliant areas within the hospital, so as to be able to recommend strategies that can assist in minimizing non-compliant areas and mitigate risks, taking into account the finding obtained during the data collection, presentation, analysis, as well as the results that have been discussed.

1.4 Preliminary literature review

1.4.1 Risk

According to Khan and Zsidisin, (2012) risk tends to be a common feature in organisations, to the extent that organisations have developed risk management as a component which is responsible for monitoring and evaluating operation processes and ensuring compliance and adherence to policies in order to minimize risks. An area of high risk is that of ensuring that demand for supplies are met effectively, and this has led organisations to institute SCM as a mechanism to ensure the balance between supply and demand. With reference to the health institution perspectives Bowersox, Closs and Cooper (2010) state that organisations recognize the need to facilitate adequate operation and service delivery, taking into consideration also the importance of abiding by procurement legislation. According to Jacobs and Chase, (2008) this indicates that hospitals need to implement compliant system that will assist them in ensuring that proper procedures are followed during procurement process. This is a system that is used to ensure that supply chain management complies with the rules, regulations and policies regarding procurement process. Supply chain risks can be rooted from either internal or external drivers which create negative effect to demand, process and supply. These risks have a negative impact on supply chain sustainability, as the required procurements may be compromised. An organisation may experience risks; however mitigation tools, techniques and models can be applied to maintain and monitor SCM processes within the organization, thereby minimizing these risks. Furthermore a sustainable organisation is the one that employs good organisation practices (maintain compliance), including product and risk management, the way an organisation treats employees (performance management and measurement of human capital), end-user and location (the community and environment) as well as the robustness of its governance practices (Westpac Group Report, 2014:3).

1.4.2 Supply chain sustainability

Chartered Institute of procurement and supply (CIPS) highlighted that sustainability in supply chain management takes into consideration social, economic and environmental aspects in conjunction with the distinctive value and quality when acquiring an item or service. Furthermore sustainability also assists the organisation to mitigate risks and create an increase in compliance as

well as becoming more energy efficient and inevitably cost effective (CIPS). According to Ageron, Gunasekaran and Spalazani (2012: 168) the emergence of a changing economic order has an influence in making organisations around the world to pay more attention on the manufacturing and service sustainability. Ageron et.al, (2012) also mentioned that sustainable organizational development has been the focal point over the past decade because of the significant attention given by government and both profit as well as non-profit organisation to environmental, social and corporate responsibility. According to Hasan (2013: 42-48) sustainable supply chain management has emerged as a key approach for an organisation aiming to become environmentally and economically sustainable. The study evaluates the risk to supply chain sustainability in kwaZulu-Natal health institution. Sustainability takes into consideration a long-term performance and recognition that the long-term success of an organisation is contingent on stakeholder relationships and capacity to address areas of interest and concern. Therefore the logic behind the study is to evaluate and identify the risk that could affect the long-term performance of the hospital.

1.4.3 The KwaZulu-Natal Health Institution (Hospital)

The research is conducted in an institution that falls under public-private partnership i.e. Inkosi Albert Luthuli Hospital. According to Grimsey and Lewis (2004:27) Hospitals are one area where private participation can be achieved at a number of levels and where PPPs involves the construction. Grimsey and Lewis (2004) further stated that the management of public hospitals can introduce innovative ways to control costs and improve services within the existing health systems. Hodge and Greve (2007:90) stated that Public Private Partnership may be considered as a form of co-production, of cooperation, in which the parties realize products, services or policy outcomes jointly. Above all, PPP assumes that through a more intensive cooperation between public and private parties, better and more efficient policy outcome and policy product can be realized. This further gives an idea that private parties would need to be involved earlier and more intensively in decision making on joint product projects. Hodge and Greve (2007) further highlighted that Public-private partnerships may be described as more or less sustainable cooperation between public and private parties in which joint product or services are developed and in which risks, cost and benefits are shared among each part.

1.4.4 Supply chain management in the Hospital

The supply chain is divided into core and comprehensive functions. According to Kachwee and Hartmann (2013:3) the core functions of the supply chain (SC) are allied to activities which are constrained to the four walls of the organisation namely demand, acquisition, logistics as well as asset and disposables these activities form part of the supply chain management (SCM) section. The comprehensive functions of the SC are those activities or functions which are protracted vertically at either end (suppliers or end-users) of the organisation's SC, therefore creating a comprehensive SC and further enables the collaboration where appropriate. Kachwee and Hartmann (2013) further stated that the model that is used to evaluate the level of capability and compliance for each of the processes that can be defined in the Supply Chain Operation Reference (SCOR) model is the Supply Chain Maturity model and also the supply chain management practices which govern the strategies and links all the functions together. Figure 1.1 below indicates the supply chain background and the areas that can be evaluated in order to obtain the risk areas to supply chain sustainability within the organisation.

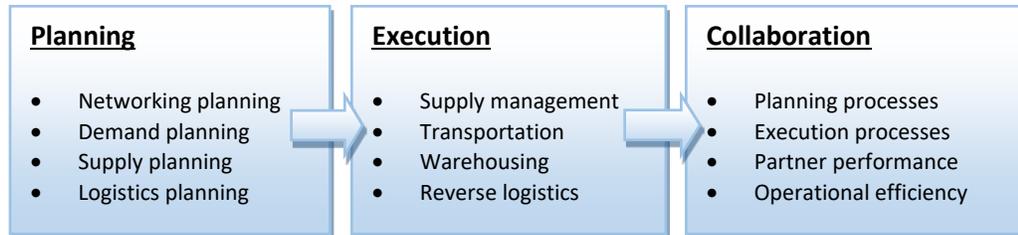


Figure 1.1 -The supply chain background

Source: Adapted from Hospital Supply Chain Management and Optimisation (Kachwee and Hartmann 2013, p. 3).

Fundamentally, an organisation is striving for better service delivery accompanied by high levels of legal compliance during their operation process. Figure 1.1 indicates the supply chain operation process within the organisation. The first step in developing sustainability is to plan, the planning can take place with deferent aspect of the organisation and components such as demand, networking, supply as well as logistics. The aspect in the planning stage determines the execution point where each aspect will take place at and be utilized for sustainability purpose. This includes

supply management, transportation, warehousing as well as reverse logistics. Furthermore the most vital phase in this whole process is collaboration, where it includes collaboration in the planning process, execution process, and partner performance as well as operation efficiency. An in-depth literature review will be presented in greater detail in Chapter Two and an investigation of procurement in public hospitals will also be presented in chapter Three.

1.5 Conceptual framework

This study evaluates the effects of risks in supply chain management that can lead to the inability of organisation to comply with policies and regulations, as well as the ultimate failure in ensuring better service delivery. The framework below figure 1.2 shows the evaluation of risk to supply chain sustainability within the institution, it shows the process in which data will be obtained in order to clarify the studied matter.

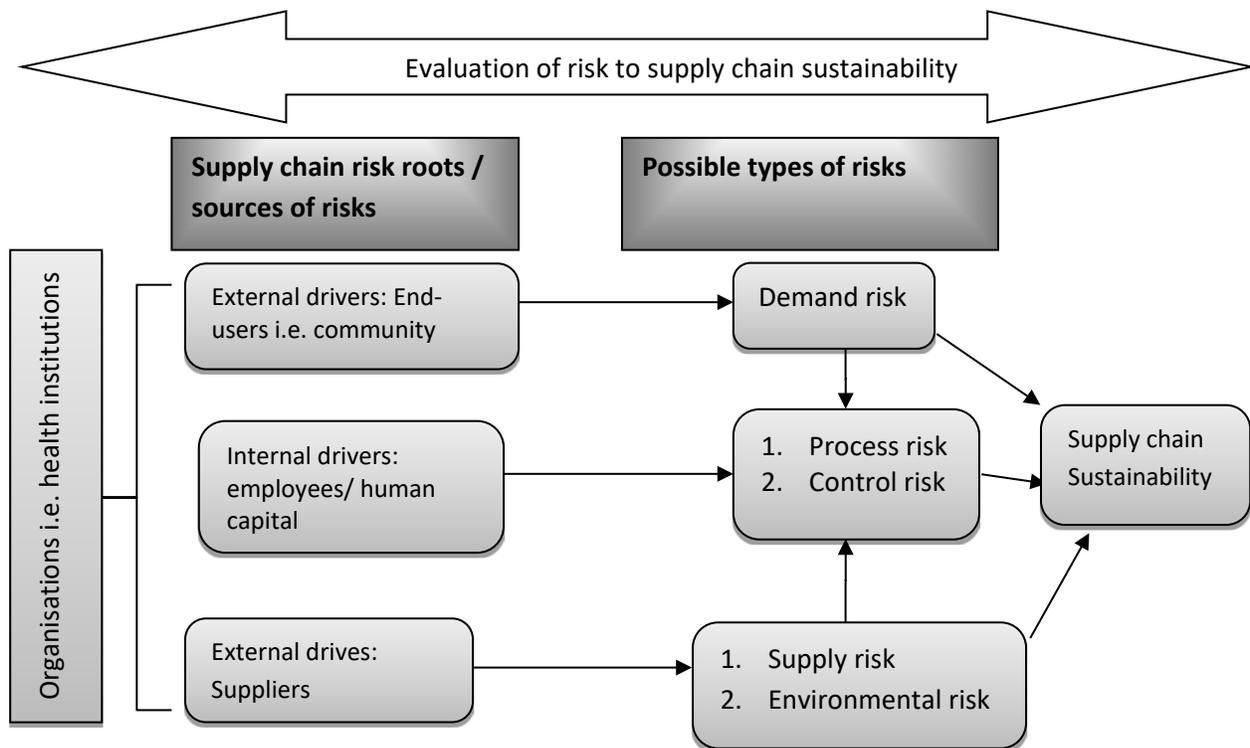


Figure 1.2- Conceptual framework

Source: Researcher’s conceptualization with reference to ‘Building the resilient supply chain’ by Christopher and Peck, (2004 p. 10).

Figure 1.2 was developed by the researcher through taking into consideration the central source of supply chain risks and their main areas of impact to supply chain sustainability. The conceptual framework is designed to develop a route toward evaluating risk, obtaining the required data, presenting the results and analyzing the findings that lead to proposing studied matter as well as the recommendations that can assist in ensuring supply chain sustainability within the organisation. The conceptual framework provides an indication of the process followed in conducting the research. It also shows where risks are originated from and enabling the organisation to identify the degree of vulnerability or challenges that risks pose to an institution's ability to achieve its goals and objectives efficiently, effectively and economically. Basically an organisation is formed by three part namely end-users, human capital (employees) as well as the suppliers. These are primary resources that contribute to the operation of any organisation therefore risks are also rooted from these functions. The possible types of risks that can be created are demand, process, control, supply as well as environmental risks. These risks therefore affect supply chain sustainability and the operation of an organisation as a whole. Figure 1.2 further elaborate the process in which risks to supply chain sustainability are evaluated and how they are created by both external and internal drivers that are indicated in figure 1.2. It has also been reflected in figure 1.2 the effect that they have and the role they play in an organisation. The first external driver which is the end-user, in this case refers to the community therefore demand risk is developed amongst the community and that further affect the operation process within the organisation. All the organisations strive to provide better service to the community and also balance the demand and the supply. On the other side there are policies and procedures that need to be taken into consideration during the procurement stage in an organisation. This further create process and control risks that is rooted from the internal driver i.e. employee or human capital of the organisation. The second external diver i.e. suppliers create supply and environmental risks that also affect process and control of the operation in an organisation. In the nutshell all these risks affect the operation and supply chain sustainability of the organisation as a whole.

1.6 Problem statement

With reference to the National Treasury Report (2015) the strategic importance of SCM is not appreciated, the workforce or human capital is under-skilled and lacks experience in SCM, and political office-bearers create scope for interference in the SCM process, raising allegations of corruption. All these factors result in negative reports from the auditors of state institutions and in their failure to achieve effective and efficient service, ultimately to a large degree because their supply chain systems are not sustainable.

Therefore the problem statement of the study is:

“Non-compliance in supply chain management within the KwaZulu-Natal Health institutions i.e. hospitals, Community Health Centre (CHC), Emergency Medical Rescue Services (EMRS), Districts Offices, Mortuaries and Clinics can lead to the creation of risk that will impact negatively on supply chain sustainability”. Therefore it is vital to adhere to the required policies and procedures of supply chain management.

1.7 Research methodology

The analysis of literature, including the websites of the KwaZulu-Natal Department of Health, Departmental Annual/ Quarterly reports, books and journal articles, provide the basis for the study. The data is qualitative in nature; it employs interviews and observation as the methods of data collection.

The research was compiled particularly through the evaluation of risks to supply chain sustainability and with reference to the operation of Inkosi Albert Luthuli Central Hospital (IALCH). This was achieved through studying the above-mentioned sources of information stated in preliminary literature as well as conducting a comparison of information obtained from interviews and observations conducted at Inkosi Albert Luthuli Central Hospital (IALCH). The interviews comprises of open and closed questions. A small sample size was used and the targeted population sample was the employee from supply chain management and finance because they work together to contribute to the development of compliance level and supply chain sustainability. This population group is guaranteed to provide relevant information to enhance the

research and to fulfill the objectives of the study. This study site was selected based on its operational characteristics; the IALCH is a private public managed organisation and is hence a health institution which can provide a model for future provincial health systems as these kinds of partnerships continue to grow. The study thus aims to gather information on how contracts and procurement operate at the IALCH and in what ways it can improve its service delivery through addressing the risks posed to its SCM.

The nature of this research is an exploratory study because it addresses the problems in health institution supply chain management that are not generally well understood and that have not been extensively researched. The main aim of an exploratory research project is to identify the boundaries of the environment in which the problem or the situation of interest is more likely to be located. In other words, as indicated in the conceptual plan above the central goal is to identify risk sources to supply chain sustainability and their effects on SCM in the context of health institution, namely the IALCH.

1.8 Objectives

1. To identify the possible types of risks that are created from the end-users and how they affect supply chain sustainability in health institution.
2. To determine the possible types of risks that are created from human capital and how they affect supply chain sustainability in health institution.
3. To examine development of risks from suppliers and their effect on supply chain sustainability in health institution.
4. To evaluate risk factors to supply chain sustainability within the KwaZulu-Natal Department of Health.

According to figure 1.1 the conceptual frame work, it has been indicated that uncertainty of demand from the end-users can lead to the creation of demand risk of which can have negative impact on supply sustainability. Non-compliance of human capital during the operation process and procedures lead to the creation of process and control risks, furthermore lack of effective cooperation and stakeholders relationship management therefore also lead to development of

supply and environmental risks (Becker 2012:226) . However the logic behind the study is to evaluate risk to supply chain sustainability in order to develop compliance and also obtain a ground base on how to maintain supply chain sustainability within the health institutions in KwaZulu-Natal. The following research question assist in finding the exact information in relation to the study and also to fulfil the objectives of the study. Section 1.9 provides the research question that guides the study to delivering the required information according to the proposed title.

1.9 Research Questions

1. How does end-users contribute to the creation of demand risk and what effect does demand risks have to supply chain sustainability in health institution?
2. How does human capital contribute to the creation of process and control risks and what effect does process and control risks have to supply chain sustainability in health institution?
3. To what extent do suppliers contribute to the development of supply and environmental risks and what impact does supply and environmental risks have towards supply chain sustainability within the health institution?
4. In what way can an evaluation of risks to supply chain sustainability be conducted within the KwaZulu-Natal Department of Health?

1.10 Ethical considerations

It is vital to avoid ethical issues that might arise during the researching period. Therefore data will not be collected without obtaining ethical clearance from the academic institution namely the University of KwaZulu-Natal, which gives an approval to start conducting the research that will take place. The research will not be conducted without the required authority from the source namely obtaining an authority letter from the relevant parties of the organisation. The organisation/ the research site that is targeted for data collection need to agree to participate in the study. This is done through issuing a signed letter of agreement called Gatekeeper letter. The information obtained will be presented with the consent of the information source and therefore the right of

anonymity and the confidentiality protocol will be adhered to. Credits and acknowledgement will be given to the information source where appropriate.

1.11 Limitations

Some information are of a sensitive nature, therefore it will not be revealed in the study if it may cause complications for sources or if it would be unethical to divulge. A further limitation is that data collected will come from selected or targeted group of individuals due to their insight on certain issues relevant to the research. The research used only the selected group because the purpose of the study is to evaluate the risk to supply chain sustainability, therefore it is wise to firstly start with the population that is directly involved in the process in order to find out the initiation of the problem to the subject matter before going any further. At the moment the selected population group are people within SCM and Finance section, therefore the study is limited to this population group because other officials may not provide significant information in relation to the subject matter as they have their own designated duties different from the one that the study is based on.

1.12 Target population

The target population for the study are the officials working in supply chain management and finance who deal with the process of obtaining the required item within the hospital. The participants will be recruited through their job description, duties and their role in supply chain management. Their involvement in the process will be taken into consideration because the logic behind the study is to identify the risks that the participants come across when procuring an item or requesting for service to be rendered, of which these risks can cause a negative impact to supply chain sustainability. Therefore, the study will focus on the officials that are involved personally in procuring an item and/or processing payment because they will be the source of appropriate information on supply chain management and its attendant risks. This target population will thus assist the researcher in obtaining the information required in order to resolve the problem statement, answer the research questions and to fulfil the objective of the study.

1.13 Sample size

The sample size is limited by the number of officials that are employed to do the finance and supply chain management duties and are the one that are targeted as the research site because they are directly involved in the operation process of procurement. There are 15 officials in supply chain management and finance, they will be participating in the study therefore they form the sample group. This is a qualitative study and it intends to obtain in-depth information, a small number of officials are employed in the relevant sections therefore everyone is in the target population that will have equal opportunity to participate in the study. The finance section consists of one Finance Manager and four Finance Officials that are responsible for authorising and processing payment according to budget expenditure and the procurement plan, while the SCM section consists of one SCM supervisor, four officials that are responsible for the procurement processes; one Systems Manager that is responsible for the monitoring and evaluation of contracts that are operating within the organisation, three Ward Clerks responsible for placing orders and completing requisition which is a request for an item forms as well as one outsourced official working with SAP (System Application Product) programme in the SCM section, which is the processes of conducting the procurement procedures online.

1.14 Contribution of the study to SCM field

The study aims at developing the field of SCM in the public sector by means of mitigating risks and improving standards, procedures and policies as well as compliance in a way that will assist in maintaining supply chain sustainability. The study aims at making a contribution to hospital operation which is to increase the level of compliance and mitigate risks that may be created in the hospital. This can be done through proposing mechanisms and the means for implementation of the strategies that will equip individuals with the necessary skills, tools and expertise. This can therefore assist them in contributing to developing sustainable supply chain as well as helping them to mitigate risks within the industry through being alert about the sources of these risks. This will ultimately improve the standard of service delivery and the understanding of supply chain management as a whole not only in the selected study site but in the KwaZulu-Natal Department of Health as a whole. Supply chain management remains a relatively poorly understood and

implemented concept that needs advance and continuous learning. The logic behind this research is to identify the risks that affect supply chain management, which further impact the improved sustainability from being accomplished. The study is needed to alert SCM officials (both at the specific study site and in the wider public sector, including the health sector) to the necessity of maintaining compliance with supply chain management procedures and policies, as well as to emphasize the need to enhance these procedures and policies in order to build sustainability in SCM.

1.15 Structure of the dissertation

The dissertation will consist of seven chapters and will be structured as follows

Chapter One: Research overview: Introduction and background

Chapter One describes the topic, the reason for proposing the topic and the method undertaken by the study to conduct a research. This chapter also serves as an introduction which overviews the whole research project and in particular the stated topic- evaluating risks to supply chain sustainability in an organisation with respect to public sector industry. The chapter highlights the most important issues that will be studied in details throughout the research. The whole thesis structure is also outlined according to each chapter's contents.

Chapter Two: Literature Review on Supply Chain Management Practices

This chapter highlights the theoretical synopses of various scholars. Chapter Two will consist of the main theorists that were used to establish a benchmark on the core topics of this study, namely, supply chain management, risk management, supply chain management models as well as supply chain sustainability. This chapter is important because it gives an understanding of the content of the study, the understanding of the core concepts before going into details in integrated literature review. This chapter also assists in mapping the literature review of the study in order to obtain more understating of Supply Chain Management Practices. This chapter also includes the study and the construction of background information and concepts concerning the subject matter drawn from the theoretical literature review as well as the hypothetical stance on a detailed study of the evaluation and effects of risks on supply chain sustainability in the operation of an organisation,

in particular with respect to the Department of Health as the area of study and the target population. The concept of supply chain risk root, possible types of risks and supply chain sustainability in an organisation will be discussed in greater detail. Furthermore risk mitigation techniques and models will also be included in this chapter.

Chapter Three: The South African public sector supply chain management operation

Chapter three includes the explanation of supply chain management processes in the public Sector. The procedures that should be followed and which can lead to compliant and clean audit are highlighted in chapter four. This chapter will assist government officials in increasing their level of understanding the operation of public sectors policies and consequences of not following the proper process. Chapter four consist of an outline of South Africa Government Sector Operating process that is considered during the procurement phase furthermore the areas where risk can be rooted are being highlighted in this chapter.

Chapter Four: Research methodology

Chapter four states the nature of the research methodology that is employed in the study. It further provides the sampling method that was being utilized, the sample size for the research project and the study site. In addition, this chapter also indicated data generation methods, data collection methods, ethical considerations, data analysis methods as well as the validity and reliability of the study.

Chapter Five: Data Presentation and analysis

Chapter five includes the presentation of the findings obtained from conducting in-depth interviews and observation during the data collection process. This chapter also stated data analysis in three stages.

Chapter Six: Discussion of results

Chapter six discusses the outcome that was generated from the data collection process, including the complications and challenges during the process leading to the results obtained. This chapter further gives a comparison between the primary information obtained from the interviews and the secondary information obtained from the literature review and also indicates areas for further

review. This chapter provides answers to research questions and also aims at satisfying the objectives of the research, through discussing phenomena emerging from the study. In addition proposes new investigative direction concerning the topic understudy.

Chapter Seven: Recommendation and conclusion

This is the final chapter which provides recommendations emerging from the findings. Chapter seven presented the conclusion concerning the research and its interpretations as well as a discussion on the possible way forward for further progression of an organisation to create development in supply chains sustainability.

1.16 Conclusion

The effect of risk on supply chain sustainability affects supply chain management in an organisation however, this is not the end of the process for SCM, the study intends to mitigate and develop compliancy that will lead to supply chain sustainability in public sectors. Furthermore the study established a framework indicating the sources, creation of risks and their effect to supply chain sustainability by identifying supply chain risk roots namely end-users, internal stakeholders: employees as well as suppliers and how they each contributes to the creation of possible types of risks namely demand, process, control, environmental and supply risks. In order to mitigate risks an organisation needs to consider all spheres that contribute to SCM and to identify the risks that circulate around each organisational function. This chapter has presented an introduction of the study conducted and an overview of the aspects that the study process proposed to entail. The following chapter basically provides a theoretical and integrated literature review of the subject matter. It has also tabulated the philosophical synopsis according to the theorist and in relation to the studied research concepts in respect to the research content.

CHAPTER TWO

LITERATURE REVIEW ON SUPPLY CHAIN MANAGEMENT PRACTICES

2.1 Introduction

According to Polonsky and Waller, (2011: 105) there are two types of literature reviews. The first type of literature review proposed by Polonsky and Waller (2011: 105) is a theoretical review which studies various philosophies and then constructs an argument in identifying the most significant philosophy and the second one is the integrated research review which includes the examination of previous studies and which both determines existing correspondence between variables and opens up a new discussion on disputes. This chapter discusses both types of literature reviews and aims at providing an in-depth understanding of the concept of supply chain management and supply chain sustainability. It is important to firstly get an understanding of the meaning of the key word of the study before conducting and collecting data in relation to the proposed study. This chapter includes an explanation of the key areas that can assist the study in conducting and fulfilling the main objective of the study which is to evaluate the risks to supply sustainability. Polonsky and Waller (2011) stated that a theoretical review scrutinizes various theoretical approaches that have been identified as being of relevance in the context of the present study and constructs an argument through pinpointing the most significant approach. The theoretical review presented in this chapter focuses on the literature concerning risk management, supply chain management and supply chain sustainability. Table 2.1 below states the philosophical synopsis of the subject matters that are being scrutinized by different authors in relation to the key areas of the study. Hart (2005: 4) mentions that a literature review is the evaluation of the main sources of information, to facilitate the researcher immersing him/herself in the terminology, competencies and professionalism of the field/area of study. This chapter will also include the application of an integrated literature review, drawing from various sources to identify correlations and divergences.

The integrated research review focuses on the studies that have been conducted concerning the risk to supply chain sustainability with reference to KwaZulu-Natal Health Institution SCM

section, as well as the public sector. An examination of the information on risk sources obtained from the researched information and the reports on the consequences of these risks are also evaluated in order to clarify the impact they have on an organisation's service delivery. Integrated literature review includes the clarification of the aspects that are taken into consideration during the procurement processes such as risk management tools, models and techniques. These tools, models and techniques include Supply Chain Operation Reference Model (SCOR Model), stakeholder relationship management (SRM), performance management, the balanced score card concept, as well as monitoring and evaluation. All these aspects are in-line with the objective of this study which is to contribute to the improvement of service delivery and to increase sustainability in supply chain management within the KwaZulu-Natal hospitals and further lead to an increase in compliance level, a decrease in irregular expenditures, fruitless, and wasteful expenditures as well as audit queries. Christopher and Peck (2004:18) highlighted an important concept that can be utilized by hospitals to govern their operation namely supply chain agility. It plays an important role within the supply chain sustainability because it is defined as the ability to respond rapidly to unpredictable changes in demand or supply in which most of the hospitals found them at risk because their response times to demand changes or supply disruption are too long.

2.2 Theoretical literature review on Supply chain management, Supply chain risk and supply chain sustainability

Table 2.1 below assists the study in presenting an outline of the theoretical positions of each and every theorist with regard to how they understand supply chain management, supply chain risk and supply chain sustainability. This is pertaining to the task of the present study which includes the evaluating of risk to supply chain sustainability because these scholars provide a theoretical basis for understanding the entire supply chain structure as well as the SCM operating process and procedures within the organisation.

