Gordon Institute of Business Science
University of Pretoria

Factors influencing sustainable procurement within the private and public sectors in South Africa

Kisten Gounden

23349132

A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration

9 November 2015

ABSTRACT

Research Purpose:

Businesses are currently struggling with the challenges of building a competitive advantage; however the current trend for being successful is through adopting an all-inclusive corporate responsibility idea of sustainability. Sustainability within an organisation is supported by sustainable procurement. The purpose of the research is to identify the factors that lead to the effective implementation of sustainable procurement.

Research Methodology:

A quantitative and descriptive research approach was conducted. This was implemented through a self-administered online survey questionnaire, which was sent to procurement specialist and managers within the private and public sectors. The basis for the research was formed through a literature review, which focused on the factors effecting sustainable procurement within the private and public sectors. The research carried out statistical data analysis on the elements contributing to best practice, enablers, opportunities, the country's competitiveness and barriers to sustainable procurement.

Research Finding:

The results reveal that there is a distinct difference between the factors that impact sustainable procurement within the private and public sectors. The factors affecting private sector are more inclined to measurement and tracking, leadership and the alignment of the company and procurement strategy, public sector investment and knowledge and awareness of sustainable sourcing. The public sector is influenced by clear policy, strong technical expertise, strategic partnership, and the potential to export locally manufactured goods.

Keywords:
Sustainable supply chain, sustainable procurement, green procurement

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination at any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Name: Kisten Gounden

Signature:

Date:

Table of Contents

ABSTRACT i

Keywords: i

DECLARATION ii

LIST OF TABLES vii

LIST OF FIGURES viii

CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM 1

1.1 Introduction 1

1.2 The Background of the Problem 3

1.3 Research Objectives and Motivation 4

1.4 The Research Report Structure 5

CHAPTER 2: LITERATURE REVIEW 7

2.1 Introduction 7

2.2 Best Practices for Sustainable Procurement 9

2.2.1 Collaboration with suppliers 9

2.2.2 Leadership skills 10

2.2.3 Policy and regulations 10

2.2.4 Stringent tender condition and evaluations 11

2.2.5 Measurement and tracking of progress 13

2.2.6 Competitive Advantage 13

2.2.7 Technical Expertise 13

2.3 Enablers of Sustainable Procurement 14

2.3.1 Leadership 14

2.3.2 Planning strategy and goal setting 14

2.3.3 Sustainable supplier availability 14

2.3.4 External pressure: 15

2.3.5 Centralised procurement (economies of scale) 15

2.4 Opportunities to Attain Sustainable Procurement 15
2.4.1 Increased awareness and education 15
2.4.2 Brand image and consumer pressure 16
2.4.3 Supplier performance 17
2.4.4 Company strategy: 17
2.5 Public Sector Opportunities to attain Sustainable Procurement 18
2.5.1 Tracking of mandatory targets 18
2.5.2 Strategic partnerships 19
2.6 The Effect on the Country's Competitiveness 20
2.6.1 The increase in financial performance of environmentally friendly companies 20
2.6.2 Increase in manufacturing and technology 21
2.7 Barriers that Prevent Organisations from achieving Sustainable Procurement 22
2.7.1 Environmentally friendly products are expensive 22
2.7.2 Policies 22
2.7.3 Procurement is decentralised 23
2.7.4 Awareness 23
2.8 Summary to Literature Review 23
CHAPTER 3: RESEARCH QUESTIONS 28
3.1 Research Proposition 28
3.2 Supporting Research Questions 28
CHAPTER 4: RESEARCH METHODOLOGY 31
4.1 Research Overview and Design 31
4.2 Population 32
4.3 Sampling Method and Size 32
4.4 Unit of Analysis 33
4.5 Research Instrument 33
4.6 Data Collection Process 34

4.7 Data Analysis 35
4.7.1 Descriptive statistics 35
4.7.2 Test for reliability 35
4.7.3 T-Test 36
4.8 Assumptions 36
4.9 Research Limitation 37
4.10 Summary 37
CHAPTER 5: RESULTS 38
5.1 Introduction 38
5.2 Basic Demographic Profile of the Sample 38
5.3 Descriptive Statistics 40
5.4 Tests for Reliability: 49
5.5 T− Test 57
5.5.1 T−Test – Best Practice 57
5.5.2 T-Test – Enablers 59
5.5.3 T-Test – Opportunities 60
5.5.4 T-Test – Competitiveness 62
5.5.5 T-Test – Barriers 64
CHAPTER 6: DISCUSSION OF RESULTS 66
6.1 Introduction to Chapter 6 66
6.3 Research Question 1: Best Practice 67
6.4 Research Question 2: Enablers 71
6.5 Research Question 3: Opportunities 75
6.6 Research Question 4: Country Competiveness 79
6.7 Research Question 5: Barriers 83
CHAPTER 7: CONCLUSION 90
7.1 Introduction 90

7.2 Principal Findings 90

7.3 Recommendations for Managers 94

7.4 Recommendations for Organisations 94

7.5 Limitations of the research 95

7.6 Suggestions for future research: 96

REFERENCES 97

APPENDICES 105

APPENDIX A: COVER NOTE OF SURVEY LETTER 105

APPENDIX B: QUESTIONAIRE 106

APPENDIX C: ETHICS CLEARANCE 111

LIST OF TABLES

Table 1: Gap Analysis…….. 26
Table 2: Research Methodology Overview…… 33
Table 3: Cronbach Alpha coefficients…… 36
.Table 4 Results for Total Respondents on Best Practice…… 41
Table 5 Results for Private Sector Respondents on Best Practice…….. 41
Table 6 Results for Public Sector Respondents on Best Practice ……... 42
Table 7 Results for Total respondents on Enablers…… 43
Table 8 Results for Private sector respondents on Enablers…… 43
Table 9 Results for Public sector respondents on Enablers…….. 43
Table 10 Results for Total respondents on Opportunities …… 44
Table 11 Results for Private Sector respondents on Opportunities…… 45
Table 12 Results for Public sector on Opportunities……... 45
Table 13 Results for Total respondents on Competitiveness…… 46
Table 14 Results for Private Sector on Competitiveness……... 46
Table 15 Results for Public Sector on Competitiveness…… 47
Table 16 Results for Total respondents on Barriers…… 48
Table 17 Results for Private Sector on Barriers…….. 48
Table 18 Results for Public sector respondents on Barriers …… 48
Table 19 Cronbach's Alpha template…….. 50
Table 20 Cronbach's Alpha for best practice…… 50
Table 21 Cronbach's Alpha for Enablers…… 51
Table 22 Cronbach's Alpha for opportunities……... 52
Table 23 Cronbach's Alpha for competitiveness…… 53
Table 24 Cronbach's Alpha for barriers …….. 54
Table 25 Factor Analysis…….. 56
Table 26 T-Test for best practice, private sector…… 57
Table 27 T-Test for best practice, public sector……... 58
Table 28: Test for Enablers, private sector…….. 59
Table 29 T-Test for Enablers, public sector…… 59
Table 30: Test for Opportunities, private sector…….. 60
Table 31: T-Test for Opportunities, public sector…… 61

Table 32: T-Test for Competitiveness, private sector..... 62
Table 33 T-Test for Competitiveness, public sector..... 63
Table 34: T-Test for Barriers, private sector..... 64
Table 35: T-Test for Barriers, public sector..... 65
Table 36: Summary of Results..... 98
Table 37: High Level Summary of Results..... 100

LIST OF FIGURES

Figure 1: Triple bottom line of sustainability..... 8
Figure 2: The impact of policy to promote green public procurement..... 12
Figure 3: A model illustrating the effect of collaboration..... 20
Figure 4: Respondents per private and public sector..... 38
Figure 5: Gender breakdown for the combined sample..... 39
Figure 6: Years of experience within procurement and supply chain..... 39
Figure 7: Respondents position within their organisation..... 40
Figure 8: Best practice comparison..... 68
Figure 9: Enablers: comparison of means..... 72
Figure 10: Opportunities: comparison of means..... 76
Figure 11: Competiveness: comparison of means..... 80
Figure 12: Barriers: comparison of means..... 84
Figure 13: Sustainable Procurement Themes..... 95
Figure 14: Sustainable Procurement Framework Model..... 102
Figure 15: Triple bottom line of sustainability..... 103

CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction

“Businesses are struggling with the challenges of building a competitive advantage in today’s market environment; however, the current trend suggest that the all-inclusive corporate responsibility idea of sustainability” is the solution (Iyer & Ngo, 2015). Sustainability has recently challenged the traditional responsibility of shareholder value creation and stimulated firms to ‘re-invent’ their businesses to become more environmentally friendly and socially responsive, while at the same time, creating economic value (Closs, Speier & Meacham, 2010; (Craig R. Carter & P. Liane Easton, 2011); (Iyer & Ngo, 2015)(Closs, Speier, & Meacham, 2010). Organisations are therefore striving towards ensuring that their supply chains are equally sustainable.

From an academic point of view, (Naim Ahmad & Rashid Mehmood, 2015) argued that sustainability research is necessary due to the emerging legal and compliance issues relating to the three dimensions of sustainability, which includes social, economic and environmental elements. Academics also need to focus their energy to further research in the areas of sustainability. It is also important to appreciate that although managers are ultimately held accountable for organisational performance, the success of the organisation is equally dependent on the success of the procurement function (Tanco, Jurburg & Escuder, 2015).

From a global sustainability standpoint and also leading by example, the United States of America’s president, President Obama very confidently committed that his government will changes current trend to decrease greenhouse gas emissions (‘Leading by Example on Climate Change’, 2015.). Locally, the South African Presidency called for the top eighty companies listed on the Johannesburg Stock Exchange to commit to buying more of their raw materials from local companies in an effort to encourage sustainable procurement.

These are extremely important trends, which are increasingly changing the focus to sustainable procurement and companies. Organisations need to really understand how these would impact their business and ways in which they can transform in order to stay ahead of the pack.

(Mohan, 2008) had raised a concern that the drive by South Africa's Government to secure more of its procurement locally through its designated products programme, has not really been very successful. This is, no doubt, a huge problem and it essentially means that more research is required to establish the possible challenges being experienced by South Africa's organisations in meeting Government's call for sustainability within its supply chain.

(Schneider & Wallenburg, 2012) argued that the implementation of corporate sustainability is driven through a sustainable procurement strategy. Organisations usually outsource a large portion of their activities. Since non-core functions, such as sustainability implementation, are usually outsourced, it is extremely important that these outsourced contracts are strictly managed (Narasimhan & Das, 2001). This ultimately places a huge pressure on the purchasing departments to assist the company in delivering on its mandate, by managing these contracts appropriately.

Many organisations globally are forced to integrate supply chain into their company strategy as well as procurement strategy. Organisations around the world are progressively pressured to integrate sustainability into their procurement processes and strategies. However, numerous efforts procurement specialist engage in these challenges have been delayed by numerous obstacles (McMurray, Islam, Siwar, & Fien, 2014). The aim of this research is to define the modern obstacles that inhibit organisations from achieving sustainable procurement as well as to understand what some organisations are doing to make them successful in implementing sustainable procurement within the private and public sectors in South Africa, with the aim of possibly drawing a contrast between the two.

Since the United States of America have signed the bill to "reduce greenhouse gas emissions", there is added pressure for the rest of the world to follow suit. South Africa has its own set of dynamic market conditions and this research aims to contribute to the body of knowledge by understanding if South Africa has a unique set of barriers and enablers for the successful implementation of sustainable procurement. This research would ultimately highlight the success factors as well as the barriers contributing to the research and business alike, noting that sustainability has been hugely publicised. This is supported by the fact that, over the past twenty years, sustainable procurement has evolved from being a unconventional and unattractive to one where there is much more interest (Pagell & Shevchenko, 2014).

Sustainable sourcing: Pagell, Wu & Wasserman (2010) defined sustainable sourcing as managing all aspects of the upstream elements of the supply chain to maximise the triple bottom line which entails the social, economic and environmental performance. Most definitions of sustainable sourcing share the focus of triple bottom line performance (Pagell & Shevchenko, 2014).

Green Public Procurement (GPP): is defined as "procuring goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured". Further, procurement is a tool that every individual, public authority and private company can use to promote and achieve sustainable consumption(Diófási & Valkó, 2014).

1.2 The Background of the Problem

The research was selected due to the current trend in business, where organisations are competing with each other for market share, however, inclination in the market is to turn into more sustainable companies as this eventually contributes to their bottom line by increasing a positive public perception resulting in increased sales of that product. The increased emphasis on the sustainability aspect has placed huge pressure on companies to balance their triple bottom line, resulting in some world famous companies being unable to handle this pressure, such as Volkswagen. Volkswagen was recently seen as being part of one of the biggest scandals of recent times, resulting in the company losing approximately R64 billion. Volkswagen was accused of allegedly installing software in some of its vehicles that caused US emissions testers into measuring incorrect (lower) emissions than the vehicles actually had and these vehicles thus did not meet the strict US environmental standards (skynews.com, 2015).

The research aims to establish which factors impact sustainable sourcing in the private and public sectors within South Africa. Although the research is performed in a common country, there are vast differences between the private and public sector in terms of leadership, operation, strategy priorities and governance, organisational structures, responsibilities, funding models and social imperatives. The circumstances are hugely different and when comparing the procurement process between the public private entities (Arlbjørn & Freytag, 2012). It is for these reasons, among others, that the research proclaims that the factors that impact the private sector will vary from those impacting the public sector.

The global trend is to be environmentally friendly and 'going green'. Further, there are local pressures in terms of sourcing locally manufactured products to support the social initiatives of the Country. These initiatives are fairly new to the supply chains of some industries, while other industries have acknowledged Government's request and implemented these initiatives. The aim is really to understand the local barriers and enablers of sustainability. It is also to understand which strategies have assisted the local industry to be successful so that one can build on these achievements.

Although China has enjoyed economic growth of approximately ten percent of their gross domestic product per annum over the last decades, this growth was environmentally and socially detrimental, to the effect that 750,000 premature fatalities annually was due to the environmental contamination. Although China has current initiatives that to balance the effect of environmental damage like the Green Revolution, one needs to explore some of the obstacles that prevented a more environmentally sustainable policies that China has experienced and avoid these bad practices (Schwerin & Prier, 2013).

Sustainability procurement studies have been conducted in other countries; however, this study adds to the theory, which will provide insight into the factors influencing sustainable procurement from a South African viewpoint, based on the current economic, political and social conditions. Further, previous research did not consider country competitiveness and best practices, but included enablers, barriers and opportunities; however, even these three factors were very seldom combined together in one study.

In summary, the aim of this research is to examine the views of procurement specialists within the private and public sectors. This study tries to answer an important question which is finding the key factors that really influences sustainability within the different sectors. The second question will be to establish if there are any differences between the two sectors.

1.3 Research Objectives and Motivation

In view of the information outlined, it is important to study and understand the sustainability issues from a local perspective, based on South Africa's dynamics. Therefore, the objectives of the research are to:

- Identify the key elements that impact sustainable procurement on a global environment, within the specific themes of best practice, enablers, opportunities, competiveness and barriers;
- Determine the perceptions of procurement specialists within the public and private sectors relating to the various elements in terms of the factors that most impact them;
- Establish, based on the survey questionnaire, the factors that most impact the private and public sectors;
- Provide guidance to both private and public sector stakeholders based on the research;
- Define a practical framework that could be used to establish the perception of supply chain professionals within a company level.

The objective of the research is to establish which factors influence sustainable sourcing in the private and public sectors as well as to establish if there is a significant difference between the factors that affect these two sectors, based on the perceptions of supply chain professionals.

1.4 The Research Report Structure

Chapter 1 introduced the research title, which relates to the factors influencing sustainable procurement in the private and public sectors. The focus of this research is on the establishing the elements that support sustainability within the South African market conditions. This chapter also outlines the research problem and scope as well as limitations to the research performed. Chapter 2 covers the in-depth review of academic literature as well as key definitions and concepts. Chapter 2 also elaborates on the relevance of the research through arguments that are supported by academic journals. Chapter 3 presents the five main research questions and the objectives for testing the research problem. Chapter 4 outlines the research methodology, which includes the descriptive quantitative research approach that was taken, including the research questionnaire; the research sample; the data collection methodology; and the data analysis process that was followed. Chapter 5 presents the data analysis comprising the demographic and descriptive analysis, followed by the reliability testing, factor analysis and T-Test. Chapter 6 presents the in-depth discussion of the results, which was

analysed in Chapter 5 and Chapter 7 concludes the research report and also highlights the positive and negative factors.

The conclusion makes recommendation of the factors that influence sustainable sourcing within the private and public sectors, from a South African context. This chapter also recommends strategies for organisations to successfully implement sustainability and highlights suggestions for future research.

CHAPTER 2: LITERATURE REVIEW

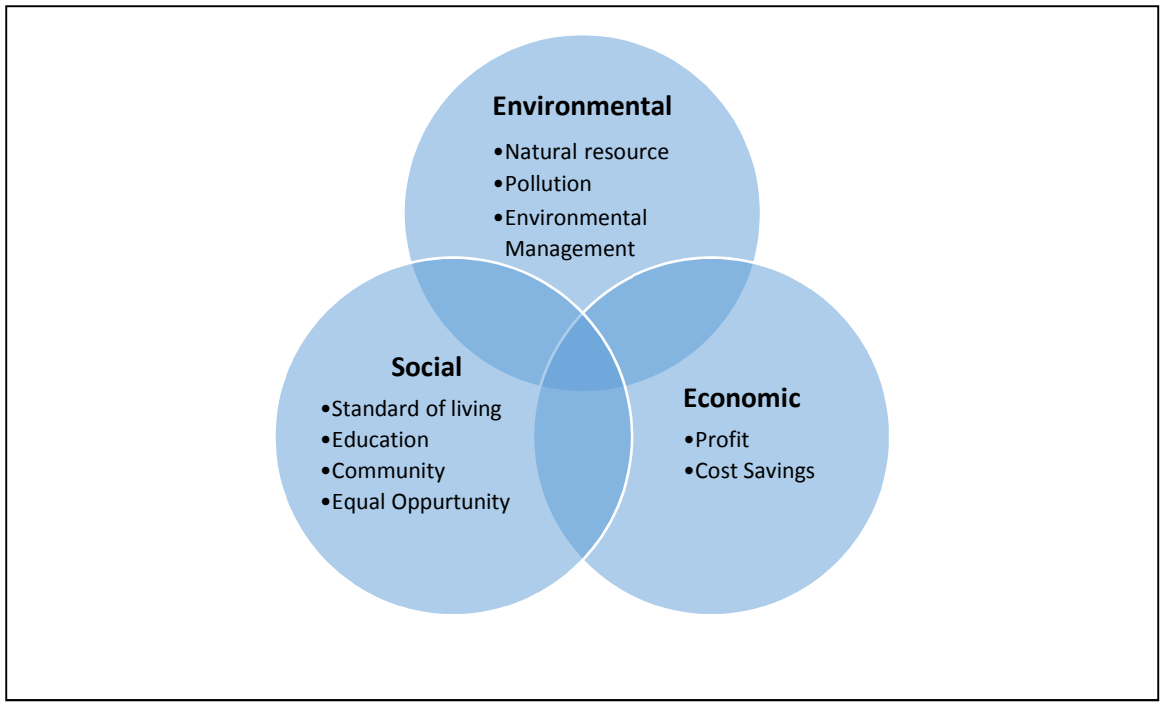
2.1 Introduction

(Miemczyk, Johnsen, & Macquet, 2012) argued that, although the definitions of purchasing, procurement and sourcing vary in scope, they can be grouped together as "procurement".

(Pagell et al., 2010) argued that managers and professionals need to review the outdated methods of purchasing. They need to permanently change by having more environmentally friendly procurement resolution in place. Public procurement practices have already undergone various methods of transformation in an effort to incorporate the sustainability trends into procurement resolutions. These resolutions are extremely influential levers in order for public entities to introduce sustainable measures and implement leadership on sustainable principles (Fisher, 2013).

Further, there has been a major increase in stakeholders' expectations. This is not merely from an economic view, but also incorporating the social and environmental impacts (Pagell et al., 2010). The recent Earth Summit has confronted the global leaders and individuals to reconsider the concept of economic progress so that it ends environmental damage and also appreciates social responsibilities. The message was that only a change of ideals, attitudes and performance could bring about the requisite change (Fisher, 2013). This supports the (Kannegiesser & Günther, 2014) argument that the maximum benefit of sustainability can be attained if there is equilibrium between economic development and environmental and social wellbeing of the organisation as depicted in Figure 1.

Figure 1 : Triple bottom line of sustainability adapted from (Kannegiesser & Günther, 2014)



However, in terms of the successful implementation of sustainable procurement, Walker & Jones (2012) indicated that “one shoe does not fit all”, but those combinations of internal and external factors contribute to the organisation’s success. The items that contribute to the success can be termed ‘enablers’ and the items that impede the success are termed ‘barriers’. The success or failure is really dependent on an organisation’s ability and resilience to manage the challenges (Helen Walker & Neil Jones, 2012). This should be supported by educating citizens on the “sustainable futures” concept. The sustainable futures concept explains how foresight becomes very advantageous to comprehend the consequences of global fluctuations, concentrating on climate change; green economies; social well-being; economic progress; and environmental conservation (Bassi, Becic, & Lombardi, 2014).

The design of the literature review will cover the areas of interest pertaining to sustainable procurement and these areas include:

- The current best practices for successful sustainable procurement implementation;
- Factors that will enable an organisation to attain sustainable procurement;
- Further opportunities for private organisations to improve sustainable procurement;
- Further opportunities for public organisations to improve sustainable procurement;
- The effects of sustainable procurement on countries' competitiveness; and
- The current barriers that prevent organisations from achieving sustainable procurement.

2.2 Best Practices for Sustainable Procurement

The literature review has identified collaboration with supplier, leadership, policy, regulations, stringent tender conditions, measurement and tracking of progress, competitive advantage and technical expertise as best practice elements for sustainable procurement. These elements will be discussed in more detail in the following sections.

2.2.1 Collaboration with suppliers

(Walker & Preuss, 2008) argued that collaborating with suppliers can positively influence opportunities for sustainable procurement. Further sourcing from small local businesses makes a drastic contribution to regional sustainable development. However, (Santos, Svensson, & Padin, 2013) referenced a South African example, where a locally-based company introduced sustainability into their local supply chain and progressively integrated this into the global supply chain. This helps to address social concerns such as unemployment, poverty and education, which essentially strengthens economic sustainability ((Gimenez & Sierra, 2012). Further, studies have shown that organisations who have greater proactivity in their sustainability supply chain strategy have an increased level collaboration with suppliers with increased environmental performance (Santos et al., 2013). (Zhao, Cao, & Li, 2015) contradicted these views by indicating that collaboration may lead to collusion, depicting uncompetitive behaviour. However, the South African public sector is governed by the Public Finance Management Act (PFMA) and public policy dictates an open competitive bid as preferred sourcing methodology.

This would contrast the private sector leadership, which is not governed by the PFMA. The next element entails organisational leadership.

2.2.2 Leadership skills

Leadership skills play an significant part in the success of any business and (Santos et al., 2013) recognised that these skills are imperative to ensure a sustainable organisational strategy. The authors further illustrated that the sustainable practice can positively impact the organisation and that one should not continuously regard sustainability as an expense, with no added benefits. (Metcalf & Benn, 2012) argued that sustainability is fairly complex in nature and it therefore requires skilled leaders, as these leaders obviously need to have the ability to navigate through complex environments incorporating difficult problem solving. However, further research is still required to fully understand such leadership traits.

Nikolaou & Loizou (2015) argued that government leadership interventions are necessary to develop suitable strategic plans for the 'green products suppliers' to be financially sustainable, by creating the consumer appetite for the adoption of 'green products'. These strategic plans should also be reinforced by the most senior leadership (Santos, Svensson & Padin, 2013), and provide an accurate and independent status of implementation, supported by key performance indicator reporting (Bai & Sarkis, 2014). Further, (Nikolaou & Loizou, 2015) indicated that sustainability should be incorporated into employees' scorecards, to evaluate their annual performance. These strategic initiatives and policies need to be translated into practical implementable plans to ensure that public procurement specialists encourage good environmental performance of firms and implement clear sustainable criteria into public contracts.

