Gordon Institute of Business Science
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The relationship between sustainability and compliance in a procurement context

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ABSTRACT

Regulatory compliance plays a key role in influencing organisations to engage in responsible business practices that contribute towards driving objectives around social, economic and environmental considerations. At a national level, governments around the world use regulation as a policy lever to drive imperatives that promote socio-economic and environmental objectives. Procurement, therefore, plays a significant role in ensuring that the contribution towards sustainability objectives is achieved and accelerated.

This study set out to understand the impact of regulatory compliance on the adoption of sustainable procurement practices by organisations, whist assessing whether leaders are able to balance compliance and the interests of various stakeholders in procurement decision making processes. Confirmatory factor analysis and structural equation modeling were the main statistical techniques that were used to quantitatively test primary data that was collected from 247 procurement and sustainability managers within the public and the private sector.

Relationships were observed between regulatory compliance, leadership and decision making towards adoption of sustainability objectives by organisations. It was observed that leaders are able to consider and translate stakeholder views into compliant decisions. Finally, the results have showed that there is strong relationship between regulatory compliance and sustainability, highlighting the contribution of procurement compliance towards driving sustainable development.

KEYWORDS

Regulatory Compliance, Procurement and Supply Chain, Leadership, Decision Making, Sustainability

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 in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Faith Mashele

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CHAPTER 1 INTRODUCTION TO RESEARCH PROBLEM

1.1 Introduction

According to Tavishvili (2015), it is important for both the private and the public sector to create an enabling environment that will increase the impact of sustainable development through responsible leaders and responsible business globally. The private and the public sector have a role to play in adopting responsible sourcing and engaging in sustainable procurement approaches. The contribution that is required is ultimately about making considerations and decisions that have a long-term impact on the social, environment and economic aspects of the environment. Wiggins (2015) posited that sustainability carries an opportunity for business to adopt strategies that will align their contribution with the global sustainable development goals that are set by the United Nations.

Phakathi (2015) suggested that inclusive growth in an economy is a vehicle that will increase the impact of sustainability and drive shared hope and development of societies. The author argued that red tape is a barrier to sustainable economic development and advocates for progressive participation that will reduce the widening gap of inequality globally.

1.2 Context of the Study

Procurement plays a key role in translating plans of an organisation into works, goods and services required to realise outcomes. The procurement function inherently interacts with different business units and individual users in order to deliver projects, services and consumables that are required by the organisation. The role of procurement within an organisation is however synonymous and associated with heavily laden rules, red tape and administrative burdens. Gutman (2014) proposed that beyond the compliance lens that is often used to look at the role of procurement lies a key proposition to deliver and increase the impact on development outcomes.

At a national level, procurement is used by governments to deliver programs and development support, such as health, education, roads and infrastructure, to citizens. In March 2015, the United States of America's President Obama signed into law an executive order that promotes sustainable procurement by including sustainability considerations in the various phases of federal procurement (Republic of the United States of America, 2015). The executive order is aimed at adopting sustainable approaches to responsible sourcing and indicates that the US Government as a global leading economy has the highest commitment towards promoting sustainability.

In South Africa, the government has used procurement in the public sector as a tool to address the imbalances of the past and change the landscape of the society. The Industrial Policy Plan Report of 2013/ 2014, issued by the Department of Trade and Industry, suggests that the total government expenditure is estimated to exceed R1.1 trillion for the 2014/2015 financial year. According to the report, this amount represents 29, 1% of the GDP in South Africa and indicates that government can use its large and vast procurement scale to act as an enabler to advance the sustainable development agenda (The Department of Trade and Industry, 2013).

The President of the Republic of South Africa, President Jacob Zuma, in the State of the Nation Address pronounced that the government will spend over the next several years more than R800 Billion towards the advancement of the infrastructure programme and other projects as indicated in Table 1 (The Republic of South Africa, 2015)

Table 1: Key South African Government Programs, 2013–14 Budget

Spend (Billion Rand)	Time period	Program, Sector or Activity
827	2013-2016	Infrastructure e.g. upgrade to health infrastructure water and electricity distribution networks & sanitation scheme
400	2013-2016	Additional Infrastructure spending by Transnet, Eskom and other SOCs for power generation plants & transmission lines
53.4	2013-2014	Transport and road networks

(Source: Adapted from Turley & Perera, 2014, p.5)

The pronouncement that was made in this regard indicates that there is an opportunity to increase the impact of sustainable development through the procurement of public goods and services. It has also been observed that organisations in the public and private sector across the globe are adapting their procurement rules in response to global changes and addressing societal issues that affect stakeholders.

Sustainability has become a business mega-trend that changes the demands placed on business leadership in various fundamental ways, thus creating the need for a new type of leadership (Tideman, Arts & Zandee, 2013). In 2014, The World Bank (2014) commenced phase two of the review of its procurement policy and procedures in response to the changing global context, the diverse and evolving needs of clients and alignment of its sustainable development mandate. The World Bank is considering adapting the conventional procurement system, which has been in place for many decades, in favour of a system that includes elements around quality and sustainability criteria (Green, 2015).

1.3   Relevance of Study

According to Pagell and Shevchenko (2014), the topic of sustainability in supply chains has moved from the fringes to the mainstream in the past two decades. The authors argue that while much progress has been done to address social and environmental issues, the question of how to create truly sustainable supply chains remains unanswered. Meehan and Bryde (2011) highlighted that the role of procurement in driving forward the corporate sustainability agenda is critical, given its position and its ability to influence the external environment through supply chain.

The procurement function, in its nature, is a rule-based environment that is guided by legislation, policies and procedures. Globally, the award of procurement contracts is a hugely contested arena that is filled with controversy about subjective decision making by leaders and organisations. The policies that govern procurement processes may restrict innovative approaches to the achievement of sustainable development objectives and efficiencies that are necessary to deliver on procurement requirements. According to a report issued by the World Bank, the country of Mexico was able to increase the impact of sustainable

procurement objectives and drive efficiencies after the review of its procurement system, which was overly regulated and oriented towards administration (The World Bank, 2013).

The Organisation of Economic Co-operation and Development in 2013 reported that the global economic crisis has created a platform for governments to leverage on the procurement function as a strategic lever to deliver on social economic objectives (OECD, 2013). The report provides that there has been a shift globally in the procurement systems of governments and a conscious effort has been employed to include criteria that promote sustainable objectives in technical specifications. To that end, it would seem that procurement is a platform that may be adopted by governments and organisations to achieve transformational and developmental objectives.

According to Brammer and Walker (2011), procurement represents an important policy tool that could help to achieve outcomes in society that are consistent with broader policy goals, while Ambe and Badenhorst-Weiss (2012) argued that the public procurement process in South Africa is supported by the provisions of the Constitution in order to address past inequitable policies and practices. In order to ensure that this objective is achieved, a procurement preference system was introduced by the National Treasury as a means to achieve socio-economic objectives.

Though the procurement preference system is intended to achieve socio-economic objectives, Hlakudi (2012) in his study argued that the preference points system used in the award of procurement contracts is inadequate to achieve socio-economic objectives. The impact of public procurement rules on transformational objectives has also generated interest by business, where the procurement regulations were perceived as a barrier to the achievement of social and economic development and strong calls were made for the prescripts to be scrapped (Marian, 2015, Mazwai, 2013, Steyn, 2011)

It is interesting that Turley and Perera (2014), in their study, posited that the existing legislation in South Africa makes provision for advancing social priorities and that there is sufficient space to pursue environmental sustainability and economic development objectives. Jeffery (2013), however, on the contrary, argued that the

regulatory prescripts that are intended to govern the promotion of socio-economic objectives in South Africa are too rigid to allow for inclusive participation and serve as a barrier to development and sustainability. It must be noted that Gutman (2014) argued that the introduction of a general approach to procurement rules is suitable for standardised goods and services and thus may restrict developmental outcomes when sourcing complex goods and services which require innovative and adaptive methods, in order to result in increased impact on development outcomes.

Practitioners and leaders that operate with the procurement and supply chain arena are the central players in the sustainability continuum as they are ultimately responsible to implement and drive the achievement of set objectives within their respective organisations. Fischer (2013) encouraged that leaders should consider promoting sustainable procurement whilst balancing the focus on competitive market processes. According to Bhattacharya (2012), it is important that leaders are aware of stakeholder dynamics that impact on sustainability and that future leaders must be empowered to be the essential driver that links and leverages the power of business to add value to the society and the environment.

1.4   Research Problem

There has been an increase in the awareness of sustainability by organisations and governments across the globe which has magnified the need to be responsible and to promote the achievement of economic objectives while considering the impact on the environment and society. Procurement is a key platform to drive sustainability and the achievement of triple bottom line objectives for organisations. The implication however that arises is how do leaders that are involved balance the considerations of external forces in the decision making process that will ensure sustainability through procurement processes (Bhattacharya, 2012; Fisher, 2013).

1.5 Research Aim and Objectives

The study seeks to understand the influence of procurement rules and legislation on achieving sustainable development objectives through the lenses of stakeholder and leadership theories.

The objectives of the study are to:

- determine the relationship between regulatory compliance and the achievement of sustainability objectives
- understand the decision making processes of leaders operating in a procurement context and the dynamics that are involved
- use existing theory in order to understand the c of individual actors as change agents that influence the impact of sustainable procurement

1.6 Structure of the Research Report

The research report has seven chapters; following the introduction which has been set out in Chapter 1, Chapter 2 provides a theoretical base which is a platform upon which the research report is grounded. Chapter 3 indicates the hypotheses that were formed to test the relationships between procurement compliance and the achievement of sustainability objectives. Chapter 4 outlines the research blue print that was followed to collect and analyse the data. Chapter 5 presents a summary of the results while Chapter 6 extends to discuss the findings in relation to the literature. Chapter 7 consolidates the findings of study and provides managerial implications and recommendations for future research.

In order to achieve the objectives as set out above, three diverse fields of management will be used to serve as a platform for the research study, namely; leadership, sustainable development and procurement. The nodal points of the research study themes are depicted in Figure 1.

The research report has been structured to navigate around the ideology of sustainable procurement with a view to understanding the influence of regulatory compliance as part of the external pressures on the organisation. The research study ultimately intends to edify the role of practitioners in advancing sustainability objectives within the context of supply chain management and procurement.

Figure 1 Research Report Themes
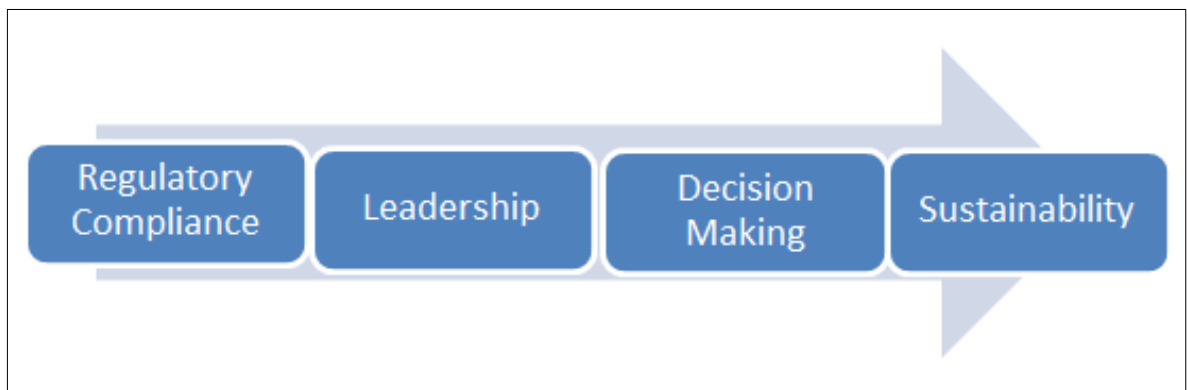
CHAPTER 2 THEORY AND LITERATURE REVIEW

2.1   Introduction

The literature study highlighted that there has been an increase in the need for the procurement function to contribute to broader global sustainable developmental goals through the inclusion of social, environmental and economic empowerment objectives within procurement processes. For this purpose, practitioners and leaders that operate within the procurement and supply chain arena are considered a critical element in driving this change through their engagements with stakeholders within organisations.

2.2   Literature Review Themes

Four main themes were selected to guide and understand the convergence of the ideas that are identified in the research problem.

These are;

  i. Sustainability in procurement
  ii. Compliance in procurement
  iii. Decisions in procurement affecting sustainability and compliance
  iv. The role of leadership in balancing sustainability in compliance

These themes will be discussed in detail below;

2.3   Definition of Terms

There are many verifying definitions for the terms "procurement" and "supply chain management" (SCM) as a function that inherently interacts with various users for goods and services and therefore cuts across many fields of management.

According to Zacharia and Sanders (2014), the definitions of SCM vary in the different fields of management as follows;

- the operations management field is interested in devising a system that concerns the delivery of goods,
- while logistics focus on the efficient flow of goods,
- purchasing definitions are focused on the acquisition of raw materials,
- whereas, in marketing the definitions are based on the links between the channels of distributions to the consumer.

It must be noted that for the purpose of this research the terms "supply chain management" and "procurement" are used synonymously.

2.3.1   Sustainable Procurement

Sustainable procurement is an ideology that integrates sustainable development and procurement by considering the three pillars of sustainability; environmental, economic and social issues in the process of procurement. According to Ahi and Searcy (2013), while there are various definitions of sustainability, the ideology of sustainability has evolved from a focus of green and environmental management considerations within the business context to a more comprehensive view that is focused on internal and external relationships while achieving profitability and resilience for the organisation.

The concept of sustainability in business is often located within the context of corporate social responsibility which is concerned with the role of business and the inherent responsibility that it has towards diverse stakeholders. Crane and Matten (2010) posited that sustainability is concerned with equity amongst generations in order to ensure that the needs of future generations will be met.

The authors posited that the interrelationship between the social, economic and environmental perspectives of sustainability as indicated in Figure 2 is concerned with the inherent spill-over effect of the preservation of environmental resources, effective management of macroeconomic resources and the impact of business activities on the society.

Figure 2 The three components of sustainability
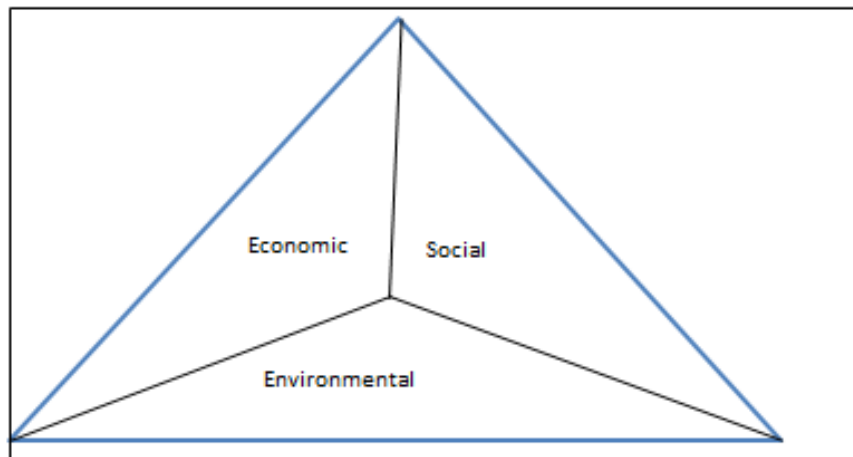
(Source: Adapted from Crane & Matten, 2010, p.33)

2.3.2   Procurement Compliance

It has been suggested that the role of procurement within an organisation is often associated with a disposition to focus on stringent rules and red tape. According to Crane & Matten, (2010), rules are issued by government, authorised bodies or institutions of government as mechanisms that aim to restrict, enable, empower or advance specific behaviours in business.

Ferri, Oelze, Habisch and Molteni (2014) studied the implementation of responsible procurement from an institutional context. The authors found that the rules and regulations that guide procurement practices can inhibit the engagement of sustainable procurement within organisations while Theodorakopoulos, Ram and Kakabadse (2015) posited that the institutional platform upon which the organisation operates, can provide an enabling environment which can foster inclusive procurement and support broader inter-organisational relationships. The author suggested that the adoption of procurement policies, stakeholder engagement and support by the management team are important factors for such an institutional structure.

2.3.3   Procurement Decisions

According to Adam, Csaki, Prier and Bufacchi (2012), procurement decisions are often connected to broader undertakings which involve significant investments within the organisation, where the decision outcome is based on a combination of technical specifications, cost effective models and social development requirements. The authors posited that the procurement arena thus involved complex decision – making processes that have far reaching implications that extend beyond the organisation and stakeholders that are concerned in the process.

2.3.4   Leadership

According to Metcalf and Benn (2013), leadership is the key driver that translates and facilitates the successful adoption of corporate social responsibility in the organisation. There is evidence in both the corporate social responsibility and supply chain literature to suggest that leadership plays an important role in the sustainability agenda (Brammer & Walker, 2011; Metcalf & Benn, 2013; Tideman, Arts, & Zandee, 2013).

Christensen, Mackey and Whetten (2014) posited that leadership behaviour can be demonstrated by individuals at any level within the organisation and not necessarily by individuals that are considered to be appointed into conventional management positions. The authors advocated that individiuals at various levels may demonstrate leadership behaviour when they are in charge of a particular task or a team whilst effectively adding value to the overall leadership system within the organisation.

2.4   Sustainability in Procurement

Beske and Seuring (2014) suggested that the novelty of integrating the principles of sustainability into procurement theory and practices is based on the approach of the triple-bottom line, which comprises the social, environmental and economic dimensions of sustainability in the business context. It would therefore appear that sustainability is a notion that is concerned with organisations creating social and economic value for stakeholders and that this is the driver within business that promotes a long-term perspective in addressing economic, social and environmental aspects.

Meckenstock, Paula Barbosa-Póvoa, and Carvalho (2015) argued, however, that the adoption of sustainability as a concept is subjective as it is based on the wicked problems and needs of the society in relation to the values of the organisation that is responding to those problems. The authors reviewed 142 sustainability reports with regard to social and environmental activities that are undertaken by organisations across 12 industries and found that the concept of sustainability is understood differently by diverse stakeholders with diverse values which may lead to inconcistency in adoption within the supply chain. It was observed that the subjectivity and the vastness of wicked problems that are addressed through the sustainaiblity lens, is a basis that may influence diverging translations and may result in possible misalignment and contradictions among various stakeholders. Metcalf & Benn (2013) further support the idea that the issue of sustainability is related to resolving wicked problems that are complex and are affected by myriad subjective interrelated elements.

Rainey (2008) argued that organisations are "social beings" that operate within a social context and are inherently created for the benefit of the society in order to meet the needs of the stakeholders, such as, customers, shareholders and markets. The author posited that organisations should provide solutions with lenses that are focused on a broader social perspective in response to the needs of the society at large.

Carbone, Moatti, and Wood (2012) and Wolf (2014) however posited that pressures from various stakeholders, as shown in Figure 3, have a major impact on the level of adoption of sustainability practices by organisations. It is interesting to note that Meixell and Luoma (2015) suggested that the influence exerted from stakeholder pressure is context dependent and has differing impact on the different sustainability elements.