Table 2.1: Author's Philosophical synopsis

Author	Key areas	Theoretical synopsis of the subject matter
Cachon and Terwiesch (2006:335)	<ul style="list-style-type: none"> • Creation of possible types of risks. 	<p>Supply chain management includes the following:</p> <ul style="list-style-type: none"> • Balancing supply and demand in an organisation. • Effective collaboration among the staff involved in SCM process. • The bullwhip effect is one of the challenges to supply chain coordination of which it is a tendency for demand inconsistency to increase, often considerably as you move up the supply chain. • SCM depends on the actions taken by all stakeholders in response to fluctuating supply and demand; one weak link can negatively affect every other location in the chain. This negative effect affects supply chain sustainability.
Waters (2007: 8)	<ul style="list-style-type: none"> • Background of Supply Chain Management. • Flow of item. • Possible types of risk 	<ul style="list-style-type: none"> • Supply chain management is responsible for moving the requested item and service rendering from an initial supplier to an end-user. • Supply chain risk appears to be any event that can affect the movement and leading to the disruption of the process or the flow of service rendering. • There are basically two types of risk to supply chain management, namely internal (process and control risk) and external drives (demand, supply and environmental risk).
Simchi-Levi et al. (2008:1)	<ul style="list-style-type: none"> • Stakeholder's involvement 	<ul style="list-style-type: none"> • SCM including inbound and outbound logistics. • It also plays an important role in making the product according to the end-user's requirements.

	<p>to the smooth run of SCM.</p> <ul style="list-style-type: none"> Stakeholder's contribution to supply chain sustainability. 	<ul style="list-style-type: none"> SCM takes into account the supplier's supplier and customer's customers because they also have an impact on supply chain performance. Risk and uncertainty are inherent in every supply chain; however the objective is to be efficient and cost-effective across the entire system and work in process. SCM revolves around the efficient integration of all stakeholders and the proper operating procedures that will result to an effective and sustainable SCM.
Wang (2009: 7)	<ul style="list-style-type: none"> Importance of SCM in an organisation. 	<ul style="list-style-type: none"> SCM is more than a database practice but is rather a decision support technique that assist managers to make decision effectively. SCM is often the determinant for generating demand since it must ensure that supply matches demand. It is essential to accentuate the strategy and procedure of SC to bring a competitive advantage for the organisation.
Bowersox et al. (2010)	<ul style="list-style-type: none"> Operation of SCM in an organisation Compliance. 	<ul style="list-style-type: none"> SCM encompasses the development and fundamentals of the logistics discipline (inbound and outbound). SCM also presents the vision of the future organisation process and plays a central role in ensuring compliance with procedures and policies.
Zandhessami and Savoji(2011: 60)	<ul style="list-style-type: none"> Awareness to possible types of risks that can 	<ul style="list-style-type: none"> SCM is a synthesis, being both an art and a science which improves the methods of sourcing an organisation's required item or services.

	<p>affect supply chain sustainability.</p>	<ul style="list-style-type: none"> • To understand supply chain risk that organisation faces, monitoring and evaluation is necessary, • It also ensure that management is made aware of the possible types of risks that can occurs in the organisation and how to proactively respond.
<p>Kushwaha (2012: 224)</p>	<ul style="list-style-type: none"> • Function of SCM in an organisation. 	<ul style="list-style-type: none"> • The concept of SCM consist of various aspects namely purchasing; logistics; operations management; assets and disposables; as well as stores and warehouses. • The focus of SCM is the integration of three broad functions <ol style="list-style-type: none"> 1. Suppliers' relationship management (SRM), 2. Internal supply chain management (ISCM) 3. End-user relationship management (ERM) with the intention of maintaining supply chain sustainability. • Non- compliance issues and supply chain risk affect most organisations at the operational level.
<p>Brandenburg, Govindan, Sarkis, and Seuring (2013: 309)</p>	<ul style="list-style-type: none"> • Supply chain sustainability. 	<ul style="list-style-type: none"> • Contextual environmental, social and economic issues are the aspects that need to be considered in order to ensure Supply Chain sustainability. • Well managed supply chain assist the organisation to mitigate risk to supply chain sustainability.
<p>Bala (2014:949)</p>	<ul style="list-style-type: none"> • Identification of shortfall that can lead to creation of risks. 	<ul style="list-style-type: none"> • Supply chain management executives face unique challenges with respect to integrating supply chain strategies

		<ul style="list-style-type: none"> Assessing supply chain leads to the identification of problems and opportunities that may affect the Supply chain sustainability.
Kilubi (2015: 41)	<ul style="list-style-type: none"> Risk management. Areas of concern in an organisation. 	<ul style="list-style-type: none"> Risk management is generally described as the identification and analysis of risks and the means to control the identified risks. Supply chain risk management (SCRM) is characterized as strategic plan of identifying and mitigating risk not only within the organisation also to the entire supply chain Suppliers and suppliers' suppliers as well as customers and customers' customers are also important to take into account.
Ross (2016: 17)	<ul style="list-style-type: none"> The degree of vulnerability of supply chain sustainability in an organisation. 	<ul style="list-style-type: none"> SCM is the most important strategic discipline for corporate survival and effective productivity. SCM comprises bridging a gap between demand and supply. A gap if is not reduced can further lead to a creation of negative effect which in turn can affect supply chain sustainability.

Source: Researcher's compilation

2.2.1 Analysis of theoretical synopsis

Cachon and Terwiesch (2006: 335) pointed out that ineffective supply chain management can create what is termed as the bullwhip effect which refers to the increase in the inconsistency of demand as one moves up the supply chain, causing disruption to supply chain operation. Therefore this leads to the creation of risks that will affect supply chain sustainability and further impact negatively to service delivery in an organisation. Wang (2009) and Bowersox et al. (2010)

highlighted that supply chain management is more than just a database practices it also encompasses the development of a discipline within the SCM structure, this means that human capital plays an important role in obtaining and maintain a sustainable supply chain. Bowersox et al. (2010) further explains that supply chain management involves a number of factors that can be fruitfully focused around stakeholder relationship management (SRM): working to satisfy the end-user and provision of customer support to this end, as well as concentration on balancing demand and supply. Wang (2009) also emphasizes the importance of sustainability in SCM. Kushwaha (2012) points out that SCM focuses on supplier relationship management, internal SCM process and procedures, as well as an end-user relationship management. The importance of stakeholder relationship management in mitigating risk and developing contingencies was highlighted as a crucial tools, model and techniques through which to promote supply sustainability. These approaches also clearly indicate potential answers to the study's research questions (noted in Chapter One) on the role of internal stakeholders and process on SCS, that both play a crucial role that stakeholders require participatory and strong relationships with the organisation. The process need to be appropriate and follow policies and procedures, however it must also be responsive to the context and to flux in supply and demand.

The above outline provides the study with a focal point, namely the importance of integration and effective collaboration within the organisation. According to Bala (2014) the evaluation of SCM by organisation leads to the identification of risks that could affect supply chain sustainability, risks which can further result into non-compliance with policies and procedures as well as the audit queries. Dealing with these issues is the core work of supply chain risk management. Table 2.1 also gives a clear understanding of the negative effect that risk imposes on supply chain sustainability. Simchi-Levi et al., (2008) stated that supply chain risk appears to be any effect that may interrupt the movement of goods and service within the organisation. In Chapter One of the study, it was indicated that one of the research questions of the present study concerns possible sources of risks that can create negative effect to supply chain sustainability. Simchi-Levi et al., (2008) thus offers answers to this question. Cachon and Terweisch (2006) provide further clarity by pointing out that risks to supply chain management can come from internal source (process and control risks) or from external (demand, supply and environmental risks).

The theorists have outlined vital points concerning SCM, SCRM and SCS, which together form the focal point of the current study. A clear understanding of this subject matter is essential during the operation process in order for an organisation to develop and maintain a sustainable supply chain management. SCM officials need to work together in achieving the goal of compliancy with policies and procedures to maintain the processes and controls through which organisation is able to operate successfully and with minimal risk factors. In reviewing the tabulated theoretical synopsis focusing on supply chain management, supply chain risk and supply chain sustainability from the perspective of different scholars, it is clear that all the theoretical views are of unique importance and can be utilized in describing the concept of supply chain management and in explaining the various aspects of the operation within the supply chain. Taking into consideration the discussion in table 2.1, this can lead to creating an understanding on how risks are created and how they affect supply chain sustainability. The operation of health institution is also affected by these factors that are stated in table 2.1, for instance the organisation might be a non-profit organisation but still need to offer better service delivery and cater for the community needs which is the most important thing in their operation because they are operating under batho pele principles. Risks are always part of every organisation either profit or non-profit organisation and most of these risks are rooted from end-users i.e. community, internal stakeholders i.e. human capital and the suppliers. The possible types of risks that can be rooted from these aspects are demand, control and process, environmental and supply risks. This at the end affects the level of compliance in an organisation and further affects supply chain sustainability.

2.3 Integrated literature review

2.3.1 Organisational operations

2.3.1.1 The concept of supply chain management within the organisation

According to Du Toit and Vlok1, (2014) supply chain management is the management of inbound and outbound logistics in an organisation; it includes balancing demand and supply of items or services rendered. This is done through taking into consideration the processes and procedures that governs the organisation. With reference to the KwaZulu-Natal Department of Health perspective supply chain management can be described as a flow of goods (medicines, equipment etc.) and

service (doctors, specialists etc.) provided via certain policies and procedures determined by the government. According to Simchi-Levi, Kaminsky and Simchi-Levi (2008: 1) SCM is a set of approaches utilized to efficiently integrate suppliers, manufactures, warehouses and store so that items can be distributed at the right quantities, to the right locations and at the right time in order to mitigate system-wide costs while satisfying service level requirements. Therefore the study highlight the creation of risks that are being generated through inconsistency and inaccuracy of human capital during the utilization of the SCM processes. The development of this study was due to the observation that the targeted institution is facing difficulties in maintaining and following the SCM procedures. This further creates risks that affect supply chain sustainability and portrays a negative image to auditors. Blanchard (2007: 197) further stated that the increasing sophistication of supply chains spanning corporate department and global boundaries has made it imperative that supply chain professional think far beyond the four walls of their organisations. With reference to Russell, and Taylor, (2011: 257) this means that all sources should be taken into consideration, not only focusing on the operation of the organisation but also consider external stakeholders, suppliers because they are the source of creating supply risk within the organisation. According to Brown, Blackmon, Cousins, and Maylor, (2001: 161) at a strategic level, this requires a close study of every task, process, and operation within an organisation extended enterprise. For instant IALCH is a public-private institution, therefore it includes another organisation that work together with them at the same time they need to consider the different policies that are taken into consideration.

2.3.2 Supply chain risk management

Supply chain management is responsible for the movement of material from an initial supplier to end-users. Waters (2011: 7) stated that supply chain management risk may appear as an event that could impact on the movement process and disrupt the planned flow of an item or service delivery. According to Donald and Water, (2007) the concept of risk can be described as a phenomenon that is based on the probability of an event, where probability is measured by the likelihood, relative, frequency or the proportion of time during which an event occurs. Bowersox et al (2010: 406)

mentioned that risks that have substantial supply chain implications include aspect such as product complexity, regulatory matters, resource availability, as well as security.

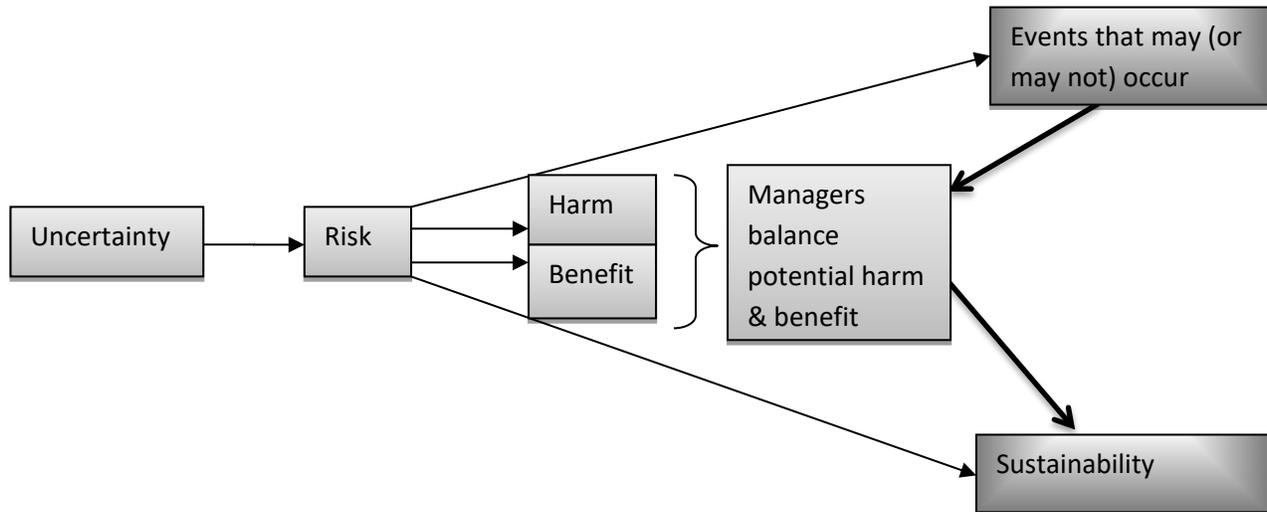


Figure 2.1 Balancing the potential harm and the benefit from risk event

Source: Adapted from Supply chain risk management: Vulnerability and resilience in Logistics (Waters 2011, p.7)

Figure 2.1 was compiled with reference to Waters (2011: 7), which can be used to illustrate the process that shows how risk occurs and how it can be managed in order to secure sustainability in supply chain management within the organisation. Often risks in an organisation process may be caused by uncertainty that may rise due to non-compliance issues and lack of human capital skills development within the department. It has been stated above that risk is the probability of an event that is likely to occur and that the level of risk also depends on the frequency or duration of the occurrence. These events can either harm or benefit an organisation. Wisner, Tan and Leong, (2015) therefore highlighted that managers within the department are required to calculate the balance of potential harm and benefit in order to maintain sustainability within the supply chain. Managers play an important role in SCM process with regard to sustainability and decision making.

2.3.2.1 Possible sources of risk

Waters (2011) stated that the possible sources of risk that organisation can encounter are derived from external and internal drivers.

External drivers

External drivers generally include the risks that affect the flow of an item or rendering of an item from the point of origin to end-users. External drivers include the following aspects:

1. Demand risk

According to Sodhi and Tang (2012: 22) demand risk relates to potential or actual disturbances that impact on the flow of a product, information, and cash, deriving from the network (transport, computer or financial systems for example), between the organisation requiring that product, information or cash, and the market supplying it. Demand risk can be a failure on either the high or the low side to accurately accommodate the level of demand.

2. Supply risk

Supply risk is similar to demand risk; it relates to potential or actual disturbances towards the flow of product or information and is a risk linked to organisation. With an organisation's suppliers being unable to deliver the product or information requested by organisation to meet its needs with regards to production, operation or expected demand.

3. Environmental risk

According to Federal Aviation Administration (FAA), (2009) environmental risk is associated with external and, from the organisation's perspective, uncontrollable events. Examples would include port and depot blockades; closure of an entire industrial area due to fire or chemical spillage; and events such as earthquakes, cyclones, volcanic or terrorist activity. According to Christopher and Peck (2004) environment risks are events that may affect a particular value stream or any link through which the supply chain passes e.g. accident, direct action, extreme weather or natural disaster. For instance a terrible storm took place in Durban on the 9th of October 2017 of which some hospitals were destroyed and people were hospitalized as they got injured during the

storm and some were killed. This has further caused an imbalance between demand and supply within the department as a whole due to the bad weather that caused changes in demand for healthcare and health necessities making it difficult for the health institution to provide the necessary care at the right quality. This has generally caused a creation of environmental risk that can affect supply chain sustainability because on the other hand the hospital is losing its facilities at the same time the need for utilizing those facilities is increasing. The disaster that took place led to some patients being transferred to other Health institutions like Inkosi Albert Luthuli Hospital therefore in this case the hospital needed to do some adjustments on their procurement plan a little bit to accommodate the fluctuating demand that has taken place within the hospital for the sake of balancing the demand and the supply. This is not the only case that have affected the operation of the health institution and service delivery, earlier on in the same year 2017 a part of Port Shepstone hospital got burnt and patients were also transferred to other health institutions therefore the demand for health care service changes. This does not only create environmental risks but also create demand and supply risks because it affect the flow of an item as well as the service delivery within the health institution. According to the research that have been done and the observation of the operation as well as the conditions of the KZN Health institutions, the operation can sometime be in a difficult position and also the environment can contribute to the creation of risks. Even though proper procedures and policies can be applied in an accurate and a required manner but the environment can disrupt the process and lead to non-compliance. Human capital can possess the necessary qualities to maintain compliance and supply chain sustainability but environmental risk can mess up the whole process.

Internal drivers

Internal drivers include risks that affect the procurement process within the organisation and the flow of item or service delivery in an organisation. Internal drives include the following aspects:

1. Process risk

According to Young (2014:20) large organisation typically execute a large number of processes in order to provide their services and this include processes for making payments, manufacturing

products and negotiate contract, furthermore risks can arise at all stages of these processes. Processes are the sequences of value-adding and managerial activities undertaken by the organisation. Process risk relates to disruptions to processes or operation of an organisation that leads to non-compliance issues. Examples could include employees' strikes or allowing products to expire. With reference to the case of employees strikes, this includes the delaying of an organisation to process their orders or procurement processes being delayed due to strikes and go slows that may take place within the organisation. Furthermore supply chain process will not be done in a required manner therefore leading to the creation of process risk.

2. Control risk

Control encompasses the assumptions, rules, systems and procedures that govern how an organisation exerts control over the processes by which it operates. In terms of supply chain management such rules, systems or procedures may include order quantities, batch sizes, safety stock policies etc. Control risk is therefore the risk arising from the application or misapplication of these rules. For instance Kachwee and Hartmann (2013) has revealed that the storeroom for all medication at the hospital is located directly below the out-patient dispensary (OPD), hence access for staff is gained through the pharmacy into the storeroom. It should be noted that at this point the storeroom has an open-door policy for all pharmacy and store room staff without mandatory security checks. This is due to the nonexistence of security strategies and resources (personnel and equipment), and non-adherence to established standard operating procedures (SOP). Furthermore Kachwee and Hartmann (2013) revealed that within the storeroom there is a packing department which repacks bulk volumes of medication into smaller quantities for dispensing purposes. An accuracy level of $\pm 75\%$ existed in this process.

In addition to that, inventory received from the MSD is manually relabeled by the store manager with a felt tipped pen since the original label is illegible when placed on higher shelving. A considerable amount of inaccuracy exists due to the vast amount of boxes which require relabeling and the monotony of the process itself. Appendix A shows an illustration of a human error where a 500 mg dosage medication was relabeled as 1000 mg (1 g displayed in the appendix); meaning

the inappropriate item may be distributed to the user. The occurrence of this situation may create control risk within the organisation and that impact negatively to supply chain sustainability lack of control mergers and inaccurate operation.

2.3.3 Risk management structure

The steps for establishing a risk management structure that can be utilized by an organisation are as follows:

Map supply network

This step includes building a structure of various participants in supply chain, identifying relationships, key measures and ownership. According to Young (2006: 9) the factors that can be identified as the participants in supply chain management are process, people, systems, strategy and external environment

Identify risk

Young (2014) stated that risk identification refers to the need for an organisation to define and understand the nature of the risk that it faces. Evaluate whether significant risk exists within the network, and whether existing risk management practices are identifying and managing it. This involves building a cross functional team of subject matter experts, the team that will work together to define organisational risk related to various financial, strategic, hazard and operational areas. Among the various risks identified the ones that are relevant to manufacturing and supply chain operations can then be filtered down and dealt with by the appropriate persons.

Assess risk

Young (2014) mention that risk assessment aim at measuring the potential frequency and severity of the exposures that have been identified. Build a risk map based upon probability of occurrence and loss severity. This can be a subjective assessment leading to a list of top ten risks within the organisation.

Manage risk

According to Grotsh, Blome and Schelper (2013:2842) managing risks include building an integrated supply chain process map that will assist the organisation in developing a systematic approach to mitigating risk and increasing compliance level. For each repeatable risk, an organisation needs to build an impact map indicating where risk is causing primary disruption. Another aspect that can be utilized to manage risk is to develop models to estimate the probability of risk taking place and the number of events expected as well as building models that can be utilized to assess monetary loss at impact points lastly emphasizing high impact points as well as developing various scenarios.

Implement actions

This includes building a risk mitigation strategy for repeatable risks at high impact points and setting up early warning signals. Implementation of actions further promotes preparation of contingency plan for non-repeatable risk and putting a regular risk review mechanism in place. It is important for an organisation to have some risk awareness campaign such as quarterly operation monitoring and evaluation projects, half yearly review or annual review.

2.3.4 Risk mitigation and contingency tools

Mitigation is a windbreak against risk built into operations and therefore, lack of mitigation procedures is a risk in itself. According to Xiong, Yu and Cao, (2015) contingency is the existence of a prepared plan and the identification of resources that can be mobilized in the event of risk being identified.

The following tools, models and techniques can be utilized to mitigate risk

1. Supply Chain Operations Reference model
2. Balanced scorecard
3. Performance measurement and management
4. Stakeholder relationship management
5. Monitoring and evaluation

1. SCOR model

The application of SCOR model within the organisation can contribute to mitigation of risk through ensuring that the organisation operates in an effective and efficient manner. Furthermore this can lead to an effective evaluation of risk to supply chain sustainability within the organisation. According to Zhou, Benton, Schilling, Millingan, (2011:332) SCOR model focuses on supply chain management function from an operational process perspective and includes customer interactions, physical transactions and market interaction. The SCOR model is a process reference model that has been developed and endorsed by the Supply Chain Council (2003) as a cross-industry standard diagnostic tool for supply chain management. The SCOR-model has been developed to describe the organisation's activities associated with all phases of satisfying end-user's demand, therefore the SCOR model is the technique that is utilized by the organisation to monitor and evaluate the operation process and sustainability. SCOR model enables users to address, improve and communicate SCM practices within an organisation and between all interested parties. With reference to the Supply Chain Council (2003:7) the objectives of the SCOR process are to plan, source, make, deliver and return. Pretorius, Ruthven and Leipzig (2013:18) mention that SCOR model offers the following benefit to an organisation's supply chain sustainability.

The benefits of the SCOR model are as follows:

1. Provides a structured approach and practical methodology for supply chain process improvements. This contribute to compliance management and further assist in maintaining supply chain sustainability within the institution
2. Provides a common language to share operational views, and communicate changes or definitions of processes. According to the findings from the interviews conducted it has been noted that there is a lack of communication, therefore utilization of SCOR model within the organisation can assist in creating an effective communication environment. So far KZN Health department is keeping communication alive through the use of circulars and seminars conducted as part of training

3. Provides a set of common, easy to understand terminology, process building blocks with definitions and performance metrics. This includes the provision of performance assessment and management of human capital in order to provide better services delivery and to follow all the necessary processes and procedures that will contribute to mitigating risk to supply chain sustainability in an organisation. It has been found that KZN Health Head Office in connection with KZN Provincial Treasury assist the officials from the institutions in developing compliance and governance through the utilization of consultants in order to gain more knowledge in supply chain management operation.
4. SCOR model offers organisations insights and suggestions on best practices to build a project portfolio for improvement.

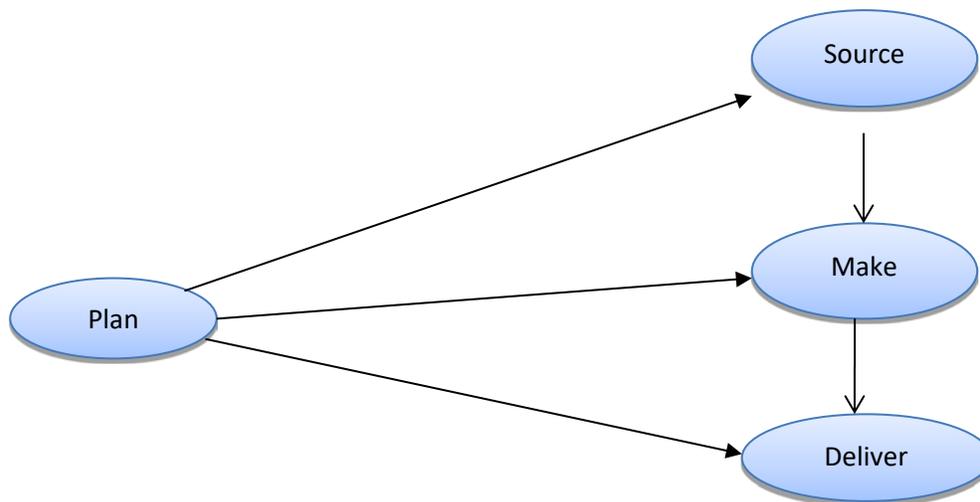


Figure 2.2: Supply Chain Operation Reference model

Source: Adapted from An evaluation of process-oriented supply chain management (Supply Chain Council 2010, p. 7)

Figure 2.2 illustrates the interaction during operations in an organisation. The SCOR process positively influences interactions between the various aspects of an organisation, this include the sourcing process, the production process, and the delivery process (Zhou et al., 2011:335). Furthermore, according to Slack, Chambers and Johnston (2010:357) the smooth functioning of the sourcing process effectively influences and ensures better service delivery and operation

management as a well-oiled manufacturing process, which in turn creates a good relationship and effective collaboration between the organisation's stakeholders. The hospital is dealing with people's life and some of the items that they procure are critical and need to be delivered at the right time in a right quality and quantity. This is why the quotation documents that are utilized by the hospitals have the section for delivery period and the description of an item. In that case the implementation of a highly efficient "just in time" production process is also beneficial in the application of a SCOR model, having a JIT production process within the organisation means that service delivery will ultimately be effective (Rios-Mercado and Rios-Solis, 2011: 3). In a large health institutions like Inkosi Albert Luthuli Central Hospital, the JIT approach is a vital aspect because the hospital is dealing with matters of life and death and cannot afford any delays. The SCOR model can contribute to the evaluation of risks posed to an institution's level of service delivery and also to supply chain sustainability. For instance in a case where hospitals procure substances, equipment or any medical sundries, the utilization of the SCOR model can contribute to maintaining supply chain sustainability and can enable these institutions to evaluate risks that could harm the smooth flow of the process, mitigating operational risk by improving the performance level of the resources that are required to develop compliance within the hospital.

2. Balanced Scorecard

Balanced scorecard is one of the tools and techniques that can assist the organisation in evaluating their supply chain sustainability. Therefore it can also assist in mitigating risk to supply chain sustainability that can occur within the organisation. According to Rohm, Wilsely, Perry and Montgomery (2013: 12) balanced scorecard theory is inconsistent because it presents managers with a scorecard that gives them no score, and therefore has no single-valued measure on how they have performed. Hence managers evaluated on such a system have no way to make careful and determined decisions. Kaplan (2010: 23) argues that the balanced scorecard concept was initially designed for the private sector, but it was later extended to non-profit and public sector enterprises (NPSEs). Previously the performance reports of NPSEs focused only on financial measures such as budgets, funds appropriated, donations, expenditures and operating expense ratios. However the performance of NPSEs cannot be measured by financial indicators alone; their success has to be measured through their effectiveness in providing benefits to constituents. The balanced scorecard

model assists NPSEs to conduct a comprehensible assessment of non-financial measures to assess their performance based on the extent that their constituents are satisfied (Rohm, et.al. 2013).