2.2.3 Policy and regulations

(Fisher, 2013) argued that suitable legal frameworks and regulatory create barriers in the implementations as they are highly political in nature; however, (Sourani & Sohail, 2011) contradicts this view, by arguing that the politician can actually help in removing the barriers to sustainable sourcing. There are really four stakeholders that are involved in the process:

- A regulatory body, such as government;

- Educational and professional institutions;
- Supply chain specialists; and
- End users of the product or service.

To proceed with the sustainable procurement program, all stakeholders should proactively participate. Government and regulatory bodies need to deal with financial, regulatory, policy and guidance obstacles. Individual public procurers should provide adequate training, sufficient time and appropriate communication. Academics and professionals should raise the degree of awareness of sustainability within society. The supply chain ought to proceed with integration and encourage demand on sustainable products (Sourani & Sohail, 2011).

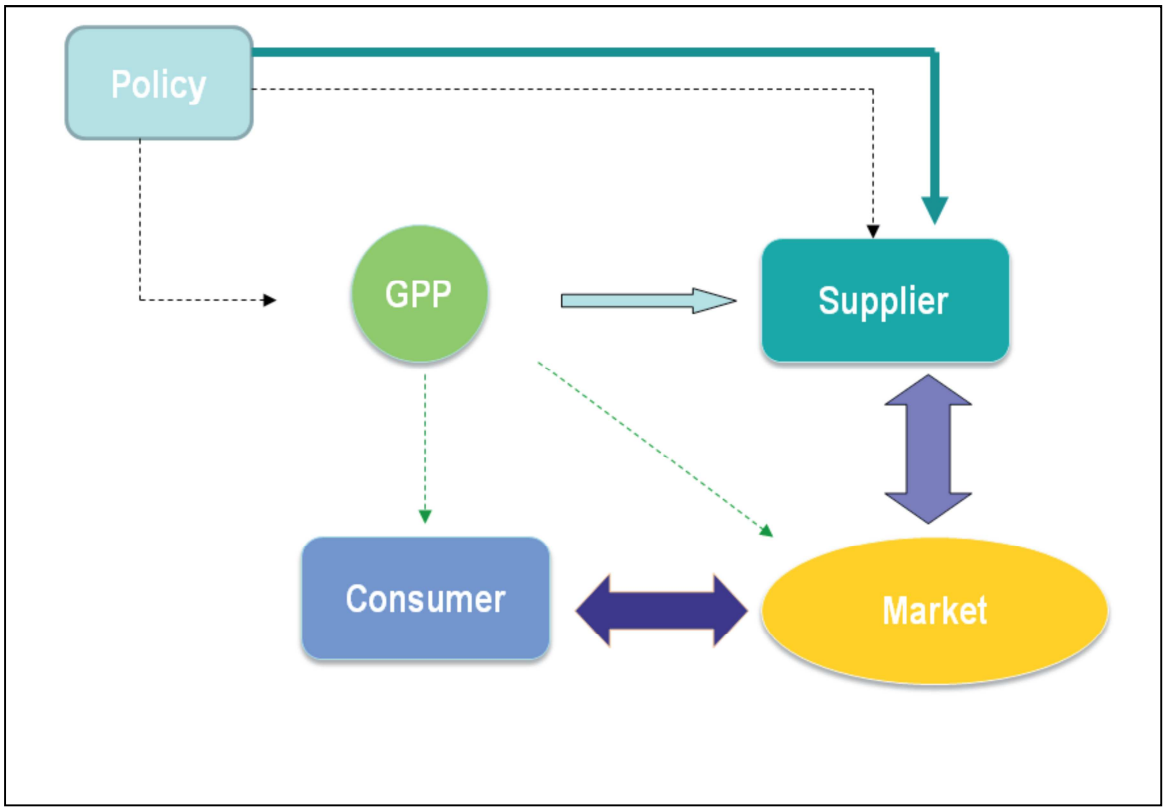
2.2.4 Stringent tender condition and evaluations

(Weller & Pritchard, 2013) argued that public sector procurement has, on numerous occasions, pursued strategic objectives in parallel with their functional objectives within the procurement processes. The benefit is that this initiative contributes to the environment and it is also socially responsible. This was because public procurement is believed to be an instrument to further social aims. Although this process once challenged in court, citing that it was not the “most economically advantageous tender”, the court ruled that the conversation should rather move to how it can be done, than whether sustainable procurement should be permitted. This was encouraging in terms of sustainable procurement winning the case ((Weller & Pritchard, 2013). Fisher (2003) argued that ‘business as usual’ is not an option, when discussing strategic procurement. The author made a specific reference to the courts that has to preside over matters that related to organisation following strategic initiatives which contradicted functional in the procurement processes. The courts were thus tasked with making a decision between the requirements of the environmental and social concerns without overlooking the practical requirements of the procurement procedures. In this case as well, the courts favoured the environmental cause. This shows that the courts and the legal fraternity at large are becoming more aware of the impact of not following the sustainability route.

The consumption of resources substantially exceeds resource availability on the planet; and exhaustion of natural resources is taking place at an alarming rate. However, (Diófási & Valkó, 2014) argued that procuring green products is one of the most active and demonstrative ways of enhancing environmental protection. The model below shows how Green Public Procurement (GPP) can drive sustainable consumption. The policy tools,

similar to other regulations and directives, have an influence on the use and implementation of GPP as well. Suppliers should meet the criteria and take the challenge to innovative and design products to support sustainable production. Since suppliers have a strong connection with the market, in the form of shared interaction, GPP has an indirect effect (dashed green line) on the market through suppliers. If a manufacturer is requested by a large company to design a “sustainable product” this could trigger a situation where the manufacturing company can make these products available to other market, to increase volumes and eventually lower costs. Essentially, with more green products, the entire market demand can progressively be converted to environmentally friendly products (Diófási & Valkó, 2014).

Figure 2: The impact of policy changes to promote green public procurement



In summary, the concept of GPP is based on acquiring green products and services with the most economically advantageous offer. This also considers the three pillars of sustainability: the best green solution throughout the lifecycle of the product or service; the most socially advantageous solution; and the life cycle costing approach on the economic side.

2.2.5 Measurement and tracking of progress

It is becoming increasingly important to track the performance of sustainability of suppliers as this has a direct impact on company competitiveness (Bai & Sarkis, 2014). However, (Ntayi & Mugume, 2014) argued that measuring, tracking and monitoring of suppliers should be performed on an ongoing basis and constructive feedback should be provided to the supplier. This should be integrated into the procurement process to ensure the security of supply of sustainable products.

2.2.6 Competitive Advantage

(Diófási & Valkó, 2014) argued that GPP is one of the most important tools towards achieving sustainable consumption. Governments in some countries require a certain number of public authorities to use green criteria in the tender process. The experiences of most green tenders in some countries demonstrate that the use of GPP is feasible and that the key to successful implementation of Green Public Procurement is commitment and technical expertise. (Metcalf & Benn, 2012) argued that the internal competitive advantage is one of the most important features for an organisation's success. However, while some suppliers are exploiting the advantages by implementing sustainable practices and increasing their lead over their opponents, the remaining suppliers that reluctant to change their negative practices face the risk of possible customer rejection and the ultimate loss of market share (Gold, Seuring, & Beske, 2010). Future commercial tender evaluations will adopt a broad set of criteria and include environmental as well as functional capability (Dragos & Neamtu, 2013). The technical evaluations should follow suite.

2.2.7 Technical Expertise

(Meehan & Bryde, 2011) argued that technical experience and expertise are essential in order to understand and benefit from innovative sustainability practices as well as to initiate the change in behaviour amongst procurement staff. (Erridge & Hennigan, 2012) supported these views by indicating that more technical training is needed in sustainable procurement. (Diófási & Valkó, 2014) indicated that the key to successful implementation of green procurement is the commitment and the solid technical expertise, whereas (Radulescu, 2013) argued that specific leadership traits, which transform the business from an economic focus to a connected business that respects the environment and

people, is the key to success. (Radulescu, 2013) argues that this kind of leadership is responsible for ensuring the change in paradigm whilst creating equilibrium between the social, environmental and economic aspects of sustainability.

2.3 Enablers of Sustainable Procurement

(Diabat, Kannan, & Mathiyazhagan, 2014) described “enable” as being to give “power”, “means”, “competence”, or “ability”.

2.3.1 Leadership

Brammer & Walker (2011) argued that ‘leadership’ is a key driver for the successful implementation of sustainable procurement within organisations. Leadership should be supported by long-term planning and strategy of the company, but the majority of managers of an organisation, irrespective of their dependence on public procurement, appear to act with greater devotion to economic and competitive issues (Nikolaou & Loizou, 2015). The authors further clarified that this could be attributed to the terrible market conditions, due to the financial crisis that forced leaders to pursue innovative plans to deal with economic difficulties, rather than concentrate on policies that actually inflate cost.

2.3.2 Planning strategy and goal setting

(Xielin Liu & Peng Cheng, 2011) argued that governments are becoming more proactive in addressing some of countries’ challenges of sustainability. (Hawkins, Gravier, & Powley, 2011) indicated that the allocation of resources and innovation systems has become an important issue as a government’s procurement budget makes up the major industry sector globally and it is imperative that one understands both sectors adequately prior to strategy development and goal setting.

2.3.3 Sustainable supplier availability

In terms of the manufacture of goods, (Revell & Blackburn, 2007) argued that manufacturers are generally reluctant to respond to global trends and best practices pertaining to sustainability. This is mainly due to the great cost related to and the unavailability of potential second and third tier ‘green suppliers’ to meet their unique

specifications. However, (Zhu & Geng, 2013) argued that public organisations, more specifically governments, need to develop stricter policies that are aligned to the promotion of sustainable practice across the value chain. One way of ensuring that there are suitable suppliers is for organisation to develop their own suppliers. This should be supported by the allocation of tangible resources, investment, human resources and management support. The implementation should be monitored through the evaluation of key performance indicators ((Zhu & Geng, 2013).

2.3.4 External pressure:

(Wolf, 2014) argued that famous court cases, like that of Nestlé, contributed to the view that the sustainable supply chain management is very reactive and generally driven by external pressures. Nestlé was suspected of driving rainforest deforestation through its palm oil suppliers. Besides pressure on food manufacturers, there is huge governmental pressure from user countries to force technology companies to go green, such as the previously-mentioned vehicle emission standards (Hitchcock, 2012). Further, as indicate in the introduction, car manufacturers like Volkswagen are facing tremendous pressure to be more environmentally friendly.

2.3.5 Centralised procurement (economies of scale)

(Testa, Annunziata, Iraldo, & Frey, 2014) argued that green procurement is playing an progressively significant role in motivating the demand for environmentally friendly products and services, especially through the public tender process ((Walker & Preuss, 2008). However, to the contrary, the combined volume will increase contract value, which may ironically create a risk for smaller, less financially viable businesses to be awarded the contract (Walker & Preuss, 2008).

2.4 Opportunities to Attain Sustainable Procurement

2.4.1 Increased awareness and education

(Zhu & Geng, 2013) argued that normative drivers from the market can stimulate companies to initiate their sustainable purchasing efforts. Normative drivers create a sense of obligation through increased environmental awareness of consumers ((Sancha,

Longoni, & Giménez, 2015). The authors argued that, the greater the institutional pressures at a country level, the greater the level of sustainable development and supplier integration. (Zhu & Geng, 2013) further argued that manufacturers with a higher normative behaviour will be more proactive in implementing sustainable purchasing.

(Pagell & Shevchenko, 2014) welcomed a greater understanding of sustainability, as the current knowledge level of organisations is not sufficient to create truly sustainable supply chains. (Radulescu, 2013) argued that the current consumer is increasingly creating pressure on organisations as they are becoming more informed and selective regarding the products they procure. These consumers are prepared to pay more for a 'green' product, thereby creating a competitive advantage for the sustainable suppliers (Radulescu, 2013). Further, although green procurement is seen as a pull factor and is one of the most important tools in achieving green procurement (Diófási & Valkó, 2014), leaders should also invest in alternative technology because the educated customer will create the pressure for more innovative high-technology products (Radulescu, 2013).

2.4.2 Brand image and consumer pressure

(Diabat et al., 2014) stated that manufacturers previously disposed of unprocessed waste into the neighbouring environment, but due to pressure from government through regulations, manufacturers are now forced to improve their knowledge of the environmental issues and have commenced to include sustainable theories in their supply chain management.

(Wolf, 2014) argued that organisations are sometimes unfortunately forced to react to outside pressure from organisations such as Greenpeace, to adopt sustainable procurement principles. Nestlé was one of the companies that were forced by Greenpeace to ensure that their palm oil supply chains become sustainable. Nestlé did improve their supply chain. However, although stakeholder pressure is seen as an enabling factor to support sustainable procurement, it also creates a negative image of the company. Organisations should realise that ensuring sustainable supply chain management in a proactive manner is the right thing to do and it creates a positive impression of the organisation. Some companies are taking advantage of this situation, resulting in a global trend that the World's largest branded multinational companies, such

as Walmart, Coca-Cola, McDonalds, HP and Nike, are competing to become the 'global sustainability champions'. These companies are adopting their goals within the operations and driving their corporate sustainability through their supply chains, thereby acting as global environment leaders (Dauvergne & Lister, 2012).

(Beer & Lemmer, 2011) stated that the consumer perception is changing drastically to embrace a greater concern for matters relating to sustainability, which is supported by the view that those companies that are actually embracing sustainable practice can be at a huge advantage by taking benefit from being first movers in the market ((Paulraj, 2011).

2.4.3 Supplier performance

Supplier performance evaluations and ratings are important as they are measures of the quality of performance attained from a supplier. A positive supplier performance rating is indicative of a high performance supplier. These high performance suppliers are ones usually chosen as partners to assist organisations to achieve their objectives (Bradshaw & Chang, 2013; Amirkhanyan, 2011). The information also assists to monitor and control suppliers and also to establish if they qualify for future work (Bradshaw & Chang, 2013). On the contrary, poor performance assessments may result in those suppliers being excluded from future work, resulting in lost revenue for these suppliers leading to lost opportunities (Williams, 2015).

(Diabat et al., 2014) stated that manufacturers previously disposed of unprocessed waste into the neighbouring environment, but due to pressure from government through regulations, manufacturers are now forced to improve their knowledge of the environmental issues and have commenced to include sustainable theories in their supply chain management.

2.4.4 Company strategy:

Patagonia is one of the many companies that are taking sustainability to the extreme. Patagonia has accomplished this by including sustainability into their company strategy, with the view that a pollution prevention strategy can incorporate external stakeholder views (Fowler & Hope, 2007). However, one of the limitations in the research is that Patagonia is a privately held company, which makes it very flexible in placing more emphasis on sustainability than maximising shareholder return. However, (Lozano, 2012)

argued that maximum results, with the least effort, can be achieved by trying to embed sustainability through the various company initiatives, which is argued to be a more voluntary process.

It must be noted that not all companies have sustainability instilled at the time of being launched. However, as the trend towards sustainability increases, companies are noticing the need to incorporate sustainability into their strategy development. This could be incorporated for various reasons such as brand image, competition or even consumer pressure.

2.5 Public Sector Opportunities to attain Sustainable Procurement

Policymakers should recognise the impact of their policies and regulations on procurement, noting that each country has its own set of policies and conditions, which would influence the implementation strategy (Stephen Brammer & Helen Walker, 2011). The implementation of sustainable procurement within one country is also not consistent, but rather based on individual managers' interpretation of the policy. It is, therefore, imperative that suppliers engage with the relevant authorities to familiarise themselves with the specific requirements of the contracting organisations (Nikolaou & Loizou, 2015). Amann, Roehrich & Harland (2014), recommended that public organisations standardise their requirements, where possible.

2.5.1 Tracking of mandatory targets

Preuss & Walker (2011) acknowledged that there was a need for procurement training for practitioners, with special emphasis on procurement as well as guidance on how to meet both financial and sustainability targets. This should be coupled with agreement on compulsory sustainable development targets. Further, there was a requirement for improved cooperation between public sector organisations and key suppliers to share best practice on sustainable procurement (Preuss & Walker, 2011).

Walker & Jones (2012) argued that reputational risk, customer requirements and organisational factors are key enablers, especially for the public sector procurement. Another enabling factor that creates an opportunity is the ability of procurement to work

with a cross-functional team incorporating other areas of the business such as technical staff, academics and investors, which increases their skills level and also allows the team to embrace new practices (Helen Walker & Neil Jones, 2012).

2.5.2 Strategic partnerships

(Adderley & Mellor, 2014) argued that partnership with 'green organisations', such as the WWF, are currently treated as strategic partnerships as opposed to the traditional relationships of philanthropy and corporate social responsibilities. Further, these types of partnerships are likely to become increasingly common as part of sustainable business models in the years to come. Most, if not all, organisations have a focus on their brand image and some sustainability partnerships will assist in developing market leaders in their particular sector to be able to set the agenda for others to follow. The focus should entail establishing a partnership, which aims to mutually benefit both parties (Adderley & Mellor, 2014).

The public procurement spend is much higher than the private sector's spend (Arlbjørn & Freytag, 2012). Further, the public sector drives much of the private sector business. This creates a huge opportunity for the public sector to spread the correct messages, ensuring that the funds are spent in the correct sectors (Santos et al., 2013). However, in the light of the huge expenditure, the United Kingdom public sector is coming under increasing demand to integrate sustainable construction in their procurement philosophy. However, there were huge barriers faced in trying to incorporate theses supply chain philosophies (Sourani & Sohail, 2011). The barriers include ; limitations on spending and unwillingness to sustain greater investment cost, poor awareness, knowledge, guarantee and demand; inadequate or unreliable policies, guidelines, obligation by leadership; inadequate or unclear guidance, tools and implementation of best practice.

Figure 3: A model illustrating the effect of collaboration, adapted from (Adderley & Mellor, 2014)

	Market orientated ⟵ Towards collaboration		
	Trading tendering	**Two-stage collaboration**	**One-stage collaboration approach**
Innovation level	Specification developed by one party − little or no innovation	Public and private companies develop possible solutions	Public and private companies develop possible solutions in collaboration with each other. The services/products are produced thereafter
Production and/or supply chain level	Companies are requested to bid	Companies are requested to bid	

Sometimes a private company is awarded tender to perform the innovation, production and delivery, with no combined input from the public entity. However, this seems to be missed opportunity as the two way or even the one way collaborative approaches present a platform for more widespread information exchange between the two sectors. In addition it presents a chance for the sector to also study other sectors' practices. This exchange offers an opportunity to re-examine practices within one's own sector and it creates an opportunity enhance one's practices. The aim is to improve by interpreting the sourcing challenges differently (Arlbjørn & Freytag, 2012).

2.6 The Effect on the Country's Competitiveness

2.6.1 The increase in financial performance of environmentally friendly companies

Kiron et al. (2015) indicated that the number of companies without a sustainability business case and value proposition was on the decline from 2009 to 2014. However, the companies which include sustainability as a top management agenda have increased from 46% to 65% from 2010 to 2014.

Although public sector procurement is drastically higher in value than the private sector, it also covers a sizeable part of a country's Gross Domestic Product (GDP) (Hettne, 2013). As the need for companies to adopt sustainable principles increases, so the interaction between non-governmental organisations with the private sector becomes more of a commercial interaction rather than a corporate sponsorship. This would have a greater contribution to the GDP (Adderley & Mellor, 2014).

In terms of creating a large number of green jobs, procurement could immediately create request for anticipated green businesses within a certain location. This can be supported by preferential purchasing policies, which can fast-track the implementation and generate a tremendous amount of jobs. This could even lower the cost of products manufactured and initiate export opportunities. The public sector can make a tremendous contribution to entrepreneurship and small business. It is, therefore, important that local and national government make use of this potential. A major retailer recently entered into a major consultancy contract with a non-governmental organisation, as the retailer sees major benefits in the partnership. The retailers was engaged in sustainability projects, however, some critics contradict this behaviour by indicating that the perception of sustainability being a window dresser with only marginal benefits ((Adderley & Mellor, 2014).

2.6.2 Increase in manufacturing and technology

The protection of the environment has been highlighted as a major objective in China and across Asia. The development of low-carbon technologies like electric cars can place China as a prominent competitor in the next generation technologies, resulting in economic and environment benefits (Schwerin & Prier, 2013).

(Lee & Pati, 2012) stated that service sector studies performed across countries revealed that both environmental and social performances are regarded as significant and competitive factors in improving an organisation's performance. Further, an advanced level of corporate social responsibility will create a much more competitive advantage for organisations.

Although governments should be play a leading as a stimulus for innovative activity large companies within a regions, however (Dragos & Neamtu, 2013) argued that these conditions will compromise the development of small suppliers as the sustainability requirements are very stringent for local small suppliers to participate.

2.7 Barriers that Prevent Organisations from achieving Sustainable Procurement

The barriers within the context of sustainable procurement are typically the factors that hinder an organisation from effectively implementing its sustainable sourcing strategies.

2.7.1 Environmentally friendly products are expensive

Stephen & Walker (2011) argued that the high cost of sustainable products impacts on organisations' financial performance and this is one of the major barriers to sustainable procurement. However, (Pagell et al., 2010) argued that companies that concentrate on improving their environmental and social performance will undoubtedly achieve an improvement in their operational performance and profitability, while (Helen Walker & Neil Jones, 2012) countered that unavailability of technical skills are undoubtedly the reasons for procurement specialists being reluctant to support sustainability products. (Nikolaou & Loizou, 2015) claims that there is insufficient consumer preferences for green products as well insufficient good quality environmental firms, and welcomes specific and clear criteria into public contracts,(Nikolaou & Loizou, 2015).

Rent-seeking behaviour is increasingly becoming an inconspicuous obstacle to sustainable procurement. (Schwerin & Prier, 2013) defined rent-seeking behaviour as being activities that extract excess value without contributing to the actual production of the excess. This occurs in areas where persons, who are involved in transactions, make decisions with the expectation of a positive 'self-interest' return due to their undesirable conduct. This drains the cash flow of a business and basically reduces the economic potential of the organisation to contribute to other important projects, or leads to the closure of an organisation (Schwerin & Prier, 2013). However, (Sourani & Sohail, 2011) claimed that the absence of funding and financial constraints are key barriers to sustainable sourcing. The authors further argued that, in addition to the lack of awareness and regulations, there are also insufficient guidance tools to support procurement specialists in successfully implementing world best practices (Zhu & Geng, 2013).

2.7.2 Policies

Although (Giunipero, Hooker, & Denslow, 2012) indicated that a company's management initiatives, coupled with government regulations, currently drive the procurement

sustainability efforts, (Zhu & Geng, 2013) argued that a government needs to develop more stringent policies to promote sustainable practices among manufacturers, supported by the allocation of tangible resources. The allocation of tangible resources includes human capital, investment and management support. (Liddle & El-Kafafi, 2010) were of the view that a government was not necessarily creating the right environment to foster innovation in the area of eco-innovation, which was mainly due to current policies and that regulations did not provide necessary incentives for organisations to proactively follow the sustainable industry.

2.7.3 Procurement is decentralised

(Sorte, 2012) claimed that centralised procurement allows companies to plan better and attain superior products with fewer resources, thereby alleviating constraints and creating efficiencies. However, (Baldi, Vannoni, & others, 2014)) argued to the contrary, citing loss of relationships with local suppliers, possible withdrawing of small suppliers and potential lock-in phenomena with suppliers that have not transformed into sustainable companies

2.7.4 Awareness

(McMurray et al., 2014) attributed decentralised purchasing, conflicting priorities, lack of awareness and strong leadership as the barrier to sustainable procurement. However, (McMurray et al., 2014) argued that the lack of political support and poor governmental regulations pertaining to environmental and social factors seem to be the major barriers at a governmental level. Further, (Helen Walker & Neil Jones, 2012) indicated that weak processes and cultural barriers seem to be some of the underlying reasons as to why organisations are struggling to manage their target on sustainability.

2.8 Summary to Literature Review

The literature review identified that there is huge focus on sustainable procurement. Global leaders as well as local leaders are becoming aware of the implications of sustainability. Initially (Fisher, 2013) indicated that the recent Earth Summit challenged the world leaders and citizens alike to rethink the concept of economic development in ways that would stop environmental destruction. There has also been an increase in the stakeholder expectations of incorporating the social and environmental impacts in procurement (Pagell et al., 2010). Further, the public procurement practices have

undergone various methods of transformation in an effort to incorporate the sustainability trends into procurement decisions.