Figure 3 Stakeholder Pressures
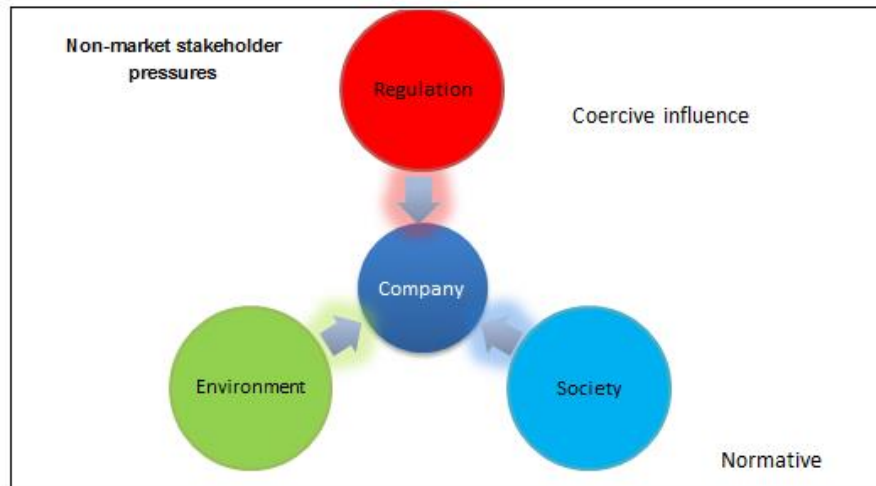
(Source: Adapted from Carbone, Moatti, & Wood 2012, p.29)

Porter and Kramer (2011) also emphasised that societal progress should be a guiding principle that anchored the objectives of the organisation and the business society. According to the authors, organisations often undertake corporate social responsibility programs as public relations exercises which are a reactive response to external pressures and are largely concerned with reputation. The authors encouraged that there must be a paradigm shift with regard to addressing the concerns of the society as a last resort for business towards a more agile perspective that is concerned with creating value for the society through the economic value that is derived by the organisation and is focused on increasing the economic value through collaboration with society.

Stank and Autry (2011) found that organisations regard the supply chain function as an important contributor and driver for financial performance that can improve revenues and customer service. The authors argued that there is an opportunity for organisations to leverage on the strategic value add and potential that is inherent in supply chain activities. Further to this, it is suggested that the procurement function is directly linked to operational costs which has implied an influence on the traditional focus of cost cutting in the procurement process. Cuthbertson (2011) suggested that a sustainable supply chain is one that operates within an economically viable enviromental context that is able to create and transfer value for its society while reducing the negative impacts on the natural environment.

While the issue of corporate social responsibility and the adoption into supply chain has generated much research interest, Silvestre (2015) agreed with Pagell & Shevchenko (2014) who recommended that there is a need to understand how organisations should implement and manage sustainable procurement to deliver sustainability objectives.

2.5   Compliance in Procurement

According to Adam et al. (2012), procurement regulations that govern the public procurement arena are important as they are aimed at promoting equality of suppliers in the market and establishing transparent processes that ensure accountability of how government funds are utilised. The authors advocated that while there are differences between the aims of procurement processes that are facilitated by the public and the private sector, regulations and procurement rules that apply in these sectors embody the essence of broader government policy that is intended to contribute to the greater good of citizens.

Porter & Kramer (2011) agreed that regulation is necessary in order to protect business and markets in order to avert the consequences of unforeseen catastrophes, such as the global financial crisis. The authors, however, recommended that government regulation should create an environment that supports the creation of shared value instead of introducing obstacles that hinder pursuit of goals that inhibit growth. Botha (2006) however posited that the impact of regulation may have an unintended consequence which result in tick-box approaches to compliance, inefficiencies and delays in decision making processes.

Theodorakopoulos et al. (2015) supported the view of utilising procedural rules towards creating a positive bias and fair treatment in procurement with a view to promote equal opportunities amongst suppliers. The authors posited that organisations that embrace inclusive development of small businesses within a procurement context tend to achieve a competitive advantage in the market, such as positive brand reputation and gaining of insights into untapped or indigenous markets.

According to Kashmanian (2015), compliance to regulations is a critical element for building a sustainable supply chain and proposed that this is the first step towards the path of adopting sustainability. The author suggested that the organisation prioritises compliance with regulations, adopts operational practices that are in alignment with standards, cost-effectiveness, and process efficiencies which ultimately spread the benefits to the supply chain. Adam et al. (2012), however, argued that the rise in demanding regulatory compliance requirements inhibits decision making processes and increases the administrative burden which complicates procurement processes.

Touboulic, Chicksand and Walker (2014) proposed that sustainability strategies and initiatives are influenced by external factors to the organisation which are connected to broader social concerns.The authors posited that the power dynamics of stakeholders inform the sustainability strategies which are the organisation's response to societal issues that stem from stakeholder pressure. Silvestre (2015) in his study observed the implementation of sustainable supply chain management in emerging economies and found that the ecosystem within which organisations operate shapes and affects the acceptance of sustainability objectives within its businesss practices.

Rainey (2008) agreed with the view that business considerations that are connected to political and regulatory influences are usually as a result of social and economic concerns that emerge from issues that are generaly present within the society and the environment. The author suggested that public policy dynamics serve as a platform to address concerns for various interest groups and are aimed at inciting the business community and civil society to converge and co-create solutions. Meehan and Bryde (2015) argued that sustainability strategies are informed by various sustainable development indicators that are set at international, national and local spheres.

It has been suggested that the PESTEL framework, as shown in Figure 4, may be used to understand the drivers that influence sustainability practices within organisations. The framework demonstrates that it is important to consider the context within which the organisation is situated in order to understand the influences by political, economic, social, technological, environmental and legal factors that may affect the organisation (Yüksel, 2012). To that end, it could be posited that sustainability encompasses various aspects of this framework which are positioned to focus on regulatory compliance with a view to address socioeconomic as well as environmental objectives.

Figure 4 PESTEL framework

(Source: Adapted from Yüksel, 2012, p.57)

Yüksel (2012) posited that the external macro economic context in respect of political, environmental, social, technological, economic and legal factors have a direct or indirect influence to the organisation. The author encouraged that it is necessary to recognise the connection and the interdependence that may exist between these factors as a political context might have economic, social, environmental and legal implications.

It has been suggested that the use of procurement by governments around the world is a means to stimulate economic activity and address social policy objectives. Ambe and Badenhorst-Weiss (2012) posited that the public procurement process in South Africa was granted constitutional status and has been used by the government to address past inequitable socioeconomic policies and practices. The authors asserted that the government adopted a process of reformation in the public procurement arena which introduced the preferential procurement system in order to achieve strategic objectives, leverage public procurement spend and streamline the delivery of public goods and services.

The public procurement legislation in South Africa is informed by the Preferential Procurement Policy Framework Act of 2000 which derives its power from section 217 of the Constitution of the Republic of South Africa.

Ferri et al. (2014), highlighted that it is critical to understand the institutional context which prescribes the setting upon which sustainable practices and related changes unfold. The authors posited that misalignment to the institutional context may undermine the efforts of business and deter development objectives. Further to this, policy makers should refrain from prescribing generic solutions that foster limitations within national contexts.The authors suggested that future research should explore the impact of local context prescripts on the decisions relating to sustainable procurement.

Hoejmose and Adrien-Kirby (2012), in their study, found that government pressures are external key influencing factors that drive sustainable procurement practices within organisations. The authors posited that socially and environmentally responsible procurement practices are a reactive response to external forces such as government pressures and customer requirements. The authors recommended that future research should explore and understand the dynamics that are involved with the impact of the influence from political factors on the ability of internal resources to implement sustainable procurement within the organisation.

2.6   Decisions Affecting Sustainability and Compliance

According to Grandia, Groeneveld, Kuipers and Steijn (2013), individuals and project teams that participate in the procurement processes often go through complex and special decision making procedures in order to determine whether sustainable procurement objectives have been realised to their full potential. Kaufmann, Meschnig and Reimann (2014), in their study, found that procurement decisions that are made by bid evaluation teams are informed by intuitive judgements that are deep-seated in experience as well as utilising guidance from standard operating procedures. The authors advocated that decision-making processes within the procurement domain are best supported by procurement specific skills and knowledge while Kaufmann, Kreft, Ehrgott and Reimann (2012) advocated that decision-making should be based on rational analytical methods.

It was found that Metcalf and Benn (2013) supported the view by Grandia, et al (2013) that sustainable procurement is a complex subject that requires expert knowledge in order to decide on sustainability considerations that are integrated into conventional procurement processes. The authors suggested that expertise is a variable in the decision making process. This means that the lack of the necessary expertise in the

decision making process may result in interpretation of information received and traditional selection based on defunct rules.

Meehan and Bryde (2011) posited that the sustainability strategy indicators that are filtered down to sustainable procurement practices are often complex and may lead to confusion and anxiety at operational staff level and result in inertia in the decision making process. The authors argued that introducing sustainability to procurement decision-making has shifted the traditional focus of procurement from selection criteria of suppliers based on lowest price to a comprehensive approach that considers social, economic and environmental factors. The authors posited that the changes to the rules which ultimately govern procurement procedures and policies have challenged existing behaviour amongst procurement decision-makers.

Wu and Pagell (2011) argued that standard operating procedures are necessary to guide decision making processes which relate to the environment and sustainability in order to avert biases in judgment and to provide direction towards justifiable decisions. The authors suggested that business decisions that relate to the environment and sustainability are often made within evolving dynamics and uncertainty, therefore are subject to rationality bias.

The stakeholder theory in decision making process is a lens that has been used to explain the balancing act that is inherent in business decisions. According to Meixell & Luoma (2015) management decisions in procurement, particularly around sustainability matters, involve multiple stakeholders that have to decide on strategically important outcomes. Alexander, Walker and Naim (2014) suggest that such business decisions are subject to high levels of uncertainty and are based on a myriad technical criteria. The authors argued that decisions that are made fall between two domains; a structured domain that is guided by procedures that are standard and an unstructured domain that is characterised by complex and unpredictable factors. Further to this, the authors argue that decisions that fall within the unstructured domain are guided by pragmatic instincts.

Fassin (2009) posited that the stakeholder model, as shown in Figure 5, considers the relationships between various stakeholders and their influence on the decision making processes and behaviours adopted by the organisation.

Figure 5 The Stake Model of The Firm

(Source: Adapted from Fassin, 2009, p.124)

Pagell & Shevchenko (2014) suggested that stakeholders have diverse values and needs, and thus, due to limited resources, there will be a disposition to select the most suitable alternative in the decision making process. The authors recommended that future research was required to explain how managers make responsible decisions in a complex and adaptive supply chain system. Freeman (2011) argued that the stakeholder theory evolves around management of the different groups of interest and their interconnectedness in the process of creating value for the organisation.

Manuj and Sahin (2011) studied the relationship between drivers of complexity within supply chains and the factors that moderate and manage the level of complexity in the decision making processes for managers. The authors found that the ease of access to information around business processes, knowledge harvesting and the ability of managers to comprehend multifunctional relationships are important considerations that contribute towards the quality of the decision making process and the ultimate outcome.

According to Roehrich, Grosvold and Hoejmose (2014), managers that adopt sustainable procurement practices are often faced with conflicting priorities that include short and long-term trade-offs and balancing of the principles of social, economic and environment aspects. The authors recommended that their findings should be expanded to various industries and the public sector.

Adam et al. (2012) posited that the focus on strict compliance to regulatory requirements contributes to the administrative burden and complexity within decision making processes for procurement. The authors argued that managers involved in both the public and private procurement domain are often subjected to constraints within the decision making processes. The authors recommended that future research should seek to assess how an amicable balance is achieved to promote efficient process and ethical behaviour by managers operating in these environments.

2.7 The Role of Leadership in Balancing Sustainability and Compliance

According to Metcalf & Benn (2013), leadership is the key driver that translates and facilitates the successful adoption of corporate social responsibility in the organisation. The authors posited that sustainability is a complex subject for organisations; hence leaders are the adaptors that facilitate the link between the broader environmental context and the internal organisation.

Meehan & Bryde (2011) and Brammer & Walker (2011) supported the view that leadership is vital in facilitating the adoption of sustainable procurement by organisations. The authors highlighted the fact that the senior management team is key to providing the necessary support for the organisation to successfully implement sustainable procurement strategies and practices within procurement processes.

According to Waldman (2011), responsible leadership is an ideology that is based on the combined lenses of social responsibility and leadership. The author posited that leadership plays an important part in the conversation around sustainability as individuals influence the outcome of decisions that are made by organisations around sustainability.

Maak and Pless (2011) suggested that a responsible leader is a person who through his or decisions and authority can morally influence and advocate for reasonable outcomes and consider the impact of how those decisions will affect others. Stahl and de Luque (2014) argued that responsible leadership involves deliberate and purposeful measures towards ensuring the greater good of the stakeholders of the organisation.

The authors posited that leadership behaviour is influenced by the context of the environment within which leaders operate, as depicted in Figure 5, and that the influences occur on diverse levels which revolve around the leader, governance, regulatory climate, stakeholders and organisational policies. The authors suggested that leaders are predisposed to "do good" based on the situational context which is influenced by the instituational framework, the organisational perspectives and the beliefs of the individual leader.

Figure 6 Model of the antecedents of responsible leader behavior
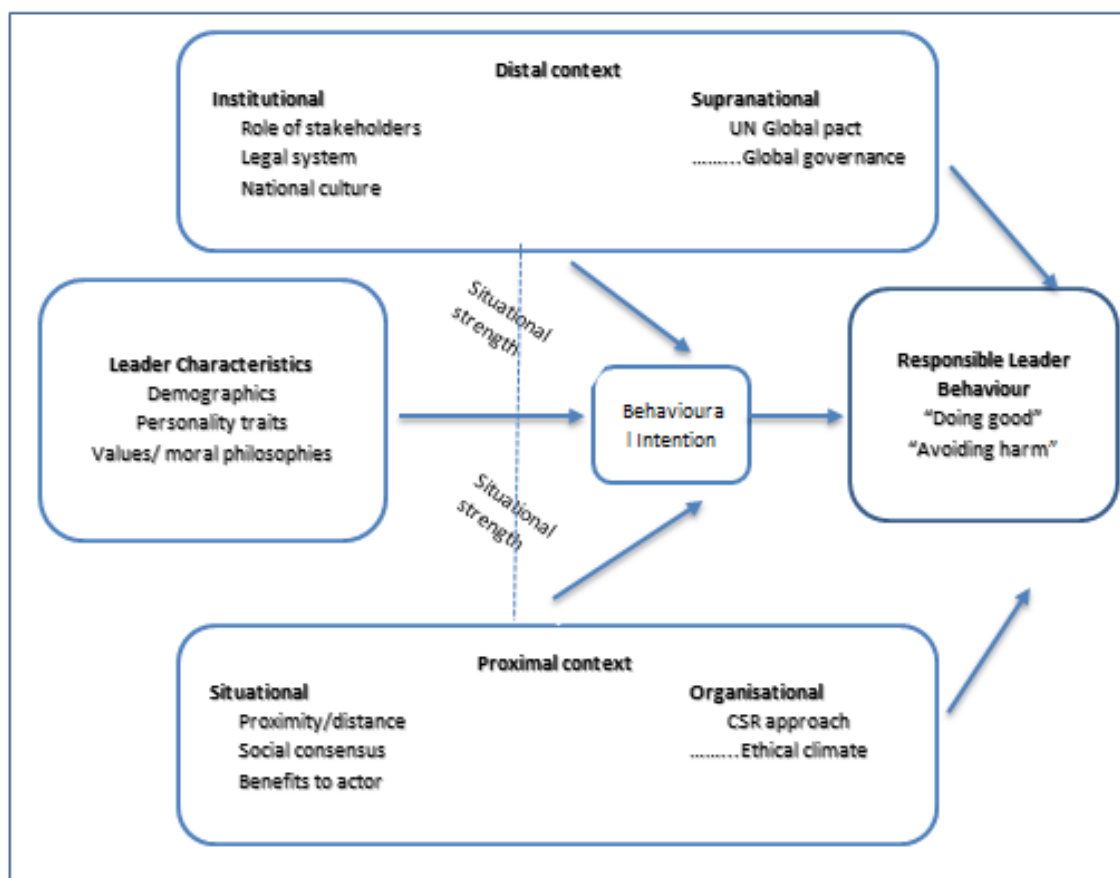
(Source: Adapted from Stahl & de Luque, 2014, p.239)

Doh and Quigley (2014) posited that the role of leaders and their responsibility towards the organisation and its stakeholders was elevated by the global economic crisis. The authors, in their study, explored the relationship between stakeholder theory and responsible leadership where they suggested that responsible leaders should leverage their knowledge to influence organisational outcomes. The authors further argued that reponsible leaders have the ability to influence outcomes of the organisation through their boundary spanning role and various interactions within the organisation.

It has been argude that as the procurement function interacts with various departments within the organisation, leaders that serve in this role through their engagements with internal and external stakeholders are in a position to share knowledge and insights that influence outcomes and positive behaviour towards sustainable procurement. Freeman (2011) argued that the leader's role is to find creative resolution and alternatives in the value creation process without compromising the interests of the diverse stakeholders of the organisation. The author suggested that where concenssions have to be considered in business decisions due to stakeholder pressures, the leader should aim to balance the outcomes as much as possible.

According to Pless, Maak and Waldman (2012), the successful adoption of sustainability by an organisation depends on the leadership behaviour and thinking that drives the organisation. The authors recommended that future research should focus on understanding the relationship between leaders and the implementation of CSR policies within the organisation which highlighted the interest on understanding the influence of leadership in decision making processes.

Grandia, et al (2013), in their study, found that individual actors, particularly leadership, play an important role in the adoption of sustainable procurement within an organisation. The authors suggested that future research should understand the level of sustainable procurement implementation in relation to the role of individual actors within multiple organisations as well as the role of individual actors as change agents to influence the impact of sustainable procurement.

Waldman and Balven (2014) argued that responsible leadership ultimately revolves around how individuals and organisations behave and decide on matters that affect sustainability. The authors suggested that the macroeconomic environment of the organisation influences the implementation of sustainability and corporate social responsibility within the organisation and the institutional context on the behaviours of responsible leaders. The authors recommended that future research should aim to understand the influence and the relationship between the governance context and responsible leadership.

Visser and Crane (2010) and Ashby, Leat, and Hudson-Smith (2012) supported the view that there is a gap that exists in compliance related environmental policy literature in recognising the role of individual managers and their influence on sustainable practices. The authors suggested that the individual level of corporate responsibility is an important platform that facilitates the improved management of sustainability in the organisation.