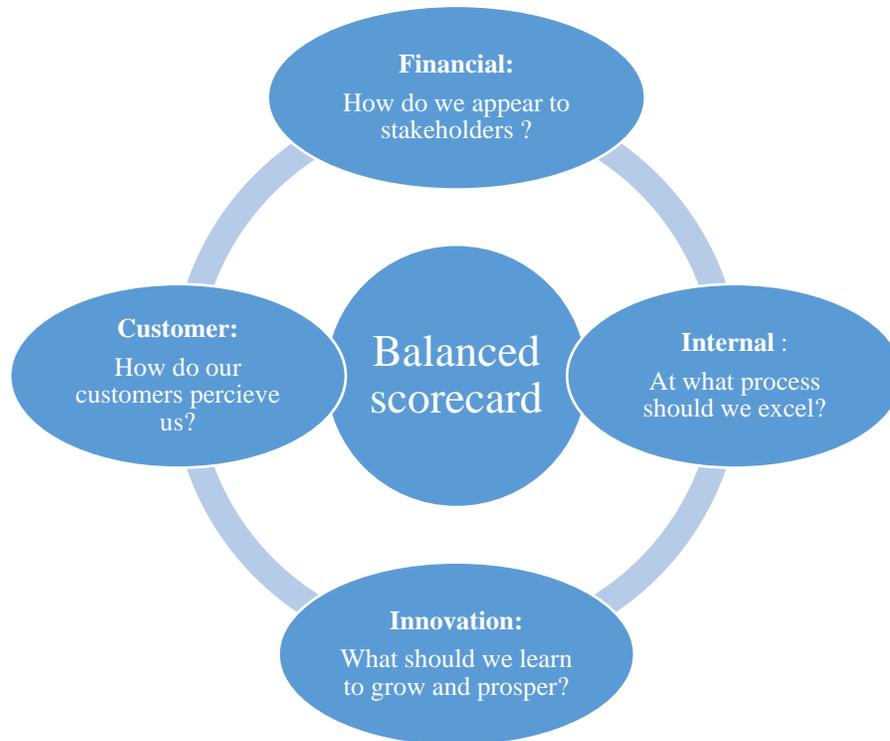


Figure 2.3: Balanced scorecard

Source: Adapted from Handbook of management accounting research. Volume 3 (Kaplan, 2010 p. 23)

Figure 2.3 illustrates the productivity measurement in an organisation through taking into account four factors of a balanced scorecard, namely financial achievements, internal processes, innovative development and customer satisfaction. These factors help in identifying and evaluating the operation of an organisation. Compliance issues and risks that affect supply chain sustainability can be evaluated by the use of balanced scorecard, inserting factors that are appropriate to the chain management operations system. In the case of a public hospital balanced score card can be linked to the utilization of five pillars of Supply chain management namely fair, equitable, transparent, competitive and cost effective according to section 217 of the Constitution of the Republic of South Africa. Therefore the financial achievement can be matched with the value for

money or cost effective and competitive. Internal processes innovative development need to be fair and equitable and lastly they should be transparent in order to maintain customer satisfaction, therefore this can contribute to supply chain sustainability and mitigation of risk.

3. Performance measurement and management

According to Bowersox et al (2010: 414), supply chain management executives need to develop their skills and capabilities to operate effectively and developing the right skills and knowledge can enhance not only supply chain performance but also an organisation's performance as a whole. Miguel and Brito (2011: 56) also highlight the importance of measuring performance, noting that the balanced scorecard model can be utilized in this regard. Brown, Blackmon, Cousins and Maylor, (2001: 161) describe performance management as being associated with skills and capabilities in five areas namely functional skills, technical leadership, global (overall) management as well as experience and credibility, this will assist the employees in exercising the principles of Batho pele within the workplace. In relation to Inkosi Albert Luthuli Central Hospital, this institution has outsourced expertise, placing the hospital in the middle-ground of being both a public and a private entity, so that performance management can be measured both in terms of success in commercial/ finance terms, and also in terms of delivery of a service to end-users. The department can take into consideration the use of SCM Master Learning Curriculum in order to develop the skills and knowledge of its own employees without having to outsource staff. This in an essence can lead to better service delivery and evaluation of risk to supply chain sustainability. Stadtler and Kilger (2008: 49) mention that having a mapped supply chain process in place is very important. This is because it assists in assigning or delegating the measures that will enable the involvement of SCM to evaluate process and policies, institute changes and assess the performance of a complete supply chain as well as that of an individual process or person. According to Brown, Lamming, Bessant and Jones, (2000: 159) the aim of operation management is not to measure the value of an item but to find the most relevant metrics. This can further contribute to evaluating the potential risk events that could affect supply chain sustainability in an organisation. Health institutions are compelled to provide a better service to the community, therefore, in order to ensure, financial, performance and compliance management within the government sector, policies, procedures and to mitigate possible risks that could affect their operations, they need to

encourage performance management and measurement of various facets within the organization. Furthermore the Financial Management Capacity Maturity Model (FMCMM) can be utilized as a tool to evaluate government operation. This can be done for instance via the departmental Employment Performance and Management and Development System (EPMDS).

4. Stakeholder relationship management (SRM)

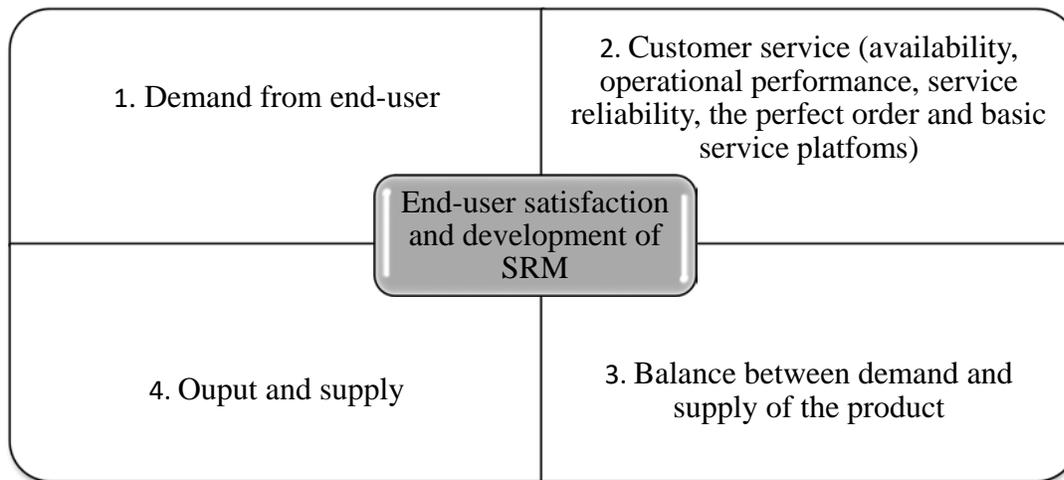


Figure 2.4- Stakeholder relationship management (SRM)

Source: Adapted from Supply chain logistics management (Bowersox et al. 2010 p.52)

Figure 2.4 above illustrates the process of obtaining a competitive advantage through the creation of a system called stakeholder relationship management (SRM) and thereby ensuring stakeholder's satisfaction. According to Bowersox et al. (2010: 52), the concept of Stakeholder Relationship Management (SRM) can be used by many organisations in describing their efforts to more effectively accommodate the needs and requirements of individual stakeholders within the organisation. Dekkers, (2003) stated that this also creates a balance between demand and supply of the product and finally leads to effective output and supply processes. All these aspects can be achieved through the involvement of a proper capacity-building team with stakeholders that possess strong relationship with management during the whole operating process in the health institution. This can lead to highly sustainable supply chain and greater stakeholder satisfaction. In a Community Health Centre (CHC) or hospital setting, to increase the sense of involvement of

all stakeholders the following should be ensured: demand from the end-user should be made clearly visible, leading to an effective end-user service that includes availability (of medication, medical services etc.), operational performance should be optimal (speed, consistency, flexibility, and malfunction recovery); and service should be highly reliable from admissions, to medical procedures, to keeping the premises clean and hygienic, to follow-ups. In this way the process of supply chain management is better protected from risk and due to the ongoing input from stakeholders and feedback to stakeholders, the supply chain and the operation of CHC or hospital as a whole remains highly sustainable.

5. Monitoring and evaluation

According to Brown, Blackmon, Cousins, and Maylor, (2001) the concept of monitoring and evaluation is a continuous function that practices a methodical gathering of information based on specific indicators to offer management and main stakeholders a means of ongoing oversight and intervention where needed. Monitoring and evaluation ensure that through accurate indicators, the extent to which objectives are being met or otherwise can be easily ascertained, and progress through the use of allocated funds can be measured. Stadler and Kilger (2010: 289) stated that supply chain evaluation is structured according to functional areas of supply chain organisation which includes executive management, the information technology function, suppliers as well as customers. This study offers an insight and an indication of the areas that need intervention within the organisation in order to create compliance that could lead to maintenance of supply chain sustainability therefore monitoring and evaluation plays an important role in the operation of an organisation.

2.3.5 Supply chain sustainability

Bowersox et al (2010:406) noted that a sustainable supply chain reflects an organisation's ability to plan for, mitigate, detect, respond to and recover from likely risks. Furthermore according to Zailani, et al. (2012: 330) supply chain sustainability entails the management of environmental, social and economic impacts (these could be termed risks or challenges) and the encouragement of good governance practices throughout the lifecycle of goods and services. The main aim of supply chain sustainability is to develop, secure and grow a long-term system of delivery of goods and services that responds to and respects environmental, social and economic contexts whereby all stakeholders are involved in rendering a better service as well as a quality product. With reference to the concept of supply chain sustainability (SCS) a fundamental focus is to ensure compliance and adherence to the policies and procedures of governance through supporting principles for sustainable working conditions. In the process of maintaining SCS Sisco, Chorn and Pruzan-Jorgensen (2010:2) mentioned seven steps that need to be taken into consideration by any organisation during its operations process: initiating supply chain sustainability ; establishing sustainability expectations for the supply chain; determining the scope of the sustainable supply chain, engaging with the suppliers, determining the roles and responsibilities of stakeholders, industry collaboration and multi-stakeholders partnerships; and lastly establishing goals, as well as tracking and communicating performance.

2.3.5.1 Practical steps in supply chain sustainability

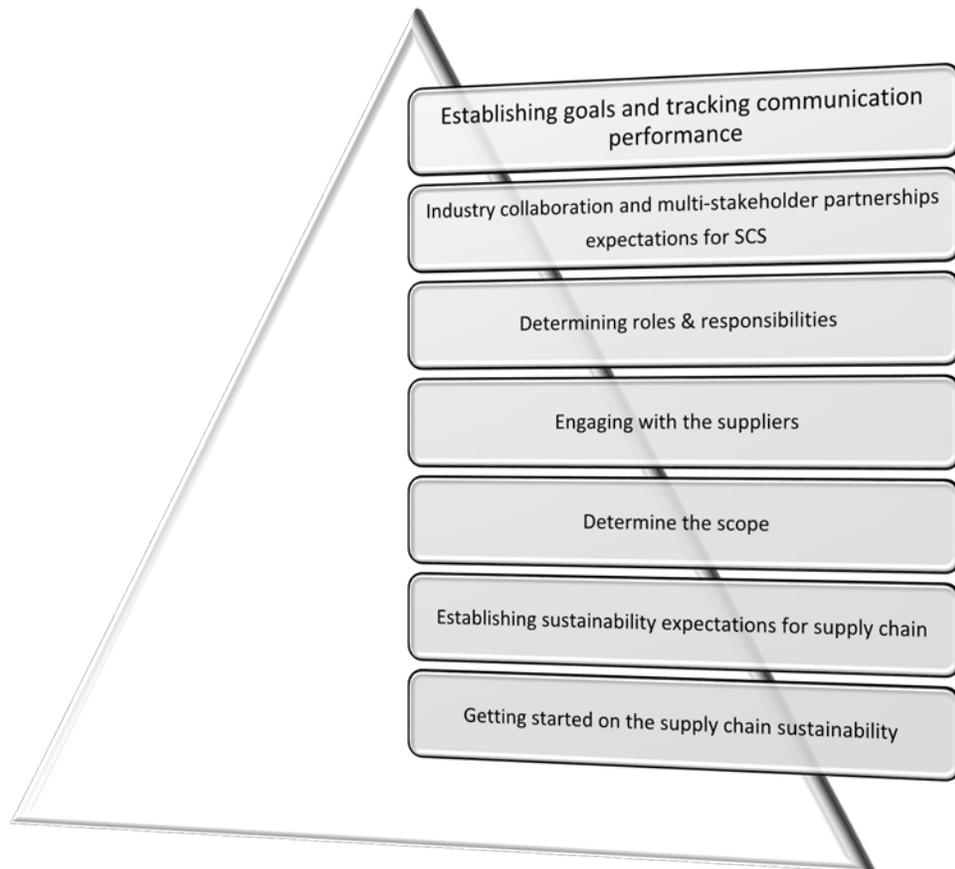


Figure 2.5: Practical steps in supply chain sustainability

Source: Adapted from Supply chain sustainability: A practical guide for continuous improvement (Sisco, Chorn and Pruzan-Jorgensen 2010 p.2)

1. Initiating supply chain sustainability

Initiating supply chain sustainability includes identifying the gaps through evaluating and measuring performance within the organisation and finding the loopholes that should be covered in order to maintain sustainability (Sisco, et al, 2010). Furthermore before proposing any strategy an organisation needs to know the exact nature of any gap identified, in order to plan health institution setting, this means being aware of the problem areas such as the timeous delivery of vital medicines or the cleaning of hospital wards to avoid infections.

2. Establishing sustainability expectations for supply chain

This step includes setting the procedures that should be followed in order to maintain supply chain sustainability and determining what is expected of supply chain management operation in order for it to be compliant with those expectations (Sisco, et al, 2010). In a health institution perspective this includes the policies and proper procedure that guides the procurement of an item or service.

3. Determining the scope

This step requires an organisation to evaluate the possibilities; the event that may take place (negative or positive events), as well as the benefits and risks that can emerge from these possibilities and events (Sisco, et al, 2010). These factors all contribute to determining the scope needed to be taken into account in supply chain sustainability. For example, a CHC or hospital would need to study the environment in which they operate on in order to identify any possible risk such as sudden unavailability of funding.

4. Engaging with the suppliers

According to Blanco and Cottrill (2012:9) engaging with the suppliers is based on building a buyer-supplier relationship and promoting communication. This creates an interaction between the organisation and the supplier, leading to a creation of balance between demand and supply which further contributes to supply chain sustainability. A close and positive relationship with suppliers is essential as CHC's and hospitals frequently need urgent assistance from specialists, manufactures of equipment etc.

5. Determining roles and responsibilities

Househam and Bombis (2015: 51) stated that supply chain sustainability strategies need to be integrated and closely coordinated with the organisational strategies that could affect supply chains. Supply chain management entails different sections that build-up the whole SCM component; therefore this step includes determining the roles and responsibility for each and every section that will contribute to supply chain sustainability. The KwaZulu-Natal Health Department has the following four main sections acquisition (quotation), demand, contact management as well as asset and disposal management. Within these sections there are roles and responsibilities that are essential in order to maintain supply chain sustainability.

6. Industry collaboration and multi-stakeholder partnerships expectation for SCS

With reference to Sisco, et al, 2010 communication among all stakeholders of an organisation is vital in the operation process because it creates a customer and supplier relationship. Good interaction between an organisation's stakeholders contribute to JIT delivery of an item or rendering of a service and this therefore leads to better service delivery and sustainable supply chain management. Other health care providers, clinics and hospitals (public or private) can collaborate with health institution, and in addition stakeholders within that institution also need to work collaboratively to ensure the provision of the best possible services for end-users (patients), which in turn depends on a sustainable supply chain to provide items and service effectively and efficiently to the hospital staff and when they need them

7. Establishing goals and tracking communication performance.

The final step in creating a sustainable supply chain according to Sisco, et al, 2010 is to establish the goals that are required to be reached in order for the organisation to be able to track performance. This is undertaken to find out whether the organisation's supply chain sustainability is being maintained. Supply chain sustainability within the organisation leads to an increase in compliance levels and to the mitigation of risk. In the context of a health institution this ensures that the highest standard and compliancy are maintained at all times with minimal waste.

2.4 Conclusion

This chapter included a discussion of the theoretical synopsis of various key scholars concerning the core subject matter of this study namely supply chain management, supply chain risk as well as supply sustainability. The theoretical synopsis from various theorist was presented in a tabular format which outline the theorist's views concerning the stated concepts. In reviewing the subject matter through the vision of the theorists, this chapter also took into consideration relevance of these viewpoints in terms of the current study. The various understandings of the subject matter were compared in a tabular format in order to draw out approaches that will underpin the discussion in the upcoming chapters. Theoretical review has assisted in presenting existing information on SCM, SCRM and SCS as well as generating new understandings on the primary subject matter under review through drawing out and combining various aspects of theories presented. Integrated literature review highlighted that successful organisations are the ones that break the risk spiral and restore supply chain confidence throughout the SC. The benefits are much more than cost reduction alone, but also include increased orderliness in the entire operation process, which leads to an increase in the level of sustainability as it has been covered in risk mitigation and contingency section above. Integrated literature review indicated that public sector supply chain management operates with policies and regulations that are created by the government. It is therefore important to adhere to the governing procedure and policies in order to remain complaint and maintain supply chain sustainability. This chapter has discussed various SCS tools, models and techniques such as the SCOR model, balanced scorecard, performance measurement and management, as well as monitoring and evaluation to mitigate supply chain risk. Effective combination of these aspects can contribute to being able to engage in accurate and timely evaluation of the risks that may affect supply chain sustainability. The following chapter will reveal the process of procuring an item or service in the public sector according to the policies and procedures stipulated and required by the Republic of South African public sector operation. The aim of this is to fulfil the objectives of the study and answer the critical research questions.

CHAPTER THREE

THE SOUTH AFRICAN PUBLIC SECTOR SUPPLY CHAIN MANAGEMENT OPERATION

3.1 Introduction

The previous chapter has presented the integrated review framework concerning the subject matter that is being studied in this research. It has increased the knowledge and the level of understanding supply chain management and its implications, of which it has also assisted on being able to apply it to the operation of public sector supply chain management in the Republic of South African health institutions. With reference to Chapter Two where Bowersox et al (2010) highlighted the importance of building stakeholder relationships, this can assist supply chain officials and enable them to increase the level of communication and interaction within the organisation or industry. The ultimate aim of this would be to improve the balance between demand and supply. In the government or public sector there are stipulated processes and procedures that need to be followed. Supply chain management officials as well as finance officials also have to work in line with these policies. Nienaber, (2007: 72) highlighted that it is important for those working in any part of the supply chain to understand and know when and how to apply these policies during the procurement process. The government and public sectors strongly concerned with compliance in their working procedure as they are bounded by laws and regulations. This chapter will also highlight the operation of PPP/3P which stands for Public-Private Partnership because the study site is that of an institution which falls under the PPP ambit. In general a public-private partnership (PPP, 3P or P3) is a government service or private organisation undertaking that is financed and operated through a corporation of government and one or more private sector enterprises. Yescombe (2011: 3) states that PPP is defined as a long-term contract between the public sector and the private sector.

3.2 Public sector supply chain management

Supply chain management (SCM) is one of the key mechanisms enabling government to implement policy. According to the Public Sector Supply Chain Management Review (2015) of the National Treasury, it is well known that public sector SCM in South Africa is imperfect; there are persistent allegations of corruptions and inefficiency, while service delivery protests are a sign that people feel that they are not receiving the quantity and quality of service they need. An efficient and intelligent public sectors SCM system can assist to overcome these problems. Du Toit and Vlok¹, (2014) mentioned that unsatisfactory service delivery leads to the creation of risk such as economic and social risk due to the rise of unrest and the accompanying destruction of property together with the decline in provision of essential services, as well as environmental risk due to lack of compliance with policies and procedures.

The Department of Health deals with critical factors because it concerns people's wellness and healthy living. Therefore risk in the context of the Department of Health does not only affects supply chain management but also the community at large, and the country as a whole. It is important for employees in this sector understand and adhere to the policies and regulations of operation within the government industry. According to McConnell (2010) public policy-making aims to ensure that public sector organisations are successful in achieving their goals; Mueller (2003) and Hindmoor (2006) further noted that coherent choice to theoretical approaches are the core of public sector management processes.

3.3 Public-Private Partnership (PPP, 3P or P3)

Grimsey and Lewis (2004) stated that Hospitals are one area where private participation at a number of levels can be achieved and where PPPs involving the construction and management of public hospitals can introduce innovative ways to control costs and improve service within existing health systems. Table 3.1 list the options for private sector involvement from outsourcing arrangement at the one end, to privatization by sale at the other end, with a variety of PPP approaches in between.

Table 3.1 Options for private participation in Hospitals

Option	Private sector responsibility	Public sector responsibility
Outsourcing non-clinical support services	Provides nonclinical services (cleaning, catering, laundry, security, building maintenance) and employs staff for these services.	Provides all clinical services (and staff) and hospital management.
Outsourcing clinical support services	Provides clinical support services such as radiology and laboratory services	Manages hospital and provides clinical services
Outsourcing specialized clinical services	Provides specialized clinical services (such as lithotripsy) or routine procedures (cataract removal)	Manages hospital; and provides most clinical services
Co-location of private wing within or beside the public hospital	Operate private wing (for private patients). May provide only accommodation services or clinical services as well.	Manages public hospital for public patients and contracts with private wing for sharing joint costs, staff and equipment.
Private lease and management of a public hospital	Manages public hospital under contract with government or public insurance fund and provides clinical and non-clinical services. May employ all staff. May also be responsible for new capital investment, depending on terms of contract.	Contracts with private firm for provision of public hospital services, pays private operators for services provided and monitors as well as regulates services and contract compliance

Private construction, financing and leaseback of a new public hospital	Constructs finances and owns a new public hospital and lease it back to government.	Manages hospital and makes phased lease payments to private developer.
Private construction, financing and operation of a new public hospital	Constructs finances and operates a new public hospital and provides non-clinical or clinical services or both	Reimburses operator annually for capital costs and recurrent costs for services provided
Sale of public hospital as a going concern	Purchase facility and continues to operate it as public hospital under contract	Pays operator for clinical services and monitors and regulates services and contract compliance.

Source: Adapted from Public hospitals- Options for Reform through public-Private Partnerships (Tylor and Blair, 2002 p. 241)

There have nevertheless been some assessments attempted on the general issues of PPPs which provide clues on relative performance and likely public benefits to date (Hodge and Greve, 2007: 232).

3.4 Supply Chain Management operation procedure for Health Institutions

In the context of health institutions, SCM operation procedures include the following aspects: first, the Constitution of the Republic of South Africa with its five pillars of supply chain management that it must be - fair, competitive, equitable, cost effective and transparent. In addition, SCM operations in health institutions are governed by the Public Finance Management Act (PFMA, act 1, 1999) , Treasury Regulation 16A (2007), Provincial Practice Notes, and Interim Delegations (February 2006). According to KwaZulu-Natal Department of Health Annual Report (2012) the main aim of implementing Departmental Procurement Policy (DPP) is to offer guidance with regard to the operation of the Supply Chain Management System (SCMS). This assists in evaluating and mitigating possible risks that may occur during departmental service delivery and further prevents negative impacts on supply chain sustainability. According to Jacobs, Berry,

Whybark, and Vollmann, (2011: 243) in order to maintain compliance within the organisation specific process must be followed, this include planning and controlling implementation within the organisation. Figure 3.1 below indicates the public sector SCM process which must be adhere to and it has various levels of legislation concerning public sector operation. During the course of this process, an organisation should be able to evaluate any risk that may arise and affect supply chain sustainability and its operation (Adendorff and De Wit 1997:38). The government supply chain management is also operating under the policies such as Infrastructure Delivery Management System (IDMS), Designated Sectors as well as Local Content.

South African government have introduced the following Act that should govern the supply chain management therefore the departments of health also operate under these acts and regulation in order to mitigate risk and non-compliant issues that may arise within the organisation. Section 3.4.1 provides the objectives of each and every act that is taken into account in supply chain management processes. These acts each portray its own unique important and should be part of the SCM processes and procedures in order to maintain compliance, mitigate risk and increase the existence of supply chain sustainability within the organisation.

3.4.1 Acts

Administrative Adjudication of Road Traffic Offences Act 46 of 1998: this act contribute on promoting road traffic quality by providing for a scheme to discourage road traffic contraventions, to facilitate the adjudication of road traffic infringements, to support the prosecution of offences in terms of the national and provincial laws relating to road traffic, and implement a points demerit system; to provide for the establishment of an agency to administer the scheme; to provide for the establishment of a board to represent the agency; and to provide for matters connected therewith. This act should be taken into consideration in the evaluation of risk related to supply chain sustainability because there are types of risk that are rooted from the supply i.e. supply risk. Basically what is happening on the road create the risks that could affect supply chain sustainability. Therefore this act comes in hand to assist in supporting such issues.

Armaments Corporation of South Africa, Limited Act 51 of 2003: To provide for the continued existence of the Armaments Corporation of South Africa, Limited; to provide for the functions, accountability and finances of the Corporation; and to provide for matters connected therewith.

Broad-based Black Economic Empowerment Act 53 of 2003 (BBBEEA): South Africa's first democratic government was elected in 1994, the main focus of this was to redress the inequalities of the past in every sphere: political, social and economic. Since then, government has embarked on a comprehensive programme to provide a legislative framework for the transformation of South Africa's economy. In 2003, the Broad-Based Black Economic Empowerment (B-BBEE) Strategy was published as a precursor to the B-BBEE Act, No. 53 of 2003. The fundamental objective of the Act is to advance economic transformation and enhance the economic participation of black people in the South African economy. This act is important in the procurement policies and procedures because it forms part of the qualities that are needed by the supplier in order to engage in business with the public entity, therefore the public officials need to understand the operation of this act in greater details

Construction Industry Development Board Act 38 of 2000 (CIDBA): This Act include the provision for the establishment of the Construction Industry Development Board; to implement an integrated strategy for the reconstruction, growth and development of the construction industry and to provide for matters connected therewith. This act is also one of the important act that the suppliers need to take into consideration in order to do business with the government departments.

Disaster Management Act 57 of 2002: To provide for an integrated and co-ordinated disaster management policy that focuses on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters and post-disaster recovery; the establishment of national, provincial and municipal disaster management centres; disaster management volunteers; and matters incidental thereto. This act make provision for the environmental risk that can occur within the health institutions.