(Kannegiesser & Günther, 2014) argued that the maximum benefit of sustainability can be attained if there is equilibrium between economic development and environmental and social wellbeing of the organisation. However, in terms of the successful implementation of sustainable procurement, Walker & Jones (2012) indicated that there is no single best course of action, but combinations of internal and external factors contribute to the organisation's success. The literature also indicated that are enablers and barriers to successful sustainable procurement implementation and this is specific to the condition of the environment or country.

The barriers within the context of sustainable procurement were largely attributed to decentralised purchasing, conflicting priorities, lack of awareness and strong leadership ((McMurray et al., 2014). However, the authors also alluded to the lack of political support and poor governmental regulations pertaining to environmental and social factors that seem to be contributing to the barriers. Further, (Helen Walker & Neil Jones, 2012) indicated that weak processes and cultural barriers seem to be some of the underlying reasons as to why organisations are struggling to manage their target on sustainability. Other barriers included the rent-seeking behaviour ((Schwerin & Prier, 2013); high cost of green products (Stephen & Walker, 2011); awareness ((Sourani & Sohail, 2011); the lack of stringent policies and building of a conductive environment ((Zhu & Geng, 2013).

The literature identified that leadership was a key driver for the successful implementation of sustainable procurement within organisations. Further, brand and reputation management was seen as an enabler as well as a barrier, where some organisations were forced to adopt sustainability, while others were acting as global environment leaders (Dauvergne & Lister, 2012). Since this topic was new in certain countries, lack of technical expertise was also seen as a barrier ((Diófási & Valkó, 2014), including a lack of awareness ((Zhu & Geng, 2013).

The best practice relates to collaborating with suppliers and developing locallybased sourcing and production facilities that can be integrated into the global supply chain ((Gimenez & Sierra, 2012). Government intervention was also necessary for development of suitable conditions in order to adopt green products (Nikolaou & Loizou, 2015). This was supported by the suitable legal and regulatory frameworks ((Sourani & Sohail, 2011).

Various gaps were identified within the literature review. Table 1 presents these gaps within the context of the five themes.

Through the literature review, it was established that, while some countries experienced an ‘element’ to be an enabler, other countries experienced an opposite effect. It was evident that the environmental conditions such as geography, macroeconomics, legal and regulatory frameworks, culture and history play an important role in establishing the factors that impact the Implementation of sustainable sourcing. This research is, therefore, pertinent in establishing the factors that are currently impacting sourcing in South Africa and, more specifically, in understanding whether there is a variance between the perception from the private and public sector from a South African context, if any.

Table 1: Gap Analysis

TOPIC	THEME	AUTHOR	GAPS
Best Practice	Collaboration with suppliers	Walker & Preuss , 2008	The study focussed on the public sector buyers only, did not include private sector. The study only concentrated on the health sector, so the results may not be relevant to other sectors.
		(Gimenez & Sierra, 2012)	This study used self-reported data and only from the perspective of the buying firm.
	Measurement and tracking of Progress:	(Ntayi & Mugume, 2014)	The study was only conducted in either manufacturing or profit-oriented sector. The public sector was not considered.
Enablers	Sustainable Supplier Availability:	(Zhu & Geng, 2013)	The study was only performed on manufacturers.
	External Pressure:	(Wolf, 2014)	The study only considered the two dimensions of sustainability, environmental and social, but did not include the third dimension, economic sustainability.
Opportunities	Increased awareness and education:	Sancha, Longoni & Giménez,2015	While the impact of social and environmental aspects were covered in the research, the financial impact related to triple bottom line was not considered.
		(Diabat et al., 2014)	The study was conducted in India, purely on enablers within the Textile industry/sector only. Gap: no consideration for the comparison between sectors industries, nor for best practices, opportunities, country

	Brand (Image)		competitiveness, barriers.
	Consumer Pressure:	(Beer & Lemmer, 2011)	Only considered food products within the supply chain.
		(Paulraj, 2011)	All three dimensions of sustainability (environmental, social and economic) were not considered.
		Amann, Roehrich & Harland, 2014	This study is missing the economic view of the triple bottom line. It does not cater for the private sector and is based on European Union only.
Country's Competitiveness	The increase in financial performance of environmentally friendly companies, including Green NGO's	(Adderley & Mellor, 2014)	This case study is only applicable to big business and corporates. Small business was not considered.
	Increase in manufacturing and Technology:	(Dragos & Neamtu, 2013)	The solution proposed will contradict the growth of smaller suppliers as the proposed rules are much more stringent.
Barriers	Environmentally friendly products are expensive:	(Helen Walker & Neil Jones, 2012)	Limited to a specific private sector firm. Public sector was not considered.

CHAPTER 3: RESEARCH QUESTIONS

3.1 Research Proposition

The research topic identified is a result of the literature related to issues influencing the successful implementation of sustainable procurement with the corporate (private) and government (public) entities. There is not enough literature information relating to research conducted on organisations within utilities. The focus on this research is on state-owned companies and corporates within the South African market.

The objective of the research is to establish what are the factors influencing sustainable sourcing in private and public organisations as well as to establish if there is a significant difference between the factors that affect private and public sectors, based on the perception of supply chain professionals.

The research attempts to answer the following five research questions by conducting a survey through a self-administered online questionnaire aimed at state-owned and private companies within South Africa.

3.2 Supporting Research Questions

Research question 1:

What are the current best practices pertaining to sustainable procurement?

H0: Respondents agree that strong leadership; clear policy; collaboration with suppliers; stringent tender conditions; technical expertise; and sustainability as a competitive advantage influence best practices in sustainable procurement within organisations (score greater than3).

H1: Respondents do not agree that strong leadership; clear policy; collaboration with suppliers; stringent tender conditions; technical expertise; and sustainability as a competitive advantage influence best practices in sustainable procurement within organisations (score equal to 3).

H0: $\mu > 3$, H1: $\mu = 3$

Research question 2:

What are the current factors that will enable an organisation to successfully implement sustainable procurement?

H0: Respondents agree that stronger leadership; clear planning; strategy; goal setting; the availability of environmentally friendly suppliers; external pressure; strong technical expertise; and centralised procurement are enablers for the successful implementation of sustainable procurement (score greater than 3).

H1: Respondents do not agree that stronger leadership; clear planning; strategy; goal setting; the availability of environmentally friendly suppliers; external pressure; strong technical expertise; and centralised procurement are enablers for the successful implementation of sustainable procurement (score equal to 3).

H0: $\mu > 3$, H1: $\mu = 3$

Research question 3:

What are further opportunities for the private organisations to attain sustainable procurement?

H0: Respondents agree that consumer pressure; more education; increased knowledge; stringent contract management; alignment of organisation procurement policy to the company's strategy; strategic partnership with suppliers; brand image; mandatory targets; and tracking are opportunity factors for private and public organisations to attain sustainable procurement (score greater than 3).

H1: Respondents do not agree that consumer pressure; more education; increased knowledge; stringent contract management; alignment of organisation procurement policy to the company's strategy; strategic partnership with suppliers; brand image; mandatory targets; and tracking are opportunity factors for private and public organisations to attain sustainable procurement (score equal to 3).

H0: $\mu > 3$, H1: $\mu = 3$

Research question 4:

What are the effects of sustainable procurement on a country’s competitiveness?

H0: Respondents agree that an increase in public sector investment in green procurement; green NGOs becoming more commercially orientated; an increase in the financial performance of environmentally friendly companies; an increase in green jobs and the potential to export locally manufactured goods; and environmentally friendly products are factors that contribute to South Africa's competitiveness (score greater than 3).

H1: Respondents do not agree that an increase in public sector investment in green procurement; green NGOs becoming more commercially orientated; an increase in the financial performance of environmentally friendly companies; an increase in green jobs and the potential to export locally manufactured goods; and environmentally friendly products are factors that contribute to South Africa's competitiveness (score equal to 3).

H0: $\mu > 3$, H1: $\mu = 3$

Research question 5:

What are the current barriers that are preventing the private and public sectors from achieving sustainable procurement?

H0: Respondents agree that environmentally friendly products are expensive; that organisations seem to be short-term focused; that there is low management commitment; that regulations and policies are not stringent; that suppliers do not provide environmentally friendly solutions; that procurement is de-centralised; that there is no consolidation of the spend; and low knowledge and awareness of sustainable procurement all prevent an organisation from implementing sustainable procurement (score greater than 3).

H1: Respondents do not agree that environmentally friendly products are expensive; that organisations seem to be short-term focused; that there is low management commitment; that regulations and policies are not stringent; that suppliers do not provide environmentally friendly solutions; that procurement is de-centralised; that there is no consolidation of the spend; and low knowledge and awareness of sustainable procurement all prevent an organisation from implementing sustainable procurement (score equal to 3).

H0: $\mu > 3$, H1: $\mu = 3$

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Research Overview and Design

An overview of the research methodology approach, as detailed in the subsequent sections, is outlined in Table 2 below:

Table 2: Research Methodology Overview

Methodology Component	Selected Methodology Approach
Research Design	Quantitative
Research Type	Descriptive
Data Collection Method	Survey Questionnaire
Survey Type	Self-Administered
Survey Tool and Technique	Electronic and Online (Survey Monkey)

This study aimed to investigate the factors affecting sustainable procurement within the private and public sectors in South Africa. The study also established a contrast between the private and public sectors. The type of research that was carried out was descriptive and quantitative in nature.

Zikmund (2003) indicated that the descriptive research is designed to describe characteristics of a population or a phenomenon. Descriptive studies are conducted when there is some previous understanding of the research problem. Descriptive studies seek to determine answers to the 'who, what, when, where, and how' questions (Zikmund, 2003). Because this research seeks to identify the most important factors affecting sustainable procurement, adopting a descriptive approach to the research was appropriate.

The quantitative research aimed at studying the culture of a particular population, with the emphasis being on its quantifiable nature as well as its predictive power − by categorising organisations into culture types and measuring distinct elements or dimensions of culture in an objective way as possible (Brewerton & Millward, 2003). The quantitative approach was adopted because this research is trying to understand the factors affecting sustainable procurement within a population of procurement specialists.

4.2 Population

Zikmund (2003) defined a population as a complete group of members (people, companies, hospitals, etc.) that have a common characteristic. The relevant population for this research is defined as South Africa-based organisations (either private or public).

The reason for choosing South Africa-based companies was because these companies were exposed to the local market conditions and the main aim of this research was to understand the factors that were most pertinent to the local environment. The population for this study was divided into respondents from South African private or public (state-owned) companies. The respondents were specialists or managers who are employed within the procurement or supply chain fraternity, within these organisations.

4.3 Sampling Method and Size

A non-probability sampling technique was used. Saunders and Lewis (2012) described a non-probability sampling technique as being one where a complete list of the population is not available. This methodology is used where it is impossible to select a random sample from this population. The criterion for selecting the research sample was based on accessibility. The data was gathered using a quota sampling to ensure that the two categories of respondents were included (Suanders & Lewis, 2012). The two group were procurement specialist from the private and public sector, and the study was aiming at attaining 50 respondents from each sector.

An e-mail, which included an overview of the survey and contact details of the researcher and supervisor, was send to the respondents. The reason for using the online medium was for ease and speed of data collection, coding and importing into an analysis tool. Another reason was for the low contact with the respondents, which reduces the level of response bias. Further, the benefits of using this sampling criterion was that one can obtain a large number of completed questionnaires quickly and economically (Zikmund, 2003). However, it also has some key disadvantages. The variability and bias of estimates cannot be measured or controlled. Nevertheless, the sampling technique was still adopted because of ease of access, increased sample size and the expectation of a higher response rate.

4.4 Unit of Analysis

The unit of analysis refers to what or who in the research should provide the data and at what level the data should be aggregated (Zikmund, 2003). The units of analysis used for this research were procurement specialists employed by public or private companies. The specialists were employed within the supply chain or procurement departments.

4.5 Research Instrument

A detailed questionnaire was developed for this study. The basis of the questionnaire was to attain information pertaining to the factors influencing sustainable procurement in South Africa. The questionnaire was designed for the respondents to answer close-ended questions. Each statement was measured using five Point Likert-type questions. The scale and its ordinal coding are as follows:

1 = “Strongly Disagree”;
2 = “Disagree”;
3 = “Neutral”;
4 = “Agree”;
5 = “Strongly Agree”.

The questionnaire comprised three parts:

- The first part (Part A) was to position the research to the respondents and to include instructions for completing the questionnaire. It also included a statement that participation is voluntary and that participants can withdraw at any time without penalty. It was also important to guarantee confidentiality to the respondents and a statement was included that stated that all data would be kept confidential and respondents would be anonymous.
- The second part (Part B) comprised a series of questions to obtain the demographic profile for each respondent (years of experience, position in the company, type of sector and gender).
- The final part (Part C) comprised a series of questions/statements that was used to measure sustainable procurement.

4.6 Data Collection Process

Before issuing the questionnaire to the survey participants, a pilot test was conducted. A total of five 'pre-testers' were used. Zikmund (2003) defined pre-testing as a means to test the sample procedure. Pre-testing also determines if the interviewers follow the instructions and the procedure is efficient. The aim was to make sure that all instructions and questions were understood and also to get feedback on any possible shortcomings. During the pilot test, the duration that respondents took to complete the questionnaire was recorded in order to ensure that the questionnaire was not too time-consuming. The main feedback received from the pilot group required that some questions within section three be re-phrased to remove ambiguity and confusion. Further, the pre-testers were concerned that not all procurement specialists would understand the definition of sustainable procurement as this concept was fairly new in some areas. A high level definition of sustainable procurement was added thereafter at the beginning of the survey questionnaire to assist respondents.

This exercise allowed for final changes to be made to the survey questionnaire, prior to it being distributed to the potential respondents (please refer to Appendix 1 for the questionnaire used to conduct the research).

The data for this research was collected by means of an electronic, self-administered survey questionnaire. Survey Monkey, a web-based survey tool, was used to design the questionnaire and collect the responses. A link to the survey was e-mailed to all participants and the e-mail made it clear that the participation in the survey was completely voluntary and the data collected would be kept strictly confidential and also that all participants would remain anonymous.

Data was collected through a web-distributed questionnaire. Saunders & Lewis (2012) suggested that an e-mail with a link to the actual questionnaire be sent to delegates. The delegates were invited to contribute and were directed to the website and questionnaire. The internet etiquette, which is the general guideline for using the internet, was followed. This included:

- Only sending e-mails and posts to relevant user groups;
- Not using more than 20 user groups at once and refraining from sending junk mails and spam;
- Not using multiple mailing lists, as delegates would receive more than one copy;

- Avoiding the use of attachments as these may be thought to contain viruses.

The potential respondents were emailed in advance, informing them that an email will follow and also highlighting the closing date as detailed in Saunders and Lewis (2012). The timeframe was extended for an additional two weeks as the response rate was lower than expected.

4.7 Data Analysis

In order to analyse the data as produced by the survey questionnaire, a number of statistical tests were used.

4.7.1 Descriptive statistics

Descriptive statistics are used to summarise and describe the characteristics of a sample or population (Zikmund, 2003), based on the data, without making any inferences. The data was first cleaned, removing all incomplete responses from the sample. The data was thereafter coded and further rearranged into a format that could be used for further analysis.

The biographical data collected was nominal, however, for all other questions, the Likert scale was used, resulting in the remaining data collected being ordinal in nature. The descriptive statistics calculated in this research included characteristics of the respondents, the number of responses received per sector (private and public) and an outline of the descriptive statistics of the different questions: mean, mode, kurtosis and skewness.

4.7.2 Test for reliability

The reliability of the results was tested using Cronbach's Alpha coefficients as per Table 3. Cronbach's Alpha coefficients measure the consistency reliabilities of the measuring instruments (Bland & Atlman, 1997). Normally, a reliability coefficient of 0.70 or higher is deemed to be acceptable.

Table 3: Cronbach Alpha coefficients

Cronbach's Alpha	Internal Consistency
Alpha >= 0.9	Excellent
0.9 > Alpha >= 0.8	Good
0.8 > Alpha >= 0.7	Acceptable
0.7 > Alpha >= 0.6	Questionable
0.6 > Alpha >= 0.5	Poor
0.5 > Alpha	Unacceptable

4.7.3 T-Test

The hypothesis stated from Chapter 3 was tested using the T-Test. A one-sided T-statistical analysis is used to measure if the respondents significantly agree with the factors within the construct. If the P-value is less than 0.05, then we should reject H1 and conclude that the mean is more than 3, which means that the respondent is more likely to agree with the questions.

4.8 Assumptions

To ensure validity, reliability and objectivity, (Morse, Barrett, Mayan, Olson, & Spiers, 2008) suggested that the researcher should ensure that:

- There is similarity between the research question and the components of the method;
- The sample must be appropriate, consisting of participants who best represent or have knowledge of the research topic;
- Collecting and analysing data forms a mutual interaction between what is known and what needs to be known in the essence of attaining reliability and validity;
- Ideas emerging from data are reconfirmed in new data and this gives rise to new ideas that, in turn, must be verified in data already collected;
- There is linking and building of a solid foundation;

- The researcher assumes that the managers are in a position to provide a knowledgeable response to the factors that influence sustainable procurement within their organisation.

4.9 Research Limitation

- Convenience sampling was utilised for the survey and thus no inferences can be made to the population;
- The timeframe for the project is limited to 2015 and therefore changes to survey results are anticipated;
- There will be new legislation passed, together with environmental changes.

4.10 Summary

The research methodology, design and the research instrument were well suited to the objectives and the nature of research that is proposed. The writer is employed by a state-owned company and believes that the necessary precautions were taken in terms of the validity, reliability and objectivity of the proposed research. Further, the research was built on a solid theoretical foundation.

While there might be perceived flaws in the sampling method and bias towards the institution from which the data is collected, the method is viewed as being acceptable due to this being primarily an exploratory study (Zikmund, 2003).

CHAPTER 5: RESULTS

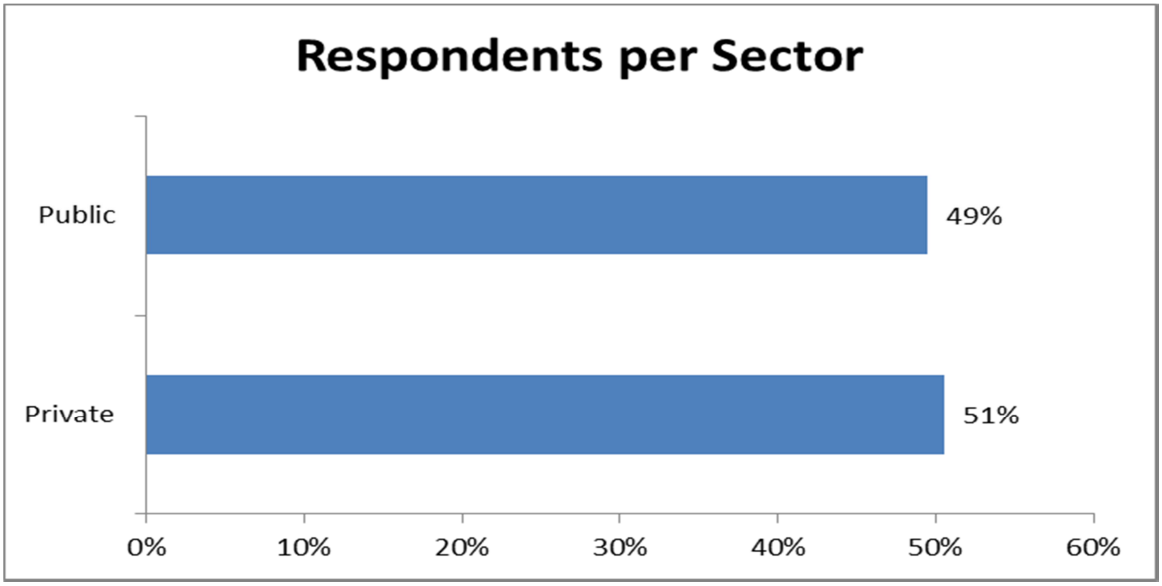
5.1 Introduction

Chapter 5 is a presentation of the results achieved by using the methodology as described in Chapter 4. This chapter commenced with introducing the basic demographic statistics by the detailed descriptive statistics. This is followed by the descriptive statistics, test for reliability and thereafter the T-Test. The sequence will be as per the research questions.

5.2 Basic Demographic Profile of the Sample

5.2.1 Responses per sector

Figure 4: Respondents per private and public sector



The total number (104) of respondents participated in the survey. Unfortunately, the data from seven respondents could not be used as the data was incomplete. This study was therefore based on the 97 fully completed survey questionnaires, which were analysed. There were 49 respondents from the private sector and 48 respondents from the public sector, which represent 51% and 49%, respectively.

Figure 5: Gender breakdown for the combined sample

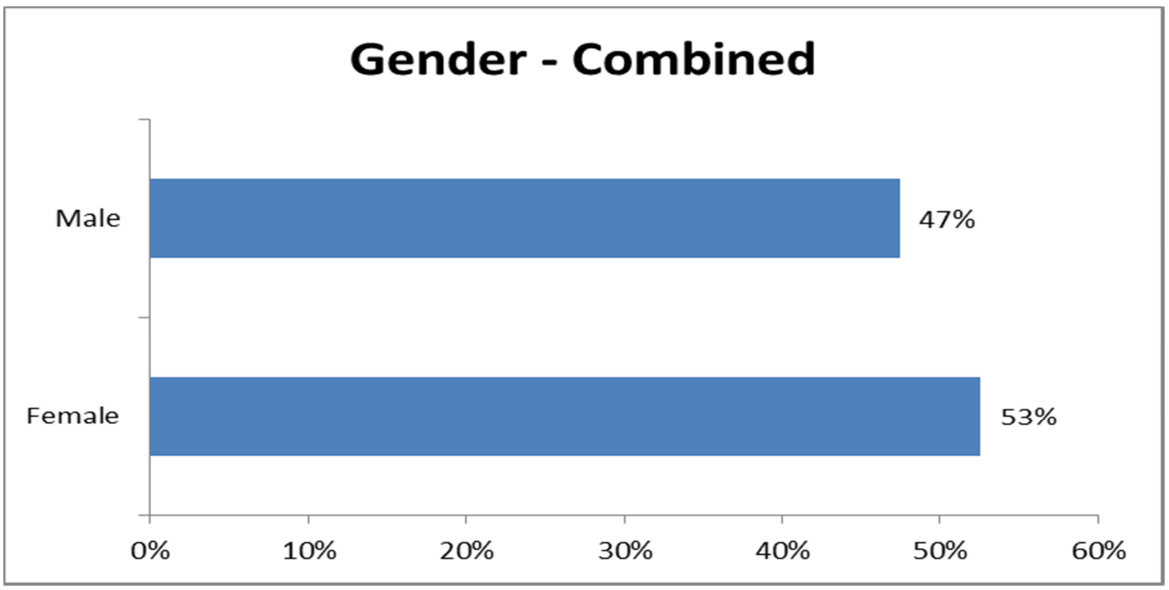


Figure 5 shows that there is almost an even split between the gender of respondents, with the number of males being 47% and females being 53%.

5.2.2. Experience

Figure 6: Years of experience within procurement and supply chain

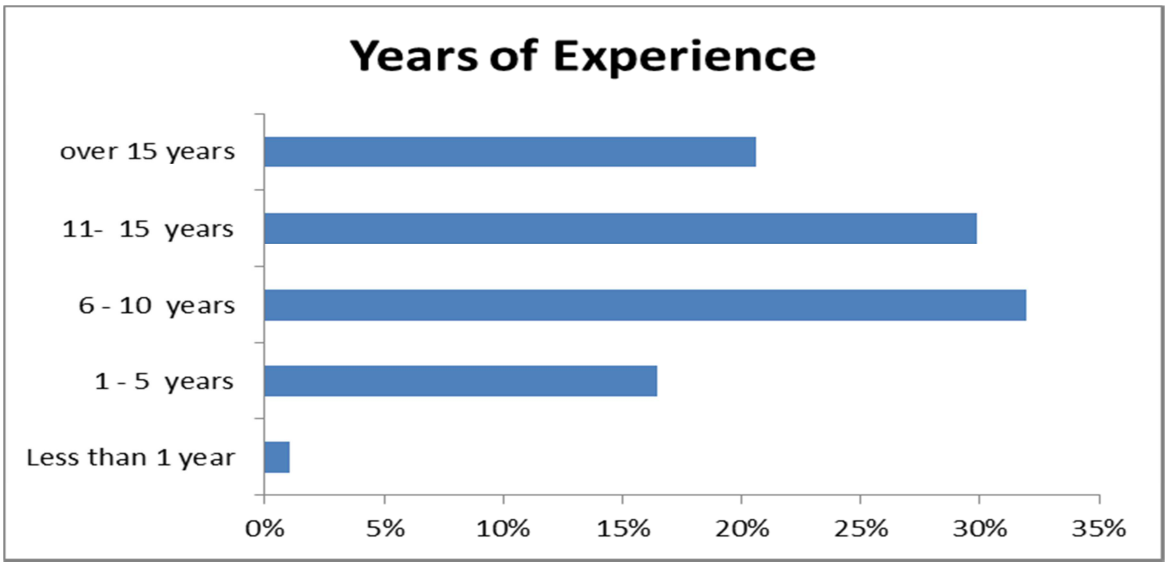


Figure 6 show that 83% of the respondents have more than 6 years of experience within the procurement/ supply industry.