2.8   Literature Summary

The literature study revealed that many authors have argued that the procurement and supply chain management function is an important contributor towards the achievement of sustainable development objectives. Many authors have highlighted the importance of the organisation as a social being that needs to address the needs of the society and provide solutions that are tailored for society (Meckenstock, Paula Barbosa-Póvoa, & Carvalho, 2015; Metcalf & Benn, 2013; Touboulic et al., 2014).

Pagell and Shevchenko (2014) advised that it is imperative for organisations to increase their impact on society and that guidance through future research should be sought on how to manage and implement sustainable procurement. Porter & Kramer (2011) highlighted that both the private and public sector have a role to play in addressing societal problems and that organisations should be concerned with creating shared value through collaboration between business and society.

It emerged that it is critical to understand the macroeconomic context which governs the landscape upon which sustainable practices are implemented (Ferri, et al., 2014; Yüksel, 2012; Meehan & Bryde, 2011). Carbone, Moatti, & Wood (2012) highlighted the role of stakeholder pressures as a contributing and guiding factor in the adoption of sustainability practices within the organisations. Hoejmose & Adrien-Kirby (2012) recommended that future research should aim to contextualise the influence of political and government factors that inform the regulatory universe of business and organisational policies while Ferri, et al (2014) suggested that future research should aim to highlight the influence of local regulations on decision making processes relating to sustainable procurement.

The stakeholder lens that emerged as an important influence towards sustainability practices within organisations was championed by Freeman (2011) and supported by many other authors (Pagell & Shevchenko, 2014; Fassin, 2009; Doh & Quigley, 2014). Roehrich et al. (2014) found that managers that operate in the sustainable procurement arena are often faced with complex and conflicting priorities in the decision making process and recommended that future research should test this view with managers operating in various industries.

Adam et al. (2012) recommended that future research should seek to assess how managers can achieve an amicable balance within compliance constraints that result in complexity within decision making processes. In conclusion, many authors elevated the role of leaders as agents of change in the sustainability continuum (Waldman & Balven, 2014; Maak & Pless, 2011; Grandia, et al. , 2013) while Visser and Crane (2010) recommended that future research should aim to address the gap in literature that exists around the key contribution of leaders in the adoption of sustainability practices within the organisation and the key influence of the environmental context.

Ashby, Leat and Hudson-Smith (2012), in their study of existing literature theory around supply chain management and sustainability, found that that there is a low prevalence of deductive theory testing methodologies and that most of the studies around the subject are qualitative rather than quantitative in nature. This gap in literature informed the basis of the chosen research design of a deductive reasoning and quantitative research approach that was followed for this research study.

CHAPTER 3 RESEARCH QUESTIONS AND HYPOTHESES

3.1 Introduction

The literature indicated that there is a correlation between the influences of stakeholders and the adoption of sustainable practices by organisations. According to Saunders and Lewis (2012), a suitable research question should provide a clear link to the relevant literature, fit the set specifications and standards and promise fresh insights to the research topic. The literature reviewed considered recommendations made in scholarly articles and informed the research questions that are answered in the research study. The combined lenses of responsible leadership and stakeholder theory are used in order to understand how procurement managers balance the influence of external forces in their decision making process.

3.2 Problem Statement

The procurement and supply chain management function operates within a regulatory environment that is informed by socio-political factors. The inclusion of sustainability objectives in procurement criteria is necessary to advance social, economic and environmental considerations. The implication however that arises is how do procurement and supply chain management practitioners balance the considerations of factors that may be external to in the decision making process.

3.3 Objectives of Research

The aim of the research study is to understand the influence of stakeholder pressure that emanates from the regulatory environment for sustainable procurement and its impact on achieving sustainable development objectives.

The objectives of the study are to:

- Explore the relationship between regulatory compliance and the achievement of sustainable procurement objectives
- understand the influence of decision making processes on contribution towards sustainability
- ascertain the role of leaders and their influence on the adoption of sustainable procurement

3.4 Research Questions

The study sought to answer the following questions:

3.4.1 Research Question One:

Does regulation influence the adoption of sustainable procurement by organisations?

The literature review illustrated that stakeholder pressure and organisational context is necessary for the adoption of sustainable procurement. It is, however, not clear whether the influence of political factors and government pressure infringe on the ability of the organisation to achieve sustainability objectives (Yüksel, 2012).

3.4.2 Research Question Two

Is sustainable procurement considered as business practice within the public and the private sector and to what extent has it been adopted?

It proposed that the procurement and supply chain function is but a means for organisations to co-create value for society and increase the impact of sustainable development (Gutman, 2014; Stank & Autry, 2011).

3.4.3   Research Question Three

Are decision-making processes efficient to enable and support responsible procurement in the public and private sector?

There is evidence in the literature that individuals that make decisions within the procurement and supply chain environment have to adhere to compliance requirements and consider the interests of diverse stakeholders (Alexander, Walker, & Naim, 2014). It is therefore necessary to assess whether decision making processes provide the necessary support to achieve conformable outcomes.

3.4.4   Research Question Four

Do leadership traits influence the adoption of sustainable procurement practices?

The literature surveyed indicated that individuals, particularly leaders, play a key role in facilitating sustainability practices within organisations. It is therefore important to understand whether there are certain leadership traits that gravitate towards driving sustainability (Metcalf & Benn, 2013).

3.5   Hypotheses

3.5.1 Hypothesis One

Hypothesis One was formulated to assess whether there are notable differences between an environment that is subject to stringent prescripts versus an environment that allows for flexibility within in the procurement process. The hypothesis was set out as follows:

Null Hypothesis (1): H0: $\rho = 0$, There is no association between a highly regulated procurement environment and the successful adoption of sustainable procurement

Alternative Hypothesis (1): H1: $\rho > 0$, There is an association between a highly regulated procurement environment and the adoption of sustainable procurement.

3.5.2 Hypothesis Two

Hypothesis Two was formulated to understand whether leaders are able to balance social, economic and environmental considerations in the decision-making process. The hypothesis was set out as follows:

Null Hypothesis (2): H0: $\rho = 0$, Leaders in a highly regulated procurement environment are unable to influence the adoption of sustainable procurement

Alternative Hypothesis (2): H1: $\rho > 0$, Leaders in a highly regulated procurement environment are able to influence the adoption of sustainable procurement

3.5.3 Hypothesis Three

Null Hypothesis (3): H0: $\rho = 0$, The interaction between the identified research themes is NOT significant to influence the successful adoption of sustainable procurement

Alternative Hypothesis (3): H1: $\rho > 0$, The interaction between the identified research themes is significant to influence the successful adoption of sustainable procurement

Hypothesis three was formulated to test whether the identified research themes can be combined to influence the adoption of sustainable procurement.

CHAPTER 4 RESEARCH METHODOLOGY

4.1   Introduction to Research Methodology and Design

Saunders and Lewis (2012) suggested that there are two differing approaches to research, namely, deduction and induction. A deductive approach involves the testing of a theoretical proposition through data that is collected. An inductive approach, however, involves analysing specific observations to applying broader generalisations and theories. Further to this, the authors propose that a research study can either be exploratory, descriptive or explanatory. The following is provided:

- An exploratory study is intended to discover general information about a topic that may be new phenomena which is not clearly understood by the researcher;
- A descriptive study involves the collection of measurable, quantifiable data that can explain a topic; and
- An explanatory study seeks to understand a specific event through discovering associations between one or multiple variables.

The research methodology for the study is detailed below;

4.2   Research Design

According to Kumar (2014), a research design is the blueprint that guides the research process and outlines procedures that will lead to valid and reliable answers to the research problem. The author suggested that the research design should clearly articulate all the tasks undertaken in order to guide future research in the case where the study would be replicated. Bryman and Bell (2011) compared a research design to a framework that guides the process of collecting and processing data for a research study.

Creswell (2014) suggested that a quantitative research approach is appropriate to test theory objectives in order to understand the relationship among variables. This study is explanatory in nature as it seeks to assess the influence of regulatory compliance on achieving sustainability objectives.

Many authors have posited that a deductive research design is formed upon a theory base and a hypothesis which is a proposition that aims to relate an observed phenomenon (Kumar, 2014; Saunders & Lewis, 2012; Jonker & Pennink, 2010). The authors suggested that a hypothesis evolves into an approach which is subject to a test that will validate the proposition through discovering an association between one or multiple concepts This study followed a deductive reasoning approach which informed the statistical tests for the theoritically based propositions that were constructed in the previous chapter.

Creswell (2014) suggested that it is important to observe the assumptions or paradigms that may influence the research approach for the study. This study holds an interpretivist view which acknowledges that the experiences of diverse individuals within an organisation can serve as a broader lens that provides the outlook of that organisation (Bryman & Bell, 2011). According to Saunders, Lewis, and Thornhill (2009) an intepretivist approach is mostly suited for a research study that is conducted within the business and management arena as it advocates for a perspective that provides that individuals have a role to play as actors in society and that business situations vary and are multifaceted.

4.3   Population and Unit of Analysis

According to Creswell (2014), it is important to identify the study population who can provide the information that will derive the answers for the research questions. The population for this study was procurement and sustainability practitioners that operate in the public and the private sector across various industries, while the target population was practitioners across different levels of management.

4.4   Sampling Method and Sample Size

Saunders et al. (2009) suggested that using a sample in a research study allows for expedient and efficient gathering of data from a cluster instead of all possible elements. The researcher used a combination of purposive and expert sampling which are non-probability sampling methods.

Purposive sampling was considered appropriate for this research study as it allowed for the selection of cases that would answer the research questions in relation to the objectives of the study (Bryman & Bell, 2011).The researcher is affiliated with the Chartered Institute of Procurement and Supply (CIPS), which is a professional body for purchasing and supply in South Africa. Through this association, the research study was extended to members that are practitioners within different levels of management in the field of procurement and supply chain management.

Kumar (2014) posited that expert sampling may be used to consider the opinions of subject matter experts within the interest area known to the researcher. For the purposes of this research study, expert sampling was used to extend gathering of data to the State Owned Entities Procurement Forum (SOEPF) which is comprised of procurement and supply chain management executives of state owned entities. These entities are instrumental in the delivery of the largest strategic and infrastructure government projects and also have a footprint across various industries and sectors.

The expert sampling method was also used extend the study to a group of sustainability managers that operate across various industries to provide opinion as subject matter experts around the area of sustainability.

The researcher also chose the combination of these groups in order to ensure that primary data would be collected data from both the public and the private sectors which would allow for diverse and enriching information for the study (Sau09).

According to Saunders & Lewis (2012), the level of certainty which can represent a population is dependent upon the size of the sample and population. The authors suggested that a probability sample of at least 30 respondents should be collected to represent a statistically significant sample. The target sample for this research study was 250 practitioners across different levels of management as indicated above.

4.5   Assumptions

The assumptions that were made for the research sample were as follows:

1. The study sample depicts the composition of the population, however the sampling method makes it difficult to generalise the findings to the entire population (Bry11)
2. The respondents are employed on different levels of management , have the relevant working knowledge relating to supply chain, procurement and sustainability matters and their data is suitable for the objectives of the study (Kumar, 2014)
3. The findings might be subject to response bias with the likelihood of non response error (Sau09)

4.6   The Research Instrument

A 5-point Likert scale questionnaire was developed for this research study. The rating scale was based on 1- 5, where 1 was "strongly disagree" and 5 was "strongly agree". Kumar (2014) suggested that using a Likert scale to collect data is valuable as it indicates the strength of competing views on a subject. The author posited that a questionnaire is a convenient and economical form of collecting data from a large population, however, the limitations of a questionnaire include the fact that information cannot be improved by further questioning or observations from respondents.

The questionnaire consisted of 51 questions spread across five subsections; Section A, B, C, D & F. Section A was demographics of the respondents. Section B consisted of statements around the opinions of the respondents regarding the level of adoption of sustainable practices by their respective organisations. Bryman & Bell (2011) posited that the use of existing questions from previous research studies may be considered in the questionnaire design, either with the intention of replication or as input into designing questions for the research study. The author suggested that the inclusion of pre-existing research questions may be convenient as the questions have already been pre-tested.

The research questions in this research study were largely based on the literature reviewed; where in Section C, D and F, the questions were linked to the identified research themes. The questionnaire consisted of questions which were informed by previous research studies and were adapted for this study as shown in Table 2.

Table 2 Research Questions Adapted from Previous Studies

Theme	Ref No.	Measure	Source
Section C: Regulatory Environment	C6	I believe that regulatory standards aim to balance the interests of various stakeholders in order to achieve favourable outcomes	Botha (2006)
	C11	It has been easy for my organisation to influence consultations before changes to regulatory standards are introduced	
	C2	My organisation has an enterprise wide policy that promotes sustainability	Meehan & Bryde (2015)
	C3	My organisation has a policy that allows for promotes procurement from local suppliers	
	C8	Compliance to regulatory standards allows for improved spend with local suppliers	
	C9	Compliance to regulatory standards allows for improved spend with Black owned suppliers and small enterprises	
Section D: Sustainable Procurement practices	D2	My organisation has set corporate targets for the achievement of sustainability and environmentally friendly practices	Meehan & Bryde (2011)
	D6	Our staff members have received training on the impact of sustainability on procurement processes	
	D8	My organisation favours suppliers that rate highly on sustainability during the tender process	
	D10	My organisation specifies criteria for social objectives and green and environmentally friendly products in our supplier agreements	
Section F: Decision making processes	F4	There is always a pre-determined criterion that must be prioritised and considered for decision making	Kaufmann, Meschnig, & Reimann (2014)
	F7	I usually follow a quantitative analytical process when making decisions	

4.6.1 Pre-Testing

Saunders et al. (2009) posited that the research questionnaire should be piloted and refined in order to ensure a meticulous data collection process. The questionnaire was piloted in two stages with a pre-selected small group. The intention of the pre-test was, firstly, to test interpretation of technical terminology with procurement practitioners who were comparable to the population and, secondly, with non-procurement practitioners to ensure that there is a flow in the document as well as logical understanding of the questions. The feedback from the pre-testing was incorporated and the questionnaire was updated accordingly to include a cover letter (Annexure A) which outlined the purpose, as well as the main objectives of the research study (Kumar, 2014).

4.7 Survey Questionnaire – Accuracy, Reliability and Validity

4.7.1 Data Collection Method

Jonker & Pennink (2010) posited that a survey is suitable to gather data about a particular group or sample that is representative of a specific group. A questionnaire (Annexure B) was administered as an online survey via SurveyMonkey™. This platform was considered as the most convenient method that could be used to collect primary data as the tool allowed for increased access of standard questions to be asked to multiple respondents in an efficient and economical manner.

The respondents were able to access the survey via an automated electronic link that was created on the platform which was then shared via email. The respondents were then able to self-administer the questionnaire where a total of 247 respondents participated in the research survey. The survey ascertained respondents of confidentiality and further encouraged respondents to provide open and honest responses. The SurveyMonkey™ platform was also convenient as it allowed for responses to be collated into an Excel spreadsheet format for ease of collation of data for research analysis purposes.

4.7.2 Data Preparation

The primary data that was collected via the SurveyMonkey™ platform in an Excel spreadsheet format was coded according to a "coding schedule" that the researcher developed in order to categorise the survey questions and the corresponding responses into input data into the SAS® statistical software (Bry11). Section A consisted of nominal data while Section B consisted of ordinal data derived from Likert type scale based questions and the coding which was used for ordinal type data is indicated in Table 3.

Table 3 Coding of data for Likert type scales questions

Section B, C, D & E		
	Likert scale	Code
1	Strongly Disagree	28
2	Disagree	29
3	Neutral	30
4	Agree	31
5	Disagree	32

4.7.3 Data Reliability and Validity

The researcher verified the internal consistency of the questions in the research survey questionnaire to ensure that the scale that was used for the Likert-type questions was reliable. Bryman & Bell (2011) suggested that a Cronbach's Alpha of 0.7 is considered efficient, therefore the value of 0.93 which was computed for this research study, as shown in Table 4, is considered as an acceptable internal consistency level. The Cronbach's Alpha for the individual of the Likert-type scale questions was computed as indicated in Table 5.

Table 4 Cronbach's Alpha

Variables	Alpha
Raw	0.934
Standardised	0.931

It must be highlighted that the Cronbach Alpha remained consistently high as different questions were deleted, which showed the robustness of the survey and indicated that the survey was not necessarily dependent on a specific question or a select group of questions.

Table 5 Reliability and validity of questionnaire

Cronbach Coefficient Alpha with Deleted Variable				
Deleted	Raw Variables		Standardized Variables	
Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
b1	0.373	0.933	0.384	0.931
b2	0.598	0.931	0.580	0.929
b3	0.490	0.932	0.477	0.930
b4	0.300	0.934	0.302	0.931
b5	0.408	0.933	0.430	0.930
c1	0.363	0.933	0.359	0.931
c2	0.643	0.931	0.618	0.929
c3	0.487	0.932	0.481	0.930
c4	0.684	0.930	0.660	0.928
c5	0.643	0.931	0.611	0.929
c6	0.561	0.932	0.562	0.929
c7	0.475	0.932	0.464	0.930
c8	0.510	0.932	0.499	0.930
c9	0.392	0.933	0.394	0.931
c10	0.527	0.932	0.521	0.929
c11	0.509	0.932	0.482	0.930
d1	0.722	0.930	0.695	0.928
d2	0.742	0.929	0.722	0.928
d3	0.773	0.929	0.755	0.927
d4	0.341	0.933	0.365	0.931
d5	0.620	0.931	0.606	0.929
d6	0.654	0.930	0.625	0.928
d7	0.716	0.930	0.691	0.928
d8	0.719	0.930	0.697	0.928
d9	0.643	0.931	0.612	0.929
d10	0.661	0.930	0.629	0.928
d11	0.582	0.931	0.563	0.929
d12	0.419	0.933	0.425	0.930
f1	0.104	0.937	0.116	0.933
f2	0.349	0.933	0.380	0.931
f3	0.419	0.933	0.451	0.930
f4	0.355	0.933	0.388	0.931
f5	0.308	0.933	0.334	0.931
f6	0.260	0.934	0.295	0.932
f7	0.203	0.934	0.220	0.932

4.7.4 Data Profiling

In order to ensure accuracy and completeness of the data collected, the researcher categorized all questions into specific concepts and themes that were identified in the literature review. The mean score of each theme was calculated where data profiling and descriptive statistics were drawn up in order to understand the data in terms of frequency distributions, variable correlations, number of useable variables, levels of missingness in the data and the need for variable transformations where necessary. In the instance where a significant amount of information was missing, the observation was removed from the analysis.