Financial Management of Parliament Act 10 of 2009: This regulate the financial management of Parliament in a manner consistent with its status in terms of the Constitution; to ensure that all

revenue, expenditure, assets and liabilities of Parliament are managed efficiently, effectively and transparently; to provide for the responsibilities of persons entrusted with financial management in Parliament; to provide financial management norms and standards for provincial legislatures; and to provide for matters connected therewith. The regulations as well as the policies and procedure such as section 217 of the Constitution of the republic of South Africa are populated and linked to this act.

Health Professions Act 56 of 1974: the objective of this act is to establish the Health Professions Council of South Africa and professional boards; that will also contribute to provide for control over the education, training and registration for training as well as practising of health professions registered under this Act; and to provide for matters incidental thereto. In this case the service delivery supply chain management will be maintained.

Housing Act 107 of 1997: To provide for the facilitation of a sustainable housing development process; for this purpose to lay down general principles applicable to housing development in all spheres of government, to define the functions of national, provincial and local governments in respect of housing development and to provide for the establishment of a South African Housing Development Board, the continued existence of provincial boards under the name of provincial housing development boards and the financing of national housing programmes; to repeal certain laws; and to provide for matters connected therewith. Provision for proper housing to the citizens of South Africa will contribute to healthy living of the people and also reduce the number of people living in informal settlement because they can be easily infected with different disease. An increase in a number of people who are getting sick contribute to uncertainty of demand for health care that need provision therefore, making it hard to balance demand and supply. This can further create risks to supply chain sustainability.

Information Technology Agency Act 88 of 1998: This Act aims to provide for the formation of an organisation that is going to deliver information technology, information systems and associated services to, or on behalf of, involvement departments and with regard to these services, serves as an agent of the South African Government; and to provide for matters connected therewith. This

regulates the adherence to the public sector SCM policies that needs to be taken into consideration in order to develop compliance within the public sectors. This therefore contributes to management of risk and also to supply chain sustainability development. In order to ensure or to evaluate the sustainability of SCM within the public sector this Act should be made available and should be understood by the officials of the organisation or department.

Local Government: Municipal Finance Management Act 56 of 2003 (MFMA): This act aims to secure sound and sustainable management of the financial affairs of municipalities and other institutions in the local sphere of government; to establish treasury norms and standards for the local sphere of government; as well as to provide for matters connected therewith. In other words the municipalities should work closely with the department in order to assist them in maintaining the service delivery standard of its people.

Local Government: Municipal Systems Act 32 of 2000 (Systems Act): To provide for the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic development of local communities, and ensure universal access to essential services that are affordable to all; to define the legal nature of a municipality as including the local community within the municipal area, working in partnership with the municipality's political and administrative structures; to provide for the manner in which municipal powers and functions are exercised and performed; to provide for community participation; to establish a simple and enabling framework for the core processes of planning, performance management, resource mobilisation and organisational change which underpin the notion of developmental local government; to provide a framework for local public administration and human resource development; to empower the poor and ensure that municipalities put in place service tariffs and credit control policies that take their needs into account by providing a framework for the provision of services, service delivery agreements and municipal service districts; to provide for credit control and debt collection; to establish a framework for support, monitoring and standard setting by other spheres of government in order to progressively build local government into an efficient, frontline development agency capable of integrating the activities of all spheres of government for the overall social and economic development of

communities in harmony with their local natural environment; to provide for legal matters pertaining to local government; and to provide for matters incidental thereto. The municipalities can contribute through building enough health care centres in order to avoid over-population of patients in certain hospitals because it can affect the balance between demand and supply within the supply chain management operation.

National Land Transport Act 5 of 2009: This Act aims at providing the process of transformation and restructuring the national land transport system initiated by the National Land Transport Transition Act, 2000 (Act No. 22 of 2000); and to provide for matters connected therewith.

National Supplies Procurement Act 89 of 1970: The purposes for which this power could be exercised ranged from the prevention or suppression of terrorism or internal disorder to operations in defence of the Republic parliament passed the National Supplies Procurement Act 89 of 1970. In terms of Section 3 of the act, the minister of Economic Affairs, whenever they deemed it necessary or expedient for the security of the republic of the republic, could order person capable of supplying, manufacturing or producing goods or services to supply, deliver or sell such goods or services to the minister (Growland-Debbas, 2004:429).

Nursing Act 33 of 2005: the objective of this act is to regulate the nursing profession; and to provide for matters connected therewith. Be it enacted by the Parliament of the Republic of South Africa. The nurses within the institution are part of the human capital therefore performance measurement and management as well as the stakeholders relationship are part of the risk mitigation and contingency aspects. Furthermore other items or services are requested by the nurse's staff therefore good communication and collaboration is so important in order to mitigate demand risk within the organisation. The Nursing Act assist in regulating the nursing profession in that case that will raise an awareness on how perform at work i.e. expressing their demands.

Preferential Procurement Policy Framework Act 5 of 2000 (PPPFA): The objective of PPPFA is to give effect to section 217 (3) of the Constitution by providing a framework for the

implementation of the procurement policy contemplated in section 217 (2) of the Constitution; and to provide for matters connected therewith.

Prevention and Combating of Corrupt Activities Act 12 of 2004 (Corruption Act): The main aim of this Act is to provide for the strengthening of measures, to prevent and combat corruption and corrupt activities; to provide for the offence of corruption and offences relating to corrupt activities; to provide for investigative measures in respect of corruption and related corrupt activities; to provide for the establishment and endorsement of a Register in order to place certain restrictions on persons and enterprises convicted of corrupt activities relating to tenders and contracts; to place a duty on certain persons holding a position of authority to report certain corrupt transactions; to provide for extraterritorial jurisdiction in respect of the offence of corruption and offences relating to corrupt activities; and to provide for matters in relation to corruption.

Promotion of Access to Information Act 2 of 2000 (PAIA): To give effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights; and to provide for matters connected therewith.

Promotion of Administrative Justice Act 3 of 2000 (PAJA): The Promotion of Administrative Justice Act, 2000 (Act 3 of 2000) (PAJA), ensures procedurally fair administrative actions, giving people the right to request reasons for administrative actions and decisions and to have such actions reviewed in court. Reviewing the ability of the Public Service to implement the PAJA provides useful insight into the extent to which human rights are currently being protected and promoted. In order to develop a longer-term implementation strategy, insight into the effectiveness of previous efforts to promote implementation of the PAJA in the Public Service and in civil society is required.

Public Audit Act 25 of 2004: The Public Audit Act gives effect to the provisions of the Constitution establishing and assigning functions to an Auditor-General; to provide for the auditing of institutions in the public sector, to provide for accountability arrangements of the

Auditor-General; to repeal certain obsolete legislation; and to provide for matters connected therewith. This in an essence regulates the process of monitoring and evaluation that is conducted within the institution which identifies the risk or the event that could harm the organisation's supply chain sustainability. It is the responsibility of an organisation to conduct a pre-audit in order to keep their supply chain sustainability in line.

Public Finance Management Act 1 of 1999 (PFMA): The objective of PFMA is to regulate financial management in the national government and provincial governments; to ensure that all revenue, expenditure, assets and liabilities of the governments are managed efficiently and effectively. It also assists to provide for the responsibilities of persons entrusted with financial management in those governments; and to provide for matters connected therewith.

Road Traffic Management Corporation Act 20 of 1999: To provide, in the public interest, for co-operative and co-ordinated strategic planning, regulation, facilitation and law enforcement in respect of road traffic matters by the national, provincial and local spheres of government; to regulate the contracting out of road transport services; to provide for the phasing of private investment in road traffic; to that end, to provide for the establishment of the Road Traffic Management Corporation; and to provide for connected matters.

State Tender Board Act 86 of 1968 (STBA): According to STBA the main objective is to provide for the regulation of the procurement of supplies and services for, the disposal of movable property of, and the hiring or letting of anything or the acquisition or granting of any right for or on behalf of, the State and to that end to establish a State Tender Board. It also assist to provide for the establishment of regional tender boards and to define their functions; and to provide for incidental matters.

3.4.2 Regulations

The regulations that govern the public sector supply chain management are derived from the acts that have been stipulated above. The regulations are as follows:

- PFMA SCM Treasury Regulations;
- MFMA SCM Regulations;
- Preferential Procurement Regulations and
- DTI (Department of Trade and Industry) provisions for local procurement designations, which promote trading from the South African locally, produced items.

3.5 Public sector (KwaZulu-Natal Department of Health) procurement in the public health sector

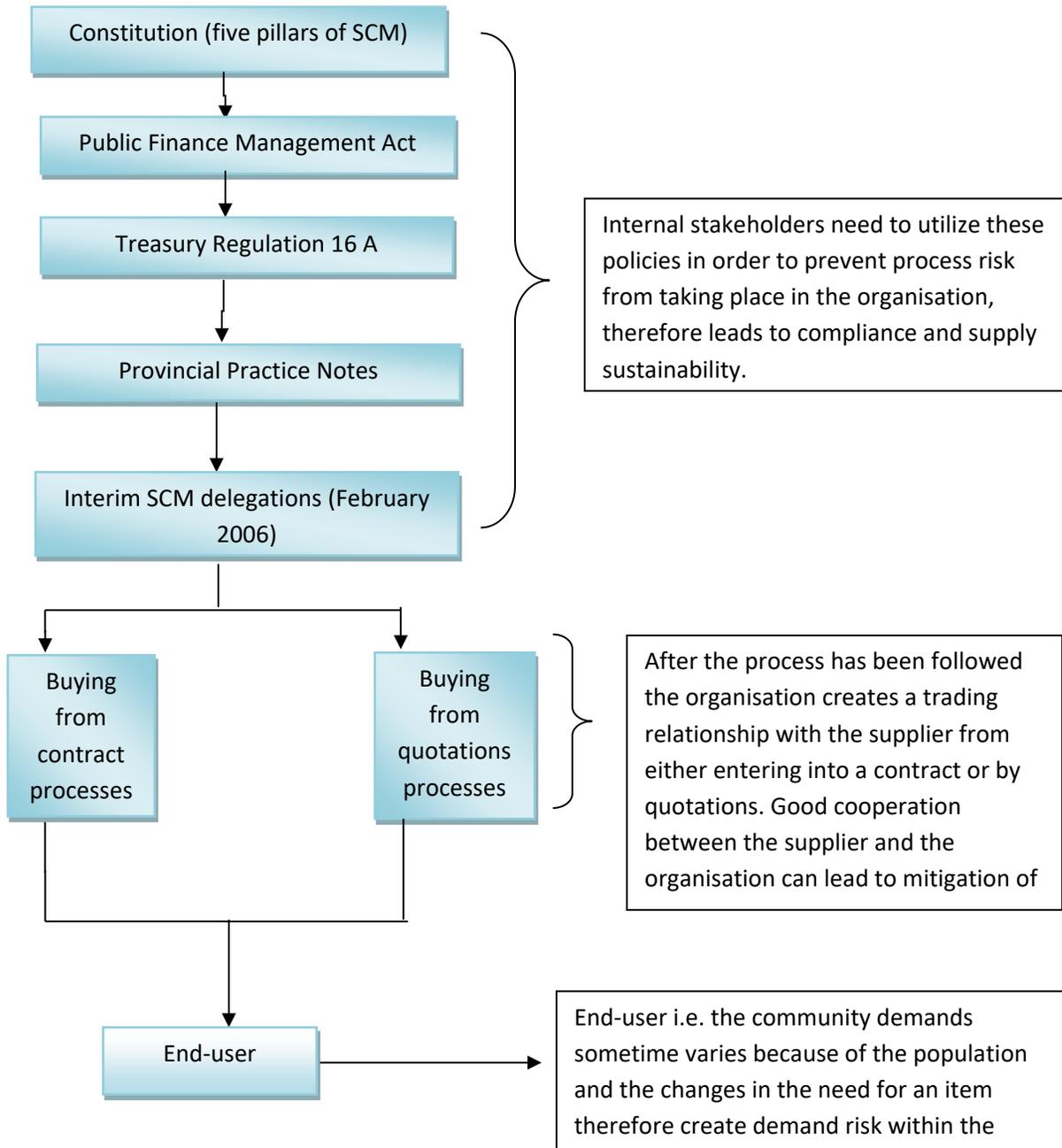


Figure 3.1: Public SCM Process

Source: KwaZulu-Natal Department of Health Annual Report (2012) and Researcher's compilation

3.5.1 The Constitution of the Republic of South Africa

According to the Constitution of the Republic of South Africa (No. 108 of 1996) Section 217 compresses with the elementary constitutional requirements of public procurement. Section 33 further stipulates the requirements for constitutionally lawful governmental accomplishment and therefore the grounds on which governmental action may be revised by the courts. Section 195 sets out the constitutional values for the country's public government. The Constitution of the Republic of South Africa (No. 108 of 1996) offers provision for the use of supply chain management in governmental or public sector and emphasizes adherence to five specific pillars which aims to assist in the procurement processes as well as in operations management that further leads to better service delivery. The Constitution of South Africa (As adopted on 8 May 1996 and amended on 11 October 1996 by the Constitutional Assembly) Chapter 13: Section 217 guides officials in the department on the procurement of goods and services stating directly that it should conduct these operations in a manner that is "fair, equitable, competitive, transparent and cost-effective"

The five pillars of supply chain management are outlined as followed

1. Value for money

In short this pillar highlights that it is not necessarily the tender with the lowest price that is going to win the bid. If the lowest price means an inferior product then the organisation's Evaluation Committee must search for a better product. Ensure that, when considering a tender, the product or the service offer is good value for money.

2. Open and effective competition

Government departments need to take into account that everyone should be granted a reasonable opportunity to participate in tenders, and to this end, procurement procedures must be transparent and fully understandable while bias should be avoided as far as possible.

3. Ethics and Fair Dealing

Ethics and fair dealing emphasizes that government officials must conduct themselves properly without compromising their integrity. When conducting tender evaluations they must not accept bribes or gifts from potential suppliers.

4. Accountability and Reporting

Accountability and reporting have two parts; the first one is that the potential supplier must be able to account for their actions and plans, ensuring that good reporting methods are built into their bid. Secondly the government departments must report to their superiors and must be held accountable for their procurement actions.

5. Equity

The purpose of the fifth pillar is to promote business with Previously Disadvantaged Individuals (PDI's). Small, Medium and Micro Enterprises (SMMEs) together with PDIs must be encouraged to play a more significant part in developing a larger South African economy. The procurement policy of a government department or public sectors organisations should thus have equity as a central feature in the procurement process.

3.5.2 The Public Finance Management Act

The Public Finance Management Act (PFMA) 01. (1999) is an important piece of legislation approved by the first democratic government in South Africa. The PFMA (1999) provides regulation governing procurement procedures within the supply chain management components in the public sector. Hence the five pillars laid out in the Constitution of the Republic of South Africa (No. 108 of 1996) are reaffirmed, and the authority of National Treasury to intervene in order to ensure adherence to these pillars is emphasized. Section 38 (1) (a) (iii) of the act makes it clear that it is the responsibility of “the accounting officer/ authority of a department, trading entity or constitutional institution to have and maintain an appropriate procurement and supply system which is fair, equitable, transparent, competitive and cost effective.”

3.5.3 Treasury regulations

According to Section 76 (4) (c) of the PFMA (1999), “the National Treasury may make regulations or issue instructions applicable to all institutions to which this Act applies, concerning the determining of a framework for an appropriate supply chain management system which is fair, equitable, transparent, competitive and cost effective.” Hence, Treasury regulations indicated in the Treasury’s PFMA Section 16A.6, that procurement through a tender or contract must follow regulations which are explained in more details below. As mentioned, Section 38 (1) (a) of the PFMA (1999) gives “the accounting officer/ authority of a department, trading entity or constitutional institution” the responsibility for ensuring that the five pillars are upheld via having in place a procurement and supply system. Where applicable, Provincial Treasuries must set complementary standards within the parameters as set by National Government. These standards may not jeopardize national objectives. In addition, a Provincial Treasury can issue a Practice Note to provide guidance and support to their various departments in the implementation of supply chain management. Therefore internal stakeholders which are the employees should ensure that the policies and procedures are taken into consideration because they serve as the guidelines for compliancy and mitigation of risk. The incorrect application of policies and procedures can lead to the creation of process risk.

3.5.4 Provincial Practice Note

The function of a Provincial Practice Note is to assist in establishing or instructing the department or organisation to establish or adjust procedures, operation and the regulations, including those pertaining to SCM, to ensure service delivery within the department. The Provincial Practice Note addresses all newly determined practices to be instituted at departmental level.

3.5.5 Interim SCM delegations

To support desired supply chain management prescripts, the implementation of an official system of Supply Chain Management from 1 February 2006 brought fundamental changes to the procurement process in government. The objective was to create a more efficient and effective system of procurement, and to place full procurement authority and accountability with the

departmental accounting officer. Various levels of authority have been clearly distinguished to ensure a clear understanding of what responsibility each level has regarding the procurement of goods and services as well as to facilitate decision making by the accounting officer. Interim Delegations (February 2006) further states the following levels:

- 1. Level one** R0.01 TO R1 500.00 inclusive of VAT at this level all personnel involved in the procurement of goods and services conditions/control measures can be held accountable for procurement and contract.
- 2. Level two** R1 500.01 to R200 000.00 including VAT. At this level responsibilities and accountabilities lies with a limited group of personnel.
- 3. Level three** exceeding R200 000.01 including VAT. At this level the procurement of goods and services is the responsibility of the Head Office in the Directorate of SCM unit.

3.5.6 Procurement process (contract or quotations)

The diagram above indicates that the various layers of regulatory procedure come together at this point to formulate an actual process to be followed. According to the Treasury's regulations, PFMA Section 16A.6 (2001:56) states that the procurement of an item or service by means of a quotation or bidding process where an institution creates a contract should be within the threshold principles as determined by National Treasury. In the case of a bidding process, the Treasury rules state that an institution is compelled to follow proper procedure in creating a long-term contract or an ad-hoc contract. This mitigates the risk of incurring irregular expenditure, as well as fruitless and wasteful expenditure. The aim of stressing these prescripts is to promote departmental compliance and clean audit records. The same applies to procurement through obtaining quotations. The following steps contribute to capacity development within the supply chain sustainability and are also the procedure of procurement via quotation:

1. Obtaining a requisition from the end-user requesting the item or service.
2. Drafting of proper and clear specification document.
3. Approval of specification by the Specification Committee.

4. Approval of funds by the Cash Flow Committee.
5. If the funds are available the item can be advertised and quotations can be invited for the item or service required.
6. In cases where the samples are required, the institution should advertise a quotes taking into account the following processes:
 - 6.1 It should be stated on the quotation as well as the advert that the samples would be requested from the suppliers that meet the specifications and are shortlisted as per the evaluation criteria.
 - 6.2 Failure to provide such samples when requested will lead to automatic disqualification. A register showing which companies have submitted their samples must be included in the ZNQ files where applicable.
 - 6.3 Samples received should be evaluated by the End-User and/ technical evaluation to specification.
 - 6.4 The approved product technical evaluation forms should be used for this purpose.
 - 6.5 Clear, concise and complete reasoning must be well documented in the technical evaluation forms.
 - 6.6 Where samples were required, the Quotation Adjudication Committee should consider the result of the completed technical evaluation forms when deciding to award.
- 7 In case of an item amounting to over R30 000 but less than R200 000, the item should be advertised in Government Tender Bulletin (GTB) for 21 days; items costing less than R30 000 should be advertised for five days. The institution is compelled to obtain three quotations if not advertising on the GTB. The suppliers are required to submit all necessary documents in order to qualify for the advertised bid, including proof of their status regards BBBEE/ submit Sworn Affidavit from commissioner of oaths and Tax Clearance Certificates. They must also be registered on the Central Supplier Database (CSD).
- 8 After the closing date, the tender may be studied and quotation documents are stamped, numbered, signed off by two officials and be recorded according to their prices as stated by the suppliers.

- 9 Then the documentation is studied by the Evaluation Committee. This is where the verifying and selection of qualifying quotes take place.
- 10 The process then proceeds to the Adjudication Committee to ensure that the Evaluation Committee has selected the right supplier to do the job.
- 11 If the quote was above R30 000 the identity of the awarded supplier needs to be advertised again. If no appeal is lodged at this stage, then the process moves to the placement of an order and to processing payment within 30 days.
- 12 This transaction will therefore appear on Basic Accounting System (BAS) for a specific financial year

3.5.7 Other type of procurement

There are some procurement of items or services within the health institution that does not comply with all the policies and procedures of the SCM. Non-compliance contribute to the creation of process risk and control risk of which that affect the SCS. However the department have developed some means to mitigate those risk through the introduction of deviation expenditure. Deviation expenditure is the exception of procuring an item or a service even though the institution may not comply with other policies and procedures. The deviation expenditures are divided into two sets namely there is the one that is approved by the Chief Financial Officer (CFO) and the other one is according to the Annual General Exemption drafted by the office of the chief procurement officer. These types of deviations set out the terms and conditions that need to followed if not it will be regarded as irregular therefore lead to non-compliance and of which it has a negative impact to supply chain sustainability. The deviation caters for the transactions that have the following aspects:

1. Fixed plant maintenance: Repairs falling outside the institution's artisan expertise but they need to write a motivation stating that they require outside expertise or the

company is the original manufacture of the item so they are authorized to repair the item

2. Difficult to obtain three quotations (provided that the market have been tested i.e. advertised on GTT) - if not advertised on GTT, need to request authority from CFO.
3. Single Source/ Sole proprietary- the company need to attach a letter proving that they are the sole supplier of the specified product and they are authorized to supply the required accessories for the item.
4. Specialized items or medical implants as well as servicing from the original manufacturer- all these needs a motivation letter to be attached.

There are other services that an institution does not need to follow SCM processes, they just need to pay for the order provided that the supplier is legally registered and the evaluation and the adjudication committee meet and approves as well as all the necessary documents are available. In case of a long-term contract a Service Level Agreement (SLA) or Lease Agreement for leased item such as photocopying machines and containers, should be signed indicating that the awarded supplier and the health institution are entering into a bidding contract for a certain specific period of time. Those services are from Telkom, Eskom, Municipality, National School of Government, South African Blood Services, South African Qualification Authority, National Pharmacy Council and many other services that department uses.

Beside these exemption and procedures that have been stipulated the institution is still required to follow the other normal process of procuring an item or service that are stated in section 4.5.6 above on procurement process (quotation or contract). The instructions Notes stipulates the norms and standards that an institution need to take into consideration in order to maintain SCM capacity maturity model.

3.5.8 End-user

The final category indicated in the public sector organisation supply chain process is indicated as being the end-user. An end-user is the person for whom the item or the service was ultimately created or intended. From the SCM perspective, the main objective of a health institution is to balance demand and supply in order to provide better service delivery. Cachon and Terwiesch (2006: 101) mentioned that for end-users, one of the most visible and probably annoying forms of supply and demand mismatches is the waiting time they have to endure. In the case of health institutions most of the item or services that are purchased are patient-related and their life could depend on obtaining the item or service at the required time and in the needed quantity especially in the case of medical and surgical items. According to Wisner, Tan and Leong, (2015) waiting time is the main concern of the end-user, supply chain management must be enabled to be as efficient and effective as possible, but bearing in mind the large volumes of orders as well as the requirement to take into consideration the policies and procedures that need to followed, it is clear that an organisation may fail to comply to service delivery due to Just-in-time management system and pressure from the end-user.

3.6 Main Contributors to irregular expenditure

The following aspects are identified as the contributors to irregular expenditure that causes non-compliance in an institution and further leads to risk that can affect supply chain sustainability. These aspect were identified by the KwaZulu-Natal Department of Health taking into consideration the operation of an institution.

3.6.1 Procurement and Contract Management

1. Awards to person in service of the institution and other state institutions;
2. Awards to close family members of person in service of the institution;
3. Combating the abuse of the SCM system and follow up of previous reports, complaints and allegation.

3.6.2 Procurement needs and economy

1. Procurement of goods and services through means other than Departmental contracts;
2. Procurement on major projects without proper needs assessment in a form of project evaluation; and
3. Appointment of consultants for which the necessary skills were available or the Accounting Officer had enough time to recruit and train people with the time available.

3.6.3 Procurement process and deviations

1. Incurred expenditure related to Public Private Partnership entered into without prior written approval of the relevant Treasury;
2. Procurement of goods and services without following SCM processes and delegations and the deviations were not approved by the delegated person;
3. Splitting of orders to avoid complying with the requirement of SCM policy and Legislation
4. Final acceptance of quotation not done by a delegated official or committees;
5. Procurement of bids above R200 000.00 not procured by means of competitive bidding process and the deviation not approved by the Accounting Officer or delegated person in accordance with SCM Policy;
6. Approval of deviation from competitive bidding on basis of it being an emergency, even though immediate action was not necessary or sufficient time was available for bidding process/ from sole supplier even though other suitable suppliers are available on the market;
7. Calling for quotation without following delegated amounts; and
8. Deviation from competitive bidding process for above R1million not reported to relevant treasury or the AGSA within 10 working days.

3.6.4 Bid specification and documentation

1. Bid specification drafted on a biased manner which did not allow all potential suppliers to offer their goods and services

3.6.5 Inviting and receiving of quotations and bids

Advertising for a period shorter than prescribed and the deviation not approved in accordance with the SCM prescripts;

1. Tenders/Bids 21 Days (Head Office)
2. Quotations 5 Days (Institutions)
3. Approval of advertising for a shorter period even though it was not an urgent cases;
4. Invitation for bid not advertised in the Government Tender Bulletin; and
5. Contracts awarded to bidder whose bids were received after the closing date and time in question.

3.6.6 Evaluation and adjudication committees

1. Final award to the Accounting Officer not always made by the quorum of bid committees in accordance with the SCM policy and delegated powers; and
2. Award a bid to a supplier that is not recommended by the Adjudication committee and the Deviation not approved.
3. KZN Department of Health Standard Operating Procedures 07 July 2016.

3.6.7 General Evaluation

1. Evaluation criteria applied in evaluation quotation or bid differ from those indicated in the original request for quotation or bid documentation; and
2. Awards made to suppliers who did not have valid tax clearance from SARS.

3.6.8 Evaluation- Preference points and functionality

1. Preference of points not applied in the procurement above R30 000.00 VAT incl.;
2. Evaluation criteria applied in evaluation for functionality, price and or preference points not stipulated in the request for quotation;
3. Allocation and calculation of preference points not correctly done in accordance with the requirements of PPPFA and PPR. The non-compliance resulted in the award to the incorrect price quotation bid; and
4. Awards made to quotation of bid not scoring the highest points. An objective criterion was not used to justify that reasonable grounds existed not to select the quotation with the highest points.