5.2.3 Position

Figure 7: Years of experience within procurement and supply chain

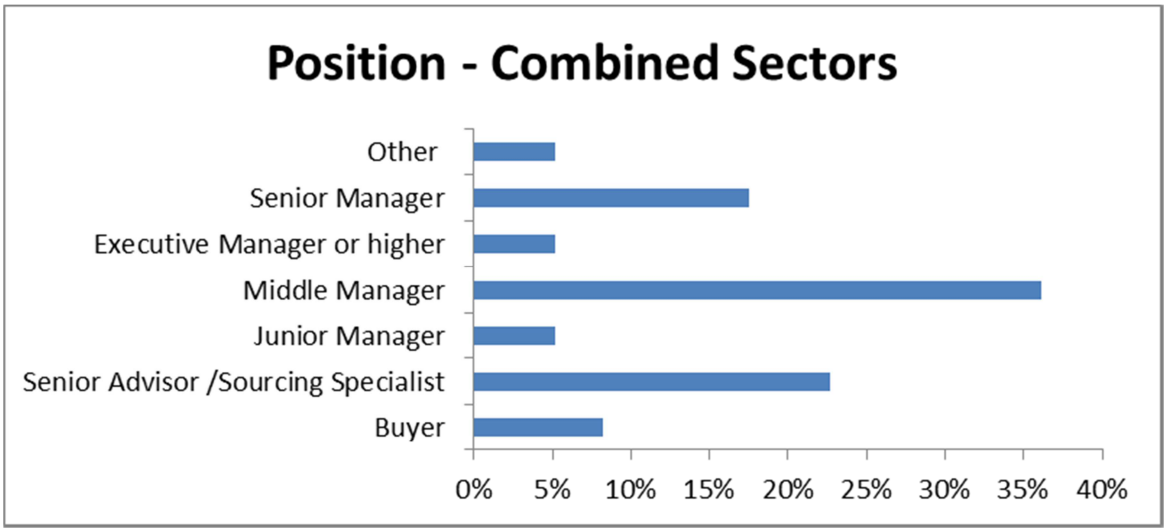


Figure 7 shows that most of the respondents are in middle-management positions with fewer respondents being junior respondents.

In summary, there is an even split between the type of company and gender, with most of the respondents having more than 6 years of experience in the procurement/supply industry and being in middle-management positions.

5.3 Descriptive Statistics

This section displays the mean, mode, kurtosis and skewness of each question within the construct. The layout of this section of the research follows a pattern where analysis of the total respondents is displayed, followed by the private sector and thereafter, the public sector.

Research Question 1: Best Practice

The following three tables display the results for the total respondents, private sector and the public sector for the best practice construct.

Table 4 – Results for Total Respondents on Best Practice (n=97)

Questions	Mean	Mode	Kurtosis	Skewness
Collaboration with suppliers/small business	3.99	4.00	0.48	-0.83
Strong Leadership	4.01	5.00	0.41	-1.07
Clear Policy and legislation	4.13	5.00	-0.28	-0.77
Stringent tender conditions to adhere to sustainable practice	3.81	4.00	-0.54	-0.56
Measurement and tracking of progress	4.07	4.00	0.49	-0.77
Sustainability is seen as a competitive advantage	3.83	4.00	-0.15	-0.65
Technical expertise supports sustainability	4.01	4.00	-0.07	-0.59

Table 5 – Results for Private Sector Respondents on Best Practice (n=49)

Questions	Mean	Mode	Kurtosis	Skewness
Collaboration with suppliers/small business	3.90	5.00	-1.03	-0.32
Strong Leadership	3.84	4.00	-0.21	-0.71
Clear Policy and legislation	3.80	4.00	-0.95	-0.26
Stringent tender conditions to adhere to sustainable practice	3.49	3.00	-1.02	0.03
Measurement and tracking of progress	3.82	4.00	0.10	-0.64
Sustainability is seen as a competitive advantage	3.57	4.00	-0.90	-0.36
Technical expertise supports sustainability	3.80	4.00	-0.56	-0.31

Table 6 – Results for Public Sector Respondents on Best Practice (n=48)

Questions	Mean	Mode	Kurtosis	Skewness
Collaboration with suppliers/small business	4.09	4.00	4.13	-1.54
Strong Leadership	4.19	5.00	1.82	-1.49
Clear Policy and legislation	4.47	5.00	2.28	-1.31
Stringent tender conditions to adhere to sustainable practice	4.15	4.00	2.08	-1.36
Measurement and tracking of progress	4.34	4.00	-0.62	-0.41
Sustainability is seen as a competitive advantage	4.11	4.00	-0.88	-0.14
Technical expertise supports sustainability	4.23	4.00	0.97	-0.73

'Clear policy and legislation' has the highest mean of 4.13 and 4.47 within the total sample and public sector, while 'collaboration with suppliers' has the highest mean of 3.9 within the private sector.

The mode is an indication of the most frequent response to that particular sub-question. In terms of the total respondents, all the modes of the sub-question are 4 (agree), with the exception of the highest mode, which is 'clear policy and legislation', which has a mode of 5 (strongly agree).

All the Kurtosis' of the sub-question are less than 3, which means that the answers are wide-spread around the mean. In terms of skewness, all the sub-questions are negatively skewed, which means that a majority of the questions are skewed to the right.

Research Question 2: Enablers

The following three tables display the results for the total respondents, private sector and the public sector for the enablers construct.

Table 7 – Results for Total respondents on Enablers (n=97)

Questions	Mean	Mode	Kurtosis	Skewness
Stronger Leadership	3.77	4.00	-0.13	-0.69
There is clear planning, strategy and goal setting	3.53	4.00	-0.53	-0.50
The availability of environmentally friendly suppliers	3.47	4.00	0.41	-0.77
External Pressure (Media/Greenpeace)	3.38	4.00	-0.67	-0.26
Strong Technical expertise	3.69	4.00	-0.61	-0.48
Centralised Procurement	3.62	4.00	-0.21	-0.41

Table 8 – Results for Private sector respondents on Enablers (n=49)

Questions	Mean	Mode	Kurtosis	Skewness
Stronger Leadership	3.78	4.00	-1.02	-0.20
There is clear planning, strategy and goal setting	3.55	4.00	-0.77	-0.23
The availability of environmentally friendly suppliers	3.43	4.00	1.00	-1.14
External Pressure (Media/Greenpeace)	3.06	3.00	-0.43	-0.29
Strong Technical expertise	3.45	3.00	-1.12	0.14
Centralised Procurement	3.43	3.00	-0.35	0.00

Table 9 – Results for Public sector respondents on Enablers (n=48)

Questions	Mean	Mode	Kurtosis	Skewness
Stronger Leadership	3.77	4.00	0.32	-0.97
There is clear planning, strategy and goal setting	3.50	4.00	-0.63	-0.58
The availability of environmentally friendly suppliers	3.52	4.00	-0.40	-0.30
External Pressure (Media/Greenpeace)	3.71	4.00	-0.52	-0.59
Strong Technical expertise	3.94	4.00	1.15	-1.17
Centralised Procurement	3.81	4.00	0.84	-0.87

Strong leadership has the highest mean among the total respondents and private sector with scores of 3.77 and 3.78, respectively. Strong technical expertise has the highest mean within the public sector.

The mode is an indication of the most frequent response to that particular sub-question. In terms of the total respondents, all the modes of the sub-question are 4 (agree). All the Kurtosis' of the sub-question are less than 3, which means that the answers are widespread around the mean. In terms of skewness, all the sub-questions are negatively skewed, which means that the majority of the questions are skewed to the right.

All the Kurtosis' of the sub-question are less than 3, which means that the answers are widely spread around the mean. In terms of skewness, all the sub-questions are negatively skewed, which means that all the questions are skewed to the right.

Research Question 3 − Opportunities

The following three tables display the results for the total respondents, private sector and the public sector for the opportunities construct.

Table 10 – Results for Total respondents on Opportunities (n=97)

Questions	Mean	Mode	Kurtosis	Skewness
Consumer pressure to procure sustainable products	3.81	4.00	-0.41	-0.45
More education, increased knowledge and training	4.14	4.00	2.42	-1.16
Stringent contract management	3.95	4.00	0.65	-0.82
Your organisation's policy encourages sustainable procurement	4.04	4.00	0.11	-0.66
Procurement strategy is aligned to the company's Strategy	4.13	4.00	0.29	-0.54
Strategic partnership with suppliers to support the implementation	4.06	4.00	0.92	-0.74
Ensure that sustainability influences brand image	4.01	4.00	-1.03	-0.02
Ensure that there are mandatory targets	4.00	4.00	0.20	-0.48
Tracking of sustainability targets	4.01	4.00	0.18	-0.39

Table 11 – Results for Private Sector respondents on Opportunities (n=49)

Questions	Mean	Mode	Kurtosis	Skewness
Consumer pressure to procure sustainable products	3.76	4.00	-0.96	-0.19
More education, increased knowledge and training	4.10	4.00	0.10	-0.77
Stringent contract management	3.65	4.00	-0.57	-0.29
Your organisation's policy encourages sustainable procurement	3.96	4.00	-0.03	-0.56
Procurement strategy is aligned to the company's Strategy	4.04	4.00	0.31	-0.41
Strategic partnership with suppliers to support the implementation	3.80	4.00	0.13	-0.54
Ensure that sustainability influences brand image	3.84	4.00	-0.98	0.25
Ensure that there are mandatory targets	3.69	4.00	-0.11	-0.25
Tracking of sustainability targets	3.80	4.00	-0.24	-0.05

Table 12 – Results for Public sector on Opportunities (n=48)

Questions	Mean	Mode	Kurtosis	Skewness
Consumer pressure to procure sustainable products	3.87	4.00	0.82	-0.81
More education, increased knowledge and training	4.17	4.00	8.14	-1.77
Stringent contract management	4.26	4.00	5.85	-1.64
Your organisation's policy encourages sustainable procurement	4.13	4.00	0.47	-0.75
Procurement strategy is aligned to the company's Strategy	4.21	4.00	0.60	-0.69
Strategic partnership with suppliers to support the implementation	4.34	4.00	-0.93	0.20
Ensure that sustainability influences brand image	4.19	4.00	-0.78	-0.25
Ensure that there are mandatory targets	4.32	4.00	-0.61	-0.02
Tracking of sustainability targets	4.23	4.00	2.17	-0.74

“More education, increased knowledge and training have the highest mean with the total respondents and private sector with scores of 4.14 and 4.10, respectively. ‘Strategic partnership with suppliers’ has the highest mean of 4.34, within the public sector.

The mode is an indication of the most frequent response to that particular sub-question. In terms of the total respondents, all the modes of the sub-question are 4 (agree). All the Kurtosis' of the sub-question are less than 3, which means that the answers are widespread around the mean. In terms of skewness, all the sub-questions are negatively skewed, which means that the majority of the questions are skewed to the right, which tends towards the 'agree'.

Research Question 4: Competitiveness

The following three tables display the results for the total respondents, private sector and the public sector for the competitiveness construct.

Table 13 – Results for Total respondents Competitiveness (n=97)

Questions	Mean	Mode	Kurtosis	Skewness
If public sector drives investment in green procurement then the private sector will also be encouraged to invest in these industries	3.97	4.00	1.10	-0.77
Green NGO's become more commercially orientated	3.67	4.00	-0.11	-0.22
An increase in the financial performance of environmentally friendly companies	3.80	4.00	0.29	-0.47
An increase in green jobs	3.87	4.00	0.73	-0.49
The potential to export locally manufactured, environmentally products	4.00	4.00	-0.83	-0.15

Table 14 – Results for Private Sector on Competitiveness (n=49)

Questions	Mean	Mode	Kurtosis	Skewness
If public sector drives investment in green procurement then the private sector will also be encouraged to invest in these industries	4.10	4.00	-0.30	-0.45
Green NGO's become more commercially orientated	3.57	4.00	-0.02	-0.41
An increase in the financial performance of environmentally friendly companies	3.61	4.00	-0.36	-0.13
An increase in green jobs	3.78	4.00	0.25	-0.34
The potential to export locally manufactured, environmentally products	3.82	3.00	-1.10	0.13

Table 15 – Results for Public Sector on Competitiveness (n=48)

Questions	Mean	Mode	Kurtosis	Skewness
If public sector drives investment in green procurement then the private sector will also be encouraged to invest in these industries	3.83	4.00	1.89	-0.97
Green NGO's become more commercially orientated	3.78	4.00	-0.39	0.00
An increase in the financial performance of environmentally friendly companies	4.00	4.00	2.41	-0.64
An increase in green jobs	3.98	4.00	1.86	-0.57
The potential to export locally manufactured, environmentally products	4.20	4.00	-0.42	-0.14

The potential to export locally manufactured, environmentally friendly products has the highest mean with the total responses and the public sector with scores of 4.00 and 4.20, respectively. 'If the public sector drives investment in green procurement, then the private sector will also be encouraged to invest in these industries' has the highest mean within the private sector.

The mode is an indication of the most frequent response to that particular sub-question. In terms of the total respondents, all the modes of the sub-question are 4 (agree). All the Kurtosis' of the sub-question are less than 3, which means that the answers are widespread around the mean. In terms of skewness, all the sub-questions are negatively skewed, which means that the majority of the questions are skewed to the right as well.

Research Question 5: Barriers

The following three tables display the results for the total respondents, private sector and the public sector for the barriers construct.

Table 16 –Results for Total respondents on Barriers (n=97)

Questions	Mean	Mode	Kurtosis	Skewness
Environmentally friendly products are expensive	3.18	3.00	-0.47	-0.26
Your organisation seem to be short term focused	2.81	2.00	-1.09	0.23
Leadership / Management are not committed to environmentally friendly solution	2.85	2.00	-0.77	0.22
Regulations and policies are not stringent enough to force your organisation to procure sustainable products	3.16	4.00	-1.02	-0.11
Your organisaton's suppliers do not provide environmentally solutions	2.96	2.00	-0.74	0.21
Procurement is de-centralised and there is no consolidation of the spend	2.73	3.00	-1.00	0.03
The knowledge and awareness of sustainable procurement is low	3.27	4.00	-0.53	-0.32

Table 17 – Results for Private Sector on Barriers (n=49)

Questions	Mean	Mode	Kurtosis	Skewness
Environmentally friendly products are expensive	3.43	3.00	-0.61	-0.10
Your organisation seem to be short term focused	3.02	2.00	-0.93	0.17
Leadership / Management are not committed to environmentally friendly solution	3.22	3.00	-0.50	-0.11
Regulations and policies are not stringent enough to force your organisation to procure sustainable products	3.39	3.00	-0.73	-0.17
Your organisaton's suppliers do not provide environmentally solutions	3.22	3.00	-0.81	0.19
Procurement is de-centralised and there is no consolidation of the spend	3.08	3.00	-0.31	-0.16
The knowledge and awareness of sustainable procurement is low	3.49	3.00	0.08	-0.35

Table 18 – Results for Public sector respondents on Barriers (n=48)

Questions	Mean	Mode	Kurtosis	Skewness
Environmentally friendly products are expensive	2.92	3.00	-0.68	-0.31
Your organisation seem to be short term focused	2.60	2.00	-1.14	0.43
Leadership / Management are not committed to environmentally friendly solution	2.46	2.00	-0.06	0.72
Regulations and policies are not stringent enough to force your organisation to procure sustainable products	2.94	2.00	-1.23	0.05
Your organisaton's suppliers do not provide environmentally solutions	2.69	2.00	-0.58	0.42
Procurement is de-centralised and there is no consolidation of the spend	2.38	1.00	-1.02	0.45
The knowledge and awareness of sustainable procurement is low	3.04	4.00	-0.94	-0.16

'The knowledge and awareness of sustainable procurement is low' has the highest mean with the total responses and the public sector with scores of 3.27 and 3.04, respectively. "Environmentally friendly products are expensive" has the highest mean within the private sector.

The mode is an indication of the most frequent response to that particular sub-question. 'Your organisation seems to be short-term focused'; 'Leadership/Management are not committed to environmentally friendly solutions'; and 'Your organisation's suppliers do not provide environmentally friendly solutions' have the lowest mode of 2.00. This means that 2.00 (disagree) was the most frequent answer of these questions. 'Regulations and policies are not stringent enough to force your organisation to procure sustainable products' and 'the knowledge and awareness of sustainable procurement is low' have the highest mode of 4 (agree).

All the Kurtosis' of the sub-question are less than 3, which means that the answers are widespread around the mean. In terms of skewness, the majority of the sub-questions are negatively skewed, which means that the majority of the questions are skewed to the right.

5.4 Tests for Reliability:

The research is going to use the data from the questionnaire to infer to the overall industry. Reliability of the answers of the questionnaire is very important because it impacts on the accuracy and strength of the results of the study. Cronbach's Alpha was used to analyse the reliability of the questions and the answering of the questionnaire. Factor analysis will be used to analyse the clustering of the questions into relevant constructs.

5.4.1. Cronbach's Alpha

The following table will be used to interpret the Cronbach's alpha.

Table 19 – Cronbach's Alpha template

Cronbach's Alpha	Internal Consistency
Alpha >= 0.9	Excellent
0.9 > Alpha >= 0.8	Good
0.8 > Alpha >= 0.7	Acceptable
0.7 > Alpha >= 0.6	Questionable
0.6 > Alpha >= 0.5	Poor
0.5 > Alpha	Unacceptable

5.4.1.2 Research Question One:

Table 20 – Cronbach's Alpha for best practice

Best Practices	
Cronbach Coefficient Alpha	Acceptance level
0.883	Acceptable
The following factors are BEST PRACTICE in the successful implementation of sustainable procurement	**Cronbach's Alpha**
Collaboration with suppliers/small business	0.868
Strong Leadership	0.870
Clear Policy and legislation	0.852
Stringent tender conditions to adhere to sustainable practice	0.865
Measurement and tracking of progress	0.859
Sustainability is seen as a competitive advantage	0.880
Technical expertise supports sustainability	0.867

Best practice has an acceptable level of reliability with the exclusion of any of the questions not leading to a higher reliability level.

5.4.1.3 Research Question Two

Table 21 – Cronbach's Alpha for Enablers

Enablers (support)	
Cronbach Coefficient Alpha	Acceptance level
0.762	Acceptable

The following factors enablers (support) your organisation in implementing sustainable procurement	Cronbach's Alpha)
Stronger Leadership	0.709
There is clear planning, strategy and goal setting	0.694
The availability of environmentally friendly suppliers	0.760
External Pressure (Media/Greenpeace)	0.772
Strong Technical expertise	0.722
Centralised Procurement	0.695

Support has an acceptable level of reliability with the exclusion of any of the questions not leading to a higher reliability level.

5.4.1.4 Research Question Three

Table 22 – Cronbach's Alpha for opportunities

Opportunities	
Cronbach Coefficient Alpha	Acceptance level
0.879	Acceptable

The following factors are OPPORTUNITIES that would support your organisation in improving sustainable procurement	Cronbach's Alpha)
Consumer pressure to procure sustainable products	0.886
More education, increased knowledge and training	0.866
Stringent contract management	0.865
Your organisation's policy encourages sustainable procurement	0.865
Procurement strategy is aligned to the company's Strategy	0.864
Strategic partnership with suppliers to support the implementation	0.862
Ensure that sustainability influences brand image	0.861
Ensure that there are mandatory targets	0.860
Tracking of sustainability targets	0.858

'Opportunities' has an acceptable level of reliability with the excluding the question 'Consumer pressure to procure sustainable products' leading to a higher reliability level, but the improvement in not significant.

5.4.1.5 Research Question Four

Table 23 – Cronbach's Alpha for competitiveness

Competition	
Cronbach Coefficient Alpha	Acceptance level
0.758	Acceptable

Within the context of sustainable procurement, the following factors would contribute to South Africa's competitiveness	**Cronbach's Alpha**
If public sector drives investment in green procurement then the private sector will be encouraged to invest in these industries	0.729
Green NGO's become more commercially orientated	0.761
Increase in financial performance of environmentally friendly companies	0.692
An increase in green jobs	0.664
The potential to export locally manufactured, environmentally products	0.721

'Competition' has an acceptable level of reliability. With the exclusion of the question "'Green NGOs become more commercially orientated' leads to a higher reliability level, but the improvement is not significant.

5.4.1.6 Research Question Five

Table 24 – Cronbach's Alpha for barriers

Barriers (prevent)	
Cronbach Coefficient Alpha	Acceptance level
0.807	Acceptable

The following factors are barriers that prevent your organisation from implementing sustainable procurement	**Cronbach's Alpha)**
Environmentally friendly products are expensive	0.801
Your organisation seem to be short term focused	0.788
Management not committed to environmentally friendly solution	0.754
Regulations and policies are not stringent enough to force your organisation to procure sustainable products	0.772
Your organisation's suppliers do not provide environmentally solutions	0.773
Procurement is de-centralised and there is no consolidation of the spend	0.804
The knowledge and awareness of sustainable procurement is low	0.789

Prevention has an acceptable level of reliability with the exclusion of any of the questions not leading to a higher reliability level.

5.4.2 Factor Analysis

Table 24 below displays the factor analysis. The analysis is divided into eight factors:

- Research Question 1, Best Practice: all questions fall within a common factor one;
- Research Question 2, Enablers: all questions with the exception of stronger leadership, the availability of environmentally friendly suppliers and external pressure fall within factor one;
- Research Question 3, Opportunities: all questions fall within factor one;
- Research Question 4, Competitiveness: all questions fall within factor one, with the exception of one question, namely Green NGOs become more commercially orientated;
- Research Question 5, Barriers: all questions fall within factor two, with the exception of one question, procurement is de-centralised and there is no consolidation of the spend.