Table 6 presents the descriptive statistics which also indicate the measures of the averages of the individual questions as well how the data was distributed in respect of the mean, median and the mode while the kurtosis and the skewness indicate the shape of the distribution. (Bry11)

Table 6 Descriptive Statistics according to survey questions

Summary Statistics					
Variable	Mean	Median	Mode	Skewness	Kurtosis
b1	4,197	4,000	4,000	-1,202	3,123
b2	3,781	4,000	4,000	-0,959	0,500
b3	3,172	4,000	4,000	-0,173	-1,217
b4	3,979	4,000	4,000	-1,156	2,539
b5	4,155	4,000	4,000	-1,508	2,587
c1	4,037	4,000	4,000	-0,998	0,335
c2	3,623	4,000	4,000	-0,637	-0,205
c3	3,986	4,000	4,000	-1,223	1,329
c4	3,642	4,000	4,000	-0,683	-0,193
c5	3,177	3,000	4,000	-0,120	-0,712
c6	4,023	4,000	4,000	-1,238	3,268
c7	3,693	4,000	4,000	-0,935	0,525
c8	3,916	4,000	4,000	-1,212	1,847
c9	3,716	4,000	4,000	-0,943	0,586
c10	3,856	4,000	4,000	-1,149	1,984
c11	3,042	3,000	3,000	-0,233	-0,276
d1	3,655	4,000	4,000	-0,844	0,494
d2	3,568	4,000	4,000	-0,589	-0,366
d3	3,728	4,000	4,000	-0,723	0,189
d4	4,345	4,000	5,000	-1,378	3,270
d5	3,442	4,000	4,000	-0,418	-0,341
d6	2,757	3,000	2,000	0,164	-0,892
d7	3,184	3,000	4,000	-0,347	-0,816
d8	3,311	4,000	4,000	-0,526	-0,354
d9	3,408	4,000	4,000	-0,801	0,011

Summary Statistics					
d10	3,306	4,000	4,000	-0,497	-0,446
d11	3,267	3,000	4,000	-0,494	-0,184
d12	3,898	4,000	4,000	-0,864	0,857
f1	3,441	4,000	4,000	-0,561	-0,834
f2	4,347	4,000	4,000	-1,130	2,526
f3	4,292	4,000	5,000	-1,315	2,578
f4	4,297	4,000	4,000	-1,086	2,219
f5	4,030	4,000	4,000	-0,601	0,314
f6	4,228	4,000	4,000	-0,337	-0,035
f7	3,980	4,000	4,000	-1,120	2,400
f8	3,990	4,000	4,000	-0,457	0,653
f9	3,911	4,000	4,000	-0,875	1,599
f10	3,990	4,000	4,000	-0,694	1,303
f11	4,050	4,000	4,000	-0,766	2,271
f12	4,361	4,000	4,000	-0,316	-0,672

Table 7 presents a summary of the test that was run on the data categories in order to indicate the average scores of how well the respondents generally responded to the questions in the research survey. The table indicates that the questions relating to leadership and management support were rated above a score of 4 out of 5 while the respondents were generally indifferent at an average score of 2.9 regarding questions related to training initiatives around sustainable procurement.

Table 7 Summary of survey responses

Simple Descriptive Statistics			
Themes	Corresponding attributes	Mean	Std Dev
Leadership	F2,F3,F9,F12,B3,B4,B5	4.043	0.514
Management support	D3,D4	4.036	0.688
Quality, time & cost factors	F8,F10,F11	4.010	0.591
Decision making	F1,F4,F5,F6,F7,F8,F10,F11	4.001	0.445
External Regulation	C1,C6,C7,C8,C9,C10,C11	3.755	0.622
Compliance	C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C11	3.702	0.642
Pre-set criteria	D9,D10,F4	3.664	0.743
Internal policy	C2,C3,C4,C5	3.612	0.848
Awareness	B2,C2,D1,D3,D5,D7	3.568	0.81
Sustainability	B1,B2,D1,D2,D3,D4,D5,D6,D7,D8,D9,D10,D11,D12	3.562	0.697
Training	B3,D6	2.976	1.065

4.8　　Data Analysis and Interpretation

To reiterate, this research study sought to understand the relationship between sustainability and the identified research themes. Saunders et al. (2009) suggested that data that is collected via a research survey can be utilised to infer relationships between variables and to generate statistical models to explain the relationships. The data tests were run on the Statistical Analysis System (SAS®) Version 9.2, which is a computerised business intelligence and statistical analytics software. The confidence limit for the statistical tests was set at 95%.

4.8.1　　Statistical Test Procedures

The statistical analysis employed the following statistical techniques; a confirmatory factor analysis, structural equation modeling and basic path analysis. A central location test was also used to validate one of the research questions. These test procedures were followed in order to assess whether there is sufficient statistical evidence to support the hypothesised associations. The rationale behind each technique is explained below.

Firstly, it was observed that the researcher had identified specific research themes in to achieve the objectives of this research study. To that end, a confirmatory factor analysis based on the identified themes was conducted to validate the grouping of survey questions according to themes in order to represent variables for statistical testing purposes (Suhr, 2006) . Research suggests that the technique could be used to either support or nullify the selected factor loadings that were shown in Table 6 (Hair, Jr., Black, Babin, & Anderson, 2010)

Secondly, it was observed that the main objective of the research study was to understand the relationship between between compliance and sustainability in a procurement context. For this purpose, structural equation models were found to be a suitable method to understand the relationships between the identified variables. Research suggests that structural equation models are able to illustrate unique interrelationships through representing and predicting a single relationship between theoretical concepts (Hair, Jr., Black, Babin & Anderson, 2010). The structural equation modelling techniques that were used to test the relationships that were observed for this research study s are depicted in Figure 7.

Figure 7 Theoretical Relationships observed for research study
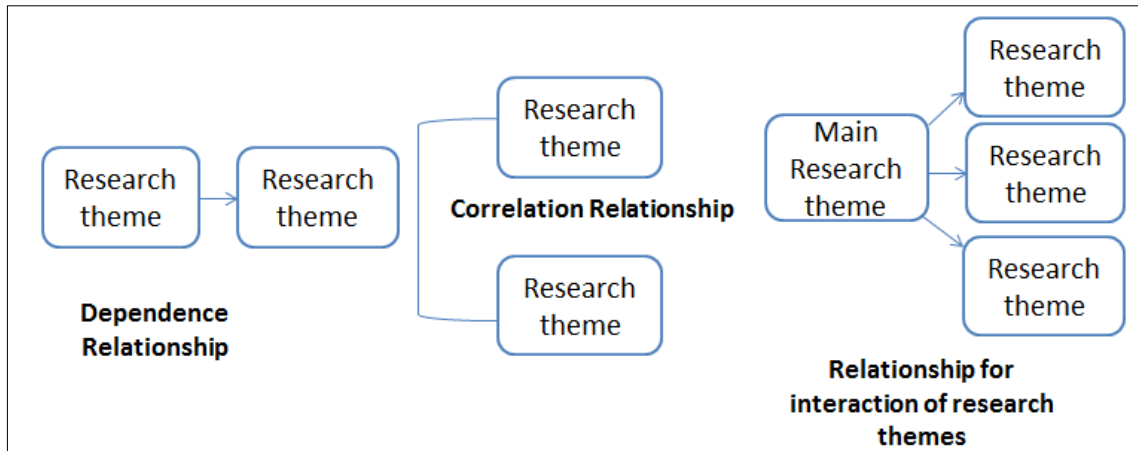
(Source: Adapted from Hair, Jr., Black, Babin, & Anderson, 2010 p.621)

Thirdly, a central location test was used to determine an indication of where the views of the respondents were concentrated (Wegner, 2010). An assumption was made using a Likert-scale of 1-5 where a score of 3 would represent a neutral view and a test was conducted to whether the views differed from this point.

Lastly, a series of basic path analysis tests were conducted using SAS® PROC CALIS to measure whether the relationships that are depicted in Figure 7, in order to ascertain whether the dependent variables had an influence on the independent variables.

The following limitations were observed relating to the statistical techniques:
- Given that the survey questions for sections C, D & F was based on a Likert-scale of 1 -5, the data categories were classified according to a hierarchy and therefore it was not possible to capture the extent of the differences between the observed data categories. This indication was pronounced when the mean scores for the latent variables (themes) were calculated.
- In the categorization that was done as part of data profiling, some of the questions (factor loadings) overlapped across different themes.
- An error term was used in the structural model to estimate the effect of information that was not known (Fennell, 2006)

4.9   Interpretation of Results

It must be noted that the statistical techniques that were mainly used to observe whether a significant relationship exists in order to infer that the independent variable influences the dependent variable. To that end, key statistical values were observed in order to describe the results and explain the outcome in the relation to the research objectives. The three indicators that were used for the outcomes of the research questions are the goodness of fit index, the t-value and the parameter estimate. These indicators are described below using guidelines as provided by Hair et al., (2010).

Firstly, the goodness of fit index was used as an indicator to explain how well a structural equation model has been fit to the data. This index is between 0 and 1 where a value that tends closer to 1 and the indicator demonstrated that there was a good fit between the structural equation model and the data.

Secondly, the t-value was used to estimate the statistical significance of the hypothesized relationships between the independent and the dependent variables. Each t-value statistic was measured against the norm of 1.96 at a 95% confidence level, where t-values higher than the norm signaled that a significant relationship between the variables existed.

Thirdly, the parameter estimate values which were greater than 0 indicated that the hypothesized relationships were positive and significant to infer an influence between the research themes.

The p-value was used to confirm or reject the hypothesized associations between the dependent and the independent variables. A p-value that was below 0.05 was considered to confirm the hypothesized association and a p-value that was used to reject the null hypothesis in favour of the alternative hypothesis (Wegner, 2010)

Lastly, the median was used to determine the central point of location for the data and guide the researcher to understand whether the views of the respondents significantly differed from the median (Wegner, 2010)

4.10   Research Limitations

The following limitations should be noted:

- The impact of sustainable procurement on the overall performance of organisations was beyond the scope of this study
- The research sample may not be representative of the entire population as purposive sampling was used for this study. It is noted that membership to the procurement professional body which the majority of the respondents were affiliated to, is not compulsory for procurement and supply chain management practitioners
- The research study does not look at the impact of supplier relationships on sustainable procurement
- The leadership lens does not extend to leader-follower relationships which may be an element that influences the adoption of sustainable development

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CHAPTER 5 RESULTS

5.1   Introduction

Chapter 5 presents the results of the findings of the data collection and analysis process in accordance with the methodology that was followed in Chapter 4. The findings presented are a summary of the statistical analysis which is related to the questions and hypotheses that were set out in Chapter 3 of this report. The results are categorised into two parts; the first section presents a summary of the descriptive statistics of the sample distribution and the second section provides the results in respect of the inferential statistics in the order of the research questions.

5.2   Descriptive Statistics

5.2.1 Demographics

A total number of 247 respondents participated in the survey that was administered via SurveyMonkey™. The breakdown of the demographics of respondents is provided in Figure 8 - 12.

Figure 8 Role in Organisation
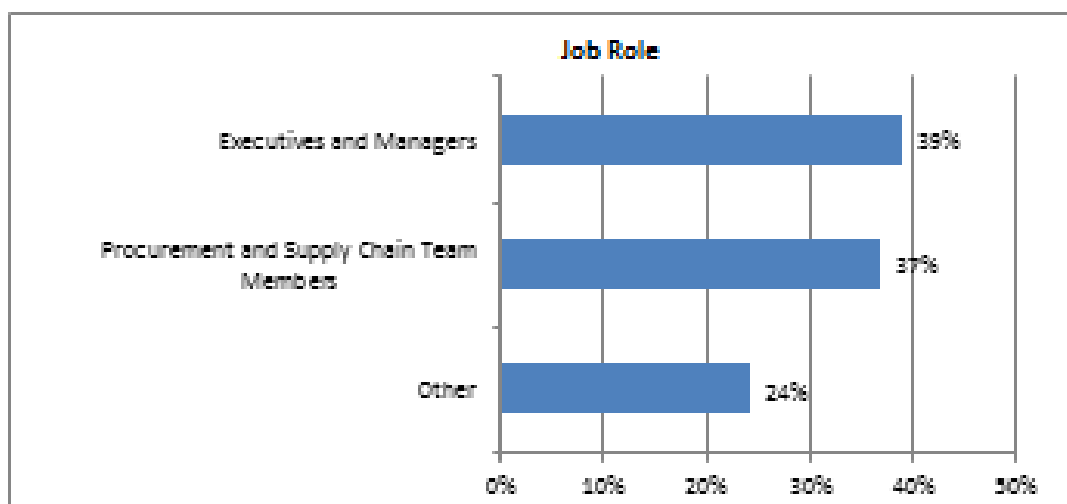
The results indicate that the majority of the respondents were at executive director and procurement manager level at 39%. Figure 8 shows that more than a third of the respondents (37%) were practitioners that are involved in various supply chain and procurement project teams with 24% of the respondents were classified as "other" which is a provision that the researcher used to accommodate the difference in terminology and designations that are adopted within various organisations.

Figure 9 Sample distribution by Gender
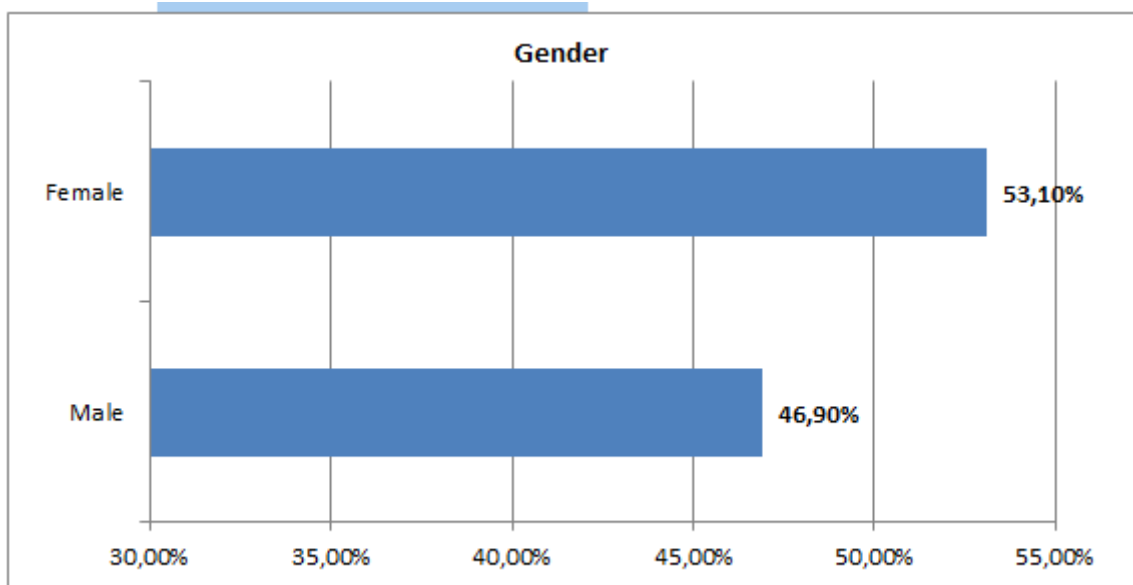
Figure 9 shows the respondents according to gender. The results indicate that there was a majority proportion (53%) of female respondents that participated in the research survey compared males at 47%.

Figure 10 Sample distribution by Business Sector
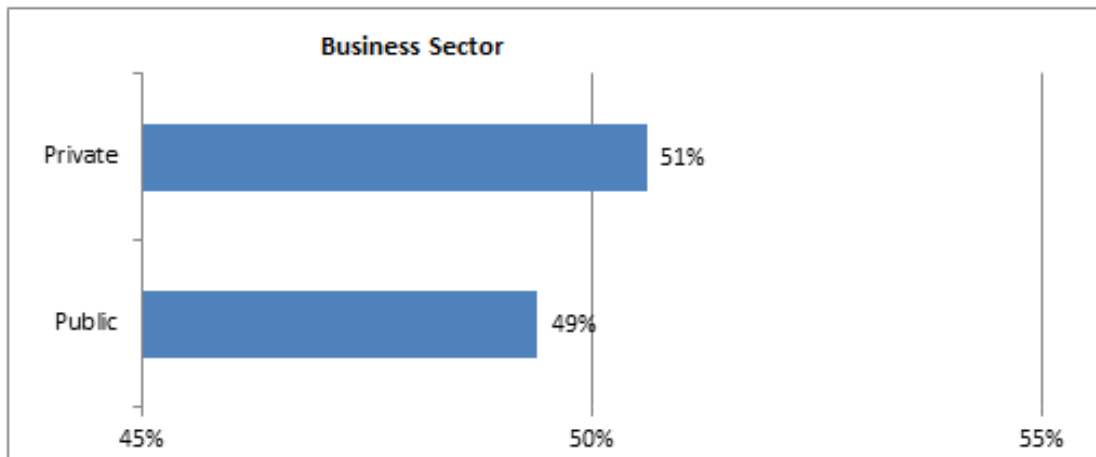
Figure 10 depicts the distribution of the respondents according to business sector. The results indicate that there was an almost equal spread in terms of business sector with the majority of the respondents being employed within the private sector at 51% and a slight variance being employed within the public sector at 49%.

Figure 11 Sample distribution by Work Experience
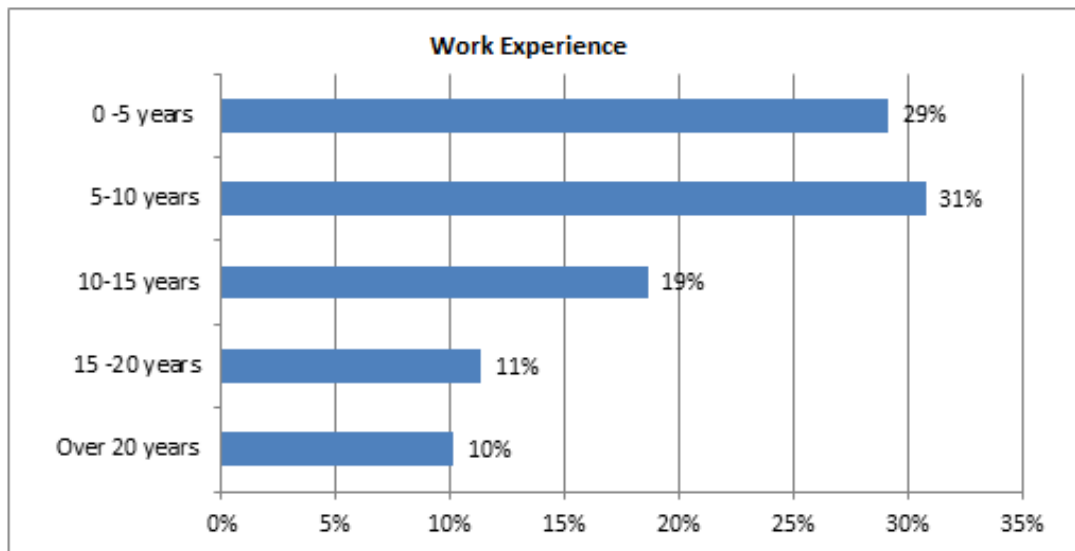
It is interesting to note that the results in Figure 11 which depicts the distribution of the respondents in respect of the work experience. The outcome indicates that a small number of the respondents at 29% have less than 5 years of work experience while the majority which is almost a third of the respondents (31%) have between 5 and 10 years work experience.