3.6.9 Construction Contracts

1. Construction contracts awarded to contractors who are not registered with the construction Industry Development Board (CIDB);
2. Construction contracts awarded to contractor whose CIDB grading is not suitable for the value of contract; and
3. Construction contracts awarded to contractors who are not registered in the class of construction works that the projects relate to.

3.6.10 Contract and Contract Management

1. Contract amendments and extension without approval by the delegated official;
2. Payment made to suppliers in excess of the approval or quoted amounts;
3. Goods and services supplied/ delivered without a written signed contract;
4. Contracts in conflicts with the general conditions of contract as issued by national treasury;

5. Performance of contracts not monitored to ensure that they comply with the specific goal;
and
6. No action taken against the supplier who failed to perform up to the standard agreed upon
in the contract.

3.6.11 IT related goods and services

IT goods and services procured from suppliers who are not registered SITA list of prospective suppliers;

Department procured IT related services which are classified as mandatory through other means either than SITA;

A contract for IT related goods and services awarded to a bidder other than the one recommended without justification; and

Amended existing or purchased new computerized system that affects financial administration without obtaining written approval from National Treasury.

Uninvited bids

Uninvited bids accepted without a business case being established by a comprehensive and relevant project feasibility study;

Uninvited bids accepted and awarded to bidders who did not have tax clearance from SARS confirming that their tax matters are in order; and

Uninvited bids accepted for goods and services which are generally available from other.

3.7 General Directives and the standard operating procedures (SOP) for KwaZulu-Natal Department of Health.

Department of Health (DOH) is committed to maintaining the highest possible standards of internal control and complying with all applicable laws and legislation in order to mitigate risk to supply chain sustainability. In all of its operations, DOH seeks to maintain structure, sound internal controls, and accurate financial reporting therefore the Department have developed a section that deals with the monitoring and evaluation as well as SCM risk and performance management (Technical Support Services- TSS).

Scope

According to the Standard Operating Procedures (2016:4) the policies and regulations applies to all DOH workforce personnel, unless an exemption is noted and approved in writing by the Chief Financial Officer (CFO). Workforce is defined to include all employees, temporary employees, trainees, and other persons whose conduct, in the performance of work for DOH, is under DOH's direct control.

Purpose

The purpose the Standard Operating Procedure (2016) is to provide comprehensive steps to be considered in order to identify occurrences when goods and services have been procured in a manner that does not comply with the applicable rules and legislation and has resulted in irregular expenditure.

Responsibility

At district and institutional level, it is the responsibility of the Deputy Director: District M&E Finance, Finance Director, and Acting Finance Manager (where applicable) and Head of Supply Chain Management to ensure that the procedures stipulated on the SOP are performed in a required manner effectively and efficiency.

At Head Office level, it is the responsibility of the Chief Director: Supply Chain Management, the Director: Demand Management, the Director: Acquisition Management and the Head of Quotation

to ensure that the procedures stipulated on the SOP are performed in a required manner effectively and efficiency.

It is the responsibility of every employee of the Department of Health to report any identified or suspected case of irregular expenditure to the Supply Chain Manager of the relevant institution in order to avoid the audit queries and being classified as a non-complying department because this may result in the increase of risk to supply chain sustainability within the department as a whole.

3.8 Conclusion

Public sector organisation operates in terms of policies and procedures. The procurement process for public and private sectors are different because the former is expected to adhere to higher levels of accountability since it is funded by the taxpayer, while it also often under greater pressure to deliver service which are essential to people basic needs and rights. If a certain stage in procurement is omitted, the process will be non-compliant and this leads to irregular expenditures. An increase of irregular expenditure in an organisation portrays an incompetent image and also affects supply chain sustainability therefore creating risks to service delivery and audit queries. It is very important for internal stakeholders i.e. human capital to ensure that they adhere to these steps in order to increase procurement compliance in an organisation and to mitigate the creation of process risks that can be referred to as corruption and inaccurate service provision.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

According to Walliman (2011) a study's research methodology indicates the tools and techniques that were utilized to conduct a study. Walliman (2011) further states that research is a term used for any kind of exploration that intends to discover significant or new realities. The purpose of this chapter is to describe and discuss the methodology design of the present study. It demonstrates how the research questions are being structured in relation to the research methodology that was selected. This chapter determines the research process which includes generation, collection and analysis of data. The specific areas that the research intends to evaluate are also highlighted and discussed in this chapter. Furthermore, it also states the limitations and ethical considerations that need to be taken into account during the research process.

4.2 Nature of the study

The nature of this research is an exploratory study because it aims to explore and evaluate the risk to supply chain sustainability in an organisation, in other words the study examines the supply chain risk roots looking at the internal and external drivers. According Gravetter and Forzano, (2012), an exploratory study is a research that provides an in-depth explanation of the concept of risk and supply chain sustainability that are being studied as well as those aspects associated with supply chain sustainability which enables the SC to function effectively in an organisation. Exploratory research, as the name implies, intends merely to explore the research questions and does not intend to offer final and conclusive solutions to existing problems. With reference to this study risks can never be finished instead they can be mitigated this is why the nature of this study is an exploratory. This type of research is usually conducted to study a problem that has not been clearly defined yet. The research method assists in answering the research questions which were stated in Chapter One of this study. The research intends to employ a qualitative methodology. According to Given (2008), qualitative research approach is utilized to ascertain new phenomena

and to capture an individual's thoughts and feelings, as well as to get clarification of meaning and process.

Harper and Thompson, (2012) noted that qualitative research embraces a wide range explanations of qualitative factual and thoughtful processes rather than working toward conclusions such as quantifying the size or magnitude of an item or phenomena. Gummesson, (2000: 1) further states that qualitative methodology provides a helpful tool for research in management and organisation-related subjects, including general management, leadership, marketing, corporate strategy as well as accounting. It is clear that a qualitative research approach is the appropriate method for the present study which deals with supply chain management, supply chain risk and supply chain sustainability.

4.3 Qualitative data

According to Wilson, (2010: 254) qualitative data is very much exploratory in nature and there is a likelihood that large amounts of information, may be gathered, to the extent that there may be confusion as to what to include and what to discard from the information collected. Hahn (2008) also mentioned that qualitative data is gathered through communication and interaction. Therefore the illustrations of qualitative data are interviews notes, records of focus groups, open ended questionnaires answers, observation and news articles. Sekeran and Bougie (2010) pointed out that qualitative data is collected from an extensive diversity of primary and secondary sources, and that the analysis of this large extent of data aims to draw conclusions and clarify the implications of these conclusions. This study collected data through the use of qualitative methods where the purpose was to obtain in-depth information concerning the SC in a health institution, and its associated risks and to analyze the content of obtained data in order to reach conclusions about risk roots and means to ensure supply chain sustainability for the purpose of enhancing service delivery, increasing compliance level and resolving audit queries.

4.4 Source of data and Participants

The sources of data collected in this study are the white-collar employees who are involved in procurement services and the processing of orders up to the point of payment. The participants in

this research are people from the management strata because they are the ones who are involved in managerial roles including oversight of the supply chain. SCS is in the hands of managers and they are in a position of mitigating risks and break the risk spiral. Blue-collar workers are excluded because they have little or no knowledge of the concept of supply chain sustainability (SCS); nor do they have the authority or responsibility according to policies and procedures, to control the SC. Managers targeted for interviews are financial managers, finance practitioners, supply chain managers, supply chain supervisors and supply chain management champions. The research also includes additional interviews conducted during the observation and evaluation of transactions made by the institution during the procurement process.

Data was collected using figure 4.1 below.

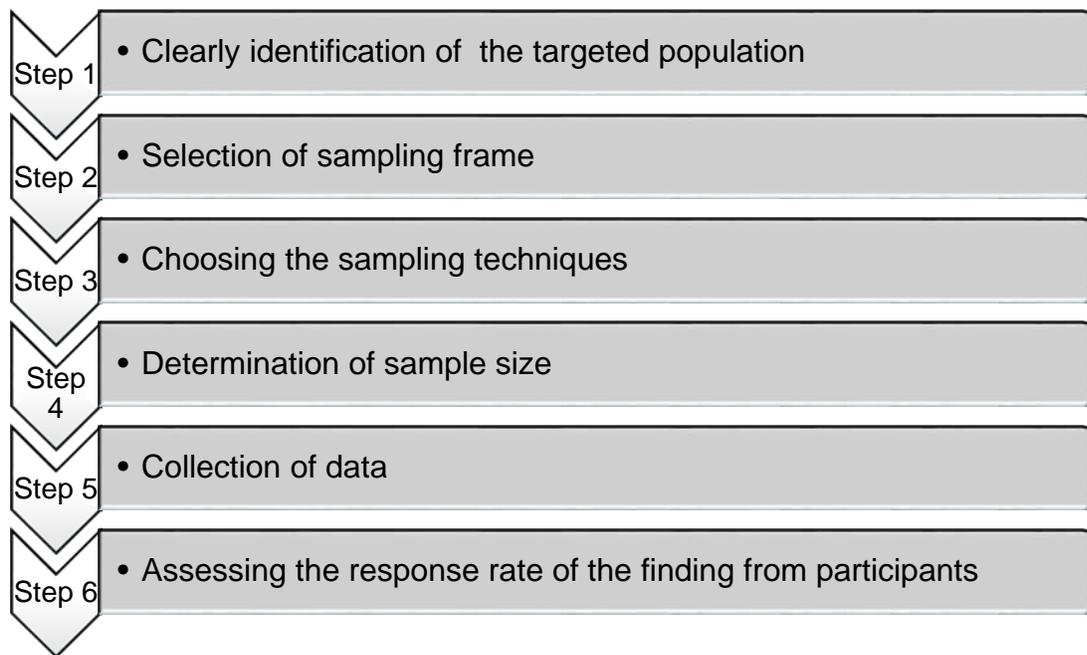


Figure 4.1- Steps to be followed during the study process.

Source: Adapted from Essentials of business research: A guide to doing your research project, (Wilson 2010, p. 190).

Figure 4.1 illustrates the steps to be followed during the study or research process with regard to the sample. The first step in the sampling process is to clearly identify the targeted population.

Wilson, (2010) stated that identifying the targeted population is not always straightforward; therefore it is helpful to ensure that step remains governed by the research questions and the perspective of the study. The target population was identified taking into consideration the research question that need to be answered and the problem statement that need to be resolved by the study.

The second step is the selection of the sample frame. According to Creswell (2007: 158) a sample frame is a list of tangible circumstances from which the sample will be drawn from; therefore the sample frame needs to be inclusive of the targeted population, but at the same time it exclude potential sources that fall outside the targeted population. Wilson, (2010) mentioned that the central feature of a sample frame is to consider the population or organisation that can be allocated to that frame.

The third step is choosing the sampling techniques. According to Creswell (2007: 158) sampling techniques can be separated into two types, namely probability or random sampling and non-probability or non-random sampling. Probability sampling includes simple random, stratified random, clustered, systematic, and multi-stage sampling while non-probability sampling includes quota, snowball, judgmental, and convenience sampling. The study selected judgmental which is used to deliberately select from particular settings, persons or events in order to provide important information that cannot be obtained from other sources. This is because the study requires important information from direct participants that are involved in the day to day handling of the supply chain management in order to create supply chain sustainability.

The fourth step is to determine the sample size. This is the point at which the researcher regulates how large the sample size is required to be in order to attain adequate data for the research. According to the studied subject matter the sample size selected provides an in-depth information on the evaluation of risk to supply chain sustainability. The sample size selected also assisted in obtaining the required data and to answer the research questions as well as fulfilling the objectives of the study.

The fifth step is the collection of data. After the identification of the target population, sampling frame, sampling techniques as well as the sample size the subsequent step is to begin data

collection. In this study, primary data was collected through interviews and observation. The secondary data was gathered through theoretical and integrated literature review.

The final step in the study process prior to analysis of data is assessing the response rate. According to Wilson, (2010) the response frequency is the number of circumstances of agreement to take part in the study. The assessment of the response rate was based on the number of responses obtained relative to the number of responses requested.

4.5 Sampling method

According to Sekeran, (2010: 261) sampling refers to the method of deciding on which individuals, objects or events are the most suitable and relevant as source of data in order for the entire population under the study to be best presented. Joseph, Babin, Money and Samouel, (2003) viewed sampling design as part of a basic organisational research process.

Joseph et al. (2003) further argue that prior to beginning with sampling, the researcher should answer the following questions:

1. Should a sample or a census be used?
2. If sampling should be used, then which sampling approach would be most suitable?
3. How large should the necessary sample be?

In answering the above question this research used a sample, since according to Joseph et al. (2003) the sample would enable the study to focus on a relatively small subset of the population. The targeted population consists of the managers from different functional areas of the health institution, specifically those concerned with SCM and financial management. The most appropriate sampling approach is non-probability sampling because, the approach is suited to case studies. In addition, as noted by Joseph et al., (2003) non-probability sampling is normally used in an exploratory phase of a study, and the present study is an exploratory in nature. This research used a small sample size since it would have logistically and financially impossible to collect data from the entire health institutions population in the KwaZulu-Natal Department of Health.

Furthermore, the present study employs the judgmental sampling method to select a sampling population that will be utilised to gather data.

4.6 Data generation method: Document analysis and observation

Data generation process includes the combination of relevant documents analysis that were useful in the research project together with data collected from conducting interviews and observation. Documents are an important source of primary data and are also utilized as part of data collection method in an exploratory research. The current study includes the issues that have been identified by the theorists and have been researched on. This further makes the primary data an initial source from which the researcher can obtain effective information that will enhance the research work. The data analysis is formed within the departmental as well as institutional documents and will be merged with the data gleaned from the interviews and observation conducted. This multiple research instrument approach is required to strengthen and validate the data collection process. Data was generated through document analysis and observation in relation to factors that are considered as part of the evaluation of risk to supply chain sustainability.

4.7 Data collection method

There are several data collection procedures available to researchers; hence it is essential that the researcher selects a data collection method that will enhance the validity and significance of the research study (Sekeran, 2010: 179).

The type of data collection method used is also subject to the facilities available to the researcher, the extent of the study, the cost of employing the method, the environment and the level of accuracy required. In this research, the methods that were employed are interviews and observation in health institutions i.e. Inkosi Albert Luthuli Central Hospital which is a common way of collecting data and involves asking open-ended questions to respondents. Interview is generally used in an exploratory study where new and comprehensive information is required. In this case the aim of the research is to evaluate the risk factors that affect supply chain sustainability in the KwaZulu-Natal Department of Health; and thus interviews are an effective mechanism for collecting the required data as well as observation and document analysis since this is an

exploratory study. Due to the fact that managers are sometimes too busy to agree to be interviewed the researcher also took into account the availability of various types of interviews like face-to-face, online, or telephonic interviews.

The other method of data collection selected for this study is to conduct an observation where data is collected through visiting the hospitals or health institution's supply chain management component to observe the working procedures and jot down some notes to enhance the studied matter.

4.7.1 Interviews

According to Joseph et al., (2003) an interview involves the researcher communicating with the respondent directly, asking questions and recording answers. They further mention that interviews are predominantly used in collecting data when studying complicated and specific matters as well as when open-ended questions are being used to collect data. With reference to the present study, risk roots to SCM are critical issues that affect an organisation's working standards and its sustainability, they are also complex issues. This indicates that the best way to conduct a research is to communicate directly with the human capital in supply chain and finance management in order to collect valid and accurate information. Ultimately, this allow for mitigation tools, techniques and models to be developed in line with the noted risks within the organisation.

Sekeran, (2010) stated that interviews are a highly mutual (two-sided) way of collecting data which involves posing of questions to respondents. Interviews can be classified into structured and unstructured interviews. According to Sekeran, (2010) an unstructured interview refers to a state where the researcher enter into the interviews without a planned sequence of questions that they want to ask the respondent. This type of interview aims to bring to the surface preliminary issues, so that the researcher can then determine what variables are required to be further asked about.

Structured interviews are conducted when the researcher has a set concept of what information is essential to be gained through interview (sekeran, 2010). This study has a set of structure questions for the interviews that are required to be asked during the interviewing process.

4.7.2 Observation

According to Joseph et al., (2003) observational data are collected by systematically recording observations of people, events or objects. The observational approach results in either narrative or numerical data. This can be in the form of a written or audio or audio-visually recording interpretation of behavior, while the latter involves a trained observer recording events using a structured questionnaire or a device that calculates or tracks activities. The present study observed people in their natural working environment, jotted down and taking pictures of important items in relation to the study, during the observation process of data collection.

4.8 Ethical considerations

There were a number of context-specific ethical considerations that were taken into account since the interviews were conducted in a health institution; and aside from this, there are further general ethical considerations that needed to be accommodated in any research context. According to Govender, (2007: 44) the basic principles of ethics in the research states that ethical responsibility rests in the hands of the researcher to protect participants from legal or any other harm that may occur after the research has been completed. Aspects such as discomfort must be addressed, while privacy must be guaranteed and assured to the participants. Seidman, (1998:49) argues that confidentiality and anonymity must be respected and maintained as far as the research can possibly be. Anonymity and confidentiality are assured in the present study.

Seidman (1998) explains that anonymity means that people remain nameless or are not forced to reveal themselves during the research process if they are not willing to be known. Anonymity protects the identity of specific individuals from being revealed, which is important in the present study, given that participants may have feared reprisals in the workplace, given that they were discussing challenges in performing their jobs in the SCM and financial fields. Confidentiality is built on trust between the researcher and the participant and when the participant responds to the researcher, he/she expects a measure of respect and trust concerning the sensitive nature of the data that is being collected. With reference to Neuman, 2006, permission must be given by the organisation as to whether the researcher may reveal their identity in the research or not. In addition, the organisation can demand to have oversight in checking that no false statements are being included

in the research before the research can come to any conclusion about the results obtained. Participant checking is also an important process whereby the interview transcripts were given to the participants for them to read and check the inaccuracies or misrepresentations of their viewpoint or experiences before data analysis began.

4.9 Data analysis method

This section explains the method that illustrates how the data obtained was analysed and interpreted. The type of data analysis that was used in this study is content analysis. Analysis based on data gleaned from interviews, observation, and the transcripts of focus groups.

Qualitative data is collected from a wide range of primary and secondary sources and the analysis of data is aimed at drawing up a conclusion on the outcome of the research study through answering the research questions and fulfilling objectives of the study. Bernard and Ryan, (2010) stated that qualitative analysis was conducted following the three accepted steps, namely data reduction, data display and data conclusions as indicated sequentially in figure 4.2 below. This process was followed by content analysis.



Figure 4.2 Three steps of qualitative analysis

Source: Adapted from Research methods for business: A skill-building approach (Sekeran, 2010).

4.9.1 Data reduction

Data reduction includes the process of selecting, coding, and classifying data. This study collected data in large amounts, making the first step which is reducing data in order to moderate. According to Sekeran (2010), coding refers to labels that are linked to each unit of the transcript. These units are later clustered together under their labels, which are then put into categories of grouped data.

A classification refers to a process of organizing, arranging and classifying the various code units. Classification allows the coded units that have been grouped into categories to have meaning attached to them. The study have conducted data reduction process through grouping similar responses from participants and calculating the number of participant that view and answered the question in a similar way. Furthermore after data has been reduced through categorizing similar data, it was displayed. Table 4.1 indicate how the study developed the coding and the categorization of data obtained. Content analysis indicated in table 4.1 assist in identifying the keywords and the similarities from the respondent during the analysis of the findings and literature review; therefore contribute to drawing a conclusion on the subject matter.

Content Analysis

Table: 4.1 Main coding differences between three approaches to content analysis

Types of content analysis	Study start with	Timing of defining coding or key words	Source of code or keywords
Conventional content	Observational	Codes are defined during data analysis	Codes are derived from data
Directed content analysis	Theory	Codes are defined before and during data analysis	Codes are derived from theory or relevant research findings
Summative content Analysis	Keywords	Keywords are defined before and during data analysis	Keywords are derived from the interests of researchers or from a review of literature

Source: Adapted from Three approaches to qualitative content analysis (Hsieh and Shannon 2005 p. 1277)

4.9.2 Data display

Data display is the second step in the qualitative analysis. According to Sekeran, (2010) this step refers to a researcher taking the reduced qualitative data and display it in a systematized and subscribed manner. This study has displayed data reduced in a tabular form, a graph as well as in discussion showing the division and the categories that were used in reducing data. This make it easier to analyse and interpret the findings from data collected.

4.9.3 Data conclusion

The final step of qualitative data analysis is concerned with drawing conclusions. Sekeran, (2010) mentions that this is the point at which a researcher answers the research questions through determining what the identification of emerging themes means for these questions, the integration of themes into a coherent picture, engaging with techniques for explaining identified configurations and connections in the data, and through providing distinctions and evaluations arising from the data. The study has taken into consideration the research questions, objectives and the problem statement in relation to the conceptual framework in order to draw a conclusion on the subject matter which is the evaluation of risk to supply chain sustainability.

4.10 Validity of the research

Validity is determined when the researcher examines how well the evaluation instruments indeed measured the concept which they aimed to measure (Sekeran, 2010). Trochim (2006), mentioned that the construct validity is approximately the true reflection toward the conclusion that is being studied and that the operationalization is based on. Furthermore this is initially a collaboration of two major types namely translation and criterion-related validity.

Trochim (2006) further elaborated that translation validity assist in assessing the extent of the operationalization whether it is a good reflection. This research includes examination of SCM processes and procedures and translation validity focus on face and content validity of which that is the content analysis. Secondly Trochim (2006) explain criterion-related validity as a type of validity that focus on the examination of the operationalization in which you check the performance against what supposed to be required. This includes predictive, concurrent,

convergent, and discriminant. The study has taken an initiative in assessing and evaluating the risk to supply chain sustainability through conducting interviews and observation in order to achieve validity.

4.11 Reliability of the research

The reliability of the research is determined when the researcher assesses how consistently a measuring tool measures the concept being studied (Sekaran, 2010). Reliability in this study thus refers to the extent to which a measuring tool is consistently employed and also reflects the stability of the measurement tool in itself. This means that tools and techniques used to gather information and the analysis of data obtained were consistent and led to an evaluation of risk to supply chain sustainability as stated by the research topic and the subject matter. The hospital official can increase their knowledge in SCM and risk management strategies through reading and understanding this study because it a reflection of what is happening in hospital's SCM. And they can be able to utilize the knowledge to assist them in increasing supply chain sustainability within the hospital.

4.12 Conclusion

In this chapter, an explanation of why the researcher intends to use the qualitative approach and how the research was conducted is provided. Data collection method was discussed in this chapter. The data collection methods that were selected are interviews as the main data collection method, while observation and document analysis were an additional method employed to strengthen and validate researched data. This chapter further included a discussion of ethical considerations and how to accommodate ethical issues during the research process including the ways of acknowledging and respecting the information source used for data collection. Lastly, the chapter presented an explanation of data analysis and how it was structured in order to make it valid and suitable to the purpose and the objectives of the research. In the next chapter, data collected during the empirical research will be presented as per the respondents from the interviews and observation.

CHAPTER FIVE

RESULTS AND DATA ANALYSIS

5.1 Introduction

This chapter presents the findings from the study conducted and also an analyses of the results obtained. In general, data analysis is the practice of giving order to the data, constructing a coherent summary of the information emerging from the data and determining the significance of the collected data to the study research questions and objectives. It is an ambiguous, creative, and challenging process, because it indicates the logic behind the studied research and determines the content of the study. Qualitative data analysis involves turning random items of data into codified unit which can then be grouped into categories, turning random categories into meaningful groups by classifying them and finally searching for broad-spectrum interactions among the various classifications of data. The collected information is displayed in this chapter in items of data, codified units and classified groups which lead to the emergence of research findings through analysis. The task of this study is to evaluate risk to supply chain sustainability and to this end data was collected through a qualitative approach which included interviews and observation. The results are presented through the display of a summary of interview transcripts from the participants, as shown in Table 6.2. Table 6.3 displays the data gleaned from conducting observation during the study.

5.2 Participants involvement

With reference to chapter five data presentation includes three steps namely data reduction, display as well as conclusion.

5.2.1 Sample composition

Lower level employees (Ward Clerks, SCM and Finance Officers, Interns)

Middle level employees (SCM and finance Supervisors)

Management level employees (Finance Manager and Systems Manager)

Table 5.1: Number of participants involved in the study

Employment levels	Participants numbers
Lower level employees (Ward Clerks, SCM and Finance Officers, Interns)	9
Middle level employees (SCM and finance Supervisors)	4
Management level employees (Finance Manager and Systems Manager)	2
Total number of participants	15

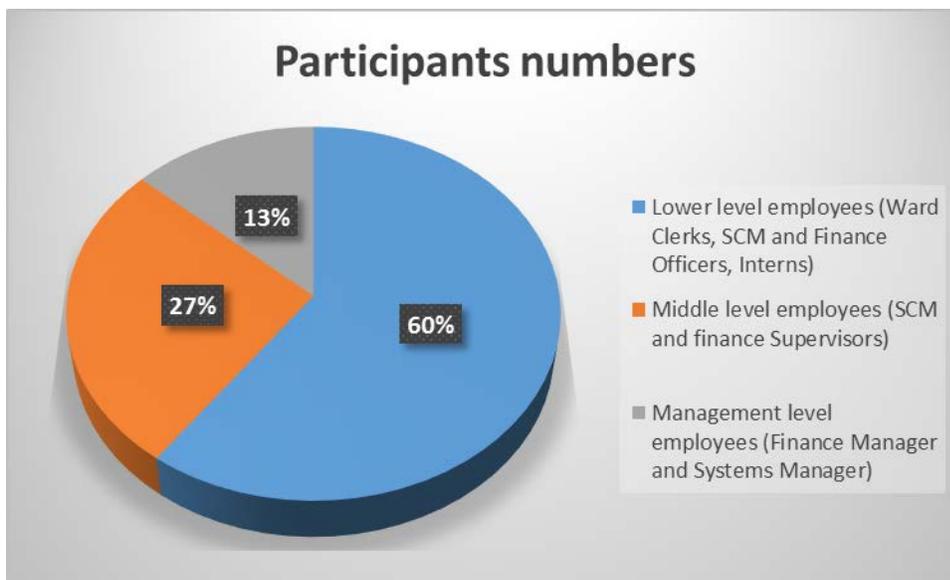


Figure 5.1: Participant involvement data

Source: Researchers compilation

5.3 Findings

This section provides a presentation of a summary of the responses from the interviewees who participated during the process of conducting the research at Inkosi Albert Luthuli Central Hospital as well as data gathered through conducting observation during the visit to the study site. Table 5.2 and table 5.3 indicate the data collected as per the participant responses at the hospital

1. Interviews

The responses obtained from the participants are grouped below as per the questions and sections in which they fall in.

Respondents overall transcript

Section one: Questions about supply chain management process

Question 1: In terms of the supply chain management process what are the processes that you follow in procuring an item taking into consideration internal and external factors? To what extent are these procedures followed?