Table 25 – Factor analysis

RQ	Questions	Factors							
		1	2	3	4	5	6	7	8
1	Collaboration with suppliers/ small business	0.60	0.00	0.32	(0.37)	(0.22)	(0.14)	(0.10)	(0.09)
	Strong Leadership	0.67	(0.03)	0.31	(0.25)	(0.23)	0.01	(0.14)	0.20
	Clear Policy and legislation	0.75	(0.14)	0.09	(0.26)	(0.01)	(0.15)	0.21	0.15
	Stringent tender conditions to adhere to sustainable practice	0.68	(0.16)	0.04	(0.31)	0.17	(0.12)	0.25	0.05
	Measurement and tracking of progress	0.67	(0.10)	0.07	(0.42)	(0.11)	(0.18)	0.19	(0.02)
	Sustainability is seen as a competitive advantage	0.60	(0.06)	(0.07)	(0.20)	0.25	(0.22)	0.07	(0.28)
	Technical expertise supports sustainability	0.70	(0.03)	(0.04)	(0.20)	0.02	0.07	0.12	(0.18)
2	Stronger Leadership	0.42	(0.11)	0.62	0.34	(0.04)	0.00	(0.27)	(0.12)
	There is clear planning, strategy and goal setting	0.45	(0.18)	0.55	0.41	0.08	(0.06)	(0.09)	0.15
	The availability of environmentally friendly suppliers	0.23	(0.27)	0.21	0.34	(0.16)	0.54	0.38	0.13
	External Pressure (Media/ Greenpeace)	0.35	(0.13)	0.08	0.31	0.58	(0.03)	0.17	(0.25)
	Strong Technical expertise	0.61	(0.18)	0.34	0.03	(0.19)	0.08	0.31	0.17
	Centralised Procurement	0.52	(0.15)	0.48	0.13	0.32	(0.11)	0.09	0.06
3	Consumer pressure to procure sustainable products	0.39	0.01	(0.24)	(0.01)	0.52	0.11	(0.16)	0.24
	More education, increased knowledge and training	0.65	0.31	0.05	0.04	(0.12)	0.23	(0.34)	(0.03)
	Stringent contract management	0.67	0.04	(0.15)	(0.05)	0.05	0.05	(0.27)	0.37
	Your organisation's policy encourages sustainable procurement	0.74	0.02	(0.02)	0.07	0.02	0.16	(0.08)	(0.11)
	Procurement strategy is aligned to the company's Strategy	0.72	0.08	(0.01)	0.08	0.10	0.14	(0.03)	(0.22)
	Strategic partnership with suppliers to support the implementation	0.72	0.14	(0.10)	0.01	(0.06)	(0.01)	(0.09)	(0.29)
	Ensure that sustainability influences brand image	0.71	0.08	(0.17)	0.04	0.03	0.05	(0.08)	0.01
	Ensure that there are mandatory targets	0.69	(0.05)	(0.34)	(0.04)	0.18	0.01	(0.17)	0.04
	Tracking of sustainability targets	0.72	(0.01)	(0.24)	(0.07)	(0.08)	0.17	(0.04)	0.22
4	If public sector drives investment in green procurement then the private sector will be encouraged to invest in these industries	0.32	0.42	(0.08)	0.50	(0.24)	(0.04)	0.03	0.05
	Green NGO's become more commercially orientated	0.28	0.03	(0.30)	0.31	(0.13)	(0.52)	0.31	0.28
	An increase in the financial performance of environmentally friendly companies	0.52	0.22	(0.51)	0.24	0.09	0.07	0.13	0.22
	An increase in green jobs	0.54	0.31	(0.39)	0.28	(0.21)	(0.04)	0.02	(0.13)
	The potential to export locally manufactured, environmentally products	0.60	0.13	(0.17)	0.22	(0.32)	0.07	0.05	(0.32)
5	Environmentally friendly products are expensive	0.03	0.55	0.36	0.27	0.04	(0.40)	(0.07)	0.10
	Your organisation seem to be short term focused	(0.05)	0.62	0.15	(0.28)	(0.06)	0.01	(0.24)	0.18
	Leadership / Management are not committed to environmentally friendly solution	(0.11)	0.77	0.25	(0.01)	(0.04)	0.03	0.17	0.02
	Regulations and policies are not stringent enough to force your organisation to procure sustainable products	0.13	0.73	0.02	(0.13)	0.05	(0.18)	0.08	(0.02)
	Your organisaton's suppliers do not provide environmentally solutions	(0.09)	0.71	0.09	0.09	0.32	(0.05)	0.05	(0.03)
	Procurement is de-centralised and there is no consolidation of the spend	(0.13)	0.47	0.17	(0.19)	0.28	0.48	0.16	0.13
	The knowledge and awareness of sustainable procurement is low	(0.02)	0.60	0.08	(0.23)	(0.08)	0.20	0.34	(0.12)

5.5 T– Test

5.5.1 T–Test – Best Practice

Table 26: T-Test for best practice, private sector

Best Practice - Private								
Factors	Score	mean	Standard deviation	Count	t-statistics	critical value	p-value	Results
Overall	3	3.73	0.76	48	6.67	1.65	< 0.05	Reject
Collaboration with suppliers/small business	3	3.90	0.98	48	6.32	1.65	< 0.05	Reject
Strong Leadership	3	3.84	1.07	48	5.43	1.65	< 0.05	Reject
Clear Policy and legislation	3	3.80	0.98	48	5.64	1.65	< 0.05	Reject
Stringent tender conditions to adhere to sustainable practice	3	3.49	1.00	48	3.38	1.65	< 0.05	Reject
Measurement and tracking of progress	3	3.82	0.86	48	6.59	1.65	< 0.05	Reject
Sustainability is seen as a competitive advantage	3	3.57	1.12	48	3.54	1.65	< 0.05	Reject
Technical expertise supports sustainability	3	3.80	0.89	48	6.20	1.65	< 0.05	Reject

Table 27: T-Test for best practice, public sector

Best Practice - Public								
Factors	Score	mean	Standard deviation	Count	t-statistics	critical value	p-value	Results
Overall	3	4.21	0.57	47	14.57	1.65	< 0.05	Reject
Collaboration with suppliers/small business	3	4.09	0.83	47	8.97	1.65	< 0.05	Reject
Strong Leadership	3	4.19	1.10	47	7.45	1.65	< 0.05	Reject
Clear Policy and legislation	3	4.47	0.69	47	14.65	1.65	< 0.05	Reject
Stringent tender conditions to adhere to sustainable practice	3	4.15	0.96	47	8.25	1.65	< 0.05	Reject
Measurement and tracking of progress	3	4.34	0.64	47	14.47	1.65	< 0.05	Reject
Sustainability is seen as a competitive advantage	3	4.11	0.70	47	10.85	1.65	< 0.05	Reject
Technical expertise supports sustainability	3	4.23	0.70	47	12.12	1.65	< 0.05	Reject

H0: mean = 3

H1: mean > 3 (skewed to the agreeing side of the answer)

Analysis indicates that all factors within the best practice construct have a P-value less than 0.05. This means that respondents are more likely to agree with the factor. ‘Measurement and tracking of progresses is the most significant factor within the private sector, while ‘clear policy and legislation’ is the most significant factor with the public sector.

5.5.2 T-Test – Enablers

Table 28: T-Test for Enablers, private sector

Enablers- Private								
Factors	Score	Mean	Standard deviation	Count	t-statistics	critical value	p-value	Results
Overall	3	3.44	0.68	49	4.50	1.65	< 0.05	Reject
Stronger Leadership	3	3.78	0.98	49	5.51	1.65	< 0.05	Reject
There is clear planning, strategy and goal setting	3	3.55	0.94	49	4.12	1.65	< 0.05	Reject
The availability of environmentally friendly suppliers	3	3.43	0.87	49	3.46	1.65	< 0.05	Reject
External Pressure media/Greenpeace	3	3.06	0.90	49	0.48	1.65	< 0.05	Reject
Strong Technical expertise	3	3.45	1.04	49	3.02	1.65	< 0.05	Reject
Centralised Procurement	3	3.43	0.98	49	3.06	1.65	< 0.05	Reject

Table 29: T-Test for Enablers, public sector

Enablers - Public								
Factors	Score	mean	Standard deviation	Count	t-statistics	critical value	p-value	Results
Overall	3	3.71	0.68	48	7.23	1.65	< 0.05	Reject
Stronger Leadership	3	3.77	1.15	48	4.63	1.65	< 0.05	Reject
There is clear planning, strategy and goal setting	3	3.50	1.19	48	2.92	1.65	< 0.05	Reject
The availability of environmentally friendly suppliers	3	3.52	0.82	48	4.37	1.65	< 0.05	Reject
External Pressure Media/Greenpeace	3	3.71	1.09	48	4.50	1.65	< 0.05	Reject
Strong Technical expertise	3	3.94	1.06	48	6.13	1.65	< 0.05	Reject
Centralised Procurement	3	3.81	0.94	48	6.00	1.65	< 0.05	Reject

H0: mean = 3

H1: mean > 3 (skewed to the agreeing side of the answer)

If the P-value is less than 0.05, then we should reject H0 and conclude that the mean is more than 3, which means that the respondent is more likely to agree with the questions. The analysis indicates that all factors within the enablers construct have a P-value less than 0.05. This means that respondents are more likely to agree with the factor. ‘Stronger

Leadership' is the most significant factor within the private sector, while 'Strong Technical expertise' is the most significant factor within the public sector.

5.5.3 T-Test – Opportunities

Table 30: T-Test for Opportunities, private sector

Opportunities - Private								
Factors	Score	mean	Standard deviation	Count	t-statistics	critical value	p-value	Results
Overall	3	3.84	0.60	49	9.80	1.65	< 0.05	Reject
Consumer pressure to procure sustainable products	3	3.76	0.97	49	5.46	1.65	< 0.05	Reject
More education, increased knowledge and training	3	4.10	0.87	49	8.85	1.65	< 0.05	Reject
Stringent contract management	3	3.65	0.90	49	5.06	1.65	< 0.05	Reject
Your organisation's policy encourages sustainable procurement	3	3.96	0.84	49	7.99	1.65	< 0.05	Reject
Procurement strategy is aligned to the company's Strategy	3	4.04	0.71	49	10.32	1.65	< 0.05	Reject
Strategic partnership with suppliers to support the implementation	3	3.80	0.82	49	6.83	1.65	< 0.05	Reject
Ensure that sustainability influences brand image	3	3.84	0.72	49	8.17	1.65		
Ensure that there are mandatory targets	3	3.69	0.77	49	6.31	1.65	< 0.05	Reject
Tracking of sustainability targets	3	3.80	0.71	49	7.89	1.65	< 0.05	Reject

Table 31: T-Test for Opportunities, public sector

Opportunities - Public								
Factors	Score	mean	Standard deviation	Count	t-statistics	critical value	p-value	Results
Overall	4	4.19	0.44	47	2.92	1.65	< 0.05	Reject
Consumer pressure to procure sustainable products	4	3.87	0.80	47	-1.10	1.65	< 0.05	Reject
More education, increased knowledge and training	3	4.17	0.70	47	11.44	1.65	< 0.05	Reject
Stringent contract management	3	4.26	0.77	47	11.25	1.65	< 0.05	Reject
Your organisation's policy encourages sustainable procurement	3	4.13	0.80	47	9.70	1.65	< 0.05	Reject
Procurement strategy is aligned to the company's Strategy	3	4.21	0.72	47	11.54	1.65	< 0.05	Reject
Strategic partnership with suppliers to support the implementation	3	4.34	0.52	47	**17.59**	1.65	< 0.05	Reject
Ensure that sustainability influences brand image	3	4.19	0.68	47	12.01	1.65		
Ensure that there are mandatory targets	3	4.32	0.56	47	16.27	1.65	< 0.05	Reject
Tracking of sustainability targets	3	4.23	0.63	47	13.37	1.65	< 0.05	Reject

H0: mean = 3

H1: mean > 3 (skewed to the agreeing side of the answer)

If the P-value is less than 0.05, then we should reject H0 and conclude that the mean is more than 3, which means that the respondent is more likely to agree with the questions. The analysis indicates that all factors within the opportunities construct have a P-value

less than 0.05. This means that respondents are more likely to agree with the factor. 'Procurement strategy is aligned to the company's strategy' is the most significant factor within the private sector, while 'Strategic partnership with suppliers to support the implementation' is the most significant factor within the public sector.

5.5.4 T-Test – Competitiveness

Table 32: T-Test for Competitiveness, private sector

Competition - Private								
Factors	Score	mean	Standard deviation	Count	t-statistics	critical value	p-value	Results
Overall	3	3.77	0.52	49	10.34	1.65	< 0.05	Reject
If public sector drives investment in green procurement then the private sector will be encouraged to invest in these industries	3	4.10	0.77	49	**10.01**	1.65	< 0.05	Reject
Green NGO's become more commercially orientated	3	3.57	0.74	49	5.43	1.65	< 0.05	Reject
An increase in the financial performance of environmentally friendly companies	3	3.61	0.81	49	5.28	1.65	< 0.05	Reject
An increase in green jobs	3	3.78	0.71	49	7.59	1.65	< 0.05	Reject
The potential to export locally manufactured, environmentally products	3	3.82	0.83	49	6.86	1.65	< 0.05	Reject

Table 33: T-Test for Competitiveness, public sector

Competition - Public								
Factors	Score	mean	Standard deviation	Count	t-statistics	critical value	p-value	Results
Overall	3	3.96	0.53	47	12.48	1.65	< 0.05	Reject
If public sector drives investment in green procurement then the private sector will be encouraged to invest in these industries	3	3.83	0.85	47	6.65	1.65	< 0.05	Reject
Green NGO's become more commercially orientated	3	3.78	0.73	47	7.37	1.65	< 0.05	Reject
An increase in the financial performance of environmentally friendly companies	3	4.00	0.60	47	11.50	1.65	< 0.05	Reject
An increase in green jobs	3	3.98	0.61	47	10.92	1.65	< 0.05	Reject
The potential to export locally manufactured, environmentally products	3	4.20	0.62	47	**13.24**	1.65	< 0.05	Reject

H0: mean = 3

H1: mean > 3 (skewed to the agreeing side of the answer)

If the P-value is less than 0.05, then we should reject H0 and conclude that the mean is more than 3, which means that the respondent is more likely to agree with the questions. The analysis indicates that all factors within the competitiveness construct have a P-value less than 0.05. This means that respondents are more likely to agree with the factor. 'If the public sector drives investment in green procurement then the private sector will be encouraged to invest in these industries' is the most significant factor within the private sector, while 'The potential to export locally manufactured, environmentally friendly products' is the most significant factors within the public sector.

5.5.5 T-Test – Barriers

Table 34: T-Test for Barriers, private sector

Barriers - Private								
Factors	Score	mean	Standard deviation	Count	t-statistics	critical value	p-value	Results
Overall	3	3.30	0.60	48	3.53	1.65	< 0.05	Reject
Environmentally friendly products are expensive	3	3.43	1.02	49	2.94	1.65	< 0.05	Reject
Your organisation seem to be short term focused	3	3.02	1.07	49	0.13	1.65	> 0.05	Accept
Leadership / Management are not committed to environmentally friendly solution	3	3.22	1.03	49	1.53	1.65	> 0.05	Accept
Regulations and policies are not stringent enough to force your organisation to procure sustainable products	3	3.39	1.11	49	2.44	1.65	< 0.05	Reject
Your organisation's suppliers do not provide environmentally solutions	3	3.22	0.92	49	1.71	1.65	< 0.05	Reject
Procurement is de-centralised and there is no consolidation of the spend	3	3.08	1.00	49	0.57	1.65	> 0.05	Accept
The knowledge and awareness of sustainable procurement is low	3	3.49	1.00	49	**3.42**	1.65	< 0.05	Reject

Table 35: T-Test for Barriers, public sector

Barriers - Public								
Factors	Score	mean	Standard deviation	Count	t-statistics	critical value	p-value	Results
Overall	3	2.70	0.78	47	-2.60	1.65	> 0.05	Accept
Environmentally friendly products are expensive	3	2.92	1.11	49	-0.53	1.65	> 0.05	Accept
Your organisation seem to be short term focused	3	2.60	1.35	49	-2.05	1.65	> 0.05	Accept
Leadership / Management are not committed to environmentally friendly solution	3	2.46	1.11	49	-3.42	1.65	> 0.05	Accept
Regulations and policies are not stringent enough to force your organisation to procure sustainable products	3	2.94	1.26	49	-0.35	1.65	> 0.05	Accept
Your organisation's suppliers do not provide environmentally solutions	3	2.69	1.03	49	-2.11	1.65	> 0.05	Accept
Procurement is de-centralised and there is no consolidation of the spend	3	2.38	1.25	49	-3.50	1.65	> 0.05	Accept
The knowledge and awareness of sustainable procurement is low	3	3.04	1.17	49	0.25	1.65	> 0.05	Accept

H0: mean = 3

H1: mean > 3 (skewed to the agreeing side of the answer)

All the factors within the public sector have a P-value greater than 0.05, which means that the respondents are more likely to disagree with the factors, while the private sector has three factors that have P-values greater than 0.05.

'The knowledge and awareness of sustainable procurement is low' is the most significant factors within the private sector.

CHAPTER 6: DISCUSSION OF RESULTS

6.1 Introduction to Chapter 6

The research findings are discussed in the following sections based on the sequence of the research questions. These findings will either support or oppose the research questions stated in Chapter 3.

The importance of this research, and understating sustainable procurement, has been highlighted by several researchers (Murray, 2009)(Sourani & Sohail, 2011); Bassi et al., 2014; (Pagell & Shevchenko, 2014)(Bassi et al., 2014). In order to have a better understanding of the factors affecting sustainable sourcing in the public and private sectors, a research method encompassing five constructs was developed. These questions ranged from the best practices in the industry; the enablers of sustainable procurement; the opportunities in the private and public sectors; the contribution to South Africa's competitiveness; and lastly to the barriers that prevent various organisations from implementing sustainable procurement. Each construct consisted of between five and nine questions, which were answered through a five point Likert scale. All the data was collected through an online Survey Monkey questionnaire. The questionnaire also made provision for comments at the end of each construct section.

The aim was to understand the factors that affected the successful implementation of sustainable procurement within a South African context as well to draw a comparison between the public and private sectors. The surveys were not restricted to managers alone, but open to all procurement specialists.

The collected data was statistically analysed and the results were presented in Chapter 5. The data was analysed using the descriptive statistics for respondents' demographics to establish the spread of responses across the organisations, gender, experience and position held within their respective organisations.

The constructs were analysed in terms of the mean, mode, kurtosis and skewness. The data was thereafter tested for reliability using the Cronbach Alpha value of greater than 0.7, as being acceptable. A factor analysis was performed to determine if items can be summarised by a smaller number of higher order factors.

This was followed by a one-sided T-Test to test if respondents significantly agreed with the factors or statements under that factor or construct as stated in Chapter 3. If T-

statistics' P-value is less than 0.05, it means that the respondents significantly agree with the factor or construct. A comparison between the private and public sectors was performed thereafter.

In summary, this chapter focuses on the discussion of the research findings in relation to survey results presented in Chapter 5. This would be achieved by using the research methodology presented in Chapter 4, supported by the literature review as discussed in Chapter 2. The sequence of Chapter 6 is as per the constructs discussed in Chapter 3.

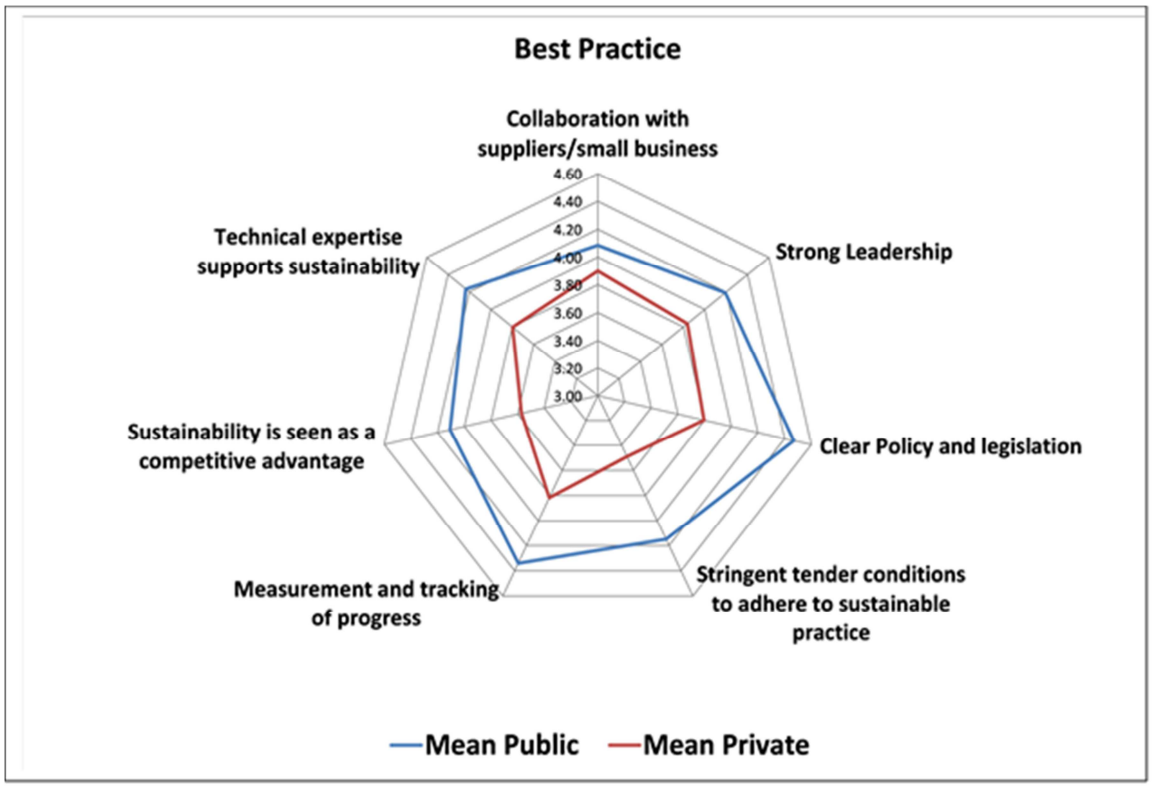
6.3 Research Question 1: Best Practice

Research Question 1, as stated in Chapter 3, is as follows: What are the current sustainable procurement best practices South Africa? Question 1 is answered through the T-Test of whether the private and public sectors agree that these factors are the best practice for sectors in South Africa, with a score greater than 3.

6.3.1 Descriptive analysis: best practice

A graphical representation of the comparison of the means of the sub-questions between the private and public sector, within the best practice construct, is represented by Figure 8, below.

Figure 8: Best practice comparison



The descriptive statistics carried out for the 'Best Practice' section of the survey is illustrated in Tables 4-6. The results indicate the individual mean values for each sub-question. As stated in Chapter 5, there were 104 responses to the questionnaire; however, only 97 responses were analysed as seven responses were incomplete and a decision was taken to exclude them from the study. The 97 respondents comprise 49 respondents from the private sector and 48 from the public sector. The calculated mean values variables are:

- Between 3.49 and 3.90, based on the 49 respondents for the private sector,
- Between 4.09 and 4.47, based on the 48 respondents from the public sectors.

It is important to note that the ordinal value of 3.00 in the survey represented a 'neutral response', where the respondent neither agreed nor disagreed with the statement. An ordinal value of 4.00 in the collected data represents 'Agree' to the survey sub-question. The sub-question with highest mean value of 4 and above indicates an 'Agree' to the sub-question.

The sub-question with the highest mean value within the private sector is 'collaboration with suppliers/small business', with a mean value of 3.90. The respondents' inclination to strongly agree with this statement is supported by (Kiron et al., 2015) indicating that there exists a business network of mutual reliance on companies, and these companies need to reach out and partner with other companies to address the current sustainability challenges and possibly explore new markets.

'Clear policy and legislation' is the sub-question with the highest mean value within the public sector, with a mean value of 4.47. The respondents' inclination to agree with this statement is supported by (Fisher, 2013), who argued that suitable legal frameworks are imperative for the success of sustainable procurement thereby creating alignment within the organisation. Based on the responses received, the overall mean of the seven sub-questions indicate that the private sector (3.74) is slightly inclined to 'agree', while the public sector (4.22) definitely 'agree' that the sub-questions contribute to the best practice of sustainable sourcing.

6.3.2 Reliability analysis: best practice

Once the data was collected through the online survey, a Cronbach's Alpha coefficient analysis for reliability was carried out on the Best Practice section of the questionnaire. The Cronbach's Alpha coefficient is a measure of the survey responses of reliability. The Alpha coefficient results produced by the test using the statistical tool for Best Practice resulted in a Cronbach's Alpha coefficient of 0.882, which is greater than the acceptable guideline of 0.7 for the reliability testing acceptance. Based on this Cronbach Alpha scoring, it is acceptable that the survey for Best Practice was reliable enough to continue further statistical analysis. The Cronbach's Alpha was based on the seven sub-questions relating to the Best Practice survey section as per Appendix 1.

6.3.3 T-Test analysis: best practice

The hypothesis stated from Chapter 3 is as follows:

H0: Respondents agree that 'Strong leadership; clear policy; collaboration with suppliers; stringent tender conditions; technical expertise; and sustainability as competitive advantage influence' are best practices in sustainable procurement within organisations (score greater than 3).

H1: Respondents do not agree that 'Strong leadership; clear policy; collaboration with suppliers; stringent tender conditions; technical expertise; and sustainability as a competitive advantage influence' are best practices in sustainable procurement within organisations (score equal to 3).

H0: $\mu > 3$ (skewed to the agreeing side of the survey)

H1: $\mu = 3$

A one-sided T-statistical analysis was used to measure if the respondents 'significantly agree' with the factors within the construct. Since the P-value is less than 0.05, we can reject H1 and conclude that the mean is more than 3, which means that the respondents are more likely to agree with all the factors within the Best Practice construct.