Of the 247 respondents that participated in the survey, it was interesting to observe that a third of the respondents have more 10 years work experience with 10% being a seasoned and mature calibre of practitioners with over 20 years work experience within the area of procurement and supply chain management.

Figure 12 Sample distribution by Service Industry
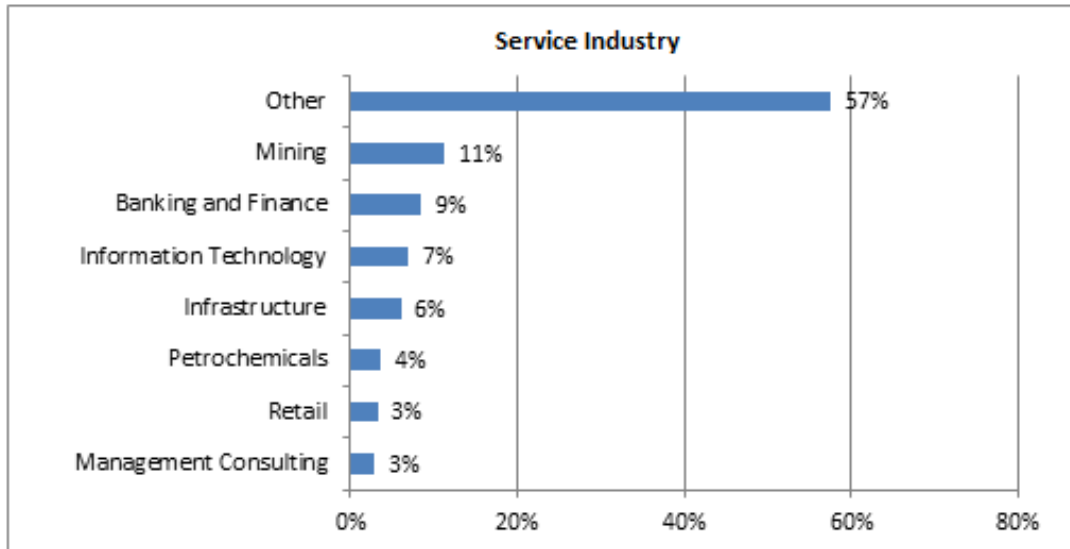
Figure 12 is a graphical representation of the distribution of the respondents according to service industry. The results show that the respondents are employed across various service industries with the majority of the respondents at 57%. The results depict that over a tenth of the respondents (11%) were within the mining industry while 9% were employed within the banking and finance industry. Further to this, the figure indicates that 7%, 6% and 4% were employed respectively within the information technology, infrastructure and petrochemical industries. The least number of the respondents (3%) were from retail and management consulting services.

5.3 Inferential Statistics for Research Questions

5.3.1 Research Question One

Does regulatory compliance influence the adoption of sustainable procurement by organisations?

Research Question One was intended to test empirically whether regulatory compliance, in the absence of other influencing factors, has an influence on sustainable procurement. The hypothesized association is indicated in Figure 13 where regulatory compliance was the dependent variable and sustainability was the independent variable. The results of the basic path analysis that was carried out to test the relationship between the two variables is presented in Table 7. The goodness of fit test is indicated in Table 8.

Figure 13 Association between regulatory compliance and sustainability
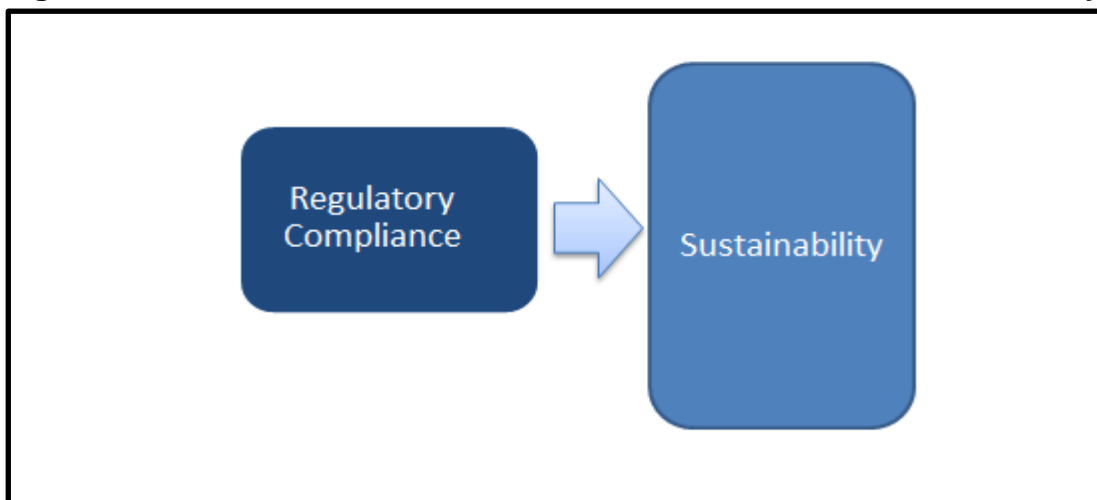
Table 8 Results for Regulatory Compliance and Sustainability

The CALIS Procedure						
Covariance Structure Analysis: Maximum Likelihood Estimation						
N Records Read			247			
N Records Used			215			
N Obs			215			
Model Type			PATH			
Analysis			Covariances			
N Records Read			247			
PATH List						
Path			Parameter	Estimate	Standard Error	t value
Regulatory compliance	===>	Sustainability	_Parm1	0.79073	0.05255	15.04720
Variance Parameters						
Variable Type	Variable	Parameter	Estimate	Standard Error	t value	
Dependent	Regulatory compliance	_Add1	0.40280	0.03894	10.34408	
Independent	Sustainability	_Add2	0.23804	0.02301	10.34408	
Squared Multiple Correlations						
Variable	Error Variance		Total Variance		R-Square	
Sustainability	0.23804		0.48990		0.5141	

Table 8 indicates that at a 5% significance level, a significant relationship exists between compliance and sustainability since the t-value at 15.05 is significantly higher than the norm of 1.96.The parameter estimate at 0.79 is greater than 0 which implies a positive and significant influence by the dependent variable, regulatory compliance on the independent variable which is sustainability. Lastly, the r-square value at 0.51 indicates that the 51% of the variation in the dependent variable, regulatory compliance is explained by the independent variable, sustainability.

Table 9 Results for Regulatory Compliance and Sustainability Model

Fit Summary		
Modelling info	Number of observations	215
	Number of Variables	2
	Number of Moments	3
	Number of Parameters	3
	Number of Active Constraints	0
	Baseline Model Function Value	0.7217
	Baseline Model Chi-Square	154.4543
	Baseline Model Chi-Square DF	1
	Pr > Baseline Model Chi-Square	<.0001
Absolute Index	Fit Function	0.0000
	Chi-Square	0.0000
	Chi-Square DF	0
	Root Mean Square Residual (RMR)	0.0000
	Standardized RMR (SRMR)	0.0000
	Goodness of Fit Index (GFI)	1.000

The p-value for the structural model as shown in Table 9 is less than 0.0001 which is lower than 0.05. This signifies that the hypothesized association between the two variables is confirmed and suggests that there is a significant relationship between regulatory compliance and sustainability is significant. The goodness of fit index for the model is 1 which shows that a good fit between the data and the model.

5.3.2   Research Question Two

Is sustainable procurement considered as business practice within the public and the private sector and to what extent has it been adopted?

The researcher used the second research question as a platform to establish the extent to which organisations within the private sector and the public sector have embraced the principles of sustainable procurement as good business practice. It must be noted that the respondents were allowed to select more than one option from a list of six general sustainable procurement practices. The results show that 206 respondents indicated more than one practice that had been adopted in their organization.

The results are depicted in Table 10 and Table 11.

Table 10 Results for Sustainable Procurement Practices

The UNIVARIATE Procedure			
Variable: procurement_process_score _ Moments			
N	206	Sum Weights	206
Mean	3.48907767	Sum Observations	718.75
Std Deviation	0.73867835	Variance	0.5456457
Skewness	-0.5578441	Kurtosis	0.30686277
Uncorrected SS	2619.63194	Corrected SS	111.857369
Coeff Variation	21.1711638	Std Error Mean	0.05146616
N	206	Sum Weights	206
Basis Statistical Measures			
Location		Variability	
Mean	3.489078	Std Deviation	0.73868
Median	3.583333	Variance	0.54565
Mode	4.000000	Range	4.00000

The results reported a median of 3.58 which is greater than the assumption that was made for 3 to represent a neutral view. A score of 3.58 indicates that there is evidence to suggest that the general view was agreeable to confirm that organisations have adopted sustainable procurement practices.

Table 11 Test for Location Results

Test for Location Mu0=3				
Test	**Statistic**		**p Value**	
Student's t	t	9.502898	Pr > |t|	<.0001
Sign	M	59	Pr >= |M|	<.0001
Signed Rank	S	6589	Pr >= |S|	<.0001
Student's t	t	9.502898	Pr > |t|	<.0001
Sign	M	59	Pr >= |M|	<.0001

Location Counts: Mu0 = 3.00		
Count	**Value**	**%**
Num Obs > Mu0	159	77%
Num Obs ^= Mu0	200	
Num Obs < Mu0	41	20%

Table 11 shows that more than 75% (159) of the 206 respondents gave a score above 3 while a small proportion (20%) of the respondents provided a score lower than 3. It is observed that the rest of the respondents (6 out of 206) were generally indifferent and provided a score of 3. It is observed that the p-values were all below 0.05 which signifies that there is evidence to suggest the adoption of the sustainable procurement practices.

5.3.3   Research Question Three

Are decision-making processes efficient to enable and support responsible procurement in the public and private sector?

It has been suggested decision-making for public procurement is to a large extent driven by stringent and inflexible prescripts that are based on cost-effective and competitive processes. Procurement in the private sector is however, is generally perceived flexible to promote innovative offerings and expedient sourcing in the decision making process. A contrast of the general perception is depicted in Figure 14A.

The observed differences formed the basis of third research question in order to determine whether decisions in the public and private sector are enablers for sustainable procurement. The hypothesized association between decision making and sustainability is depicted in Figure 14B.

Figure 14A: Perceived contrast of decision-making in the public and private sector
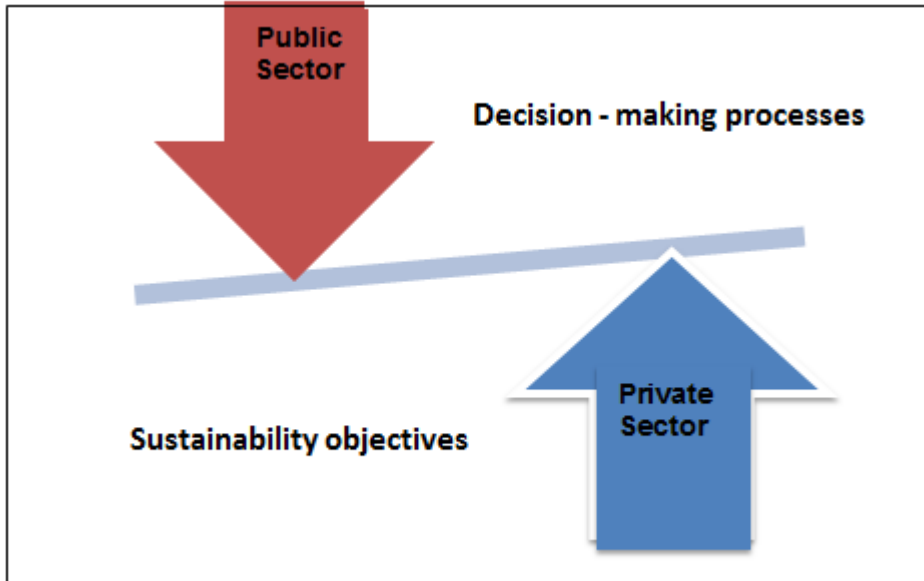
Figure 14B: Association between regulatory compliance and sustainability
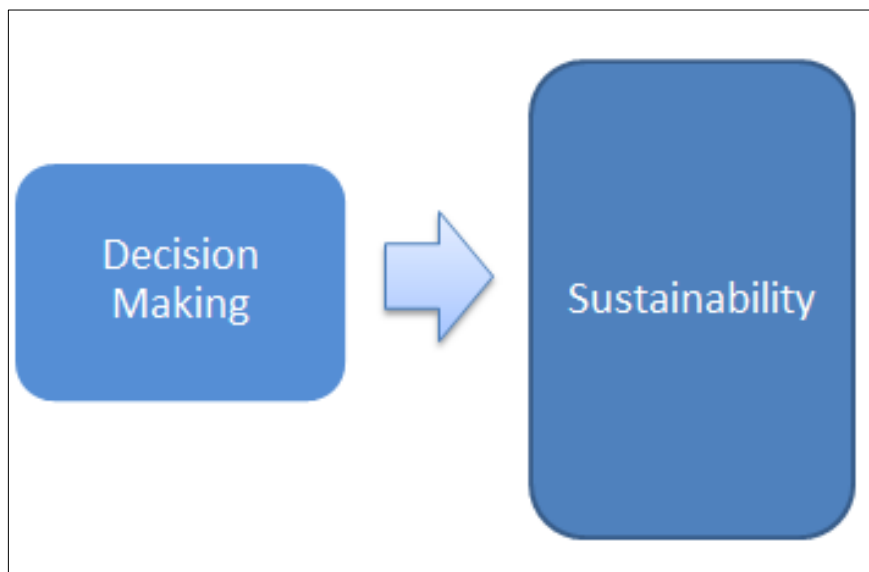
The profile of the respondents in Table 12A was used to interpret the results with a view to highlight the differences that were observed. The profile indicates that there was generally an even split between the respondents, where 49% of the respondents were from public sector and 51% of the respondents were from the public sector. The results of that were conducted are presented according to each sector in Table 12B and Table 12C. A summary is provided in Table 12D and the results of the model are presented in Table 12E.

Table 12A Profile of Respondents according to Business Sector

Sector	Number	Percentage
Private	125	51%
Public	122	49%

Table 12B shows that 102 out of the 122 responses received from the public sector were regarded as valid for the path analysis test that was conducted. It is observed that at a 5% significance level, the t-value of 3.15 is greater than the norm at 1.96. This shows that there is a significant relationship that exists between decision-making process in the public sector and sustainability. The parameter estimate is 0.49 is greater than 0 and implies a positive influence by the dependent variable, decision making on the independent variable which is sustainability

Table 12B Results for Public Sector: Decision Making and Sustainability

The CALIS Procedure Covariance Structure Analysis: Model and Initial Values Influence of decision making on sustainability (public sector)					
PATH List					
N Records Read		122			
N Records Used		102			
N Obs		102			
Model Type		PATH			
Analysis		Covariances			

The CALIS Procedure Covariance Structure Analysis: Maximum Likelihood Estimation					
PATH List					
Path			Parameter	Estimate	Standard Error	t value
Decision Making	===>	Sustainability	_Parm1	0.49217	0.15604	3.15417

Variance Parameters					
Variable Type	Variable	Parameter	Estimate	Standard Error	t value
Dependent	Decision Making	_Add1	0.20294	0.02856	7.10634
Independent	Sustainability	_Add2	0.49907	0.07023	7.10634

Squared Multiple Correlations			
Variable	Error Variance	Total Variance	R-Square
Decision Making	0.49907	0.54823	0.0897

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Table 12C Results for Private Sector: Decision –Making and Sustainability

The CALIS Procedure
Covariance Structure Analysis: Model and Initial Values
Influence of decision making on sustainability (public sector)

PATH List

N Records Read	122
N Records Used	102
N Obs	102
Model Type	PATH
Analysis	Covariances

The CALIS Procedure

Covariance Structure Analysis: Maximum Likelihood Estimation

PATH List

Path			Parameter	Estimate	Standard Error	t value
Decision Making	===>	Sustainability	_Parm1	0.49217	0.15604	3.15417

Variance Parameters

Variable Type	Variable	Parameter	Estimate	Standard Error	t value
Dependent	Decision Making	_Add1	0.20294	0.02856	7.10634
Independent	Sustainability	_Add2	0.49907	0.07023	7.10634

Squared Multiple Correlations

Variable	Error Variance	Total Variance	R-Square
Decision Making	0.49907	0.54823	0.0897

Table 12C shows that a total of 100 responses from the public sector were regarded as valid data to conduct the path analysis test. The t-value at 4.87 is above the rule of thumb at 1.96. This shows that at 5% significance level, a significant relationship exists between decision-making process in the private sector and sustainability. The parameter estimate of 0.62 is greater than 0 and signifies that there is evidence to suggest a positive influence by the dependent variable, decision making on the independent variable, which is sustainability.

Table 12D Summary Results: Decision Making and Sustainability

Standardized Results for PATH List							
Path			Category	Estimate	Standard Error	t Value	R-squared
Decision _Making	===>	Sustainability	Private Sector	0,439	0,081	5,416	0,193
Decision _Making	===>	Sustainability	Public Sector	0,299	0,091	3,306	0,090
Decision _Making	===>	Sustainability	All	0,366	0,061	5,984	0,134

A summary of the results on the influence of decision making process in the business sectors is shown in Table 12D. The tables highlight significant relationship using the two test statistics. Firstly, it is noted that the parameter estimates across the business sectors (0,44; 0,30 and 0,37) are greater than 0. This outcome indicates a positive influence by decision making on sustainability across the public and the private sector. Secondly, the results show that t-values across the business sectors (5.41; 3,30 and 5.97) are greater than the norm of 1,96. These values highlight that at a 5% significance level, a significant relationship exists between decision-making process and sustainability across the business sectors. It was observed that the values reported for the private sector are higher than the values in the private sector.

Table 12E Model for Public and Private Sector Decisions

Fit Summary		
Modelling info	Number of observations	202
	Number of Variables	2
	Number of Moments	3
	Number of Parameters	3
	Number of Active Constraints	0
	Baseline Model Function Value	0.1435
	Baseline Model Chi-Square	28.8479
	Baseline Model Chi-Square DF	1
	Pr > Baseline Model Chi-Square	<.0001
Absolute Index	Fit Function	0.0000
	Chi-Square	0.0000
	Chi-Square DF	0
	Root Mean Square Residual (RMR)	0.0000
	Standardized RMR (SRMR)	0.0000
	Goodness of Fit Index (GFI)	1.000

The p-value for the structural model as shown in Table 12E is less than 0.0001 which is lower than 0.05. This signifies that the hypothesized association between the two variables is confirmed and suggests that there is a significant relationship between regulatory compliance and sustainability is significant. The goodness of fit index for the model is 1 which shows that a good fit between the data and the model.

5.3.4 Research Question Four

Do leadership traits influence the adoption of sustainable procurement practices?

The researcher used the last research research question as a base that would explain the impact of leadership characteristics on sustainability. The hypothesized influence is indicated in Figure 15 and the results of the basic path analysis that was carried out to determine there is evidence to infer a relationship between leaders and sustainable procurement decisions is depicted in Table 13 and Table 14.