Responses from participants: The respondents stated that demand from end-users sometimes leads to SCM processes not being followed however the Department does have procurement procedures that should be followed. The process of procuring an item is to submit a request to the SCM component and SCM then procures the item following the processes, for instance inviting quotes, advertising for five days, etc. After the closing dates Quotation Evaluation and Adjudication Committee (QEC and QAC) meet. The supplier is selected and an order is placed. Some of these procedures are followed, others are not, of which at the end of the day, creates a situation of non-compliance for the hospital and therefore leads to irregular expenditures. Procedures such as having the required quorum for meetings during the Evaluation and Adjudication Committee meetings are a major issue pointed out by the respondents. Due to the fact that Inkosi Albert Luthuli Central Hospital is a Public-private hospital the selection process for awarding a company with a contract or procurement order is based on different perspective from those of the Department of Health. Impilo Consortium the private partnership to the hospital is more focus on the quality of the product or service rather than the cheapest price. Supply chain sustainability is important in the operation of an organisation despite the challenges along the process but it need to be taken into consideration.

Question 2: Health institutions works with people's lives and when you come across emergency cases, following proper SCM procedures can be challenging. What are the challenges and how do you deal with such issues within the hospitals? Focus on both at internal and external factors that cause challenges.

Responses from participants: Some processes are omitted due to emergencies because the hospital has to ensure that the community receives proper care at the required time and place. In such cases exceptions are made, for example exemption from getting three quotations and from advertising. These are regarded as deviations from SCM procedures; however it is important to follow the other processes in place so that it will not lead to creation of irregular expenditure. The challenge is that the officials tend to utilize this exemption from adherence to procedure recklessly, in that case irregular expenditure and non-compliance leads to a creation of risk to supply chain sustainability and it is not good for the hospital. Head Office issue circulars that guide the officials on how to utilize annual general exemption in a proper and acceptable way. These circulars include Circulars G106 which was then amended to G47 and is currently G60. The circulars assist in giving guidance on how to procure an item or service where an emergency case occurs.

Question 3: In order to maintain sustainability in SCM processes there are stakeholders involved, that plays a vital role in each and every step. Briefly illustrate who are these stakeholders and how are they related to each other?

Responses from participants: The stakeholders that are involved are as follows:

1. Internal stakeholders (SCM officials, Finance officials, doctors, nurses)
2. External stakeholders (suppliers and end-users i.e. the community)

These stakeholders are related to each other and they each play a vital role in the procurement processes. Basically the internal stakeholders purchase an item from the external stakeholder which is then supplied to provide a service to another external stakeholder which is the end-user namely the community. The relationship between these two stakeholders is that end-users are the ones who need the item or the services basically the procurement process or the requisition is drawn taking into consideration the demand from the end-users. The internal stakeholders such as SCM officials, Doctors, Finance officials as well as Nurses act as the middle role players in the organisation because they are a bridge or they interlink supplier and the end-user as they are responsible for the procurement process. The supply chain sustainability of an organisation therefore rely on the ability of the internal stakeholders to cooperate and work together towards maintaining compliance as well as mitigating risk to supply chain management.

Question 4: How do these stakeholders fit together and what effect do they have on SCM sustainability in order to ensure that they produce better service delivery to the community?

Responses from participants: These stakeholders' works together in providing better services and keeping the operation of a hospital effective and sustained. The following aspects can affect supply chain sustainability in the effort of producing better service delivery:

1. Good communication with each other (among internal and external stakeholders)
2. Prioritizing
3. Providing for the community
4. Proper planning
5. Segregation of tasks for internal stakeholders
6. Striving for effective collaboration
7. Better service and just-in-time delivery from suppliers
8. Matching demand and supply

The stakeholders need to create an effective communication amongst themselves in order to fulfil the above mentioned aspects within the organization. Taking into consideration the above mentioned aspects can lead to supply chain sustainability and compliance in supply chain management.

Section two: Questions about risk creation factors during the operation of an organisation

Question 1: In terms of the SCM perspective, what are the notable external and internal sources of risk that could affect a health institution's operation?

Responses from participants:

The notable sources of risk that could affect health institution's operation are as followed

1. Misuse of Circular and SCM Practice Notes
2. Increase of wasteful expenditures through different preferences of various end-users such as doctors
3. Failure by some committee members to attend meeting leading to a quorum not being met and therefore this also lead to an increase in irregular expenditure due to non-compliance with SCM policy
4. Lack of communication and cooperation among internal stakeholders, some stakeholders tend to place orders through Ward Clerks without consulting the SCM

official channels. This is classified as a direct order which constitutes to irregular expenditure as some of the procedure and processes may be omitted leading to the policies not being taken into consideration.

Question 2: Adapting to technical changes and resistance to change could be a challenge in an organisation. Do you think technology has an impact on risk creation and how?

Responses from participants:

1. Adapting to technological changes could be a challenge because everything at IALCH is computerized, for instance the use of the SAP system for procurement processes
2. Network problems can cause delays
3. Human capital transfer to technological devices
4. Lack of skills and knowledge
5. Levels of adaptation to technical changes can be problematic.

The above mentioned aspect indicate that not every officials have access to SAP system therefore this may cause some delays when it comes to placing of orders during the peak times or emergency times.

Question 3: During the operation within the hospital what can you identify as the source of the risk creating in supply chain management?

Responses from participants:

The aspects that can be identified as risk creation factors are as follows:

1. Non-compliance issues
2. Direct ordering
3. Lack of communication and collaboration
4. Increase in irregular expenditures and wasteful expenditure
5. Technological issues
6. Different policies and guidelines from each partner

Section three: Questions about supply chain sustainability

Question 1: What are the negative impacts of risks on supply chain sustainability? Briefly illustrate.

Responses from participants:

The negative impact that the respondents pointed out are as follows

1. Non-compliance issues leading to increases in irregular expenditures
2. Audit queries
3. Wasteful expenditures
4. Incongruent nature of policies from the public and private partners in the hospital

The mentioned negative impact reveals that an organisation is required to that they follow the proper processes and procedures as stated by the government of the Republic of South Africa in order to maintain compliance, safe-keeping the transaction records for audit purpose, the institution also need to procure items or services according to the implemented procurement plan for the specific financial year in order to avoid wasteful expenditure. The evaluation of risks to supply chain sustainability will assist in identifying the gap that cause an imbalance between demand and supply.

Question 2: Risk factors portray a bad image about an organisation's operation process. They cannot be limited but there are ways to mitigate risks. What are the major processes that your institution follows in order to mitigate risks?

Responses from participants:

1. There is a risk management team that deals with monitoring and evaluation within the hospital. This team is also assisted by the District Champions that are allocated per district to attend all the queries that the institution might have with regard to the utilization of the SCM Policies and procedures. Therefore the institution have taken an initiative to make use of the useful resources that are provides to them.
2. The institution attends the workshops where officials from the Head Office train and give guidance on every new practices that are being introduced by the KwaZulu-Natal Department of Health provincial, nationally as well as in the Treasury.

Question 3: What are the results obtained after attending the training or workshop process?

The respondent did mentioned that they have seen some changes in their operation after attending training and workshops although there still some weaknesses and lacks here and there however they are trying their level best to fix the pitfalls but in some situation the partnership does not allow them. IALH falls under PPP therefore it under the management of two ownership that is private and private ownership. The following are some of the views that were pointed out by the respondent during the interview process.

1. Improvement of working standard
2. Reduction of instances of non-compliance
3. Development of employees skills and knowledge
4. Improvement in service delivery

Question 4: With reference to educational level, would you say that it can be classified as the primary source for developing SCS within the health institution?

Responses from participants:

The responses from the interviewees confirmed that Educational level is the primary source of developing the SCS within the hospital because it determines the level of understanding of the stakeholders with regard to the concept itself and its importance. It also assist in enhancing adaptation to practices and policies. Education facilities contributes to better decision making, improve levels of accuracy, increase Productivity levels and streamlines operational levels.

Question 5: What is your opinion regarding the development of supply chain sustainability?

Responses from participants:

The participants have stated the below listed view associated with supply chain sustainability within the health institution.

According to the responses from the participants supply chain sustainability can lead to the following:

1. Maintenance of accuracy within the hospital
2. Better service delivery
3. Proper coordination of SCM within the organisation

4. Better working standards
5. In this hospital SCS will contribute to decreasing audit queries and irregular expenditure. Most of the transactions are irregular besides the Head Office contract and the National contract because the hospital uses SAP and some SCM procedures are not being followed, resulting in irregular expenditure, which creates risk to the hospital's well-being.
6. SCS can also contribute to compliance
7. Effective communication among the stakeholders

Question 6: If you were to be employed as a Supply Chain Risk Manager in a public hospital what would you implement, if you were assigned to head a project focused on “evaluating risk to supply chain sustainability”?

Responses from participants:

There lot of responses that were obtained from the participants stating their views on how they would head the project focusing on evaluating risk to supply chain sustainability. Judging from the responses that were obtained the responses were totally based on the challenges that they come across during their operation. The issues that were raise are valid points that need to be taken into consideration or better be researched on in order to find a way to overcome these issues.

According to the participants the responses were as follows:

1. The implementation of SCM Policy workshops and guidance to develop SCM skills and abilities among DOH officials
2. Technological adaptation skills
3. Emphasis of the importance of education
4. Human capital and organisation's performance management and measurement
5. Economic risk management
6. Addressing environmental issues affecting SCM
7. Ensuring resource availability to overcome and mitigate risk within the SCM component and the hospital as a whole
8. Stakeholders' involvement in supply chain sustainability
9. Understand the operation of SCM in an organisation
10. Recognition of Standard operating procedures (SOP) for SCM
11. SCS strategic planning and organisation management

12. Effective collaboration and communication management
13. Risk management and development of level of accuracy development
14. Risk mitigation and compliance measures within the hospital

3. Observation

With regard to observations conducted during the research process, the information obtained is described below and was utilized to gather additional information in order to further validate the results of the study. It was noted that non-compliance issues are created by a lack of communication among internal stakeholders within the health institution. This further affects the operation of the institution as a whole and also impact negatively on supply chain sustainability. Furthermore a key aspect that leads to non-compliance within the organisation is the existence of incongruent policies and procedures due to the fact that Inkosi Albert Luthuli Central Hospital is categorized as a 3P institution meaning that it is Public Private Partnership. In this case the private partner, Impilo Consortium has its own policies which differ from those of the public sector partner, the KwaZulu-Natal Department of Health. The information gathered during observation of the institution's operation process is presented below. The findings indicates the challenges identified during the observation, a strategic scrutiny of these challenges in terms of the ways in which they can be addressed, as well as the validation of the importance of the identified challenges and the means for their resolution as crucial factors in ensuring supply chain sustainability.

Operation Observation- challenges identified

1. Lack of control in terms of deciding on way to streamline the procurement of common items that serves similar purposes for similar procedures to be purchased from specialized companies. The hospital finds itself procuring similar items but from different suppliers at varying prices because each individual (stakeholders) wants to obtain his or her own brand or item regardless of cost or availability issues, recommended for example by a friend working in a private hospital.
2. Stakeholder's reluctance when attending budget presentations to raise their concerns and to be involved during budget preparation sessions.
3. Failure of stakeholders to inform the Matron/OPM timeously of the items required for their cases. Often a patient has been booked for an operation well in advance, but stakeholders pressure Clerks (using threats that "patient will die") to place the required

order at the last minute result in some cases/ operations being cancelled pending proper procurement procedures taking place according to SCM compliance requirement.

4. Stakeholders engage in direct contact with suppliers, order the delivery of an item and dispense that item in the ward/theatre without knowing whether the institution will pay the supplier or not, without ensuring that the supplier is on the database and is hence authorized, and without being certain of the availability of funds. This creates irregular and unauthorized expenditure.
5. Stakeholders lack accountability in terms of wastage Doctor X will demand certain items to be procured and when he/ she resigns or when another product becomes available that item will go to waste.
6. The failure to attending Cash Flow Committee meetings leads to delays in decision making because a stakeholder's request need to be explained in order for the required information to be made available to decision-making at the meeting.
7. A lack of understanding of SCM procurement procedures and a tendency to focus only on obtaining an item leads to a situation in which stakeholders forget that there are prescripts in place governing procurement of goods and services in the Department of Health.

5.4 Data analysis

Content analysis

Content analysis was applied to the interviewee responses in order to determine the frequencies and concentrations with which identified themes and sub-themes concept occurs. The findings from the interviewees were divided into two key segments, namely the operational indicators and the strategic indicators of an institution's degree of compliance with SCM policies and procedures.

Strategic indicators refer to aspects that were implemented by the KZN Department of Health which requires consideration and commitment from the Department's officials. These aspects can have a greater impact on supply chain sustainability and can also create a sustained compliant working standard, therefore decreasing risks that may appear within the hospital.

The establishment of operational indicators has a very significant impact on the process of the management and the performance of an organisation. Furthermore also affects procurement

procedures and policies that are utilized during the process. Performance management leads to greater staff commitment and higher level of productivity. The interviewees stated that internal communication is a particular weakness within the hospital when it comes to procurement procedures, while the filtering of information through various official channels is inadequate.

In the table below, the numbers 1 to 15 indicate each respondent that participated in the study. Seven main operational indicators were identified. Each indicator is subdivided into subthemes that were identified by the participants as important aspects within each particular operational/strategic indicator in order to provide the greatest possible details with regard to the results of the research. The mark X indicates each incidence a particular sub-theme as per each respondent, while the final column presents the total number of appearance of the subtheme among all respondents. The content presenting the frequency of occurrence of each of the themes is displayed in the below Tables and Figure.

Content analysis presenting frequency of themes and sub-themes

5.4.1 Content segment: Operational indicators

1. Evaluation of human capital- internal stakeholders

Table 5.2: Human capital development

Sub-theme	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Lack of technical skills							X	X	X	X	X	X	X	X	X	9
Training and development conducted	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Performance management	X	X	X	X	X	X	X	X	X	X	X	X	X	X		14
Hospital embracing quality at all levels	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Total	3	3	3	3	3	3	4	4	3	4	4	4	4	4	4	53

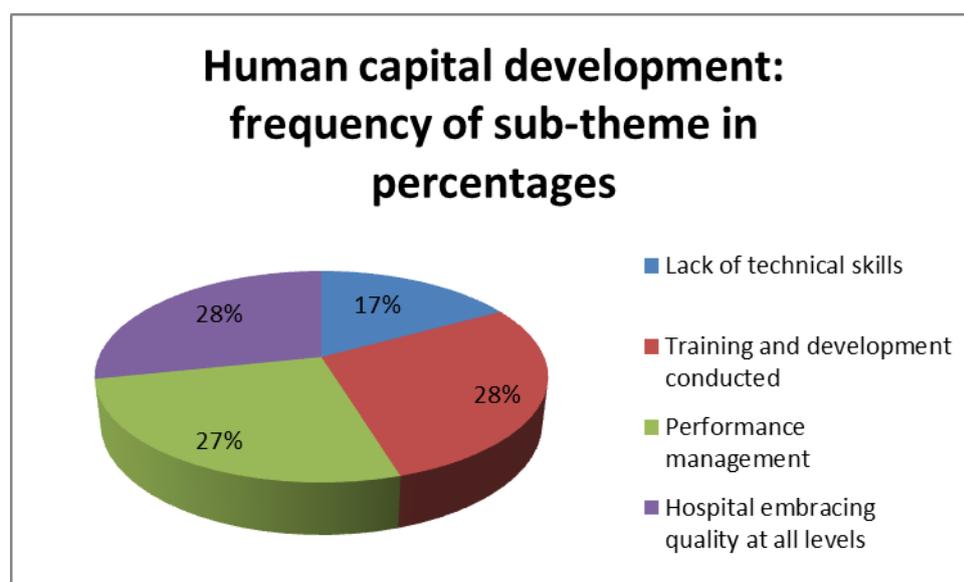


Figure 5.2 Human capital development: frequency of sub-theme in percentages

Figure 5.2 indicates the responses of each participant to the question asked during the interview session. According to the content analysis shown above in table 5.2, most of the participants considered training and development as well as the fact that the hospital embraces quality at all levels as the most vital aspects to operational indicators of human capital development in the organisation. This means that in order to evaluate risk to supply chain sustainability in human capital perspective the most important aspect to take into consideration are lack of technical skills, training and development, performance management as well as hospital embracement of quality at all levels. During the evaluation of risk to supply chain sustainability, it is important to identify the risk and also identify the tools and techniques that need to be taken into consideration in order to mitigate risk. Performance management is one of the techniques and tools that can be utilized to mitigate risks; of which this can further contribute to the development of compliance and reduction of risks to supply chain sustainability. Therefore figure 5.2 indicated that the participant responses states that the most noted aspect is performance management and hospital service delivery which includes striving to embrace quality at all levels, then followed by training and development as well as lack of technical skills.

2. Evaluation of Compliance issues: process

The respondents have raised the following factors as part of issues that affect compliance in an organisation:

Sub-theme

1. Transaction verification for compliance
2. Monthly reporting
3. Regional coordination
4. Irregular and deviation declaration

This shows how compliance issues are perceived by respondents to affect the operation system within the organisation. It has been indicated that there is equal percentage of responses from participants on each sub-theme with regard to the need for compliancy within the organisation as an operational indicators. These sub-them were irregular expenditure and deviation declaration, regional coordination, monthly/ annual/ quarterly reporting from institutions and transaction verification for compliance. Evaluation of compliance issues is important in organisation especial when evaluating risk to supply chain sustainability because it identifies

the possible types of risk as well as supply chain risk roots. The participants have rated the following sub-theme equally important to the organisation namely transaction verification for compliance, monthly reporting, regional coordination as well as declaration of irregular and deviation expenditure. These issues contribute to maintaining supply chain sustainability.

3. Evaluation of Stakeholders relationship

Sub-theme

1. Poor Internal communication
2. Segregation of duties
3. Effective collaboration

The stated sub-themes show the importance of these factors attached to stakeholder's relationship in a form of an operational indicator. Poor internal communication was highlighted as the most significant factors in this regard. However segregation of duties could assist the organisation to maintain better level of working standard and accountability but only if there is effective internal communication as well as effective collaboration within the organisation's operation process. This also shows the frequency of the sub-themes in related to stakeholder relationship during the interview. In other words all the participants indicated that poor internal communication affect segregation of duties and effective collaboration in an organisation. This links back to the purpose of this study which is to evaluate risk to supply chain sustainability because this issue can lead to the creation of irregular expenditure of which forms part of risk to an organisation's operation processes and supply chain sustainability.

4. Evaluation of Service delivery: demand management

Sub-theme

1. Audit queries to SCM procurement procedures
2. Providing for the community
3. Quality service delivery
4. Prioritizing and good filling system

The sub-themes indicate that the participants view the evaluation of service delivery as one of the aspect that can be utilized to pursue the purpose of the study which is the evaluation of risks to supply chain sustainability concerning the operation indicators of services delivery within

the hospital. All the participants have raised that demand management include issues such as audit queries to SCM procurement procedures, providing for the community, quality service delivery as well as prioritizing and good filling system. Hence these factors are each rated on an equal frequency according to participant's responses in the category of services delivery. A lack to comply in these aspects can lead to the creation of demand risk because these aspects are related to end-user satisfaction; therefore this can also affect supply chain sustainability in an organisation.

5.4.2 Content segment: Strategic indicators

1. Operating procedures: key areas that leads to process risk during the procurement processes

Sub-theme

1. Non- compliance
2. Not meeting quorum by Quotation Evaluation Committee & Quotation Adjudication Committee
3. Obtaining less than three quotations
4. SCM policies and regulation

The above mentioned strategic indicators are instituted by the Department of Health, relating to procurement process, risk management, standard operating procedure and supply chain sustainability. This also shows the frequency in which each sub-theme (emerging from the indicators) appeared and the responses that have been developed to indicate the context. With regards to the procurement process, each of the sub-themes was given equal rating by the participants in terms of its importance when conducting an evaluation of risk to supply chain sustainability. The sub-themes are as followed: SCM policies and regulations, non-compliance, obtaining less than three quotations and the failure to meet quorum by Evaluation and Adjudication Committee.

These sub-themes are the examples of process risks created by the human capital during the procurement processes. This can further affect supply chain sustainability in an organisation if these aspects occur during the supply chain processes and procedures.

2. Evaluation of Risk management

Table 5.3: Risk management

Sub-theme	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Wasteful expenditures								X	X	X	X	X	X	X	X	8
Monitoring and evaluation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Economic risk management	X	X	X	X	X	X										7
Environmental risk management	X	X	X													3
Total	3	3	3	2	2	2	1	2	33							

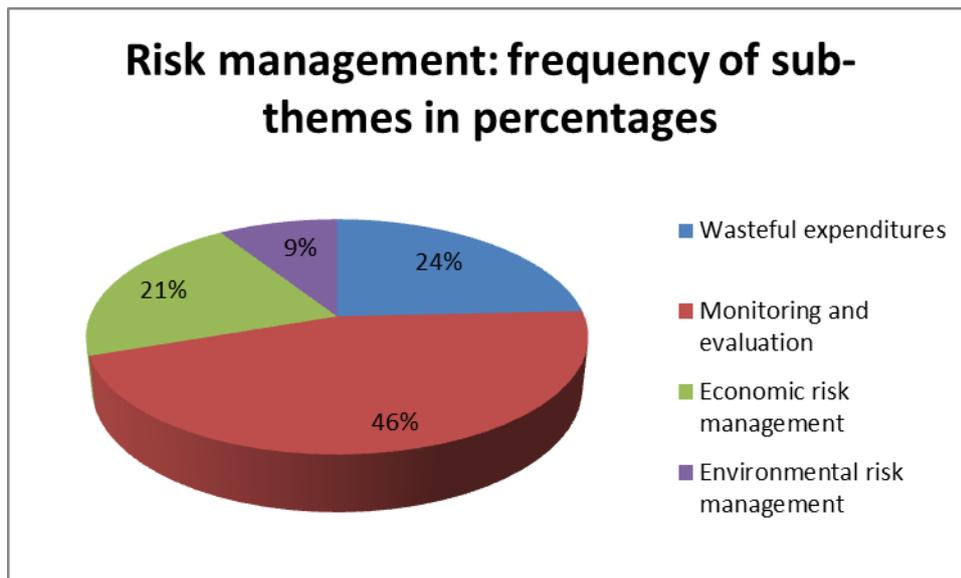


Figure 5.3 Risk management: frequency of sub-themes in percentages

According to table 5.3 it has been indicated that in order to identify the risk that may affect supply chain sustainability within the hospital, monitoring and evaluation is considered by the participants to be one of the tools that can be utilized to determine risk. Wasteful expenditures, economic risk, lack of monitoring and evaluation as well as environmental risk has been identified as the aspects that contribute to the creation of appropriate tools to mitigating risks with regard to the strategic indicators of determining and mitigating risks. The frequency of

these sub-themes is show in figure 5.3 according to the responses of the participants. Through content analysis it has been identified that most of the participant viewed monitoring and evaluation as the most important aspect that can be utilized in risk management in order to maintain sustainable supply chain.

3. Evaluation of Standard operating procedure

Sub-theme

1. Adaptation to practices and policies
2. Issuing of Circulars
3. SCM Practice Notes

The results from the interviews revealed that there are loopholes in the standard operating procedures in place. Participants noted that adaptation of the practice notes and policies utilized by the hospital is a challenge for stakeholders. This is because some uncertain event that occurs in the hospital. For instant the request of an item, some items or services are required urgently and therefore leads to some policies and procedures being omitted. This is however due to the nature of the institution, as Public Private Partnership organisation. For this reason, Circulars and Practice Notes used by the Department of health in public hospital may not be applicable to Inkosi Albert Luthuli Central Hospital. This ended up affecting the adherence to the standard operating procedure. In order to evaluate risk to supply chain sustainability the following sub-themes need to be taken into consideration namely adaptation to practices and policies, issuing of circulars as well as the utilization of SCM practice notes. If one of these sub-themes lacks or not used in a required manner, it can lead to a creation of process risk to supply chain sustainability.

4. Evaluation of Supply chain sustainability

Table 5.4 Supply chain sustainability

Sub-theme	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Assist in maintaining accuracy within the hospital							X	X	X	X	X	X	X	X	X	9

Proper coordination of SCM within the organization	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Effective communication among the stakeholders	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Better service delivery	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Total	3	3	3	3	3	3	4	4	3	4	4	4	4	4	4	53

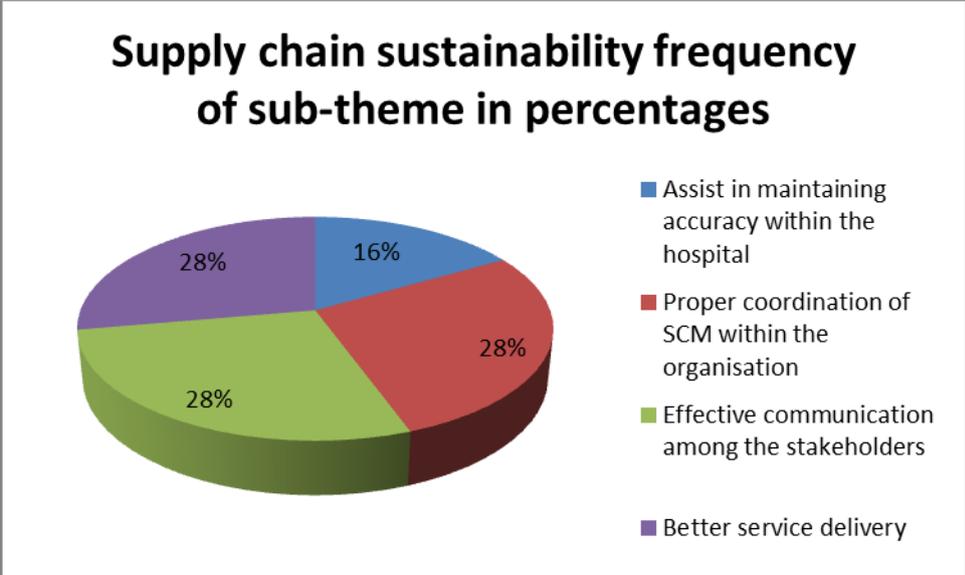


Figure 5.4 Supply chain sustainability frequency of sub-theme in percentages

Table 5.4 present the content analysis that deals with the strategic indicator of supply sustainability. This indicates that respondent felt that SCS could be supported in particular by proper coordination of the whole process of SCM, more effective communication between stakeholders, as well as better service delivery. Therefore this indicates that if accuracy is not maintained in hospital and if there is no proper coordination of SCM within the organisation, process risk can be created, ineffective communication among the stakeholders and poor service delivery can lead to the creation of demand risks and supply risks and also affect supply chain sustainability. The responses from the participants indicate that they view proper

coordination of SCM, effective communication among the stakeholders as well as better service delivery as the most important aspect to be taken into consideration with regard to supply chain sustainability perspective within the organisation. However this depend on the compliance of these aspects and valuing them during the procurement processes because non-compliance in any of these aspects can lead to the creation of demand, process, control, supply as well as environmental risk. For an example end-users create a demand for an item, in a hospital perspective it could be patient related item or service therefore the stakeholders needs to creates an effective communication in order to properly coordinate SCM and maintain accuracy within the hospital of which it will lead to better service delivery. A shortfall in any of these aspects can lead to poor service delivery and that can affect the community i.e. the patients and further creates environmental risks that have a negative impact on supply chain sustainability.