The Private Sector: The results from Table 25, it is evident "Measurement and tracking of progress" is the most significant factor within the private sector. The private industry finding supports the (Ntayi & Mugume, 2014) view that measuring, tracking and monitoring of suppliers should be performed on an ongoing basis and feedback should be provided to the supplier and this should be integrated into the procurement process to ensure security of supply of sustainable products.

On a practical level, the reasons for the respondents selecting this sub-question could be attributed to the growing emphasis being placed on triple bottom line reporting within the private sector. This essentially means that the private sector respondents call for more consistent adherence to monitoring and reporting standard.

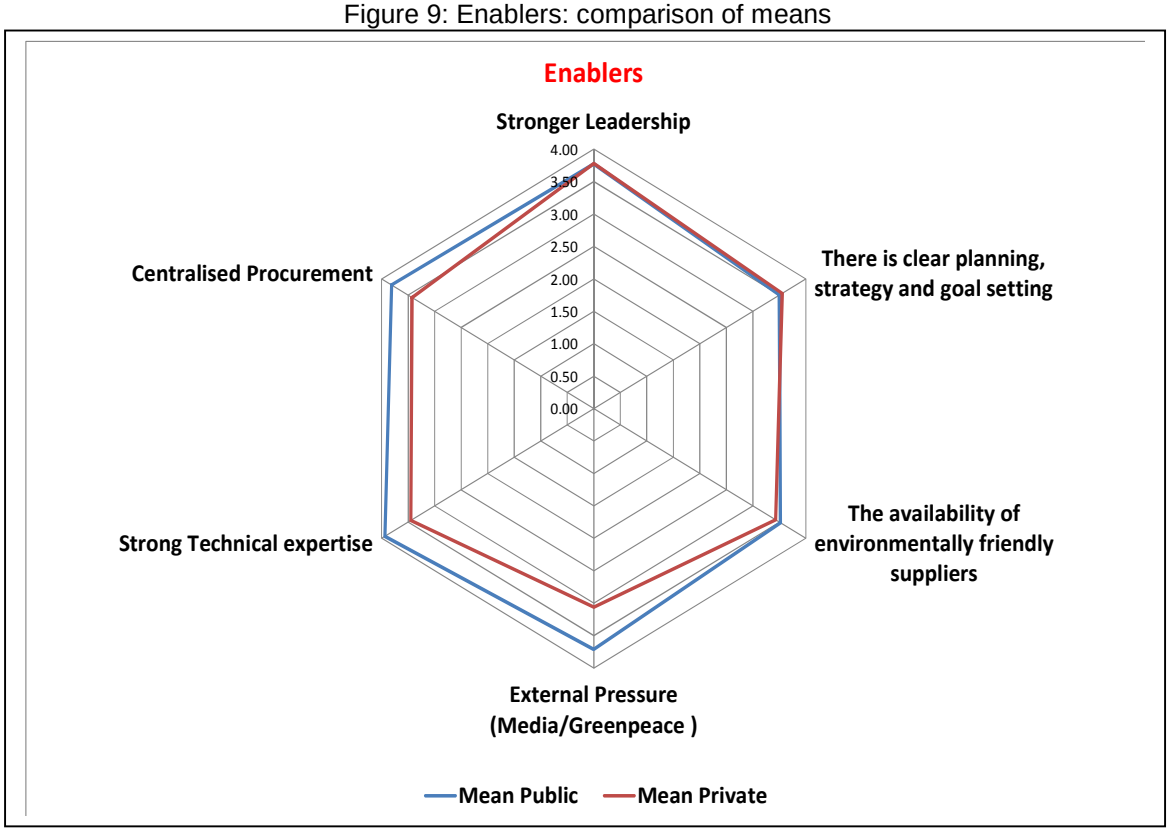
The Public sector: 'Clear policy and legislation' is the most significant factor within the public sector. In terms of the South African context, Government is the 100% shareholder in most public companies (state-owned companies). Procurement and Supply Chain Management within public companies are therefore aligned to Government policies and regulations, which is the Preferential Procurement Policy Framework Agreement (PPPFA). In addition, public entities need to adhere to several other policies such as the Public Finance Management Act (PFMA), labour tax laws, customs and foreign exchange procedures. These various policies are complex and additional sustainable policies may increase the complexity of aligning and implementing these policies. Public respondents would therefore require clear legislation to ensure that there is no contradiction to existing policies.

Considering a theoretical viewpoint that is supported by the literature review from Chapter 2, (Sourani & Sohail, 2011) supported the view that "Clear policy and legislation" stating that it is essential to move the procurement agenda forward. Although sustainable policies are political in nature (Fisher, 2013), both government and regulatory bodies are obligated to implement these clear policies, regulations and guidance notes after consultations with the relevant stakeholders such as educational and profession institutions, supply chain specialists and end users.

6.4 Research Question 2: Enablers

A graphical representation of the comparison of the mean of the sub-question A between the private and public sector, with the enablers construct, is represented by Figure 9.

Figure 9: Enablers: comparison of means



Research Question 2 as stated in Chapter 3, is as follows: Do these respondents agree that these factors contribute to the enablers in sustainable procurement? The attempt was to answer the research question through a T-Test analysis concentrating on whether the private and public sectors agree that these factors are enablers to an organisation achieving sustainable procurement for industries in South African

6.4.1 Reliability analysis: enablers

A Cronbach's Alpha coefficient analysis for reliability was carried out on the enablers section of the questionnaire. Cronbach's Alpha coefficient is a measure of the survey responses of reliability. The Alpha results produced by the test using the statistical tool for 'enablers' resulted in a Cronbach's Alpha coefficient of 0.762, which is greater than the acceptable guideline of 0.7 for the reliability testing acceptance. Based on this, the research accepts that the survey for 'enablers' was reliable enough to continue further

statistical analysis. The Cronbach's Alpha was based on the seven sub-questions relating to the enablers survey section as per Appendix 1.

6.4.2 Descriptive analysis: enablers

The descriptive statistics carried out for the 'enablers' section of the survey is illustrated in Table 7-9. The results indicate the individual mean values for each sub-question. As stated in Chapter 5, there were 104 responses to the questionnaire; however, only 97 responses were analysed as seven responses were incomplete and a decision was taken to exclude them from the study. The 97 respondents comprise of 49 respondents from the private sector and 48 from the public sector. The calculated mean values variables are:

- Between 3.06 and 3.78, based on the 49 respondents for the private sector,
- Between 3.50 and 3.94, based on the 48 respondents from the public sectors.

It is important to note that the ordinal value of 3.00 in the survey represented a 'neutral response', where the respondents neither agreed nor disagreed with the statement. An ordinal value of 4.00 in the collected data represents 'Agree' to the survey sub-question. The sub-question with highest mean value of 4 and above indicates an 'Agree' to the sub-question.

The sub-question with the highest mean value within the private sector is 'Stronger Leadership', with a mean value of 3.78. The respondents' inclination to agree with this statement is supported by Brammer & Walker (2011), who stated that leadership is indeed a key driver for the successful implementation of sustainable procurement within organisations.

Nikolaou & Loizou (2015) argued that government leadership interventions are necessary to develop suitable strategic plans for the 'green products suppliers' to be financially sustainable, by creating the consumer appetite for the adoption of 'green products'. These strategic plans should also be reinforced by the most senior leadership (Santos, Svensson & Padin, 2013)

'Strong Technical expertise' is the sub-question with the highest mean value within the public sector, with a mean value of 3.94. The respondents' inclination to agree with this statement is supported by (Diófási & Valkó, 2014), who indicated that the key to successful implementation of green procurement is commitment and solid technical expertise.

6.4.3 T-Test analysis: Enablers

The hypothesis stated from Chapter 3 is as follows:

H0: Respondents agree that 'Stronger Leadership; clear planning; strategy; goal setting; the availability of environmentally friendly suppliers; external pressure; strong technical expertise; and centralised procurement' are enablers for the successful implementation of sustainable procurement (score greater than 3).

H1: Respondents do not agree that 'Stronger Leadership; clear planning; strategy; goal setting; the availability of environmentally friendly suppliers; external pressure; strong technical expertise; and centralised procurement' are enablers for the successful implementation of sustainable procurement (score equal to 3).

H0: $\mu > 3$ (skewed to the agreeing side of the answer)

H1: $\mu = 3$

A one-sided T-test was used to measure if the respondents 'significantly agree' with the factors within the construct. Since the P-value is less than 0.05, we can reject H1 and conclude that the mean is more than 3, which means that the respondents are more likely to agree with all the factors within the Enablers construct.

The Private Sector: The analysis indicates that 'Stronger Leadership' is the most significant factor within the private sector. "Stronger Leadership" plays a significant part in the success of any business and supported by (Santos et al., 2013) who recognised that these skills are imperative to ensure a sustainable organisational strategy. (Metcalf & Benn, 2012) argued that sustainability is fairly complex in nature and it therefore requires skilled leaders, as these leaders obviously need to have the ability to navigate through complex environments incorporating difficult problem solving.

Nikolaou & Loizou (2015) argue that leadership intervention from government or political point of view is essential for the development of suitable strategic plans in aiding consumer appetite for the adoption of 'green products'. These strategic plans should also be reinforced by the most senior leadership (Santos, Svensson & Padin, 2013),

From a business perspective, (Radulescu, 2013) argued that specific leadership traits, which transform the business from an economic focus to a connected business that respects the environment and people, is the key to success. (Radulescu, 2013) argues that this kind of leadership is responsible for ensuring the change in paradigm whilst creating equilibrium between the social, environmental and economic aspects of sustainability, while Brammer & Walker (2011) argued that 'leadership' is a key driver for the successful implementation of sustainable procurement within organisations.

The Public Sector: 'Strong Technical expertise' is the most significant factor within the public sector. This could be attributed to the current skills shortage in the country. The impact of was mostly felt by the engineering fraternity, with recent media reports of the shortage of skilled engineers in the country. This could possibly be the response from Transnet, Denel, SAPREF and Eskom, who tend to employ a lot of skilled engineers. There could equally be a greater emphasis on the technical skills of supply chain individual to perform the more complex task of including sustainability on their supply chain.

Strong technical expertise was also supported by (Meehan & Bryde, 2011), who stated that technical expertise is essential in order to take advantage of the more advanced sustainability practices as well as to initiate the change in behaviour amongst procurement staff. Further, with the emphasis of "green public procurement" public entities require commitment and technical expertise to successful implement the initiatives.

(Meehan & Bryde, 2011) supports the view that technical experience is essential in order to understand and benefit from innovative sustainability practices as well as to initiate the change in behaviour amongst procurement staff. (Erridge & Hennigan, 2012) supported these views by indicating that more technical training is needed in sustainable procurement. Walker indicate that one of the easier ways of attaining skill is if procurement works in a cross-functional team incorporating other areas of the business

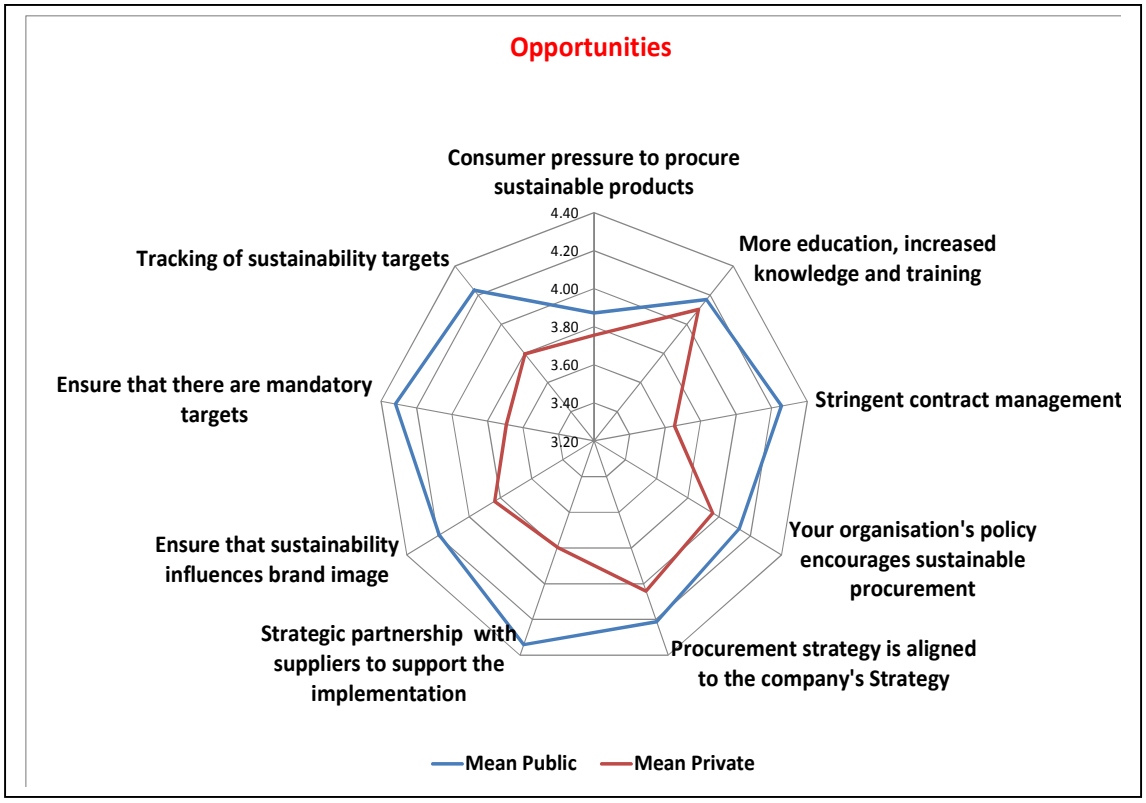
such as technical staff, academics and investors to allow embrace new practices and technical skills (Helen Walker & Neil Jones, 2012).

In contrasts between the public and private sectors, (Diófási & Valkó, 2014) indicated that the key to successful implementation of green procurement is the commitment and the solid technical expertise, whereas (Radulescu, 2013) argued that specific leadership traits, which transform the business from an economic focus to a connected business that respects the environment and people, is the key to success.

6.5 Research Question 3: Opportunities

A graphical representation of the comparison of the mean of the sub-question A between the private and public sector, with the opportunities construct, is represented by Figure 10 below.

Figure 10: Opportunities: comparison of means



Research Question 3, as stated in Chapter 3, is as follows: Do the main factors contribute to the opportunities in sustainable procurement? Question 1 was attempted to be answered through the T-Test of whether the private and public sectors agree that these

factors are deemed sustainable procurement opportunities for industries in South Africa, with a score greater than 3.

6.5.1 Reliability analysis: opportunities

A Cronbach's Alpha coefficient analysis for reliability was carried out on the opportunities section of the questionnaire. The Cronbach's Alpha coefficient is a measure of the survey responses of reliability. The Alpha results produced by the test using the statistical tool for 'opportunities' resulted in a Cronbach's Alpha coefficient of 0.879, which is greater than the acceptable guideline of 0.7 for the reliability testing acceptance. Based on this, the research accepts that the survey for 'opportunities' was reliable enough to continue further statistical analysis. The Cronbach's Alpha was based on the seven sub-questions relating to the 'opportunities' survey section as per Appendix 1.

6.5.2 Descriptive analysis: opportunities

The descriptive statistics carried out for the 'opportunities' section of the survey is illustrated in Tables 10-12. As stated in Chapter 5, there were 104 responses to the questionnaire; however, only 97 responses were analysed as seven responses were incomplete and a decision was taken to exclude them from the study. The 97 respondents comprise of 49 respondents from the private sector and 48 from the public sector. The calculated mean values variables are:

- Between 3.65 and 4.10, based on the 49 respondents for the private sector;
- Between 3.87 and 4.34, based on the 48 respondents from the public sectors.

It is important to note that the ordinal value of 3.00 in the survey represented a 'neutral response', where the respondents neither agreed nor disagreed with the statement. The ordinal value of 4.00 in the collected data represents 'Agree' to the survey sub-question. The sub-question with highest mean value of 4 and above indicates an 'Agree' to the sub-question.

The sub-question with the highest mean value within the private sector is 'More education, increased knowledge and training', with a mean value of 4.10. The respondents' inclination to agree with this statement was supported by (Pagell & Shevchenko, 2014) in welcoming a greater understanding of sustainability, as the authors felt that the current knowledge within organisations is not sufficient to create truly sustainable supply chains. Further, suppliers must realise that consumers are willing to

pay more for a “green” product, which is actually creating a competitive advantage for the sustainable suppliers (Radulescu, 2013).

‘Strategic partnership with suppliers to support the implementation’ is the sub-question with the highest mean value within the public sector, with a mean value of 4.34. The respondents’ inclination to agree with this statement was supported by (Adderley & Mellor, 2014), who stated that partnership with ‘green organisations’, such as the WWF, are currently treated as strategic partnerships as opposed to the traditional relationships of philanthropy and corporate social responsibilities. Further, these types of partnerships are likely to become increasingly common, as part of sustainable business models in the years to come. The focus should, therefore, entail establishing partnerships which aim to mutually benefit both parties(Adderley & Mellor, 2014).

6.5.3 T-Test analysis: opportunities

The hypothesis stated from Chapter 3 is as follows:

H0: Respondents agree that ‘Consumer pressure; more education; increased knowledge; stringent contract management; alignment of organisation procurement policy to the company's strategy; strategic partnership with suppliers; brand image; mandatory targets; and tracking’ are opportunity factors for private and public organisations to attain sustainable procurement (score greater than 3).

H1: Respondents do not agree that ‘Consumer pressure; more education; increased knowledge; stringent contract management; alignment of organisation procurement policy to the company's strategy; strategic partnership with suppliers; brand image; mandatory targets; and tracking’ are opportunity factors for private and public organisations to attain sustainable procurement (score equal to 3).

H0: $\mu > 3$ (skewed to the agreeing side of the answer)

H1: $\mu = 3$

A one-sided T-test was used to measure if the respondents ‘significantly agree’ with the factors within the construct. Since the P-value is less than 0.05, we can reject H1 and conclude that the mean is more than 3, which means that the respondents are more likely to agree with all the factors within the Opportunities construct.

"Procurement strategy is aligned to the company's strategy" is the most significant factor within the private sector. It is too often that there is misalignment and conflict in terms of a business's strategic intent and operation obligations. Once sustainability is embedded in the company strategy, then all other business operations are forced into synergies with the overall company strategy. This view was supported theoretically by (Fowler & Hope, 2007), who argued that incorporating sustainable business practice into company strategy creates alignment and focus for any company.

Many organisations globally are forced to integrate supply chain into their company strategy as well as procurement strategy and sustainability into their procurement strategy, however, McMurray, Islam, Siwar & Fien, (2014) indicates that numerous efforts by procurement specialist to engage in these challenges have been delayed by numerous obstacles. Schwerin & Prier, (2013) is of the view that one needs to explore some of these obstacles in order to find solutions and thereby prevent more environmental disasters.

In terms of the public sectors, "Strategic partnership with suppliers to support the implementation' is the most significant factor, which supports (Adderley & Mellor, 2014) who indicated that partnership with 'green organisations', such as WWF, should be treated as strategic partnerships as opposed to the traditional relationships of philanthropy and corporate social responsibilities.

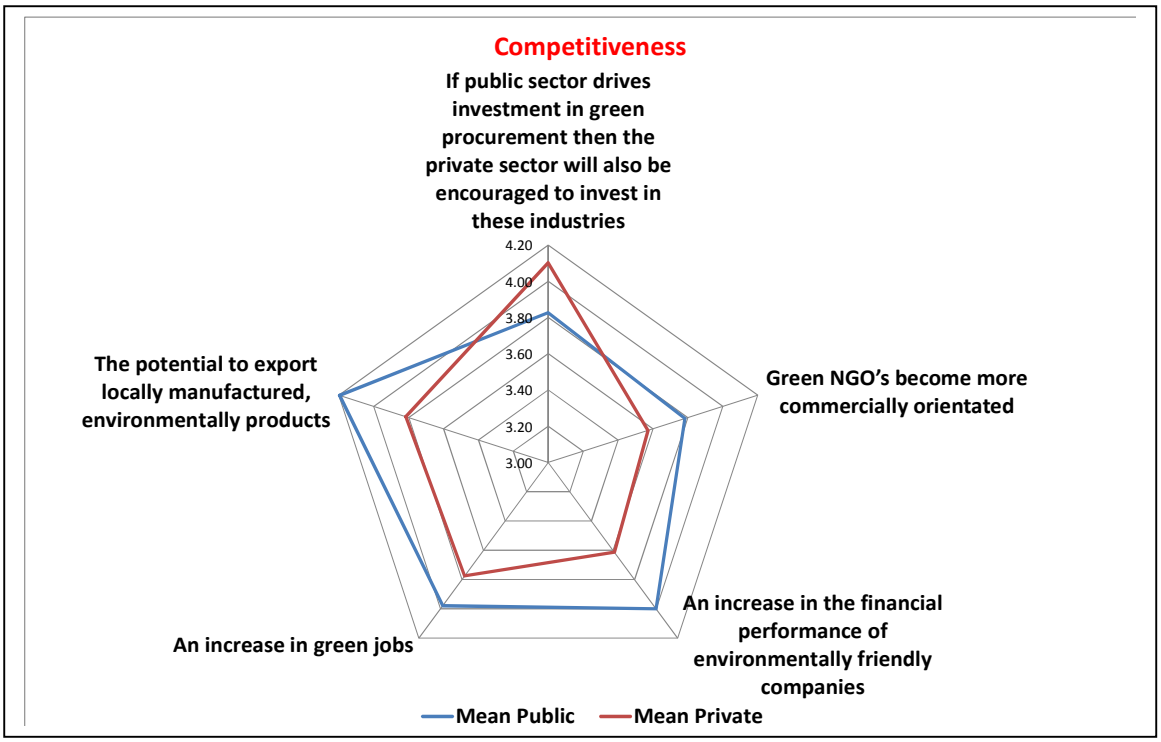
(Santos et al., 2013) suggest that organisations who have greater proactivity in their sustainability supply chain strategy have an increased level collaboration with suppliers with increased environmental performance, however Zhao, Cao & Li (2015) contradicted these suggestions by indicating that collaboration may lead to collusion, depicting uncompetitive behaviour.

The solution may lie somewhere in the middle as companies needs to collaborate to succeed. Much of the risk can be eliminated by adequate policies like the Preferential Procurement Policy Framework Agreement (PPPFA) as well as the intervention of the competitions commission, who monitor and investigate anticompetitive behaviour.

6.6 Research Question 4: Country Competiveness

A comparison of the means within the competitiveness construct is illustrated in Figure 11.

Figure 11: Competiveness: comparison of means



Research Question 3, as stated in Chapter 3, is as follows:

Do the respondents agree to the main factors that would ensure competitiveness in South Africa? This question was also analysed using the T-Test.

6.6.1 Reliability analysis: competitiveness

A Cronbach's Alpha coefficient analysis for reliability was carried out on the competitiveness section of the questionnaire. The Cronbach's Alpha coefficient is a measure of the survey responses of reliability. The Alpha results produced by the test using the statistical tool for 'competitiveness' resulted in a Cronbach's Alpha coefficient of 0.758, which is greater than the acceptable guideline of 0.7 for the reliability testing acceptance. Based on this, the research accepts that the survey for 'opportunities' was reliable enough to continue further statistical analysis. The Cronbach's Alpha was based

on the seven sub-questions relating to the opportunities survey section as per Appendix 1.

6.6.2 Descriptive analysis: competitiveness

The descriptive statistics carried out for the 'competitiveness' section of the survey is illustrated in Tables 13-15. The results indicate the individual mean values for each sub-question. As stated in Chapter 5, there were 104 responses to the questionnaire; however, only 97 responses were analysed as seven responses were incomplete and a decision was taken to exclude them from the study. The 97 respondents comprise of 49 respondents from the private sector and 48 respondents from the public sector. The calculated mean values variables are:

- Between 3.57 and 4.10, based on the 49 respondents for the private sector;
- Between 3.78 and 4.20 based on the 48 respondents from the public sectors.