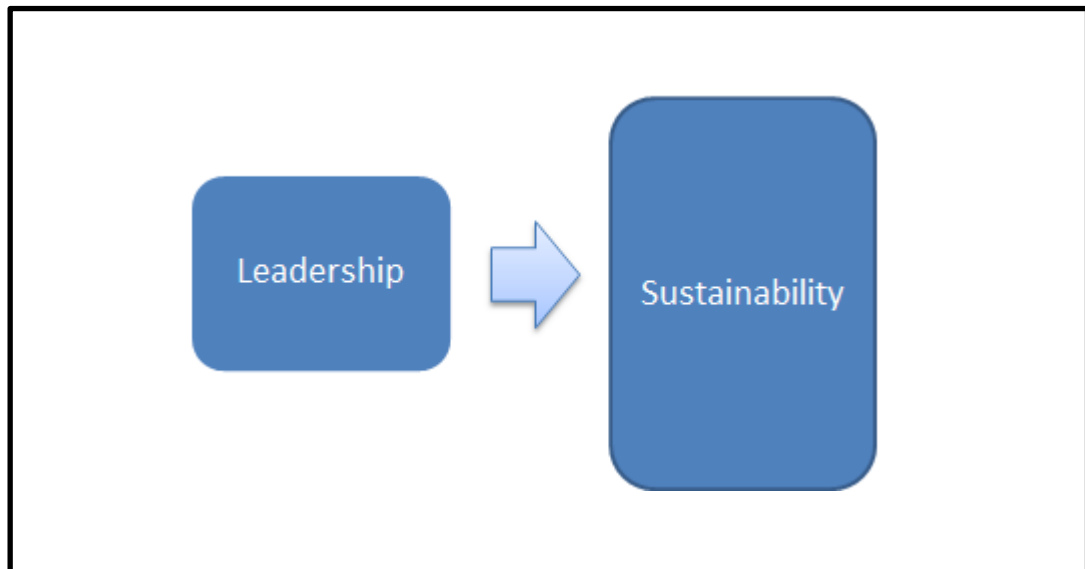**Figure 14 Association between Leadership and Sustainability**

Table 13 Results for Leadership and Sustainability

The CALIS Procedure Covariance Structure Analysis: Maximum Likelihood Estimation					
PATH List					
N Records Read		247			
N Records Used		233			
N Obs		233			
Model Type		PATH			
Analysis		Covariances			
Path			Parameter	Estimate	Standard Error	t value
Leadership ===> Sustainability			_Parm1	0.58488	0.07379	7.92579

The CALIS Procedure Covariance Structure Analysis: Maximum Likelihood Estimation Variance Parameters					
Variable Type	Variable	Parameter	Estimate	Standard Error	t value
Dependent	Leadership	_Add1	0.30981	0.02877	10.77033
Independent	Sustainability	_Add2	0.39140	0.03634	10.77033

Squared Multiple Correlations			
Variable	Error Variance	Total Variance	R-Square
Sustainability	0.39140	0.49738	0.2131

Table 13 indicates that at a 5% significance level, a significant relationship exists between leadership and sustainability since the t-value at 7.93 is significantly higher than the norm of 1.96.The parameter estimate at 0.58 is greater than 0 which implies a positive and significant influence by the dependent variable, leadership on the independent variable which is sustainability.

Table 14 Results for Leadership and Sustainability Model

	Fit Summary	
	Number of observations	233
Modelling info	Number of Variables	2
	Number of Moments	3
	Number of Parameters	3
	Number of Active Constraints	0
	Baseline Model Function Value	0.2396
	Baseline Model Chi-Square	55.5921
	Baseline Model Chi-Square DF	1
	Pr > Baseline Model Chi-Square	<.0001
Absolute Index	Fit Function	0.0000
	Chi-Square	0.0000
	Chi-Square DF	0
	Root Mean Square Residual (RMR)	0.0000
	Standardized RMR (SRMR)	0.0000
	Goodness of Fit Index (GFI)	1.000

The p-value for the structural model as shown in Table 14 is less than 0.0001 which is lower than 0.05. This signifies that the hypothesized association between the two variables is confirmed and suggests that there is a significant relationship between leadership and sustainability is significant. The goodness of fit index for the model is 1 which shows that a good fit between the data and the model.

5.4   Hypotheses

The researcher formulated three hypotheses that were tested at a 95% confidence level.

5.4.1 Hypothesis One

It has been suggested that regulatory compliance, particularly in a procurement context, generally differs across the business sectors and various industries. It was therefore important to understand the impact of regulatory compliance on sustainability, within the public and the private sector. To this end, while both the public and the private sector are guided by internal policies, it was assumed that a highly regulated environment would be subject to both internal and external regulation.   The hypothesized association is depicted in Figure 16.

Hypothesis One was set out as follows:

Null Hypothesis (1): H0: $\rho = 0$, There is no association between a highly regulated procurement environment and the successful adoption of sustainable procurement

Alternative Hypothesis (1): H1: $\rho > 0$, There is an association between a highly regulated procurement environment and the adoption of sustainable procurement.

Figure 15 Hypothesis One: Internal Policy, External Policy and Sustainability association
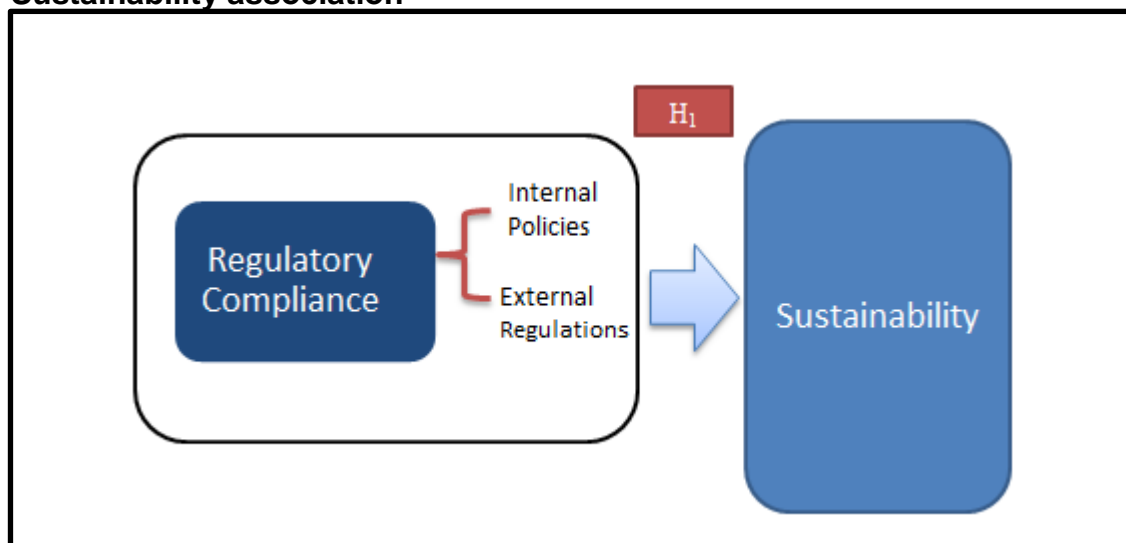
Figure 16 shows the association where internal policy and external regulations are the dependent variables and the sustainability is the independent variable. The results of the test that was run are shown in Table 15 and the outcome of the goodness of fit test is indicated in Table 16.

Table 15 Results for Internal Regulation, External Regulation and Sustainability

The CALIS Procedure					
Covariance Structure Analysis: Maximum Likelihood Estimation					
PATH List					
Path			Parameter	Estimate	Standard Error	t value
Internal Policy	===>	Sustainability	_Parm1	0.49287	0.04878	10.10343
External Regulations	===>	Sustainability	_Parm2	0.24146	0.06592	3.66290

Variance Parameters					
Variable Type	Variable	Parameter	Estimate	Standard Error	t value
Dependent	External Regulations	_Add1	0.38715	0.03743	10.34408
Independent	Internal Policy	_Add2	0.70696	0.06834	10.34408
Independent	Sustainability	_Add3	0.21714	0.02099	10.34408

Covariances Among Independent Variables					
Var1	Var2	Parameter	Estimate	Standard Error	t Value
Internal Policy	External Regulations	_Add4	0.32959	0.04227	7.79758

Squared Multiple Correlations			
Variable	Error Variance	Total Variance	R-Square
Sustainability	0.21714	0.48990	0.5568

Based on the results in Table 15, it can be concluded at a 95% confidence that a significant relationship exists between both internal policy criteria and that a significant relationship also exists between external regulations as the t-values are above 1.96. It is interesting to note that internal regulations variable has a higher value (10.10) when compared to external regulations (3.66). The r-squared value is 0.55 which indicates a strong relationship between the variables as the number tends towards 1.

Table 16 Results for Internal Regulation, External Regulation and Sustainability Model

Fit Summary		
	Number of Observations	215
Modelling info	Number of Variables	3
	Number of Moments	6
	Number of Parameters	6
	Number of Active Constraints	0
	Baseline Model Function Value	1.3193
	Baseline Model Chi-Square	282.3317
	Baseline Model Chi-Square DF	3
	Pr > Baseline Model Chi-Square	<.0001
Absolute Index	Fit Function	0.0000
	Chi-Square	0.0000
	Chi-Square DF	0
	Root Mean Square Residual (RMR)	0.0000
	Standardized RMR (SRMR)	0.0000
	Goodness of Fit Index (GFI)	1.000

The p-value for the structural model as shown in Table 16 is less than 0.0001 which is lower than 0.05. This signifies that the hypothesized association between the two variables is confirmed and suggests that there is a significant relationship between regulatory compliance and sustainability is significant. The goodness of fit index for the model is 1 which shows that a good fit between the data that was tested and for decision making model.

5.4.2 Hypothesis Two

Hypothesis Two was formulated in order to understand regulatory compliance from a perspective of a leader, to ascertain whether leaders are able to balance social, economic and environmental considerations in the decision-making process. To that end, it was important to identify a relationship that would assist leaders to contribute towards sustainability objectives.

Hypothesis Two was set out as follows:

Null Hypothesis (2): H0: $\rho = 0$, Leaders in a highly regulated procurement environment are unable to influence the adoption of sustainable procurement

Alternative Hypothesis (2): H1: $\rho > 0$, Leaders in a highly regulated procurement environment are able to influence the adoption of sustainable procurement
The results of the covariance tests that were run are shown in Table 17

The hypothesized association is indicated in Figure 17 where regulatory compliance, leadership, and decision making are the dependent variables and the sustainability is the independent variable. The covariances that have been included as input into the model are represented as follows:

- The covariance between compliance and leadership is denoted as "Cv2v3"
- The covariance between compliance and decision making is denoted as "Cv2v4"
- The covariance between leadership and decision making is denoted as "Cv3v4"

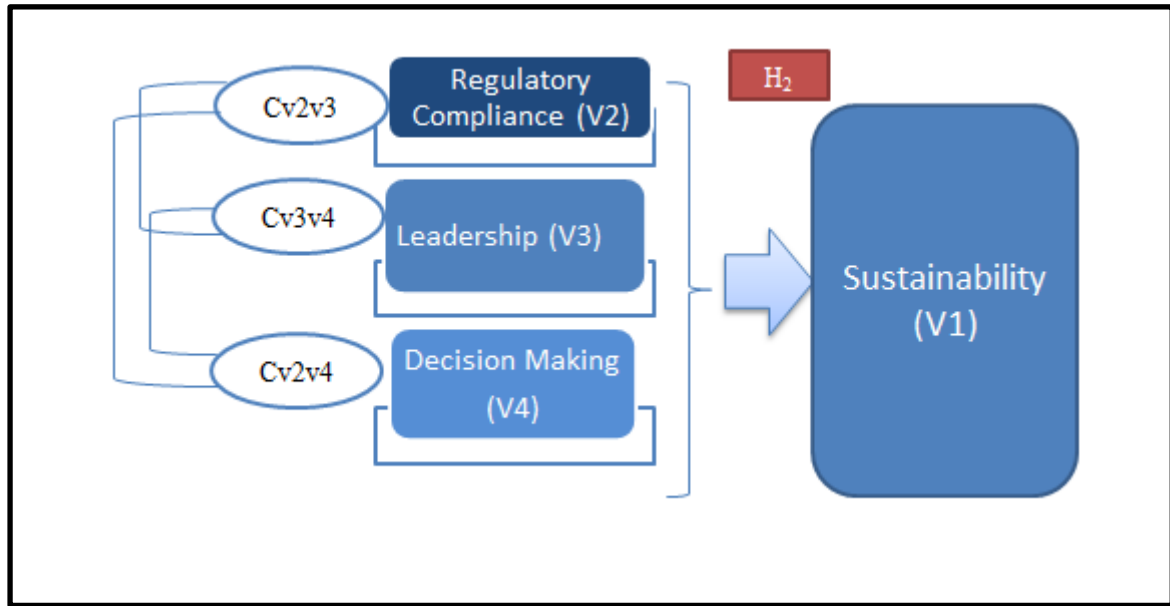**Figure 16 Leader Decisions in a Regulated Environment**

Table 17 Covariances among Research Themes

Covariances Among Dependent Variables					
Var1	Var2	Parameter	Estimate	Standard Error	t Value
Compliance	Leadership	cv2v3	0.15991	0.02570	6.22276
Compliance	Decision making	cv2v4	0.07380	0.02073	3.56006
Leadership	Decision Making	cv3v4	0.12862	0.01843	6.97800

Optimization Results Parameter Estimates					
N	Parameter	Estimate	Standard Error	t Value	Pr > |t|
1	cv2v3	0.15991	0.02570	6.22276	<.0001
2	cv2v4	0.07380	0.02073	3.56006	0.0013
3	cv3v4	0.12862	0.01843	6.97800	<.0001

Table 17 shows the covariances between leadership, compliance and decision making. Firstly, it is observed that the results indicate that the t-values (6.22, 3.56, 6.97) are greater than the norm of 1.96. This signifies that it can be said with 95% confidence that there is a significant relationship between the variables. It was also observed that the relationship between leadership and decision making reported the highest t-value at 6.98.

Secondly, the estimate values were greater than 0 which also implied that a significant relationship exists between the variables. It was also observed that the p-values of the covariances are significantly lower than 0.05 which means that there the variables assist each other to influence sustainability. Finally, the p-values were below 0.05 which suggested that there is statistical evidence to reject the null hypothesis in favour of the alternative.

5.4.3 Hypothesis Three

Hypothesis Three was formulated in order to understand the collaboration of the identified research themes towards the adoption of sustainable procurement practices with a view to highlight the factors that have the most influence in the interaction process.

Hypothesis were set out as follows:

Null Hypothesis (3): H0: $\rho = 0$, The interaction between the identified research themes is NOT significant to influence the successful adoption of sustainable procurement

Alternative Hypothesis (3): H1: $\rho > 0$, The interaction between the identified research themes is significant to influence the successful adoption of sustainable procurement

The hypothesized influence is indicated in Figure 21 where regulatory compliance leadership, and decision making are the dependent variables and the sustainability is the independent variable.
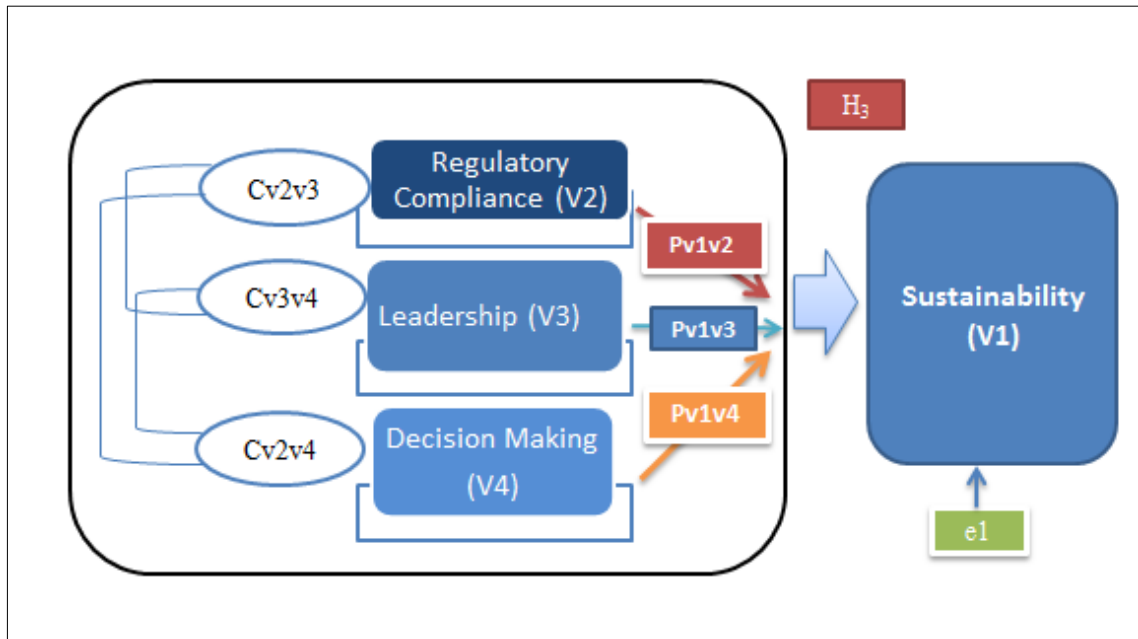
Figure 17 Interaction of research themes

Figure 18 depicts the hypothesized association between the research themes. The parameter estimates for the relationships between the dependent variables and the independent variable "sustainability" is represented as "Pv1v2", "Pv1v3 and "Pv1v4" respectively.

The covariances that have been included as input into the model are represented as follows:

- The covariance between compliance and leadership is denoted as "Cv2v3"
- The covariance between compliance and decision making is denoted as "Cv2v4"
- The covariance between leadership and decision making is denoted as "Cv3v4"
- The error term in the model is denoted as "e1'

The results of the statistical tests are presented in Table 18.

Table 18 Results for Factor Influence on Sustainability

The CALIS Procedure					
Covariance Structure Analysis: Optimization					
Optimization Results					
Parameter Estimates					

N	Parameter	Estimate	Standard Error	t Value	Pr > |t|
1	pv1v2	0.68152	0.05505	12.37982	<.0001
2	pv1v3	0.26192	0.08061	3.24915	0.0029
3	pv1v4	0.14729	0.08381	1.75744	0.0890
4	vare1	0.18977	0.01893	10.02497	<.0001
5	varv2	0.40938	0.04084	10.02497	<.0001
6	varv3	0.26175	0.02611	10.02497	<.0001
7	varv4	0.19768	0.01972	10.02497	<.0001
8	cv2v3	0.15991	0.02570	6.22276	<.0001
9	cv2v4	0.07380	0.02073	3.56006	0.0013
10	cv3v4	0.12862	0.01843	6.97800	<.0001

Value of Objective Function = 0

The CALIS Procedure				
Covariance Structure Analysis: Maximum Likelihood Estimation				
Predicted Covariances				

	Sustainability	Compliance	Leadership	Decision Making
Sustainability	0.48399	0.33176	0.19648	0.11310
Compliance	0.33176	0.40938	0.15991	0.07380
Leadership	0.19648	0.15991	0.26175	0.12862
Decision Making	0.11310	0.07380	0.12862	0.19768

Table 18B Results for Linear Equation and R-Square Value

The CALIS Procedure									
Covariance Structure Analysis: Maximum Likelihood Estimation									
Linear Equations									
Sustainability =	Compliance +	0.6815	Leadership +	0.2619	Decision Making +	0.1473	e1	1.0000	
Std Err	pv1v2	0.0551	pv1v3	0.0806	pv1v4	0.0838			
t-Value		12.3798		3.2491		1.7574			

Squared Multiple Correlations			
Variable	Error Variance	Total Variance	R-Square
Sustainability	0.18977	0.48399	0.607

Table 18A shows the results of the interaction of the identified research themes and their contribution towards driving sustainability in a procurement context.