5.5 Conclusion

Understanding the risks associated with the procurement processes and supply chain management as well as the steps required to mitigate these risks must be to taken into consideration. This will give guidance to the stakeholders through potential pitfalls that an organisation needs to be aware of and the way to remedy them. The findings reveal that demand and pressure placed by the end-users on SCM officials leads to the creation of non-compliance issues. The result indicated in this chapter also show that in order to increase the standard of compliancy within the hospital, a full commitment and interaction of all stakeholders is required. This chapter has presented the participants responses to the interviews conducted and also provide the observation obtained during the study research. The following chapter includes the discussion of the findings discussed in chapter six.

CHAPTER SIX

DISCUSSION OF RESULTS

6.1 Introduction

This chapter will conclude the discussion of all the discoveries gleaned from both the primary and the secondary data collected during the research study. It also provides answers to the research questions constructed in Chapter One. Chapter Seven also indicate the objectives that needed to be fulfilled and how the study managed to fulfil those objectives. This chapter also indicate the problem statement by presenting phenomenological the risk root to supply chain sustainability in the Inkosi Albert Luthuli Central Hospital and identified means of mitigating them of which that is logic behind the study. The chapter will also conclude by substantiating the corrective recommendations that emerged from the data (interviews and observation) as well as from the literature.

6.2 Theoretical framework for overall primary and secondary data analysis

Content analysis was applied to primary data/interviewee responses for the purpose of determining the frequencies with which the themes and sub-themes occur. The result emerging from the content analysis was divided into two main categories. The first category consists of conceptual discoveries, which are the findings arising from the secondary data sources (the literature) discussed in Chapter Two. The second category contains the empirical discoveries, which are the findings from the primary data sources, in other words the results that were obtained through data collected by interviewing officials and through observation as presented in Chapter Four.

6.3 Review of findings on the evaluation of risk to supply chain sustainability in KZN Department of Health from interviews and observation

Supply chain management within the Inkosi Albert Luthuli Central Hospital is governed by policies (rules) and procedures, as discussed in Chapter Four. The institutional procedures include the utilization of policies regulated by the legislature, in particular those overseen by the Finance and Systems Manager and on the other hand, those drawn up by the private partner, Impilo Consortium. The public policies and procedures are aligned to the KwaZulu-Natal Department of Health Public Finances Management Act: the SCM Guidelines, Treasury Regulations and SCM Delegation of 2006. Inkosi Albert Luthuli Central Hospital is a unique hospital in the province. No hospital in the province has Domain Business Managers aside from

Inkosi Albert Luthuli Central Hospital. Secondly, no other hospital in KwaZulu-Natal has its supply chain management run by the private sector. Thirdly the IALCH is the only hospital in the province that authorizes the Ward Clerk to be involved in procurement on behalf of the Department. This situation leads to many challenges in the IALCH in respect to procurement policies, leading to the hospital being tagged as being non-complying institution. The challenges of ensuring SCS and mitigating risk are always complex but they are aggravated by the stakeholders at the IALCH. One of the main reasons for this is that practitioners (specialist and clinicians) as well as Ward Clerk have been procuring products and services on behalf of the Department since the hospital opened in 2002. This practice is supported by the attitude that as a PPP hospital, procurement at IALCH must proceed according to directives of Project Agreement that was signed by the public partner (KZN Department of Health) and the private partner (Impilo Consortium). Thus there are notable levels of procurement of stock items by the private partner (Impilo Consortium) and of non-stock- items (buy-outs) by the Ward Clerks. Stock item are the item that are purchased in bulk in order to keep physical item in stores for the upcoming request and non-stock items are those item that you do not keep physical item they are ordered at the time when they are needed.

Through the process of data collection via observation and interviews, it has emerged that the procurement policies of the private partner are not congruent with those drawn up by the legislature. The latter includes legislation contained in the Constitution of South Africa, the PFMA and Treasury Regulations tall of which is built on the five pillars that aim to ensure that procurement of goods and services is conducted efficiently, effectively and ethically. These five pillars are fairness, equitability, transparency, competitiveness and competency. Supply Chain Management prescripts provide the methods in which these five pillars of procurement are to be applied in government institutions.

The study has found that the IALCH needs to ensure the coordination or integration of all officials involved in procurement, namely the SCM practitioners, Ward Clerks, buyers and staff involved in logistics. In addition, the findings indicate that buyers need to ensure that the entire team of stakeholders complies with government policies. There are numerous examples of the incongruence between the two partners in the operation of IALCH. While the Department of Health Supply Chain Management Delegation of 2006: 8 (4) stipulates that an invitation of bid must be advertised for a minimum of five days, the Impilo Consortium requires

no advertisement period and procurement is based on quotes rather than bids. Clause 1.5 indicates that the quotations deadline is at 11h00, two day after the request for a quotation has been sent to a supplier.

The decision to procure will be based on the quotes received. According to Clause 1.7 the Buyer decides which supplier to place the order with, using price, quality, end-user's preference and availability as the main criteria. Finance Manager Output Specifications Receipt and Distribution. Clause 2.1 (b) states that the Project Company (the IALCH) shall ensure that all goods required by the hospital are available at the point of use at all time and in the quantities specified by the hospital. In the public sector, under governmental legislation, the SCM Delegations states that all quotations should be evaluated and adjudicated by the internal bid committees (Evaluation and Adjudication Committee), not the buyers. The researcher was unable to discover a policy used by IALCH Ward Clerk in their procurement system. Unlike in Departmental Hospitals, the Ward Clerk do not record their quotations in the Quotation Control Register, they do not have set closing dates nor do they evaluate and adjudicate decision to procure via legislated procurement committee.

6.4 Answers to the research questions

6.4.1 Question one: How does end-users contribute to the creation of demand risk and what effect does demand risks have to supply chain sustainability in health institution?

According to the finding of the study, obtained from interviews and observations, internal stakeholder plays a vital role in supply chain sustainability because they are involved in the operation of the institution and they are the decision makers during the procurement process. Furthermore if they fail to adhere to the process this is likely to create non-compliance within the organisation and that also leads to the creation of risk to SCS within the hospital. Therefore it can be said that internal stakeholders have a fundamental impact on supply chain sustainability. The impact can be either positive or negative.

6.4.2 Question two: How does human capital contribute to the creation of process and control risks and what effect does process and control risks have towards supply chain sustainability in health institution?

It has been discovered that the Department of Health and the public partner Impilo Consortium each have their own procurement policies and procedures that are not congruent with each other. This creates challenges during the procurement process and that results in the IALCH being classified as a non-complying institution in terms of government legislation. The procedures that affect supply chain sustainability are discussed in section 7.2 above. Human capital is responsible for conducting the operation of the hospital. Human capital is the one who take control of the working procedures as stated in section 7.2 therefore following proper SCM processes rely on the human capital of the organisation. Human capital is accountable for the process and control risk towards supply chain sustainability in health institution.

6.4.3 Question three: To what extent does a supplier contribute to the development of supply and environmental risks and what impact does supply and environmental risk have to supply chain sustainability within the health institution?

External stakeholders are the suppliers and the end-users (i.e. the community). Suppliers affect supply chain sustainability because Ward Clerks place orders without following proper procedures like verifying the company registration details as per the requirement of the regulation, leading to irregular expenditure and non-compliant transactions being made in an institution. Appendix A indicates that the eThekweni District has the largest population distribution in the province therefore the expenditure is also larger on health care. Since IALCH is located in this district, non-compliance by this hospital will impact eThekweni District as well as the KwaZulu-Natal Department of Health negatively in terms of SCS. The end-user or community in which the hospital serves is another external stakeholder. The end-user also affects SCS because of fluctuations in demand for an item and service, leading to difficulties in ensuring adequately and timeous supply. If demands feedbacks from the end-user are not made clearly visible within the operation of the organization, service delivery will be negatively impacted. Demand fluctuation maybe caused by different seasons for instance weather changes, rate of accident during holidays as well as development of different diseases within the country. This therefore led to creation of supply and environmental risk that affect supply chain sustainability within the organisation.

6.4.4 Question four: How can an evaluation of risk to supply chain sustainability be conducted within the KwaZulu-Natal Department of Health?

The evaluation of risk to supply chain sustainability can be conducted by firstly create an understanding of the concept of supply chain management, supply chain risk as well as supply chain sustainability. This includes conducting secondary data collection process which is literature review namely theoretical and integrated literature review. The secondary literature review is developed through studying the documents, books, report as well as journals written by different theorist about the subject matter and compares their views. The primary data collection can also assist in evaluating risk to supply chain sustainability because first-hand information can be obtained through interviews and observation that can take place at the study site from the target population group.

The risks to SCS that emerge during the research process are:

1. Lack of communication between stakeholders (interaction risk)
2. Ignorance of or indifference to the SCM policies and procedure by internal stakeholders (process risk)
3. Irregular and wasteful expenditure (economic risk)

6.5 Objectives of the research

Through the process of conducting the research, gathering as well as analyzing primary and secondary data, the objectives of the research that were set in Chapter One were reached.

6.5.1 Objective one: To identify the possible types of risks that are created from the end-users and how they affect supply chain sustainability in health institution.

After conducting a literature review, interview and observations it was confirmed that internal stakeholders affect supply chain sustainability significantly. A lack of communication among the hospital's officials, ignorance of and indifference to SCM processes as well as incongruence between the procedures of the Department and the Impilo Consortium were highlighted. Through the actions and attitudes of internal stakeholders SCM policies and procedures are not maintained, of which it negatively impacting supply chain sustainability. So the study aims at highlighting those lacks and identifies way to remedy them.

6.5.2 Objective two: To determine the possible types of risks that are created from human capital and how they affect supply chain sustainability in health institution.

The internal processes operated by human capital strongly affect supply chain sustainability were identified these are for instance the issues of incongruence between the policies and procedures of the KwaZulu-Natal Department of Health KwaZulu-Natal and the Impilo Consortium. These internal processes are caused by inaccuracy in follow legislated requirements and lead to non-compliance, irregular and wasteful expenditure as well as ineffectiveness with regard to supply chain management. This ultimately creates negative impacts on SCS through the creation of control and process risk.

6.5.3 Objective three: To examine development of risks from suppliers and their effect on supply chain sustainability in health institution.

The effects of external stakeholders on supply chain sustainability were found to have the potential negative impact on operation process of the hospital. The legitimacy and validity of the supplier can affect SCS because it might happen that the supplier is not able to provide the required item or render services at the right time; or that the supplier is neither legitimate nor valid in terms of its registration and/or status regarding its relationship with the Department. In addition, the products or services supplied may be of an inadequate or inferior standard therefore resulting on unnecessarily costs. The community that is being served by the hospital is another external stakeholders that can also affect supply chain sustainability, due to fluctuations and rapid growth of demand. Given the demographic of the eThekweni District (see Appendix A), this can negatively impact SCS within the IALCH, which falls within that District.

6.5.4 Objective four: To evaluate risk factors to supply chain sustainability within the KwaZulu-Natal Department of Health.

The studies of the literature, together with the interview transcripts and the observations made have indicated the possible risks that may take place within the KwaZulu-Natal Department of Health during the procurement process. An awareness of the source of risks is essential for the development of mitigating tools, as discussed in Chapter Two. The secondary source consulted

found that risks come from external and internal drivers. External drivers includes demand (disturbance of the flow of the goods and services due to disruptions and transport, computer of financial systems), supply risk (disturbances in the flow of products or information due to problems of an organisation's suppliers, or supplier's suppliers) and environmental risk (disturbances in the flow of goods or products due to external events such as industrial accidents, severe weather or strikes action at ports or depots). Internal drivers include process risk (disruptions to process or operations of an organisation such as non-compliance with policies and procedures by stakeholders) and control risk (a lack of and failure to apply the rules, systems and procedures that govern how an organisation exercises control over the SCM processes such as standard order quantities, batch sizes, safety stock policies etc.).

The primary data gathered indicated that risks to SCS are those associated with three areas. First, a lack of communication between stakeholders (interaction risk) means that hospital staff fails to inform one another of what is needed, when, and why as well as who would be best suited to supply these needs. Second, stakeholders' ignorance of or indifference to the SCM policies and procedures (process risk) means that the proper procurement processes are not followed leading to inefficiency in SCM. Third, the primary data showed that the third source of risk to SCS is irregular, unauthorized and wasteful expenditure (economic risk) due to non-compliance with policies and procedures.

6.6 Conclusion

This chapter contained an overview of the theoretical framework for the overall primary and secondary data analysis according to the structure of the study as a whole. The chapter has also answered the research questions presented in the first chapter of this research. After reviewing all of the data collected the chapter indicated how the objectives that were set for this research were reached. The findings mirror the 80/20 rule (the Pareto principle) which states that 20 percent of imperfections creates 80 percent of complications therefore creating more risks within the hospital and the Department as a whole. With reference to the 80/20 principle it can be said that the small portion of wrong doing in the process or the non-compliance that is developed within the supply chain management process can lead to complication in the entire operation process of the department as a whole. The findings also indicate that in an organisation the demand risks are created by the external stakeholders which are the end-users through requiring an item or service. Process and control risks are created by human capital i.e. employees of the hospital by not following the required procedures, policies and regulations when procuring an item. Omitting some processes like not meeting quorum for QEC and QAC lead to creation of non-compliance that affect supply chain sustainability. Supply and environmental risks are rooted from the external stakeholders which the delays that are caused by the suppliers it have been mentioned in the study that the storm that took place in Durban which destroyed lots of houses and cars resulted in a number of people that were injured and needed to be admitted at the hospital therefore that created a supply risk and environmental risks. Another incident took place at Portshepstone Hospital that got burnt and most of their patients were transferred to Inkosi Albert Luthuli Hospital. The imbalance of demand and supply affect the supply chain sustainability in the hospital. In evaluating risks for an upcoming development, not every risk conveys equal implication. An organisation need to select the top risks that pose the utmost potential for damage (given the likelihood of the incidence) and focus on monitoring and the risk planning activities on those items. The institution must not ignore the others, however, distribute their focus proportionately. The research aimed at evaluating the impact of risk to supply chain sustainability. The findings from the data collected revealed that there are extensive and systemic risks to ensuring that the sustainability of supply chain and that these have a highly significant impact on SCS and in turn on the entire organisation's operations. The consolidation of the data collected from primary and secondary sources gives an in-depth understanding of the causes of the IALCH's classification as a non-compliant and

what are the factors that resulted in this situation. The challenges that supply chain management experience during the hospital's operation includes: a lack of proper knowledge, skills and capacity regarding the importance and functioning of SCM, non-compliance with SCM regulations, inadequate planning and linking of demand to budget, lack of accountability, leading to fraud and corruption, inadequate monitoring and evaluation of SCM, and unethical behavior. These challenges affect the totality of operations within the organisation therefore also impact on supply chain sustainability. It is important for any organisation to take into account the stipulated policies and procedures in order to ensure both sustainable supply chain and compliance with regard to the legislation governing procurement processes and procedures.

CHAPTER SEVEN

RECOMMENDATIONS AND CONCLUSION

7.1 Introduction

This chapter will present a summary of all the chapters that makes up the study. The chapter will also outline the problem statement by phenomenologically stating the final response to the problem statement. In addition the chapter provides recommendations arising from the study, as well as indicating the value of this research and directions for further investigation. Basically this is a conclusion of the study conducted.

7.2 Analysis of the problem statement

The problem statement of the study is:

”Non-compliance in supply chain management operations within the KwaZulu-Natal Department of Health can lead to the creation of risk that will impact negatively on supply chain sustainability”.

This statement indicates the fundamental reason for conducting this study, namely to investigate the risk to SCS and their roots. This problem statement gives the study direction concerning the investigative routes to follow in order to answer the research questions and fulfil the study objectives as stipulated in Chapter One. The problem statement of a research study indicates the core aspect that needs to be resolved by the study.

7.3 Validation of findings

Working collaboratively while bearing in mind the value for money will minimise irregular expenditure as sustainable contracts can be arranged either in-house (the hospital) or by the Department head office, avoiding bias in favour of brand names that come at an unnecessary expense. In addition, these strategies will reduce the quantity of redundant items, and the number of items that expires on the shelves, as well as improving accountability.

Involvement in the budget planning sessions will assist in including required item the procurement plan and in motivating for new items and equipment in order to avoid delays when such items or equipment are required.

Keeping channels of communications flowing efficiently and effectively between surgeon/clinicians as well as the OPM /Matron will allow the human capital to follow correct procedures in directing procurement instructions to the Clerks only once the validity of the request and the most appropriate supplier have been confirmed. Accountability with the Matron and Operation Manager, their involvement in ward/section/department and activities is essential since they will be held responsible for all irregular expenditures and issues of non-compliance.

Abiding by SC procedures and policies as well as ensuring ongoing communication with management to ensure that items and equipment required are procured timeously and appropriately will assist in promoting compliance and in decreasing irregular expenditures. In turn, this will protect supply chain sustainability and therefore contribute to improving risk management within the hospital.

Increase care with the placement of orders will allow for the accommodation of new and improved stock, and will reduce wastage and redundancy.

Attending Cash Flow Committee meets instead of sending a proxy is important as the person making a request is well-informed about the required item and can explain the reason for which it is needed. If the Committee has a query about the item, then a response can be obtained promptly from the requestor and procurement procedures can then commence swiftly.

An increase in the level of compliance results in the decrease of irregular expenditures and therefore mitigates risk to SCS within the hospital.

7.4 Recommendations

7.4.1 Recommendations to observed data

1. Surgeons/ clinical staff are to consider value for money first as opposed to individual's preferences, be willing to work collaboratively and in a controlled manner in deciding on commonly required items and suppliers to be used.
2. Stakeholders need to make the effort to attend budget presentations and liaise with the Operation Manager (OPM), Matron and Business Manager with regard to planned or anticipated situations and needs that may arise in the following year, that will require new items or equipment to be procured and which need consideration in the budget.

3. Surgeons/ Clinicians are to advise the Matron/ Operations Manager of the specific required items by email and place to orders needed for a set date in such a manner that will allow sufficient time to order and deliver.
4. Stakeholders must ensure that they communicate with the OPM/Matron/Finance/Business Manager to ensure that the pitfalls mentioned are avoided. Stakeholders must not sidestep SCM procedures and policies.
5. Stakeholders need to develop a sense of accountability and respect for the financial constraints faced by the institution. Older stock should be used before resorting to newer stock, while clinicians and other stakeholders should advise OPM/Matron/Business Manager/Stores Manager to discontinue the placement of orders for items that are no longer required.
6. The attendance at Cash Flow Committee meeting of all stakeholders will ensure that the right item or equipment is procured when it is required by a stakeholder because the reasons for which it is needed can be clarified to the Committee by the stakeholder him/herself.
7. The widespread ignorance of the institution's need to adhere to national and provincial regulation when it comes to procurement needs to be addressed urgently through education.

7.4.2 Recommendations to the study

After reviewing the study in its entirety, including the primary data collection as well as secondary literature consulted, it is clear that there are serious complications and challenges facing the Department, and Inkosi Albert Luthuli Central Hospital in particular, organisation's regarding the sustainability of the SCM processes being followed. It would be advisable that the organisation become more engaged in increasing their levels of stakeholders communication and collaboration, as well as ensuring that policies and procedures are in place and that these are complementary as opposed to being incongruent. This could further enhance compliancy with legislation and contribute to sustainable supply chain management.

In addition, management structures could be streamlined so as to aim at minimising waste and maximizing consumer value. The phenomenon of agility also needs to be promoted, namely

the ability to react or adapt to the changes in demand and supply that may occur in an organization, depending on the requirements of end-user in the supply chain management processes. Thus it is recommended that the KwaZulu-Natal Department of Health in general and the Inkosi Albert Luthuli Central Hospital in particular, develop a focused strategy of effective stakeholder collaboration for the purpose of mitigating risk and ensuring supply chain sustainability.

The following mentioned factors are some other recommendations that can be taken into consideration during the operation process of an institution:

1. Addressing of compliance issues
2. Monitoring and evaluation of transactions undertaken by the institution
3. Promote effective communication among the stakeholders of an institution
4. Performance management and skills development
5. Promotion of sustainability within the organisation's operation and procurement processes

7.5 Value of the study

The research provides an in-depth study of public procurement, policies, as well as procedures and it also offers information about Public Private Partnership (PPP/ 3P) operating processes in an organization. The information presented by the study can be utilized in an organisation to develop stakeholder collaboration, effective communication and to understand what needs to be done by the organisation so as to maintain compliance to legislated processes and procedures as well as to mitigate risk and thereby maintain supply chain sustainability.

7.6 Areas for future research

The study indicates the potential for a new phenomenon to be developed within the public sector in South Africa, which can be related to the term Green Operation Management (GOM), in this case it can be introduced in public sectors because it already being used in private sectors. This can be defined as an approach and a method of organisational operation aimed at maximizing operational value, end-user demand, while utilizing resources in the legislatively required manner and according to set supply chain management processes, procedures and policies. This in essence targets risk to supply chain management in the operation of an

organisation. Risks affecting supply chain sustainability in the KwaZulu-Natal Department of Health have been identified, evaluated, and studied; therefore the future research could focus on specific ways in which to remedy risks to supply chain sustainability and the operation of an organisation as a whole as well as initiation to put GOM into existence in public sector supply chain management. Furthermore contribution of Private-Public Partnership to compliance issues and its operation still need to be studied further because the research has indicated some lack of knowledge in linking together the policies and procedures that are used in these two partnerships, so a study further would be better in resolving the issue of incongruent policies and procedures between the partners operating the institution.

7.7 Conclusion

The study set out to evaluate the risk to supply chain sustainability within the KwaZulu-Natal Department of Health. The study was conducted at the Inkosi Albert Luthuli Central Hospital because according to Department of Health Reports; the IALCH is classified as a non-complying institution. An added element is that this institution is managed by both private and public sectors. This is referred to as a 3P/ PPP/ Private-Public Partnership. As this may form the model for many more public institutions in the future, the outcome of the research with specific situation at IALCH as a 3P organisation may provide a mode for use elsewhere.

In order to identify the precise events that lead to non-compliance, the study conducted an investigation into the risk roots to supply chain sustainability. The fundamental issues that emerge from the primary data in regard to these risks are that the communication and filtering of information among stakeholders is currently neither efficient nor effective in terms of ensuring the utilization of proper procedures for procuring an item or a service within the institution. Non-compliance with legislated policies and procedures by an institution or an organisation can create risk to supply chain sustainability because it opens the door to irregular and wasteful expenditure, an imbalance between supply and demand, and ultimately a failure to deliver better and quality service to the community.