It is important to note that the ordinal value of 3.00 in the survey represented a 'neutral response', where the respondents neither agreed nor disagreed with the statement. The ordinal value of 4.00 in the collected data represents 'Agree' to the survey sub-question. The sub-question with the highest mean value of 4 and above indicates an 'Agree' to the sub-question.

The sub-question with the highest mean value within the private sector is 'If the public sector drives investment in green procurement then the private sector will also be encouraged to invest in these industries', with a mean value of 4.10. The respondents' inclination to agree with this statement was supported by (Bratt, Hallstedt, Robèrt, Broman, & Oldmark, 2013), who had a strong belief that green procurement is gradually being developed into a policy tool with a substantial potential to navigate procurement decisions in a direction that supports sustainability. This would further enhance innovation and development in this field and create opportunities for private sector participation.

'Strategic partnership with suppliers to support the implementation' is the sub-question with the highest mean value within the public sector, with a mean value of 4.20. The respondents' inclination to agree with this statement was supported by(Adderley & Mellor, 2014), who stated that sustainable companies such as the WWF are becoming strategic suppliers to corporates rather than the traditional notion of these suppliers being viewed as a product of philanthropy or corporate social responsibility.

6.6.3 T-Test analysis: competitiveness

The hypothesis stated from Chapter 3 is as follows:

H0: Respondents agree that 'environmentally friendly products are expensive; organisations seem to be short-term focused; low management commitment; regulations and policies are not stringent; suppliers do not provide environmentally friendly solutions; procurement is de-centralised; no consolidation of spend; and low knowledge and awareness of sustainable procurement' prevent an organisation from implementing sustainable procurement (score greater than 3).

H1: Respondents do not agree that 'environmentally friendly products are expensive; organisations seem to be short-term focused; low management commitment; regulations and policies are not stringent; suppliers do not provide environmentally friendly solutions; procurement is de-centralised; no consolidation of the volumes; and low knowledge and awareness of sustainable procurement' prevent an organisation from implementing sustainable procurement (score equal to 3).

H0: mean = 3

H1: mean > 3 (skewed to the agreeing side of the answer)

If the P-value is less than 0.05, then we should reject H0 and conclude that the mean is more than 3, which means that the respondents are more likely to agree with the questions. The analysis indicates that all factors within the competitiveness construct have a P-value less than 0.05.

This means that respondents are more likely to agree with the factor.

'If the public sector drives investment in green procurement, then the private sector will be encouraged to invest in these industries' is the most significant factor within the private sector. This supports the view that the public sector procurement is of drastically higher value than the private sector. It also covers a sizeable part of a country's Gross Domestic Product, and such public sector spend can have major impact on business strategy and focus.

In terms of creating a large number of green jobs, procurement could immediately create request for anticipated green businesses within a certain location. This can be supported by preferential purchasing policies, which can fast-track the implementation and generate

a tremendous amount of jobs. This could even lower the cost of products manufactured and initiate export opportunities. The public sector can make a tremendous contribution to entrepreneurship and small business. It is, therefore, important that local and national government make use of this potential. ((Adderley & Mellor, 2014)

In terms of the public sector, “The potential to export locally manufactured, environmentally friendly products is the most significant factor. This is supported by (Schwerin & Prier, 2013) quoting examples of the development of low-carbon technologies like electric cars, similar to where China is positioned as a leading player in the next generation of technologies.

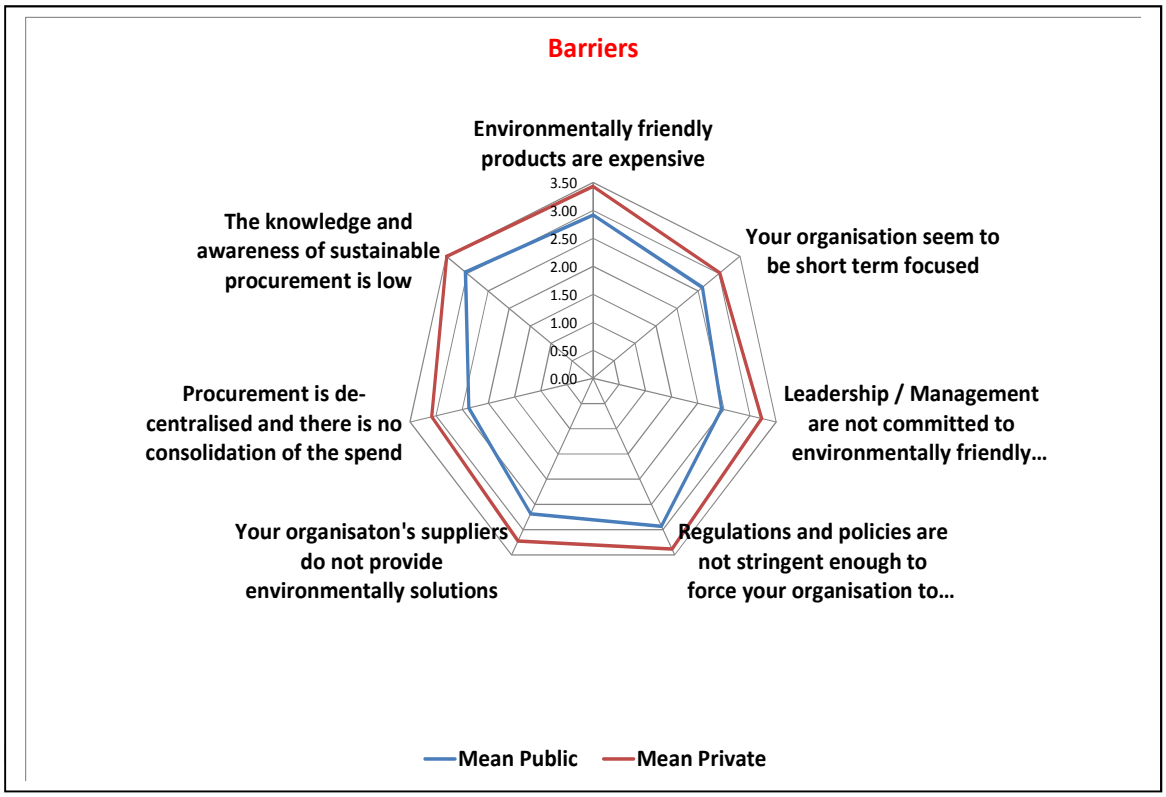
This concern in terms of the country’s competitiveness was argued by (Mohan, 2008) indicating that the drive by South Africa’s Government to secure more of its procurement locally through its designated products programme was not really been very successful. This is obviously a huge problem and it is also a sentiment that is shared by the respondents as well.

In order to encourage sustainable procurement and boost manufacturing, South Africa’s presidency, called for the top eighty companies listed on the Johannesburg Stock Exchange to commit to buying more of their raw materials from local companies. This will ensure more local manufacturing, which should translate to increasing the export of the locally manufactured goods.

6.7 Research Question 5: Barriers

The comparison of the means within the barriers construct is represented by Figure 12.

Figure 12: Barriers: comparison of means



Do the main factors contribute to the barriers in sustainable procurement? The attempt to answer the question was to test whether the private and public sectors agreed that these factors are barriers for the successful implementation of sustainable procurement for industries in South Africa, with a score of 4 or above.

6.7.1 Reliability analysis: barriers

A Cronbach's Alpha coefficient analysis for reliability was carried out on the barriers section of the questionnaire. Cronbach's Alpha coefficient is a measure of the survey responses of reliability. The results produced by the test were a coefficient of 0.807, which is greater than the acceptable guideline of 0.7 for the reliability testing acceptance. Based on this, the research accepts that the survey for 'barriers' was reliable enough to

continue further statistical analysis. The Cronbach's Alpha was based on the seven sub-questions relating to the opportunities survey section as per Appendix 1.

6.7.2 Descriptive analysis: barriers

The descriptive statistics carried out for the 'barriers' section of the survey is illustrated in Figures 16-18.The results indicate the individual mean values for each sub-question. As stated in Chapter 5, there were 104 responses to the questionnaire; however, only 97 responses were analysed as seven responses were incomplete and a decision was taken to exclude them from the study. The 97 respondents comprise of 49 respondents from the private sector and 48 from the public sector. The calculated mean values variables are:

- Between 3.02 and 3.49, based on the 49 respondents for the private sector;
- Between 2.38 and 3.04, based on the 48 respondents from the public sectors.

It is important to note that the ordinal value of 3.00 in the survey represented a 'neutral response', where the respondents neither agreed nor disagreed with the statement. The ordinal value of 4.00 in the collected data represents 'Agree' to the survey sub-question. The sub-question with the highest mean value of 4 and above indicates an 'Agree' to the sub-question.

The private sector and the public sector have interestingly resulted in 'the knowledge and awareness of sustainable procurement is low' as being the common sub-question, with the highest mean value of 3.49 and 3.04 respectively. The respondents' inclination to agree with this statement is supported by (Testa et al., 2014.) who stated that training and awareness initiatives that increase the knowledge of green procurement are very strong drivers of sustainability practices.

6.7.3 T-Test analysis: barriers

What are the current barriers that are preventing the private and public sectors from achieving sustainable procurement?

H0: Respondents agree that 'environmentally friendly products are expensive; organisations seem to be short-term focused; low management commitment; regulations and policies are not stringent; suppliers do not provide environmentally friendly solutions; procurement is de-centralised; no consolidation of the volumes; and low knowledge and awareness of sustainable procurement' prevent an organisation from implementing sustainable procurement (score greater than 3).

H1: Respondents do not agree that 'environmentally friendly products are expensive; organisations seem to be short-term focused; low management commitment; regulations and policies are not stringent; suppliers do not provide environmentally friendly solutions; procurement is de-centralised; no consolidation of the volumes; and low knowledge and awareness of sustainable procurement' prevent an organisation from implementing sustainable procurement (score equal to 3).

H0: mean = 3

H1: mean > 3 (skewed to the agreeing side of the answer)

If the P-value is less than 0.05, then we should reject H0 and conclude that the mean is more than 3, which means that the respondents are more likely to agree with the questions.

All the factors within the public sector have a P-value greater than 0.05, which means that the respondents are more likely to disagree with the factors, while the private sector has three factors that have P-values greater than 0.05.

This effectively means that none of the factors within the public sector is significant.

In terms of the private sectors, "The knowledge and awareness of sustainable procurement is low" is the most significant factor contributing to the barriers to sustainable procurement. This view is supported by (McMurray et al., 2014), who attributed lack of awareness, among other issues, as being major barriers to sustainable sourcing.

In order solve these the awareness challenge, (Sancha et al., 2015) argues for greater institutional involvement, indicating that an increase in the institutional pressures at a country level, the greater the level of sustainable development and supplier integration.

However, (Zhu & Geng, 2013) argues that manufacturers with a higher normative behaviour will be more proactive in implementing sustainable purchasing. Normative drivers create a sense of obligation through increased environmental awareness of consumers ((Sancha et al., 2015).

6.8 Summary of the Discussion of Results

The objective of this research, as elaborated in Chapter 1, was to study and understand the sustainability issues from a local perspective, based on South Africa's dynamics. Therefore, the objective of the research was to:

- Identify the key elements that impact sustainable procurement on a global environment, within the specific themes of best practice, enablers, opportunities, competiveness and barriers;
- Determine the perception of procurement practitioners within the public and private sectors relating to the various elements in terms of the factors that most impact them;
- Establish, based on the survey questionnaire, the factors that most impact the private and public sectors;
- Provide guidance to both private and public stakeholders based on the research;
- Define a practical framework that could be used to establish the perception of practitioners within a company level.

The objective of the research is to establish what are the factors influencing sustainable sourcing in private and public organisations as well as to establish if there is a significant difference between the factors that affect the private and public sectors, based on the perception of supply chain professionals.

An in-depth literature study was performed on accredited peer reviewed journals in the sustainable sourcing field, as discussed in details within Chapter 2. The literature was divided into five major themes:

- Best practice;
- Enablers;
- Opportunities;
- Competiveness; and
- Barriers.

A set of research questions, with hypothesis, was developed in Chapter 3 based on the above five themes. Further, a set of sub-questions was established for each one of the themes.

A quantitative study was chosen for this research as elaborated. Chapter 4 outlined the research methodology that was followed, which was a self-administered survey questionnaire that was issued to procurement and supply chain professionals within the private and public sectors. After much persuasion and follow up, responses were received through the online Survey Monkey platform; however, only 97 valid responses could be used for the purposes of this research.

The data was statistically analysed. The following test was performed as per Chapter 5:

- Descriptive analysis;
- Validity and reliability; and
- One-sided T-test.

All survey sections showed to be reliable for the purpose of continuing with further statistical analysis. The data produced interesting results, which will add value to both businesses and the theoretical knowledge base as the literature study reveals that there was no study of this nature performed within the South African context.

The results show that there is a huge difference of perceptions of the key drivers or factors of sustainable sourcing between public and private sectors. The table below illustrates the high level results of the research.

Table 36: Summary of Results

Theme	Factors impacting the Private Sector	Factors impacting the Public Sector	Common /Different Factors
Best Practice	Measurement and tracking of progress	Clear Policy and legislation	Different
Enablers	Stronger Leadership	Strong Technical Expertise	Different
Opportunity	Procurement strategy is aligned to company strategy	Strategic partnership with suppliers to support the implementation	Different
Competitiveness	If the public drives investment in green procurement, then the private sector will be encouraged to invest in these industries	The potential to export locally manufactured, environmentally friendly products	Different
Barriers	The knowledge and awareness of sustainable procurement is low		Different

From the results, it is evident that there are no factors that are common to the private and public sectors.

The factors affecting the private sector are more inclined to measurement and tracking; leadership and the alignment of the company strategy to the procurement strategy; the public sector should drive investment; and knowledge and awareness of sustainable sourcing. It was interesting to note that this was also the perception of the pre-testers, who requested that a definition of sustainable sourcing be included in the questionnaire.

The public sector is influenced by clear policy; strong technical expertise; strategic partnership; and the potential to export locally manufactured goods.

From a business perspective, there is obviously a vast difference in perspective, in terms of the factors that affect sustainable procurement.

The research objectives have thus been achieved based on the intentions that were outlined in Chapter 1. The objective of the research was to establish what are the factors influencing sustainable sourcing in private and public organisations as well as to establish if there is a significant difference between the factors that affect the private and public sectors, based on the perception of supply chain professionals, which is summarised in Table 35 above.

CHAPTER 7: CONCLUSION

7.1 Introduction

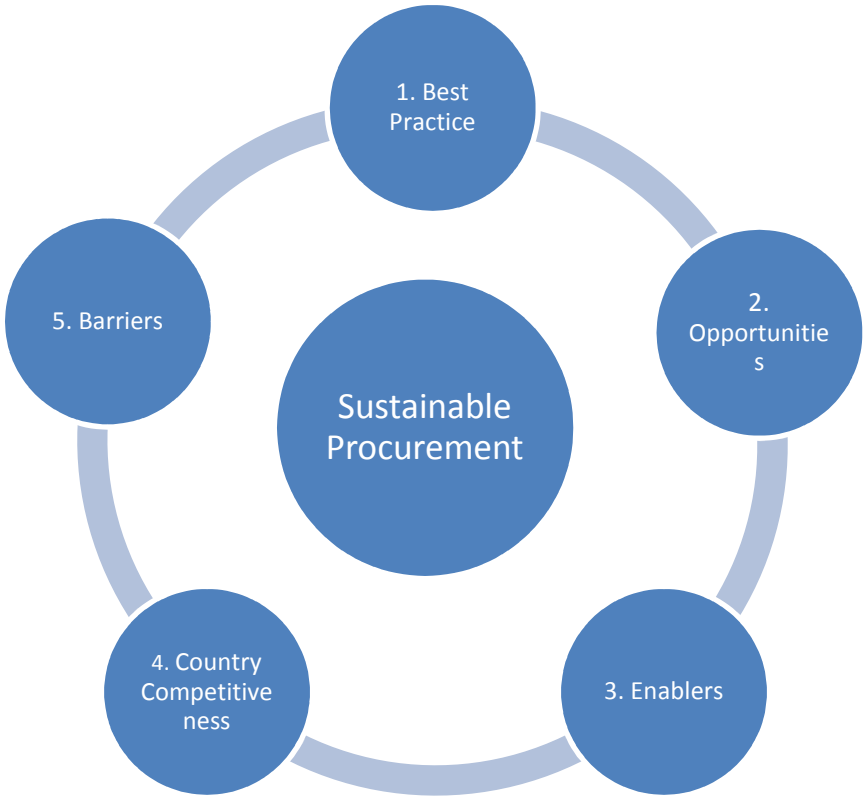
The huge emphasis placed on sustainability through the drastic impact on the triple bottom line is noteworthy demonstration to the importance of sustainability. By impacting their business, leaders take a more focused approach to ensuring that operations are driven by sustainably procurement strategies. Implementing sustainable procurement strategies is not without challenges, most especially due to issues pertaining to the local market condition being faced by that organisation as well as the implications thereof. By understanding which factors that impact the success of the implementation of sustainable procurement within the two broad sectors, the organisations within these sectors will have more knowledge. They will be able to be more prepared and will place more emphasis on the factors discussed to prevent rework and unnecessary failures and the effects thereof.

This chapter highlights the main objectives of the research in relation to the five research questions; the major findings of the research and recommendations to the procurement and supply chain professionals and organisations involved in sustainable projects; as well as areas of future research.

7.2 Principal Findings

The main objective of the research was to establish the key factors that influence sustainable procurement within the private and public sectors and to understand if these key influential drivers are common between these sectors. The research was tested using five research themes and 34 sub-questions.

Figure 13: Sustainable Procurement Themes



In comparing the response from the private sector to the public sector, the research found that there is a distinct difference in the perception of the respondents. There are huge opportunities which can be realised by aligning the procurement strategy to the company strategy, supported by strategic partnership with suppliers.

One of the best practices is adopting clear goals, policies and legislation, and embracing systems to strictly monitor and track progress. For South Africa to be globally competitive, the public sector should drive investment though green procurement, which will encourage a private sector investment in the competitive manufacturing of green products. The potential to export these competitively priced locally manufactured environmentally friendly products will thus contribute to the competitiveness of the country.

A noteworthy observation which was recommended by the pre-testers and later, the same finding developed in the results is that there is still a lack of understanding, awareness and knowledge of sustainable procurement amongst the procurement fraternity in South Africa, based on the perception of the respondents. This is supported by the need for strong technical and leadership skill to enable successful implementation.

From a business perspective, there is obviously a vast difference in perspective, in terms of the factors that affect sustainable procurement as displayed below:

Table 37: High Level Summary of Results

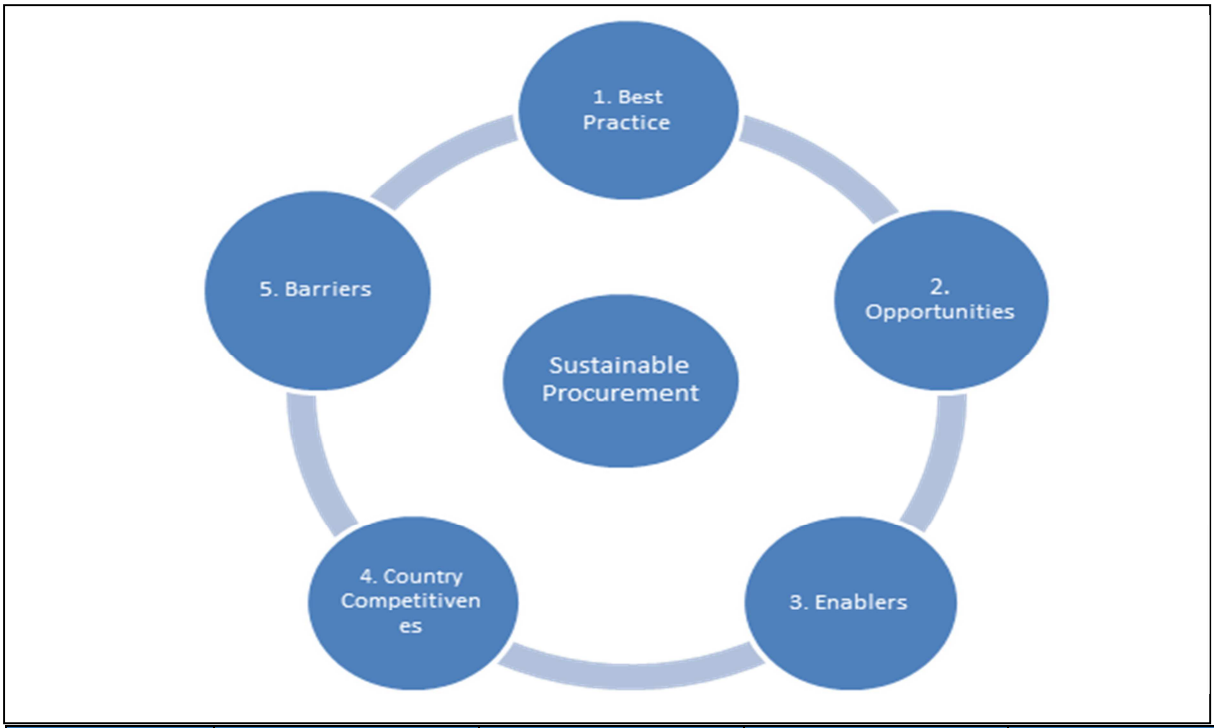
Theme	Factors impacting the Private Sector	Factors impacting the Public Sector	Common / Different Factors
Best Practice	Measurement and tracking of progress	Clear policy and legislation	Different
Enablers	Stronger leadership	Strong technical expertise	Different
Opportunity	Procurement strategy is aligned to company strategy	Strategic partnership with suppliers to support the implementation	Different
Competitiveness	If the public drives investment in green procurement, then the private sector will be encouraged to invest in these industries	The potential to export locally manufactured, environmentally friendly products	Different
Barriers	The knowledge and awareness of sustainable procurement is low	No significant factors	Different

The various themes relating to sustainable sourcing was integrated into a framework model illustrated in Figure 14 below. While the top portion is various themes, the bottom portion is a list of the various elements that support the main themes as indicated in the literature review within chapter 2. In using the framework, the themes relate to:

- The best practice within sustainable procurement
- The enablers of sustainable procurement
- The opportunities to attain sustainable procurement
- The factors that influence the countries competitiveness
- The barriers to sustainable procurement

The lower section entails the sub-question which supports the main themes.