Firstly, it was observed that the **t-value** for the relationship between **regulatory compliance** and **sustainability** is **12. 38**, which was found to be more than 6 times higher than the norm of 1.96. The p-value is below 0.05 while the parameter estimate is greater than 0. This signifies a positive and significant relationship between regulatory compliance and sustainability.

Secondly, the **t-value** at **3.24** for **leadership** is also greater than the norm of 1.96. The **p-value is below 0.05** while the parameter estimate is greater than 0. This signifies a positive and significant relationship between the two variables.

It was interesting to note that the **t-value** of **decision making** was diluted to **1.76** which is below the norm of 1.96 which does not indicate a significant relationship. The **p-value** is greater than **0.05** and also does not indicate a significant relationship. The parameter estimate however is greater than 0, which signifies a positive and significant influence on sustainability.

Based on the t-values, it can be said at a 95% confidence that there is evidence that a significant relationship exists between regulatory compliance, leadership and sustainability.

The results in Table 18A also show that the **co-variances** among the variables are significantly above 0 and are positive which indicates that the research themes assist each other to influence sustainability objectives. It is also observed that the results also reported the highest covariance between **leadership** and **decision making** (**Cv3v4) with a t-value of 6.98** and a p-value that is below 0.05. The covariance between **leadership** and **compliance** (**Cv2v3) with a t-value of 6.22** and a p-value that is below 0.05. This signifies that it can be said at a 95% confidence that there is statistical evidence to show that a significant relationship exists between regulatory compliance, leadership, decision making and sustainability within a procurement context. The r-squared value is 0.61 which indicates a positive and strong correlation between the dependent variables and sustainability.

Table 19C Results for Factor Influence on Sustainability Model

Fit Summary		
	Number of observations	202
Modelling info	Number of Variables	4
	Number of Moments	10
	Number of Parameters	10
	Number of Active Constraints	0
	Baseline Model Function Value	0.5946
	Baseline Model Chi-Square	320.5246
	Baseline Model Chi-Square DF	6
	Pr > Baseline Model Chi-Square	<.0001
Absolute Index	Fit Function	0.0000
	Chi-Square	0.0000
	Chi-Square DF	0
	Root Mean Square Residual (RMR)	0.0000
	Standardized RMR (SRMR)	0.0000
	Goodness of Fit Index (GFI)	1.000

Table 18B shows a structural equation model that was constructed to represent the interaction between the research themes using the values that were reported in Table 18B. The model illustrates that regulatory compliance has a t-value (12.38) that is almost four times higher than the t-value (3.25) that was reported for leadership. Decision making was also incorporated into the model with a t-value of 1.75. This model reported a goodness of fit index of 1 in Table 18C. This value signifies that the model was good fit for the data. The p- value indicated in Table 18C is less than 0.05 and indicates that there is significant statistical evidence to reject the null in favour of the alternative hypothesis.

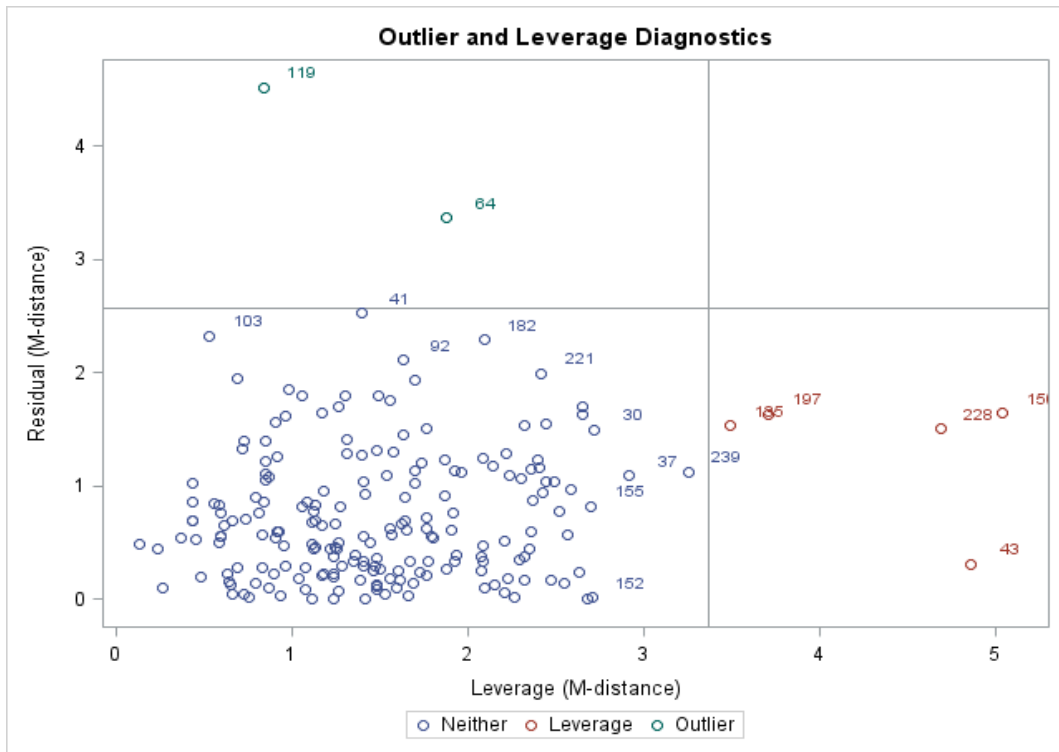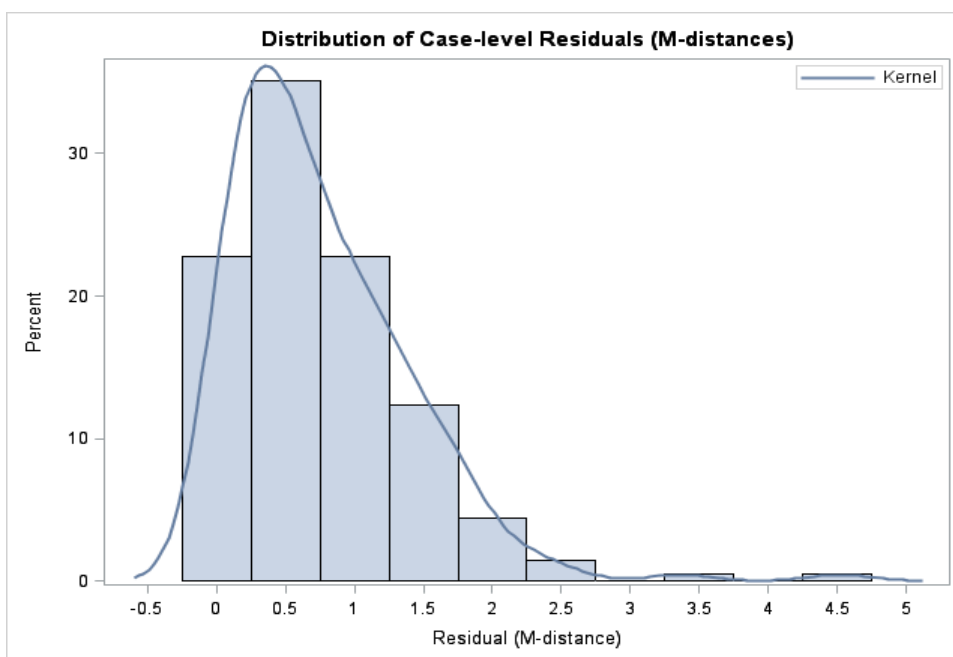**Figure 19: Outlier Diagnostics**

Figure 19 shows that the observations are randomly scattered with a few outliers which indicates that the model is a good fit, while Figure 23 indicates that the residuals follow a normal distribution.

Figure 20: Distribution of Case Level Residuals

5.4   Summary of Results

Table 19 presents a summary of the results of the hypotheses testing that was conducted for each hypothesised association and the statistical conclusion.

Table 19: Summary of Hypotheses Testing

| Hypotheses	Results	Relationship	Conclusion
Null Hypothesis (1): H0: p = 0, There is no association between a highly regulated procurement environment and the successful adoption of sustainable procurement. Alternative Hypothesis (1): H1: p> 0, There is an association between a highly regulated procurement environment and the adoption of sustainable procurement.	Correlation Coefficient: 0.5568 (**) P-Value: <.0001	Positive and strong relationship	Reject Null Hypothesis
Null Hypothesis (2): H0: p = 0, Leaders in a highly regulated procurement environment are unable to influence the adoption of sustainable procurement. Alternative Hypothesis (2): H1: p> 0, Leaders in a highly regulated procurement environment are able to influence the adoption of sustainable procurement	cv2v3 p value <.0001 cv2v4 p-value = 0.0013 cv3v4 p value <.0001	Positive relationship	Reject Null Hypothesis
Null Hypothesis (3): H0: p = 0, The interaction between the identified research themes is NOT significant to influence the successful adoption of sustainable procurement. Alternative Hypothesis (3): H1: p> 0, The interaction between the identified research themes is significant to influence the successful adoption of sustainable procurement	Correlation Coefficient: 0.607 (**) P-Value: <.0001	Positive and strong relationship	Reject Null Hypothesis

5.5   Concluding remarks

This chapter presented the results of the data analysis in relation to the relation to the questions and hypotheses that were set out in Chapter Three.

Firstly, the results of the test were presented which confirmed that the data was able to answer the four research questions. Secondly, the results of the hypotheses which were formulated to test the hypothesised associations relating to the research themes also confirmed that the data was able to provide statistical evidence to support the hypothesis testing. The findings of results are depicted in Figure 21.

A summary of the hypotheses testing that was conducted was presented in Table 19 which highlighted that it can be said at a 95% confidence that there is statistical evidence to show that a significant relationship exists between regulatory compliance, leadership, decision making and sustainability within a procurement context.

Figure 21: Summary of findings
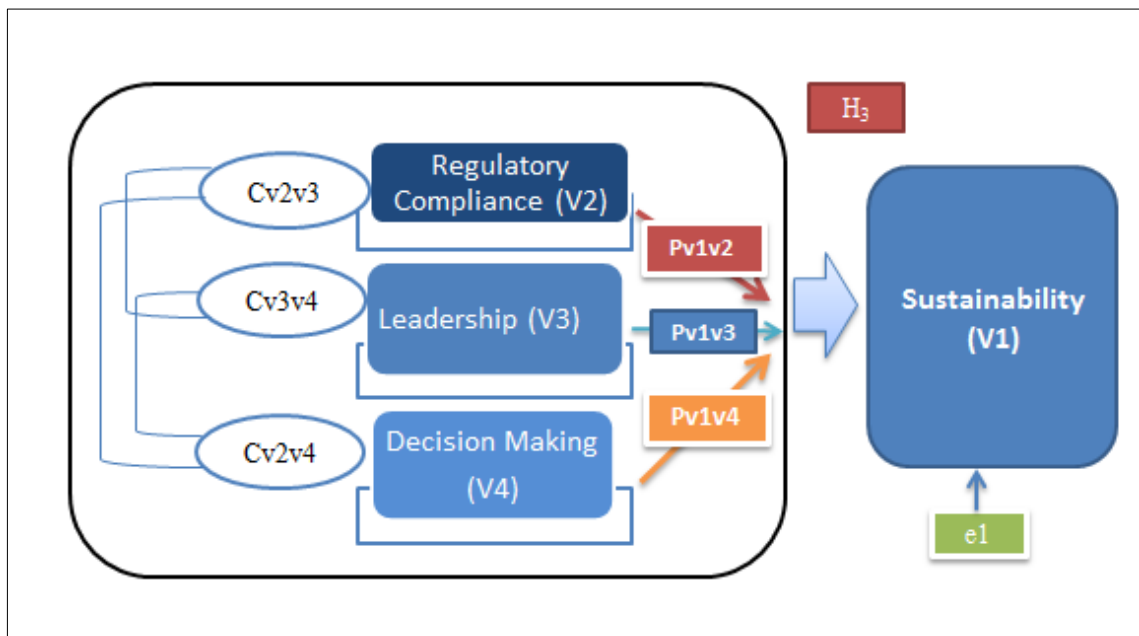
CHAPTER 6: DISCUSSION OF RESULTS

The aim of this research study is to understand the influence of procurement rules and legislation on achieving sustainable development objectives through the lenses of stakeholder and leadership theories. The results of the study were presented in Chapter Five. Chapter Six interprets the results that were presented in light of the insights that were shared by the literature reviewed in Chapter Two.

The results are discussed in the order of the research questions in Chapter Three of this report.

It is important to highlight that primary data for this research study was collected from procurement and supply chain management practitioners that hold different levels of management positions in organisations across various industries that operate within the public and the private sector. The 247 respondents offered different views which provided a broader perspective required to understand sustainable procurement practices that are adopted within organisations.

6.1 Research Question One

Does regulation influence the adoption of sustainable procurement by organisations?

The first research question sought to assess the perceptions of the respondents on the impact of regulation and the influence on sustainable procurement objectives in the absence of other influencing factors. Figure 22 depicts a summary of the opinions of the respondents with regard to the impact of regulatory compliance standards on the sustainability objectives, including improved spend with local suppliers, Black owned suppliers and small enterprises.

Figure 22: Summary of survey responses relating to regulatory compliance
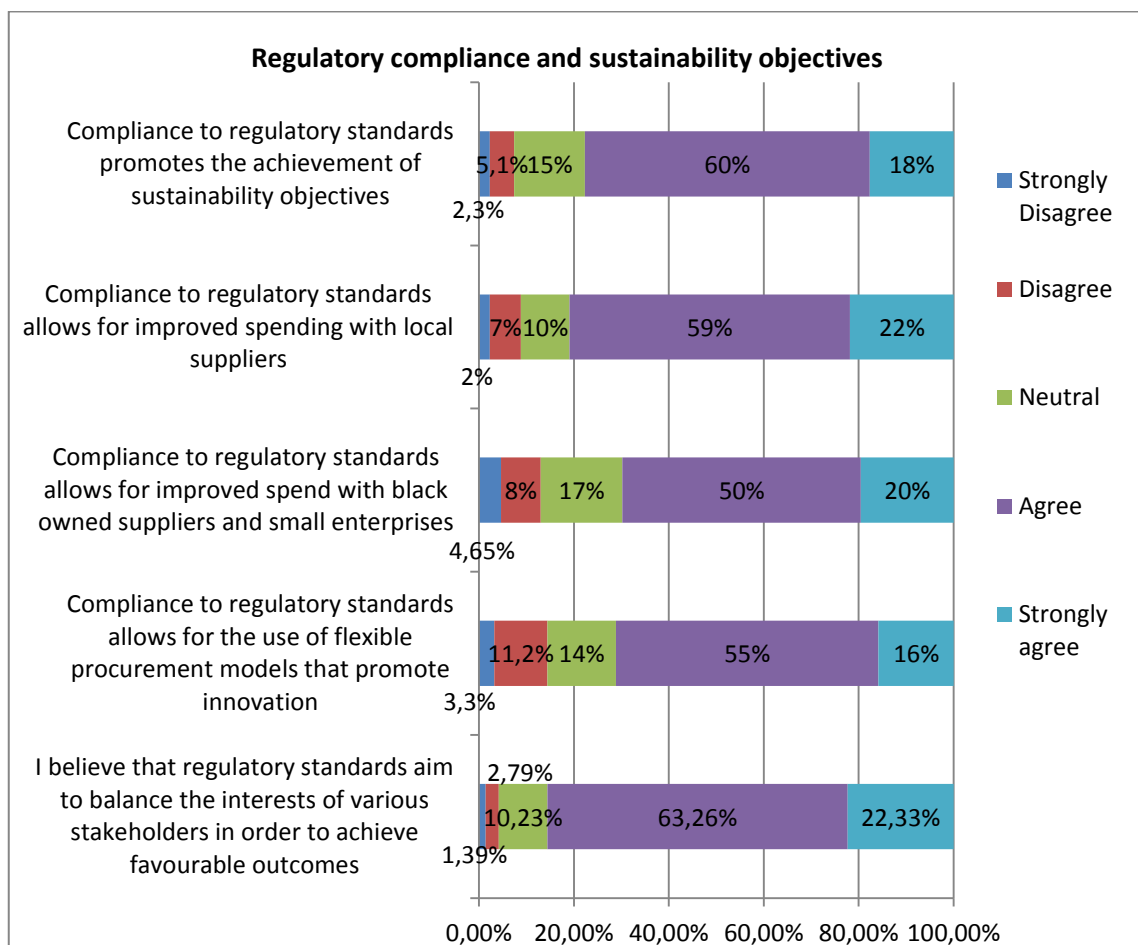
6.2.1 Interpretation of results

The hypothesized association between regulation and sustainable procurement was depicted in Figure 13, while Table 7 provided the outcome of the statistical tests that was performed on the data using SAS®. The findings in Table 7 indicate that there is a significant relationship that exists between regulatory compliance and sustainable procurement. It was also observed that regulation has a positive influence on the adoption of sustainable procurement by organisations.

With regard to the opinions provided by the respondents in Figure 22, it is interesting to note that the majority of the respondents (more than 70%) believe that compliance to regulatory standards promotes the achievement of sustainability objectives and the introduction of flexible procurement models that promote innovation. It was also observed that more than 85% of the respondents felt that regulatory standards are a means to balance the interest of various stakeholders.

Research has shown that various forms of stakeholder pressure, including regulatory compliance, play a key role in developing awareness and the adoption of sustainability practices in the area of procurement and supply chain management (Meixell & Luoma, 2015). The authors, in their study, found that regulation appeared in more than 60% of the articles reviewed and that external stakeholder pressure has an influence on sustainable procurement practices that are adopted by organisations.

Hoejmose & Adrien-Kirby, (2012) also found that external pressure from government, specifically legislation, is a key contributor to the adoption of sustainable procurement by organisations. The authors further confirmed that the organisation that embraces sustainable procurement practices responds in reaction to external pressure and that internal support structures serve as enhancers that augment the adoption process.

It is important to note that Ferri et al. (2014) cautioned that the regulation should promote a conducive environment for driving sustainability objectives.