References

1. Adendorff, S. A. and De Wit, P. W. C. (1997) *'Production and operation management: A South African perspective'*, Thomson, South Africa
2. Ageron B., Gunasekaran A. and Spalanzani A., (2012) *'Sustainable supply chain management: an empirical study'* International Journal of production economics, Volume. 140 Issue: 1 p 168-182. ELSEVIER, USA
3. Bala K., (2014) *'Supply Chain Management: Some Issues and Challenges – A review'* International Journal of Current Engineering and Technology, Volume. 4, Issue: 2, INPRESSCO. MDU Rohtak.
4. Becker, P. (2012) *'The importance of integrating multiple administrative levels in capacity assessment for disaster, risk reduction and climate change adaption'* Disaster Prevention and Management', volume 21 Issue: 2 Lund Sweden
5. Bernard R. and Ryan G. (2010) *'Analysing qualitative data: Systematic Approaches'*, SAGE Publication, California
6. Blanchard D., (2007), *'Supply Chain Management Best Practices'* Hoboken, John Wiley and Sons Inc., United State.
7. Blanco E., and Cottrill K., (2012), *'Engaging with suppliers to meet supply chain sustainability goals'* MIT Global scale network white paper, Zaragoza Spain.
8. Bowersox D, Closs D and Cooper M. (2010) *'Supply chain logistics management'* Third edition, McGraw-Hill International edition, United State.
9. Brandenburg M., Govindan K., Sarkis J. and Seuring S. (2013) *'Quantitative models for sustainable supply chain management: Developmenets and Directions'* European Journal of operational Research, ELSEVIER, USA.
10. Brown, S., Blackmon, K., Cousins, P. and Maylor, H. (2001) *'Operations Management: Policy, Practice and Performance improvement'* Butterworth-Heinemann: p 161-238
11. Brown, S., Lamming, R., Bessant, J. and Jones, P. (2000) *'Strategic operations management'* Heinemann, Butterworth.
12. Cachon G. and Terwiesch C., (2006), *'Matching Supply and Demand: An Introduction to Operations Management'*, International Edition, McGraw-Hill, New York
13. Chartered Institute of Procurement and supply (CIPS), *'Supply chain sustainability'* Available from:<https://www.cips.org/knowledge/procurement-topics->

andskills/sustainability/sustainable-and-ethical-procurement/sustainable-supply-chain/
[accessed on 29 September 2017]

14. Christopher M. and Peck H., (2004) '*Building the resilient supply chain*' International Journal of Logistics Management, Volume. 15 Issue 2 pp 1-13 Cranfield School of Management, UK
15. Creswell J.W., (2007) '*Qualitative inquiry and research design*' 2nd edition, Sage Publication Inc., Britain.
16. Dekkers, R. (2003) '*Strategic capacity management: meeting technological demands and performance criteria*' Journal of Material Processing technology. Volume 139 issue 1-3 p 385-393.
17. Department: National Treasury, (2015), '*Public sector Supply Chain Management Review*' Republic of South Africa
18. Donald C. Water J., (2007), '*Supply Chain Risk Management: Vulnerability and resilience in logistics*', Kogan Page Publishers, London
19. Du Toit D and Vlok1 P, (2014) '*Supply chain management: A framework of understanding*' South African Journal of Industrial Engineering November 2014 Volume 25 issues 3, Elsevier Science, Netherlands
20. Federal Aviation Administration (FAA), (2009) '*Risk management Handbook*' available from: <http://www.faa.gov/library/manuals/aviation/> [accessed on 12 May 2017]
21. Given L. M., (2008) '*The SAGE encyclopedia of qualitative research methods*' SAGE Publication Inc., USA
22. Govender, R., (2007) '*The role of school library committee in governance research*', UKZN, South Africa
23. Government of the Republic of South Africa, (1968), '*State Tender Board Act 86 (STBA)*', South Africa
24. Government of the Republic of South Africa, (1998), '*Administrative Adjudication of Road Traffic Offences Act 46*', South Africa
25. Government of the Republic of South Africa, (1998), '*State Fragmentation of processes and systems makes SCM compliance difficult Information Technology Agency Act 88*' South Africa
26. Government of the Republic of South Africa, (1999) '*Public Finance Management Act*' South Africa National Treasury, South Africa

27. Government of the Republic of South Africa, (1999), '*Road Traffic Management Corporation Act 20*', South Africa
28. Government of the Republic of South Africa, (2000) '*Construction Industry Development Board Act 38 (CIDBA)*' , South Africa
29. Government of the Republic of South Africa, (2000), '*Local Government: Municipal Systems Act 32*' (*Systems Act*), South Africa
30. Government of the Republic of South Africa, (2000), '*Preferential Procurement Policy Framework Act 5*' (PPPFA), South Africa
31. Government of the Republic of South Africa, (2000), '*Promotion of Access to Information Act 2 (PAIA)*', South Africa
32. Government of the Republic of South Africa, (2000), '*Promotion of Administrative Justice Act 3 (PAJA)*' , South Africa
33. Government of the Republic of South Africa, (2002), '*Disaster Management Act 57*'
34. Government of the Republic of South Africa, (2003), '*Armaments Corporation of South Africa, Limited Act 51*' , South Africa
35. Government of the Republic of South Africa, (2003), '*Broad-based Black Economic Empowerment Act 53 (BBBEEA)*' , South Africa
36. Government of the Republic of South Africa, (2003), '*Local Government: Municipal Finance Management Act 56*' , South Africa
37. Government of the Republic of South Africa, (2004), '*Prevention and Combating of Corrupt Activities Act 12 (Corruption Act)*' , South Africa
38. Government of the Republic of South Africa, (2004), '*Public Audit Act 25*' , South Africa
39. Government of the Republic of South Africa, (2005) , '*Nursing Act 33*' , South Africa
40. Government of the Republic of South Africa, (2005) '*Treasury Regulations: PFMA*', Section 16, South Africa: National Treasury.
41. Government of the Republic of South Africa, (2009), '*Financial Management of Parliament Act 10*' , South Africa
42. Government of the Republic of South Africa, (2009), '*National Land Transport Act 5*' , South Africa
43. Government of the Republic of South Africa, '*Constitution of Republic of South Africa*' Juta Limited, South Africa

44. Government of the Republic of South Africa, '*Health Professions Act 56*' , South Africa
45. Government of the Republic of South Africa, '*National Supplies Procurement Act 89*' , South Africa
46. Government of the Republic of South Africa '*Housing Act 107*' , South Africa
47. Gravetter F. and Forzano L. (2012), '*Research Methods for the behavioural sciences*' 5th Edition, USA
48. Grimsey D. and Lewis M. K. (2004) '*Public Private Partnerships: The worldwide revolution in infrastructure provision and project finance*' Edward Elgar Publishing Inc. USA.
49. Grimsey D. and Lewis M., (2004), '*Public Private Partnership: A worldwide Revolution in infrastructure provision and project finance*' , Edward Elgar publishing.
50. Grotsch V., Blome C. and Schleper M. (2013) '*Antecedents of proactive supply chain risks management: A contingency theory perspective*' *international journal of production research Vol. 5 Issue no. 10* 2842-2867, Traylor and Francis Publication, UK.
51. Growland-Debbas V., (2004) '*National Implementation of United Nations Sanctions: A Comparative Study*' Martinus Nijhoff Publishers, Boston.
52. Gummesson E., (2000) '*Qualitative Methods in Management Research*' , Sage Publication Inc. London.
53. Hahn C., (2008) '*Doing qualitative research using your computer: A Practical guide*' , Sage Publication Inc., UK
54. Harper D. and Thompson A. R., (2012) '*Qualitative methods in mental health and psychotherapy*' Wiley-Blackwell Publication, USA
55. Hart E., (2005) '*Hospital ethical climates and registered nurses turnover intention*' , Volume 37, Issue 2. National Laboratory, USA
56. Hodge G. and Greve C. (2007) '*The Challenges of Public Private Partnerships: Learning from International Experience*' Edward Elgar Publishing Inc. USA
57. Househam A., and Bombis E., (2015) '*Supply chain sustainability: a practical guide for continuous improvement*' Second Edition, UN Global Compact Office and BSR United Nation.
58. Hsieh H. and Shannon S. E., (2005) '*Qualitative Health Research*' Volume. 15 Issue no. 9 Sage Publications, USA

59. Jacobs, F. R. and Chase R. B. (2008) '*Operations and Supply Chain Management: The Core*', McGraw-Hill, New York
60. Jacobs, F. R., Berry, W. L., Whybark, D. C. and Vollmann, T. E. (2011) '*Manufacturing planning and control for supply chain management*' McGraw- Hall, New York.
61. Joseph F. H., Babin B, Money A. H and Samouel P., (2003) '*Essentials of business research methods*' Routledge, Wiley International Edition, USA
62. Kachwee and Hartmann (2013) '*Hospital Supply Chain Management and Optimisation*', Stellenbosch, South Africa.
63. Kaplan R, (2010) '*Conceptual foundation of the balanced scorecard*' *Handbook of management accounting research* Vol. 3, Elsevier, Harvard
64. Khan O and Zsidisin A, (2012) '*Handbook for supply chain risk management: case studies, effective practices and emerging trends*' J. Ross Publishing, UK
65. Kilubi I., (2015) '*Supply Chian Risk Management enablers- A framework development through system review of the literature form 2000-2005*' *Int. Journal of Business Science and Applied Management*, Volume. 10, Issue 1, 2015, Hans–Dietrich Haasis, Germany.
66. Kushwaha G. S., (2012) '*Operational Performance through Supply Chain Management Practices*' *International Journal of Business and Social Science*, Volume. 3 Issue No. 2 Bhopal, India
67. KwaZulu-Natal Department of Health (2013/14) '*Annual report*', Vote 7, Republic of South Africa.
68. KwaZulu-Natal Department of Health, (2016) '*Irregular Expenditure Standard Operating Procedures*' South Africa.
69. McConnell A., (2010), '*Understanding Policy Success: Rethinking Public Policy*', Palgrave Macmillan, New York.
70. Miguel P. and Brito L. (2011) '*Supply Chain Management measurement and its influence on operational performance*' *Journal of Operations and Supply Chain Management* Volume 4 Issue no. 2 pp. 56-70. FGV SB, Brazil.
71. Mueller D.C, (2003) '*Public choice III*' Cambridge University Press, Cambridge, England.
72. Neuman, W. L. (2006). '*Social research methods: Qualitative and quantitative approaches*' (6 Ed.). Pearson Education, Boston.
73. Nienaber, H. (2007) '*Assessing the management status of South Africa*' *European Business Review*, volume 19 issue: 1, Europe.

74. Polonsky M. J. and Waller D. S., (2011) '*Designing and managing a research project: A business student's guide*' Sage Publication, USA.
75. Pretorius C, Ruthven G, and Leipzig K, (2013) '*An empirical supply chain measurement model for a national egg producer based on supply chain operations reference model*' 7(1), Art, Page 97 and 13, Available from: <http://dx.doi.org/10.4102/jtscm.v7i1.97>. [29 June 2016]
76. Rios-Mercado R. Z. and Rios-Solis Y. A., (2011), '*Just-in-time system*', Springer Science and Business Media, Mexico.
77. Rohm H., Wilsely D., Perry G. and Montgomery D. (2013) '*The institute way: simplify strategic planning and management with the balance scorecard*' 1st Edition, The Institute Press.
78. Ross D. F., (2016) '*Introduction to Supply Chain Management Technologies*' 2nd Edition, Taylor and Francis Group.
79. Russell, R. S. and Taylor, B. W., (2011) '*Operations Management*' John Wiley & sons. Inc., UK
80. Seidman, I. (1998). '*Interviewing as qualitative research a guide for researchers in education and social science*'. Teachers College, New York.
81. Sekeran U and Bougie R (2010) "*Research Methods*" John Wiley & Sons Inc., UK.
82. Sekeran U., (2010) '*Research methods for business: A skill-building approach*' John Wiley and SonS Inc., UK.
83. Simchi-Levi D., Kaminsky P. and Simchi-Levi E., (2008) '*Designing and Managing Supply Chain: Concepts, Strategies and Case studies*', International edition, McGraw-Hall, New York.
84. Sisco C., Chord B., and Pruzan-Jorgensen P. M. (2010) '*Supply chain sustainability: a Practical Guide for Continuous Improvement*' , Megan Larson, United Nation.
85. Slack, N., Chambers, S. and Johnston, R. (2010) '*Operation Management*' Pearson, Rotolito Lombarda, Italy
86. Sodhi M.S and Tang C. S., (2012), '*Special Issue of Production and Operations Management: Socially Responsible Operations*', Volume 21, Issue 4, John Wiley and Sons Inc., UK.
87. Stadtler H. and Kilger C., (2008) '*Supply Chain Management and Advanced Planning: Concepts, Models, Software, and Case Studies*' 4th Edition, Springer-Verlag Berlin Heidelberg, New Delhi, India.

88. Supply chain councilor (2003) '*An evaluation of process-oriented supply chain management frameworks*', Volume 26, Issue 1., John Wiley and Sons Inc., UK.
89. Taylor R., and Blair S., (2002) '*Public Hospitals- Options for Reform through Public-Private Partnerships*', Note Number 24, Washington, DC.
90. Trochim W.M.K, (2006), '*Research methods: Knowledge Base*' Web Center for Social Research Methods. Cornell University, USA
91. Walliman N., (2011), '*Research Methods: The basic*', Taylor and Francis Group, London and New York.
92. Wang J., (2009) '*Innovations in Supply Chain Management for Information Systems*', TGI Global, South Africa
93. Waters D. (2011), Supply Chain Risk Management: Vulnerability and resilience in logistics', 2nd edition Kogan page, London.
94. Westpac group Report (2014), '*Annual Review and Sustainability Report*' Australia
95. Wilsely D., Perry GS. and Montgomery D., (2013) '*Merger and Acquisition pay-off optimization: the commercial imperative*' , Institute Press, USA
96. Wilson, J. (2010) '*Essentials of business research: A guide to doing your research project*' SAGE publications Ltd, USA.
97. Wisner J, Tan K and Leong G, (2015) '*Principles of supply chain management: A balance approach*' Cengage learning, USA.
98. Xiong W, Yu Y, Cao Y (2015) '*A Conceptual model of supply chain risk mitigation: The role of supply chain integration and organisational risk propensity*' Journal of coastal research Issue 73, Coastal Education and Research Foundation, China.
99. Yescombe E. R., '*Public-Private Partnerships: Principles of Policy and Finance*': Heinemann, Butterworth.
100. Young J., (2006) '*Operational Risk Management: The practical application of a qualitative approach*' Van Schaik Publishers, First Edition, Pretoria, South Africa.
101. Young J., (2014) '*Operational Risk Management*' Van Schaik Publishers, Second Edition, Pretoria, South Africa
102. Zailani S., Jeyaraman K., Vengadasan G. and Premkumar R. (2012), '*Sustainable Supply chain management*' International Journal of Production Economics, Volume 140, Issue 1, Malaysia.

103. Zandhessani H. and Savoji A. (2011) '*Risk Management in Supply Chain Management*' International Journal of Economics and Management Sciences, Volume. 1, Issue No. 3 JEMS.
104. Zhou H., Benton W.C., Schilling D.A., Milligan G.W., (2011) '*Supply Chain Intergration and the SCOR Model*' Journal of Business Logistics, Volume 32, Issue 4: 332-344, Council of Supply Chain Management Professionals.

Appendices

Appendix A

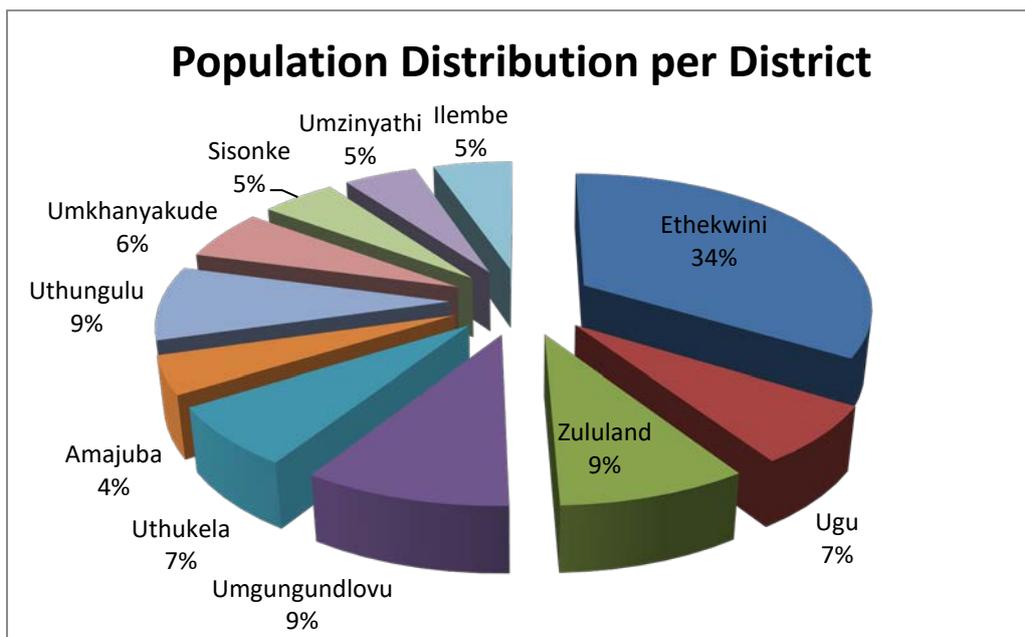
Error in relabelling



Appendix C

Population Distribution per District

Ethekwini	33.80%
Ugu	6.90%
Zululand	8.80%
Umgungundlovu	9.60%
Uthukela	7%
Amajuba	4.40%
Uthungulu	8.70%
Umkhanyakude	5.90%
Sisonke	4.90%
Umzinyathi	4.80%
Ilembe	5.20%



Source: Department of Health KZN Annual Report (2012)

Appendix D –Glossary

80:20: The 80/20 preference point evaluation system is applied in terms of the Preferential Procurement Policy Framework Act No.5 of 2000, for the acquisition of services, works or goods up to the Rand value threshold of R1 million through which the points for price is calculated to a maximum of 80 points, in respect of tenders (including price quotations) with a Rand value equal to, or above R30 000 and up to a Rand value of R1 000 000 (all applicable taxes included); and to calculate the points for preferences, with a maximum of 20 points, to a tenderer for attaining a B-BBEE status level of contribution based on its overall performance using the relevant scorecard contained in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act, No 53 of 2003, with the points scored for price and preferences added together to indicate a winning tenderer.

90:10: The 90/10 preference point evaluation system is applied in terms of the Preferential Procurement Policy Framework Act No.5 of 2000, for the acquisition of services, works or goods above the Rand value threshold of R1 million through which the points for price is calculated to a maximum of 90 points, in respect of tenders with a Rand value above R1 000 000 (all applicable taxes included); and to calculate the points for preferences, with a maximum of 10 points, to a tenderer for attaining a B-BBEE status level of contribution based on its overall performance using the relevant scorecard contained in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act, No 53 of 2003, with the points scored for price and preferences added together to indicate a winning tenderer.

Ad Hoc Contract: A contract arranged on the request of only one department for a once-off requirement for supplies or services, the hiring or leasing of any item, the acquisition or granting of any right or the disposal of movable state/ Department property.

Accounting Officers (AOs): Accounting Officers the terms used for Director Generals, Heads of Department, Chief Executive Officers accountable for the finances and operations of the government entity or department Basic

Annual General Exemption or AGE: Authority granted annually by the Accounting Officer to institutional quotation committees to deviate from normal procurement processes in specific instances.

Basic Accounting System (BAS): used in some of the government departments for reporting transactions against budgets and monitor expenditure.

Quotation Adjudication Committee (QAC): Appointed by the accounting officer to consider the reports and recommendations made by the evaluations committee. It approves specifications / terms of reference and conditions and the awarding of resultant in case of bids.

Quotation Evaluation Committee (QEC): Evaluates and verifies bids received in terms of specifications/ terms of reference and conditions. It also verifies and evaluates, capability of the bidder to execute contract. It also compiles a report to the Quotation Adjudication Committee recommending a successful bidder.

Quotation Specification Committee (QSC): Compiles the specification/ Terms of Reference for the procurement of goods and services by the department or institution. It also verifies availability of funds prior initiating the procurement process. Determines the sourcing strategy, setting of conditions, determining evaluation criteria.

Quotation Specifications: Drafted when an item must be procured. It must be drafted in an unbiased manner to allow all potential suppliers to offer their goods or services.

Capacity Development: A process, through which the ability of individuals, institutions and societies to perform functions, solve problems, and set and achieve objectives in a sustainable manner are obtained, strengthened, adapted and maintained over time.

Central Supplier Database: Database of all names of suppliers supplying different goods; services or works to a state institution maintained by the National Treasury.

Construction Industry Development Board (CIDB) Act: Construction Industry Development Board (CIDB) Act no 38 of 2000 that provides for the establishment of the Construction Industry Development Board to implement an integrated strategy for the reconstruction, growth and development of the construction industry. Contract Agreement that results from the acceptance of a tender by an organ of state.

Designated Sectors: A sector, sub-sector or industry that has been designated by the Department of Trade and Industry in line with national development and industrial policies for local production, where only locally produced/manufactured services, works or goods meet the stipulated minimum threshold for local production and content.

Financial Management Capability Maturity Model (FMCMM): The FMCMM is a tool used by National Treasury and Departments to evaluate and monitor government institutions financial, performance and compliance management. Functionality The measurement according to predetermined norms, as set out in the tender documents, of a service or commodity that is designed to be practical and useful, working or operating, taking into account, among other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of a tenderer.

Fruitless and wasteful expenditure: Expenditure that is made in vain and would have been avoided had reasonable care been exercised.

Infrastructure Delivery Management System (IDMS): Refers to the Infrastructure Delivery Management System, which is a standardised approach for planning, procurement, management and delivery of infrastructure aligned to South African legislation. It thus comprises a set of interrelating or interacting elements that establish processes for public sector infrastructure delivery and management.

Instruction Note: Supplementary legal notices that provide specific instructions on the application of rules and procedures.

Irregular expenditure: expenditure or any other unauthorised expenditure, incurred in contravention of or that is not in accordance with a requirement of any applicable legislation including the State Tender Board Act, 1968 (Act No. 86 of 1968) as well as provincial legislation providing for procurement procedures in a provincial government.

Local Content: The portion of the tender price which is not included in the import content, provided that local manufacture does take place.

Municipal Guidelines: Procedural interpretations of regulations to provide proper application of the law.

National Development Plan: A planning framework prepared by the National Planning Commission that aims to eliminate poverty and reduce inequality by 2030.

National School of Government: The National School of Government (NSG) replaces Public Administration Leadership and Management Academy (PALAMA)

Non-compliance: failure or refusal to comply with the law, regulation or the term of contract

Norms and Standards: Legal standards set to achieve an abiding set of behavioural norms to guide proper application of the law.

O-CPO: Office of the Chief Procurement Officer within the National Treasury, replace the Specialists Functions that dealt with Supply Chain Management.

Price: The price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax, which in terms of the law or regulations, is binding on the contractor and demonstrably has an influence on the price of any supplies, or rendering costs of services for the execution of the contract.

Procurement: The act of buying goods, services and works through a regulated supply chain process that covers the processing of a demand up unto receipt of the requirement and approval of the payment at the end.

Professionalisation: In this context, professionalisation refers to the process of developing the knowledge, skills and experience required for officials to be qualified and recognized as professionals in the field.

Public Finance Management Act (PFMA): The act regulating financial management of national and provincial government, including efficiency and effectiveness of the public expenditure and the responsibilities of those engaging with government financial management.

Public Financial Management Capacity Development Strategy: The PFM capacity development strategy provides a national perspective to address capacity constraints and sets out four strategic objectives supported by key activities.

SCM Capability Maturity Model: A component of the FMCMM that assesses the SCM capability within an organisation

SCM Master Learning Curriculum: The SCM Master Learning Curriculum identifies and outlines the totality, sequence and series of required learning experiences or opportunities in public sector SCM, enabling state institutions to channel resources into the areas where they will contribute the most to employee development, and enhance morale and organisational performance.

SCM Treasury Regulations: The regulatory framework for the application of the supply chain management policy in government.

Service Level Agreement (SLA): A Service Level Agreement is a document that is used to define the level of a service that exists between a service provider and a customer. The agreement is generally expressed in simple language so that it can be clearly understood by the customer. The document may also include more technical terms for defining the service. The Service Level Agreement is often part of a wider service contract. A Service Level Agreement can either be an informal contract between parties or a legally binding contract. The SLA may address several areas including the availability of the service, the performance of the service, how it will operate, priorities, and responsibilities of involved parties, guarantees and warranties. As well as defining key areas, the Service Level Agreement may also specify a level of service, including targets and a minimum level that can be reached (SLA Template.com, 2014).

Supply Chain Management: The design, planning, execution, control and monitoring of supply chain activities in the delivery of goods or services, with the objective of creating net value and providing oversight and co-ordination of information and finances within the supply chain.

TCO: Encompasses the total life cycle cost associated with goods and services from initiation/development to disposal/ need fulfilment. When incorporated in any financial benefit analysis it provides a cost basis for determining and understanding the direct and indirect costs drivers contributing to the overall spend.

Tenderer/ Bidder: Any natural or legal person who makes an offer in response to request to submit price quotation.

ZNB file: It is reference that is used as the identification for contract files that the department have developed.

ZNQ file: It is reference that is used as the identification for a quotation transaction files that the department have developed.

Appendix E- Interview Questions

Interview questions

**Research title: Evaluating risk to supply sustainability: a study in KwaZulu-Natal
Health institution (Hospital)**

The interview question will be divided into three set of question namely:

➤ *Section one: Questions about supply chain management processes*

1. In terms of supply chain management process what are the processes that you follow in procuring an item taking into consideration external and external factors. To what extent are these procedure followed?
2. How do these stakeholders fit together and what effect do they have on SCM sustainability in order to produce better service delivery to the community?
3. Health institutions works with people's lives and you come across emergency cases, following proper SCM procedures can be challenging. What are the challenges and how do you deal with such issues within the hospitals? Looking at internal and external factors
4. In order to maintain sustainability in SCM processes there are stakeholders involved, that plays a vital role in each and every step. Briefly illustrate who are these stakeholders and how are they related to each other?

➤ *Section two: Questions about risks creation factors during the operation of an organisation*

1. In terms of SCM perspective what could be the notable source of risk that could affect health institutions operation? Externally and internally?
2. Adapting to technical changes and resilience to change could be a challenge in organisation. Do you think technology have an impact in risk creation and how?
3. During the operation within the hospital what can you identify as the creation of risk in supply chain management?
4. What can you identify as the factors that can be utilized to minimize or mitigate risk within an organisation's operation

➤ *Section three: Questions about negative impacts of risks to supply chain sustainability*

1. What are the negative impacts of risks to supply sustainability? Briefly illustrate.
2. Risk factors portraits bad image in an organisation and they cannot be finished but there are ways to mitigate risks. What are the majors that your institution follows in order to mitigate risks?
3. What are the results obtained after the process?
4. With reference to educational level would you say it can be primary source of uplifting or developing the existence of SCS within health institution?
5. What is your opinion in the development of supply sustainability?
6. If you were to be employed as a Supply Chain Risk Manager in a public hospital what would you implement, if you were assigned to head a project about “Evaluating risk to supply sustainability”?

Appendix F- Informed Consent Letter Cover



School of Management, Information Technology and Governance

Faculty of Law and Management Studies

**UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS
COMMITTEE (HSSREC)**

Information Sheet and Consent to Participate in Research

Greetings,

My name is **Mbalenhle Pretty Gwala from University of KwaZulu-Natal**, contact number: 0795819533 email address: gwala.mbalenhle@gmail.com

You are being invited to consider participation in a study that involves research titled “Evaluating risk to supply sustainability: a study in KwaZulu-Natal Health Department”. The study is about gaining more knowledge on challenges that health institutions are facing in supply chain management. Working in Technical support service have made me release that the best way in which a person can provide better support and guidance is to conduct a study that will give an in-depth understanding of an institution’s operation. In that way we can be able to identify the loopholes where assistant is needed to maintain good service delivery within the organisation

The aim and purpose of this study is to assist in identify and mitigating risks that may affect supply chain sustainabilityand also affect compliance within the department. The study is expected to include 15 participants who are supply chain management as well as finance officials at Inkosi Albert Luthuli Hospital- Department of Health KZN. It will involve the following procedures: visiting of health Institution and conducting a structured face to face interviews and observation.

The duration of participation if you choose to grant consent to the study is expected to be approximately one month. The study is funded by the University of KwaZulu-Natal. There are no risks and discomforts that may be caused during the study. We hope that the study will create benefits such as understanding of SCM procurement procedures leading to an increase in the level of compliance and also identifying the reason behind non-compliant areas.

This study has been ethically reviewed and approved by the UKZN Research Proposal Review Committee for Research and Higher Degrees: School of Management IT & Governance.

In the event of any problems or concerns/questions you may contact me at 0795819533/0338467358 or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details are as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban 4000 KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

Participation in the study is voluntary and by approving, you are granting the researcher permission to use the responses. You may refuse the participation or withdraw from the study at any time with no negative consequence. There will be no monetary gain from participating in the study. Your anonymity will be maintained by the researcher and the School of Management, I.T. & Governance. The responses will not be used for any purposes outside of this study.

All data, both electronic and hard copy will be securely stored during the study and archived for 5 years. After this time, all data will be destroyed.

If you have any questions or concerns about the study, please contact me or my research supervisor Professor Maxwell Phiri at the following contact details:

Tel. no: 033 260 5843

E-mail: phirim@ukzn.ac.za

Sincerely

Miss Mbalenhle Pretty Gwala

Date

CONSENT TO PARTICIPATION

Ihave been informed about the study titled “Evaluating risk to supply chain sustainability: a study in KwaZulu-Natal Health Department” by Mbalenhle Pretty Gwala.

I understand the purpose and procedures of the study.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at 0795819533 email address gwala.mbalenhle@gmail.com.

If I have any questions or concerns about my rights, or if I am concerned about an aspect of the study or the researcher’s then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557 - Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

I hereby provide consent to:

Audio-record interview / focus group discussion	YES / NO
Video-record interview / focus group discussion	YES / NO
Use of photographs for research purposes	YES / NO

Consent Signature

Date

**Signature of Witness
(Where applicable)**

Date