Figure 14: Sustainable Procurement Framework Model



Best Practice	Enablers	Opportunities	Competitiveness	Barriers
Suppliers Collaboration Strong Leadership Clear Policy and legislation Stringent tender conditions Measurement and tracking Sustainability competitive advantage Technical expertise	Stronger Leadership Clear planning, strategy and goal setting Environmentally friendly suppliers External Pressure Strong Technical expertise Centralised Procurement Tracking targets	Consumer pressure Education, increased knowledge and training Stringent contract management Organizational policy Strategy is aligned Strategic supplier partnership Influence on brand image	Increased public sector spend on sustainability Green NGO's become more commercially orientated Increase in the company's financial performance An increase in green jobs A Increased export of manufactured environmentally product Mandatory targets	Sustainable products are expensive e Organisation is short term focused Leadership / Management committed Regulations and policies Suppliers Base Knowledge and awareness

7.3 Recommendations for Managers

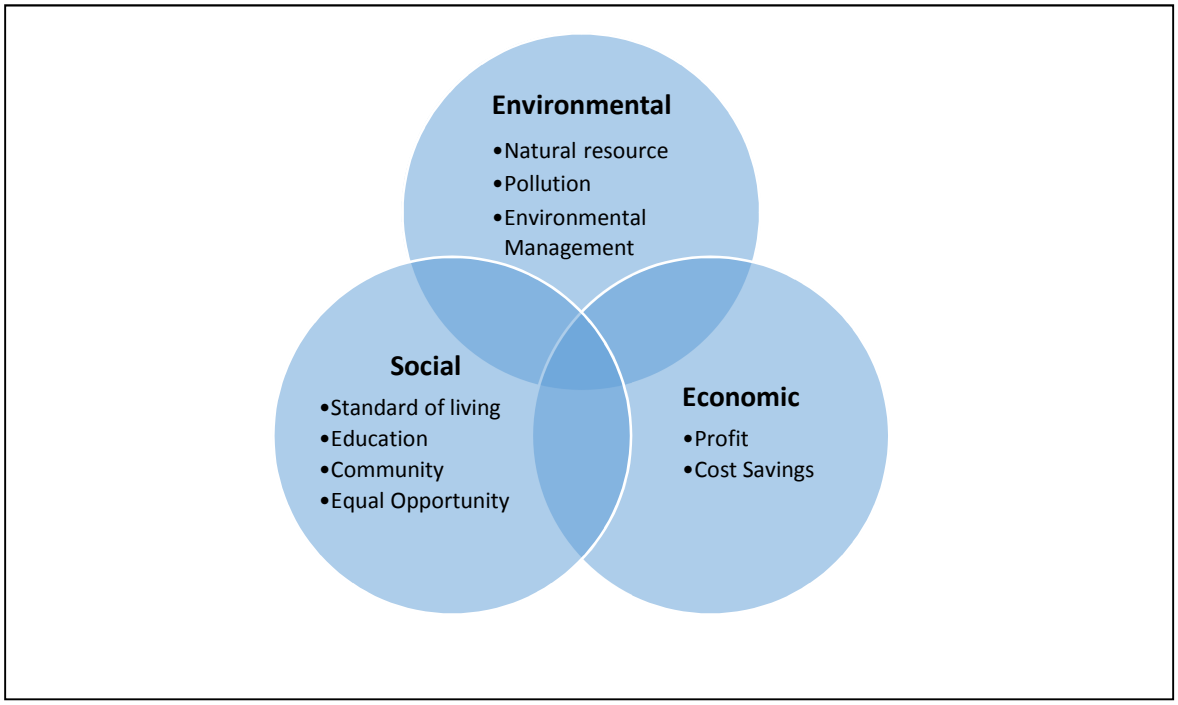
Although the two sets of respondents are within the same country, it is interesting to note that the response differ drastically. This is important for managers and researchers that, one should not assume the result will be common amongst the private and public sector. This is obviously the sentiments of the dynamics of the sectors as well the challenges being faced by the organisations within the sector. It is therefore important to understand which sector you are operating in, prior on embarking of sustainability initiatives. The recommendation is that emphasis should be placed in training, awareness and knowledge pertaining as the research indicates that this one of the major barriers to sustainable sourcing

7.4 Recommendations for Organisations

In order to build a competitive advantage in today's market environment, the current trends points to corporate sustainability, which is essentially driven through a sustainable procurement strategy. There is a massive difference between the factors that affect the private and public sectors which should be taken into consideration when planning to adopt the sustainable sourcing initiative. The factors

Business leaders need to balance the triple bottom line as indicated in figure 16, as it is an important contributor to the organisational goal. Since the factors facing the private and public sector are different, business leaders also need to understand which factors address the various organisations and address them appropriately. There is also a huge opportunity for business initiatives in this space as the research indicate that limited knowledge in this field and there are stringent institutional pressures that will encourage the change to sustainable procurement.

Figure 15: Triple bottom line of sustainability adapted from (Kannegiesser & Günther, 2014)



7.5 Limitations of the research

The following are the limitations identified in the research for this case study:

- The nature of the non-probability sampling technique prohibited the assertion that the sample is representative of the population propensity;
- One of the limitations of respondent-driven sampling strategies is the difficulty encountered in evaluating the size of the population being studied, and thus also the rates of response obtained for the population as a whole, and sub-groups within this population.
- According to Diabat et al. (2014), a limitation was that the study was restricted to the one industry, but having conducted this study in more industries would have provided more insight into enablers.
- These are very broad sectors and a survey was a very low percentage of the total procurement fraternity.

7.6 Suggestions for future research:

The following recommendations for future research were based on limitations identified during the research and observations made from analysing the survey responses. The list is not exhaustive as further analysis may uncover other observations:

- Government has increased the focus on local manufacturing, however only state-owned companies are obligated to procure local designated goods. A study could be commissioned on the impact of designation;
- A qualitative study could look at the level of awareness on sustainable procurement with the private and public sectors;
- What is the impact of government's designation of certain products for local manufacturer on sustainable sourcing
- Similar research could be taken, concentrating on a more granular level of individual sectors or industries, such as oil and gas, steel, consumables, FMCG;
- An in-depth analysis of the current policies pertaining to sustainable sourcing in South Africa, in comparison to the global best practices;
- A case study approach could be considered.

7.6 Conclusion:

The trend of sustainability and sustainable sourcing is a huge trend. Companies like Volkswagen are falling victim to massive fines for non-adherence. Since these initiatives have serious financial impact on the organisation, it is essential that there is alliance between the company, sustainable and procurement strategies.

In terms of South African context, this research, although bound by the limitation, is a fair initial indication that further research is required on this subject within the South African context. Furthermore training, knowledge and awareness is required.

REFERENCES

Adderley, S., & Mellor, D. (2014). Who's influencing whom? Developing sustainable business partnerships. *EuroMed Journal of Business*, *9*(1), 60–74. http://doi.org/http://0-dx.doi.org.innopac.up.ac.za/10.1108/EMJB-06-2013-0033

Amann, M., K. Roehrich, J., Eßig, M., & Harland, C. (2014). Driving sustainable supply chain management in the public sector: The importance of public procurement in the European Union. *Supply Chain Management*, *19*(3), 366–351.

Arlbjørn, J. S., & Freytag, P. V. (2012). Public procurement vs private purchasing. *The International Journal of Public Sector Management*, *25*(3), 203–220. http://doi.org/http://0-dx.doi.org.innopac.up.ac.za/10.1108/09513551211226539

Bai, C., & Sarkis, J. (2014). Determining and applying sustainable supplier key performance indicators. *Supply Chain Management*, *19*(3), 291–275.

Baldi, S., Vannoni, D., & others. (2014). *The Impact of Centralization, Corruption and Institutional Quality on Procurement Prices: An Application to Pharmaceutical Purchasing in Italy*. Collegio Carlo Alberto. Retrieved from http://aperto.unito.it/bitstream/2318/154188/1/no.379.pdf

Bassi, A., Becic, E., & Lombardi, N. (2014). An Introduction to the Assessment of Sustainable Paths, Models and Metrics. *Asian Social Science*, *10*(11), 17–27.

Beer, S., & Lemmer, C. (2011). A critical review of 'green' procurement. *Worldwide Hospitality and Tourism Themes*, *3*(3), 229–244. http://doi.org/http://0-dx.doi.org.innopac.up.ac.za/10.1108/17554211111142194

Bratt, C., Hallstedt, S., Robèrt, K.-H., Broman, G., & Oldmark, J. (2013). Assessment of criteria development for public procurement from a strategic sustainability perspective. *Journal of Cleaner Production*, *52*, 309–316. http://doi.org/10.1016/j.jclepro.2013.02.007

Closs, D. J., Speier, C., & Meacham, N. (2010). Sustainability to support end-to-end value chains: the role of supply chain management. *Journal of the Academy of Marketing Science*, *39*(1), 101–116. http://doi.org/10.1007/s11747-010-0207-4

Craig R. Carter, & P. Liane Easton. (2011). Sustainable supply chain management: evolution and future directions. *International Journal of Physical Distribution & Logistics Management*, *41*(1), 46–62. http://doi.org/10.1108/09600031111101420

Dauvergne, P., & Lister, J. (2012). Big brand sustainability: Governance prospects and environmental limits. *Global Environmental Change*, *22*(1), 36–45. http://doi.org/10.1016/j.gloenvcha.2011.10.007

Diabat, A., Kannan, D., & Mathiyazhagan, K. (2014). Analysis of enablers for implementation of sustainable supply chain management – A textile case. *Journal of Cleaner Production*, *83*, 391–403. http://doi.org/10.1016/j.jclepro.2014.06.081

Diófási, O., & Valkó, L. (2014). Step by Step Towards Mandatory Green Public Procurement. *Periodica Polytechnica. Social and Management Sciences*, *22*(1), 21–27. http://doi.org/http://0-dx.doi.org.innopac.up.ac.za/10.3311/PPso.2151

Dragos, D., & Neamtu, B. (2013). Sustainable Public Procurement: Life-Cycle Costing in the New EU Directive Proposal. *European Procurement & Public Private Partnership Law Review*, *8*(1), 19–30.

Erridge, A., & Hennigan, S. (2012). Sustainable procurement in health and social care in Northern Ireland. *Public Money & Management*, *32*(5), 363–370. http://doi.org/10.1080/09540962.2012.703422

Fisher, E. (2013). The Power of Purchase: Addressing Sustainability through Public Procurement. *European Procurement & Public Private Partnership Law Review*, *8*(1), 2–7.

Fowler, S. J., & Hope, C. (2007). Incorporating sustainable business practices into company strategy. *Business Strategy and the Environment*, *16*(1), 26–38. http://doi.org/10.1002/bse.462

Gimenez, C., & Sierra, V. (2012). Sustainable Supply Chains: Governance Mechanisms to Greening Suppliers. *Journal of Business Ethics*, *116*(1), 189–203. http://doi.org/10.1007/s10551-012-1458-4

Giunipero, L. C., Hooker, R. E., & Denslow, D. (2012). Purchasing and supply management sustainability: Drivers and barriers. *Journal of Purchasing and Supply Management*, *18*(4), 258–269. http://doi.org/10.1016/j.pursup.2012.06.003

Gold, S., Seuring, S., & Beske, P. (2010). Sustainable supply chain management and inter-organizational resources: a literature review. *Corporate Social Responsibility and Environmental Management*, *17*(4), 230–245. http://doi.org/10.1002/csr.207

Hawkins, T., Gravier, M., & Powley, E. (2011). Public Versus Private Sector Procurement Ethics and Strategy: What Each Sector can Learn from the Other. *Journal of Business Ethics*, *103*(4), 567–586. http://doi.org/10.1007/s10551-011-0881-2

Helen Walker, & Neil Jones. (2012). Sustainable supply chain management across the UK private sector. *Supply Chain Management: An International Journal*, *17*(1), 15–28. http://doi.org/10.1108/13598541211212177

Hettne, J. (2013). Sustainable Public Procurement and the Single Market - Is There a Conflict of Interest? *European Procurement & Public Private Partnership Law Review*, *8*(1), 31–40.

Hitchcock, T. (2012). Low carbon and green supply chains: the legal drivers and commercial pressures. *Supply Chain Management*, *17*(1), 98–101. http://doi.org/http://0-dx.doi.org.innopac.up.ac.za/10.1108/13598541211212249

Iyer, K. N. S., & Ngo, H. (2015). *Achieving Triple Bottom-Line Performance in Sustainable Supply Chains: Explicating the Role of Capabilities*. Springer International Publishing. Retrieved from http://link.springer.com/chapter/10.1007/978-3-319-10951-0_164

Kannegiesser, M., & Günther, H. –. (2014). Sustainable development of global supply chains--part 1: sustainability optimization framework. *Flexible Services and Manufacturing Journal*, *26*(1-2), 24–47. http://doi.org/http://0-dx.doi.org.innopac.up.ac.za/10.1007/s10696-013-9176-5

Kiron, D., Kruschwitz, N., Haanaes, K., Reeves, M., & al, et. (2015). Joining Forces: Collaboration and Leadership for Sustainability. *MIT Sloan Management Review*, *56*(3), 0–0.

Leading by Example on Climate Change: Our New Federal Sustainability Plan. (2015). Retrieved 3 May 2015, from http://energy.gov/articles/leading-example-climate-change-our-new-federal-sustainability-plan

Lee, J., & Pati, N. (2012). New Insights On The Operational Links Between Corporate Sustainability And Firm Performance In Service Industries. *International Journal of Business Insights & Transformation*, *4*, 80–93.

Liddle, S., & El-Kafafi, S. (2010). Drivers of sustainable innovation push, pull or policy. *World Journal of Entrepreneurship, Management and Sustainable Development*, *6*(4), 293–305.

Lozano, R. (2012). Towards better embedding sustainability into companies' systems: an analysis of voluntary corporate initiatives. *Journal of Cleaner Production*, *25*, 14–26. http://doi.org/10.1016/j.jclepro.2011.11.060

McMurray, A. J., Islam, M. M., Siwar, C., & Fien, J. (2014). Sustainable procurement in Malaysian organizations: Practices, barriers and opportunities. *Journal of Purchasing and Supply Management*, *20*(3), 195–207. http://doi.org/10.1016/j.pursup.2014.02.005

Meehan, J., & Bryde, D. (2011). Sustainable procurement practice. *Business Strategy and the Environment*, *20*(2), 94–106. http://doi.org/10.1002/bse.678

Metcalf, L., & Benn, S. (2012). Leadership for Sustainability: An Evolution of Leadership Ability. *Journal of Business Ethics*, *112*(3), 369–384. http://doi.org/10.1007/s10551-012-1278-6

Miemczyk, J., Johnsen, T. E., & Macquet, M. (2012). Sustainable purchasing and supply management: a structured literature review of definitions and measures at the dyad, chain and network

levels. *Supply Chain Management*, *17*(5), 478–496. http://doi.org/http://0-dx.doi.org.innopac.up.ac.za/10.1108/13598541211258564

Mohan, R. (2008). The Role of Fiscal and Monetary Policies in Sustaining Growth With Stability in India. *Asian Economic Policy Review*, *3*(2), 209–236. http://doi.org/10.1111/j.1748-3131.2008.00106.x

Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2008). Verification Strategies for Establishing Reliability and Validity in Qualitative Research. *International Journal of Qualitative Methods*, *1*(2), 13–22.

Murray, J. G. (2009). Towards a common understanding of the differences between purchasing, procurement and commissioning in the UK public sector. *Journal of Purchasing and Supply Management*, *15*(3), 198–202. http://doi.org/10.1016/j.pursup.2009.03.003

Naim Ahmad, & Rashid Mehmood. (2015). Enterprise systems: are we ready for future sustainable cities. *Supply Chain Management: An International Journal*, *20*(3), 264–283. http://doi.org/10.1108/SCM-11-2014-0370

Nikolaou, I. E., & Loizou, C. (2015). The Green Public Procurement in the midst of the economic crisis: is it a suitable policy tool? *Journal of Integrative Environmental Sciences*, *12*(1), 49–66. http://doi.org/10.1080/1943815X.2014.993657

Ntayi, J. M., & Mugume, E. (2014). A taxonomy of strategic sourcing for defense forces in sub-Saharan Africa. *World Journal of Entrepreneurship, Management and Sustainable Development*, *10*(1), 13–32.

Pagell, M., & Shevchenko, A. (2014). Why Research in Sustainable Supply Chain Management Should Have No Future. *Journal of Supply Chain Management*, *50*(1), 44–55.

Pagell, M., Wu, Z., & Wasserman, M. E. (2010). Thinking Differently About Purchasing Portfolios: An Assessment of Sustainable Sourcing. *Journal of Supply Chain Management*, *46*(1), 57–73. http://doi.org/10.1111/j.1745-493X.2009.03186.x

Paulraj, A. (2011). Understanding the Relationships Between Internal Resources and Capabilities, Sustainable Supply Management and Organizational Sustainability*. *Journal of Supply Chain Management*, *47*(1), 19–37. http://doi.org/10.1111/j.1745-493X.2010.03212.x

Radulescu, M. (2013). Getting Performance Through Sustainable Thinking and Action. *Annales Universitatis Apulensis : Series Oeconomica*, *15*(1), 310–317.

Revell, A., & Blackburn, R. (2007). The business case for sustainability? An examination of small firms in the UK's construction and restaurant sectors. *Business Strategy and the Environment*, *16*(6), 404–420. http://doi.org/10.1002/bse.499

Sancha, C., Longoni, A., & Giménez, C. (2015). Sustainable supplier development practices: Drivers and enablers in a global context. *Journal of Purchasing and Supply Management*, *21*(2), 95–102. http://doi.org/10.1016/j.pursup.2014.12.004

Santos, M. A. O. D., Svensson, G., & Padin, C. (2013). Indicators of sustainable business practices: Woolworths in South Africa. *Supply Chain Management*, *18*(1), 104–108. http://doi.org/http://0-dx.doi.org.innopac.up.ac.za/10.1108/13598541311293212

Schneider, L., & Wallenburg, C. M. (2012). Implementing sustainable sourcing—Does purchasing need to change? *Journal of Purchasing and Supply Management*, *18*(4), 243–257. http://doi.org/10.1016/j.pursup.2012.03.002

Schwerin, E., & Prier, E. (2013). RESEARCH ARTICLE: Rent-Seeking Obstacles to Changing Environmental Practices and Sustainable Public Procurement in China. *Environmental Practice*, *15*(3), 240–252. http://doi.org/http://0-dx.doi.org.innopac.up.ac.za/10.1017/S1466046613000288

Sorte, W. F. (2012). Assessing the efficiency of centralised public procurement in the Brazilian ICT sector. *International Journal of Procurement Management*, *6*(1), 58–75. http://doi.org/10.1504/IJPM.2013.050610

Sourani, A., & Sohail, M. (2011). Barriers to addressing sustainable construction in public procurement strategies. *Proceedings of the ICE - Engineering Sustainability*, *164*(4), 229–237. http://doi.org/10.1680/ensu.2011.164.4.229

Stephen Brammer, & Helen Walker. (2011). Sustainable procurement in the public sector: an international comparative study. *International Journal of Operations & Production Management*, *31*(4), 452–476. http://doi.org/10.1108/01443571111119551

Testa, F., Annunziata, E., Iraldo, F., & Frey, M. (2014.). Drawbacks and opportunities of green public procurement: an effective tool for sustainable production. *Journal of Cleaner Production*. http://doi.org/10.1016/j.jclepro.2014.09.092

Walker, H., & Preuss, L. (2008). Fostering sustainability through sourcing from small businesses: public sector perspectives. *Journal of Cleaner Production*, *16*(15), 1600–1609. http://doi.org/10.1016/j.jclepro.2008.04.014

Weller, C., & Pritchard, J. M. (2013). Evolving CJEU Jurisprudence: Balancing Sustainability Considerations with the Requirements of the Internal Market. *Eur. Procurement & Pub. Private Partnership L. Rev.*, 55.

Williams, T. P. (2015). Sustainability in Government Contracts: A Measure of Performance from the Contractor Perspective. *Mustang Journal of Business and Ethics*, *8*, 41–57.

Wolf, J. (2014). The Relationship Between Sustainable Supply Chain Management, Stakeholder Pressure and Corporate Sustainability Performance. *Journal of Business Ethics*, *119*(3), 317–328. http://doi.org/http://0-dx.doi.org.innopac.up.ac.za/10.1007/s10551-012-1603-0

Xielin Liu, & Peng Cheng. (2011). Is China's Indigenous Innovation Strategy Compatible with Globalization? *Policy Studies (15471349)*, (61), 1–74.

Zhao, J., Cao, Z.-H., & Li, C.-W. (2015). Horizontal collusion in a two-echelon decentralized supply chain. In *2015 12th International Conference on Service Systems and Service Management (ICSSSM)* (pp. 1–5). http://doi.org/10.1109/ICSSSM.2015.7170239

Zhu, Q., & Geng, Y. (2013). Drivers and barriers of extended supply chain practices for energy saving and emission reduction among Chinese manufacturers. *Journal of Cleaner Production*, *40*, 6–12. http://doi.org/10.1016/j.jclepro.2010.09.017

APPENDICES

APPENDIX A: COVER NOTE OF SURVEY LETTER

Good day

In partial fulfilment of my MBA degree at the Gordon Institute of Business Science (GIBS), I am conducting research on the Factors influencing sustainable procurement within the private and public sector in South Africa.

You are kindly requested to participate in the survey by accessing the link provided on https://www.surveymonkey.com/r/T26WPPV

The survey should take about 5 minutes of your time to complete. All the data will be kept confidential and your identity will not be required. By completing the survey, you indicate that you voluntarily participate in this survey and participants can withdraw at any time without any penalty.

Should you have any concerns, please contact me or my supervisor. Our contact details are provided below.

Researcher:	Kisten Gounden
Email Address:	kisten.gounden@gmail.com
Phone:	083 232 8693
Supervisor:	Mahendra Dedasaniya
Email Address:	Mahendra.Dedasaniya@WorleyParsons.com
Phone:	082 877 5275

Please click on the following link to access the online questionnaire:

https://www.surveymonkey.com/r/T26WPPV

Kind Regards,

Kisten Gounden

APPENDIX B: QUESTIONAIRE

Factors that influence sustainable procurement within the private and public sector in South Africa

Sustainable procurement is essentially the management of all aspects of the supply chain to maximise social, environmental and economic performance.

Demographic Questions:

* 1. Which industry are you currently employed in

- ◯ Public / State Owned Company (SOC)
- ◯ Private Company
- ◯ Other (please specify)

* 2. Gender

- ◯ Male
- ◯ Female

* 3. Your experience within the Procurement/Supply Chain field is

- ◯ Less than 1 year
- ◯ 1 - 5 years
- ◯ 6 - 10 years
- ◯ 11- 15 years
- ◯ over 15 years

* 4. Please indicate your current position within your organisation

- ◯ Buyer
- ◯ Senior Advisor /Sourcing Specialist
- ◯ Junior Manager
- ◯ Middle Manager
- ◯ Senior Manager
- ◯ Executive Manager or higher
- ◯ Other (please specify)

Answer each of the questions by clicking on one of the options on the right hand side

* 5. The following factors prevent your organisation from implementing sustainable procurement

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Environmentally friendly products are expensive	○	○	○	○	○
Your organisation seem to be short term focused	○	○	○	○	○
Leadership / Management are not committed to environmentally friendly solution	○	○	○	○	○
Regulations and policies are not stringent enough to force your organisation to procure sustainable products	○	○	○	○	○
Your organisaton's suppliers do not provide environmentally solutions	○	○	○	○	○
Procurement is de-centralised and there is no consolidation of the spend	○	○	○	○	○
The knowledge and awareness of sustainable procurement is low	○	○	○	○	○

Further Comments

Answer each of the questions by clicking on one of the options on the right hand side.

* 6. The following factors support your organisation in implementing sustainable procurement

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Stronger Leadership	○	○	○	○	○
There is clear planning, strategy and goal setting	○	○	○	○	○
The availability of environmentally friendly suppliers	○	○	○	○	○
External Pressure (Media/Greenpeace)	○	○	○	○	○
Strong Technical expertise	○	○	○	○	○
Centralised Procurement	○	○	○	○	○

Other (please specify)

Answer each of the questions by clicking on one of the options on the right hand side.

* 7. The following factors are BEST PRACTICE in the successful implementation of sustainable procurement

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Collaboration with suppliers/small business	○	○	○	○	○
Strong Leadership	○	○	○	○	○
Clear Policy and legislation	○	○	○	○	○
Stringent tender conditions to adhere to sustainable practice	○	○	○	○	○
Measurement and tracking of progress	○	○	○	○	○
Sustainability is seen as a competitive advantage	○	○	○	○	○
Technical expertise supports sustainability	○	○	○	○	○

Other (please specify)

Answer each of the questions by clicking on one of the options on the right hand side

* 8. The following factors are OPPORTUNITIES that would support your organisation in improving sustainable procurement

	Strongly Disagree	Disagree		Neutral	Agree	Strongly Agree
Consumer pressure to procure sustainable products	○	○	○	○	○	
More education, increased knowledge and training	○	○	○	○	○	
Stringent contract management	○	○	○	○	○	
Your organisation's policy encourages sustainable procurement	○	○	○	○	○	
Procurement strategy is aligned to the company's Strategy	○	○	○	○	○	
Strategic partnership with suppliers to support the implementation	○	○	○	○	○	
Ensure that sustainability influences brand image	○	○	○	○	○	
Ensure that there are mandatory targets	○	○	○	○	○	
Tracking of sustainability targets	○	○	○	○	○	

Answer each of the questions by clicking on one of the options on the right hand side

* 9. Within the context of sustainable procurement, the following factors would contribute to South Africa's competitiveness

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
If public sector drives investment in green procurement then the private sector will be encouraged to invest in these industries	○	○	○	○	○
Green NGO's become more commercially orientated	○	○	○	○	○
An increase in the financial performance of environmentally friendly companies	○	○	○	○	○
An increase in green jobs	○	○	○	○	○
The potential to export locally manufactured, environmentally product	○	○	○	○	○

APPENDIX C: ETHICS CLEARANCE

Gordon Institute
of Business Science
University of Pretoria

Dear Kisten Gounden

Protocol Number: **Temp2016-01484**

Title: **Factors influencing sustainable procurement within the private and public sector in South Africa**

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

Adele Bekker