6.2.2 Conclusion to Research Question One

In light of the data analysis observed and the arguments from existing research, this study has confirmed that regulatory compliance has a significant relationship and is a key contributor that influences the adoption and achievement of sustainability objectives within procurement. The findings therefore answer Research Question One that regulatory compliance influences sustainable procurement.

6.2 Research Question Two

To what extent have organisations within the public and the private sector adopted sustainable procurement practices?

The second research question sought to understand the practices that have been adopted in procurement processes of organisations operating within the private and the public sector.

Figure 23 is a graphical representation of the existing top eight business practices within the organisations. The business practices include the setting of sustainability objectives at a corporate level, bid documents and supplier agreements that promote sustainable procurement objectives, sourcing from local suppliers and small enterprises and green procurement.

Figure 23: Summary of responses for sustainable procurement practices
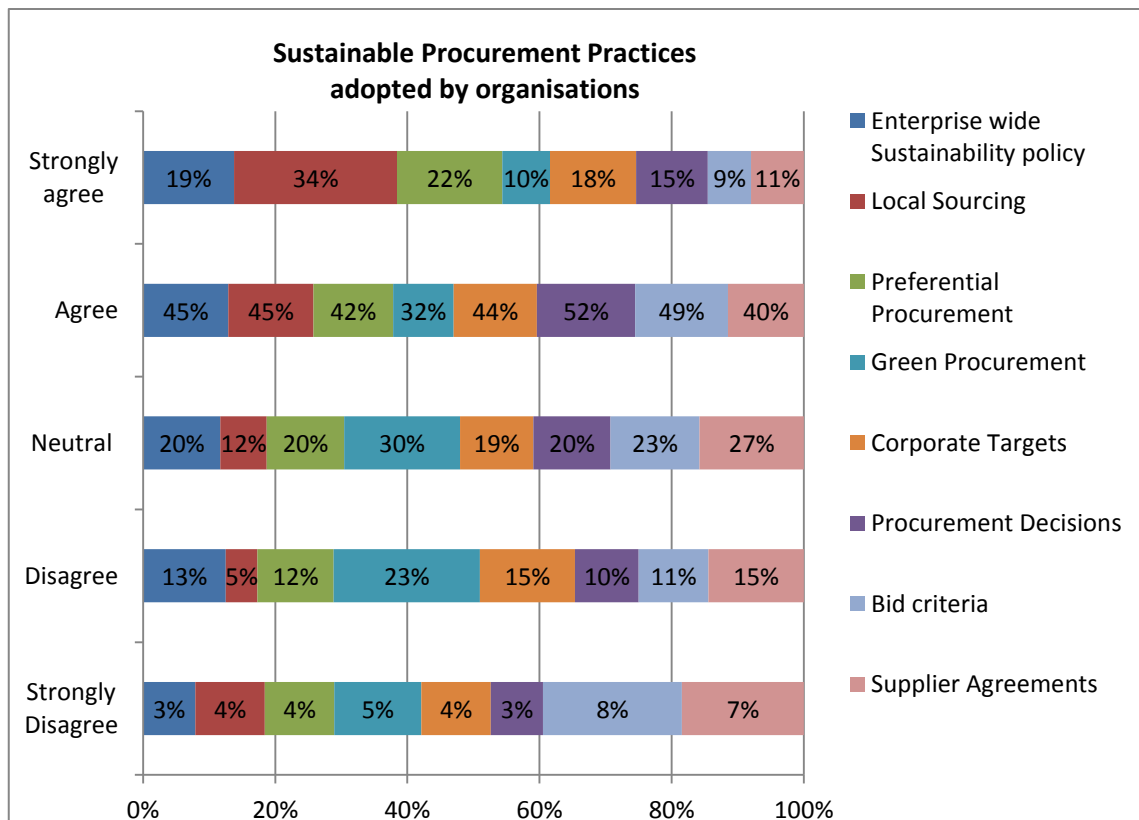
6.2.1 Interpretation of results

It is interesting to note the spread across the various industries, both in the public and the private sectors, as depicted in Figure12. The highlights from the results depicted in Figure 23 indicate the following:

- More than 60% of the respondents have an enterprise wide sustainability policy
- Almost 80% of the respondents have embraced sourcing from local suppliers
- More than 60% of the respondents are aware of sustainability objectives that are set at a corporate level
- Almost 70% of the procurement decisions incorporate aspects of sustainability objectives
- Less than 55% of the respondents promote the procurement of green and environmentally friendly products

Table 9 provides the results of the statistical tests that were run on the data to understand the perceptions of the respondents on how well the respective organisations have embraced sustainable procurement in their business practices and the extent to which processes were attuned to the phenomena.

The results in Table 10 further indicate that the majority of the respondents provided responses that confirmed that their respective organisations had implemented sustainability objectives within their procurement environment.

Beske & Seuring (2014) suggested that organisations that pursue sustainability objectives and integrate the practices in the processes stand to gain competitive advantage in the market in order to be considered as progressive providers that are preferred over their competitors. Silvestre (2015) argued that the adoption of sustainable procurement by organisation depends on the context of the business environment within which the organisation operates.

Meehan & Bryde (2015), in their study, however, found a low prevalence of sustainable procurement practices that were adopted by organisations. The authors found that although the organisations had implemented procurement policies, their practices largely tended towards green procurement and the environment rather than increasing the impact on socio-economic objectives.

In this research study, it was observed that there is an increased awareness of sustainable procurement business practices by organisations which includes driving sustainability objectives as part of the corporate targets

6.2.2   Conclusion to Research Question Two

The study has showed that a large proportion of organisations that operate in the public and private sector have adopted sustainable procurement into their business practices. It was observed that the majority of the respondents reported to be accustomed to progressive procurement policies that promoted socio-economic objectives while only a small percentage had responded favourably towards green procurement practices.

The findings and the theory suggest that the majority of organisations in the private and public sector have adopted sustainability objectives in their respective procurement environments in order to gain legitimacy and the licence to operate in the current business context. This finding is aligned to the research by Ambe and Badenhorst-Weiss (2012), who purported that procurement is an important policy tool that is adopted in South Africa to advance government policy objectives and to redress the imbalances of the past, given the history of our economic landscape.
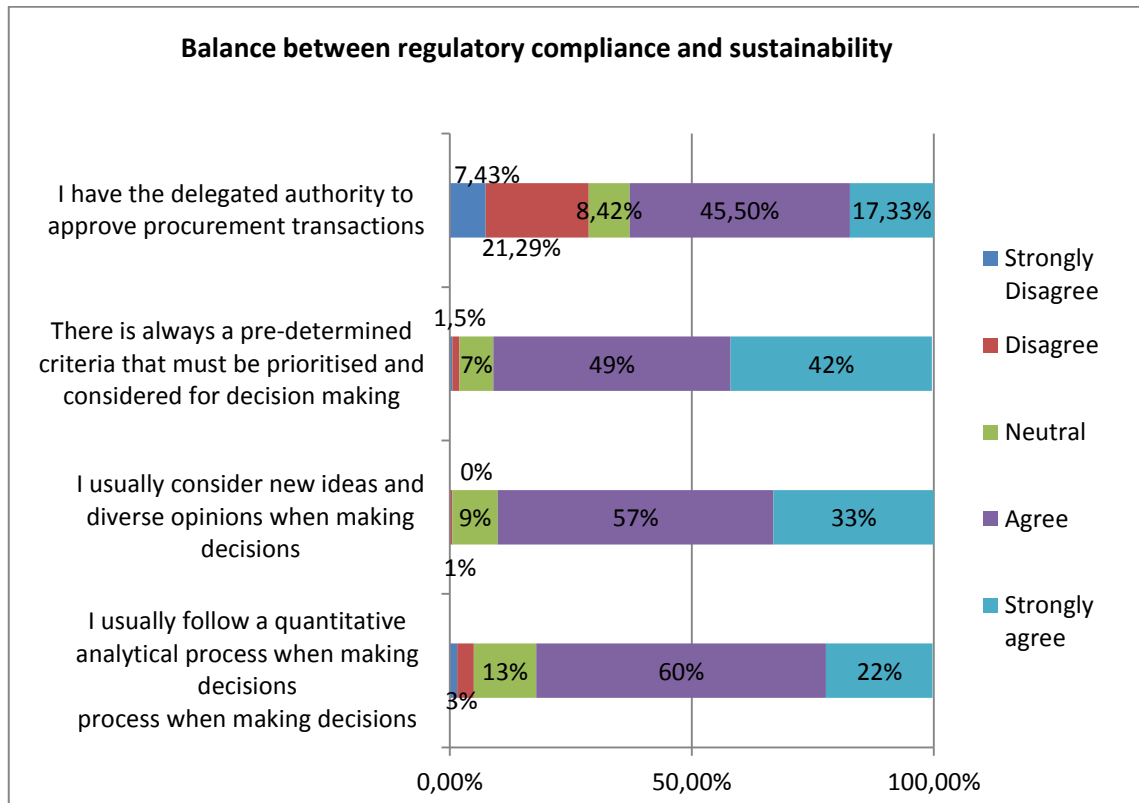
6.3 Research Question Three

How do supply chain management and procurement practitioners balance social, economic and environmental considerations in the decision-making process?

Research Question Three was used to reflect on the decision-making processes that are followed by procurement and supply chain management practitioners in their pursuit to achieve sustainability objectives while adhering to regulatory compliance. It was also important to understand whether there are differences between the decision-making processes that are followed by organisations in the public sector and the private sector and the impact with regard to the achievement of sustainability objectives

The results of the statistical procedure that was conducted to test the hypothesised relationship between regulatory compliance and decision-making within the public sector are presented in Tables 12A whilst the results for the hypothesised relationship are presented in Table 12B. Table 12C provides a summary of the situational analysis in both sectors, while **Figure 24** presents a summary of the perceptions of the respondents towards the decisions that are approved within the organisations in relation to the achievement sustainable procurement objectives.

Figure 24: Summary of responses relating to decision-making processes

Balance between regulatory compliance and sustainability

Legend:
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly agree

I have the delegated authority to approve procurement transactions: 7,43% | 21,29% | 8,42% | 45,50% | 17,33%

There is always a pre-determined criteria that must be prioritised and considered for decision making: 1,5% | 7% | 49% | 42%

I usually consider new ideas and diverse opinions when making decisions: 0% | 9% | 57% | 33%

I usually follow a quantitative analytical process when making decisions process when making decisions: 1% | 3% | 13% | 60% | 22%

6.3.1   Interpretation of results

It was observed in the graphical representation of the perceptions around decision-making that are presented in Figure 24 indicate that more than 60% of the respondents are authorised to approve procurement transactions and the selection of suppliers. It is interesting to note that more than 90% of the respondents confirmed that there is always pre-determined criteria that they apply to guide decisions around sustainable procurement and that they were predisposed to considering diverse opinions in the process which is a characteristic that is found in a typical procurement environment. It was also observed that more than 80% confirmed that their decision-making processes are based on measurable analytical techniques.

The results in Table 12A indicate that there is a significant relationship that exists in the public sector, however the strength of the relationship is weak to confirm the influence on sustainability objectives. It was observed that there is also a significant relationship that exists in the private sector, however what is interesting is that the influence is greater in the private sector compared to the public sector.

Adam et al. (2012) suggested that one of the key principles that is important to the decision-making process should be that individuals that are involved in the process should, at a bare minimum, be authorised to make decisions that are based on relevant considerations. The authors found that whilst there maybe differences between decisions that are made in the public sector when compared to those in the private sector, procurement practitioners in both areas generally have to balance the interests on competing stakeholders which may result in trade-offs.

Theodorakopoulos et al. (2015) posited that though public and private organisations are governed by different regulatory requirements, the decisions that are aimed at promoting inclusive procurement were subjected to some form of institutional structure that guides the objectives of the organisation and at least sought to address the needs of various stakeholders. Kaufmann et Al. (2012) found that it is preferable that decisions in the supply chain and procurement environment follow rational and analytical methods, instead of subjective and random approaches. The authors posited that supplier selection processes that consider cross-functional and diverse opinions offer more transparency and are acceptable across various user departments within organisations.

6.3.2　Conclusion of Research Question Three

In conclusion, this study indicated that there is a significant relationship between decision-making processes that are followed by organisations to consider sustainable procurement objectives. It was observed that though this relationship is weak, there is a difference between the impact that is achieved by the private sector versus the impact by the public sector. It was found that the data further indicated that decision making processes are supported by analytical considerations that are objective and are aligned to pre-determined criteria. The research supports the findings and suggests that, in pursuit of balancing the interests of diverse stakeholders, there is a higher acceptance level by users when those decision—making processes are transparent and logical.

6.4　Research Question Four

Do leadership traits influence the adoption of sustainable procurement practices?

Research Question Four was used to understand whether there are particular qualities and behaviours that are exhibited by responsible leaders in a sustainable procurement context.

Figure 25 is a graphical representation of the perceptions of the respondents with regard to behaviours that are exhibited by leaders around sustainable procurement.

Figure 25: Summary of responses relating to leadership behaviours
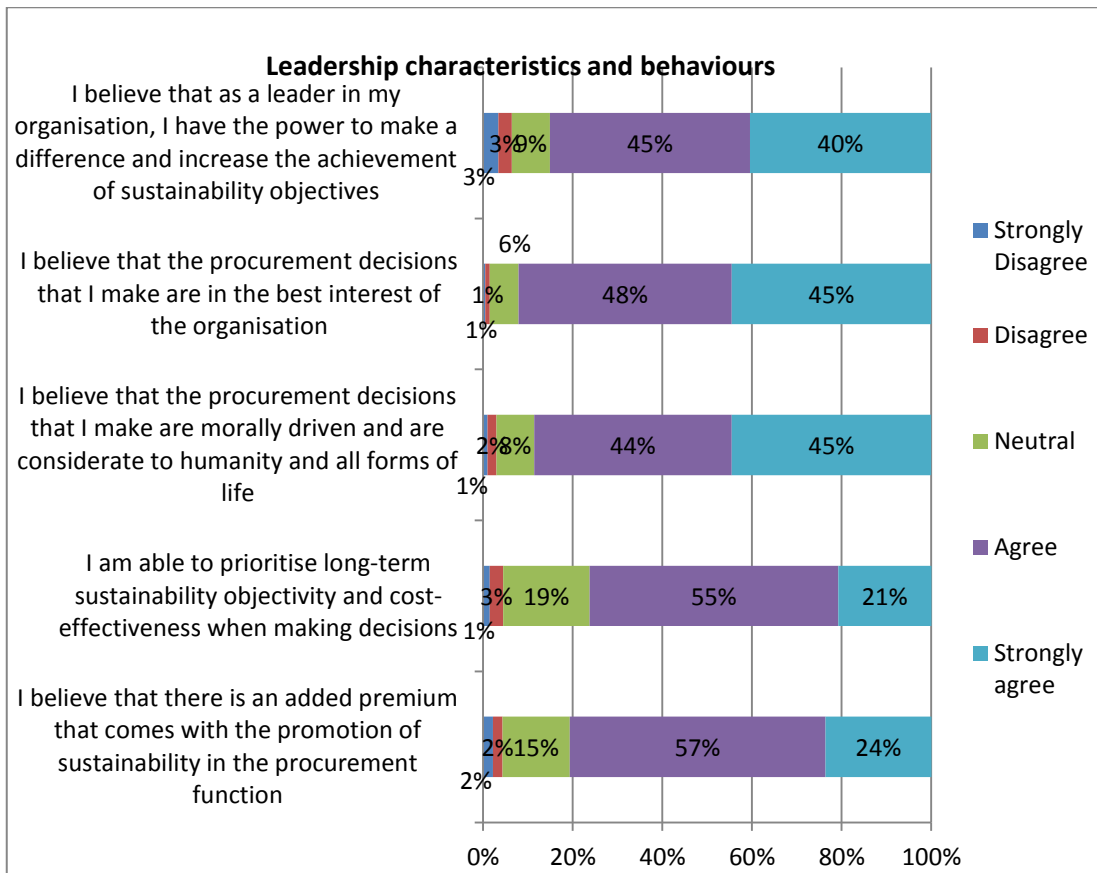
6.4.1 Interpretation of results

It was observed that 85% of the respondents believed that they have the power to make a difference in their respective organisations towards the advancement of sustainability objectives while almost 90% of the respondents believed that the decisions that they make are morally driven towards preservation of humanity and all forms of life. The results generally indicated that more than 70% of the respondents were inclined towards considering long term objectivity in support of advancing sustainable procurement objectives.

The results in Table 13 show that there is a significant relationship that exists between behaviours exhibited by leaders and the adoption of sustainable procurement. Though this relationship is significant, the results indicate that the strength of the relationship is weak to confirm the influence in this regard.

Christensen et al. (2014) posited that although the ideology of sustainability largely revolves around the impact that is made by organisations, it is ultimately the actions of individuals that create, lead, support and drive sustainability strategy and initiatives that contribute to the bigger picture. It was therefore important in this research study to understand the influence of the individual behaviours with regard to the adoption of sustainability within organisations.

The authors found that the leader's positive attitude with regard to concern about the welfare of others, self-judgment, moral perceptions, and the need to do the right thing, tends to inspire others to have a positive attitude towards corporate social responsibility. Stahl & de Luque (2014) also observed that those who practice and foster values that are selfless are likely to endorse decisions and actions that benefit the greater good of the society and the environment. The authors suggested that responsible leaders are usually those leaders that are inclined to consider taking intentional actions that will advance sustainability objectives, while Figure 6 distinctively indicates that responsible leadership behaviour exists within the institutional and the situational environmental context within which organisations operate which would contribute to the effectiveness of leadership behaviour in driving sustainability.

6.4.2   Conclusion to Research Question Four

Based on the data and the research study, it is concluded that traits exhibited by leaders have an influence on the leadership behaviours that are ultimately exhibited towards the advancement of sustainability objectives. The research study suggests that though this is the case, in order for the leadership behaviour to be effect in driving sustainable objectives, the organisational climate should be conducive to support the contributions by leaders.

6.5 Hypotheses Testing

The statistical analysis conducted in Chapter Five aimed to test the overarching hypotheses which were identified in relation to the literature reviewed. The hypotheses that were set out have been outlined and the results of the tests are discussed below.

6.5.1 Hypothesis One

Hypothesis one was set out as follows:

H1: $\rho = 0$, There is no association between a highly regulated procurement environment and the successful adoption of sustainable procurement

The results of the test are presented in Table 17 and Table 18.

6.5.1.1 Interpretation of results

It must be noted that Hypothesis one was formulated in order to understand the associated influence between regulation and sustainability within procurement, the factor was further segmented into internal policy and external regulation in Figure 19. This hypothesis was based on the associations that were inferred in Research Question One.

Since the findings in Research One have confirmed that regulation influences the adoption of sustainable procurement, the findings in Table 17 also confirmed that there is a significant relationship between the identified variables which implies that the two, internal and external regulation, collectively drive the adoption of sustainable procurement practices by organisations. It was observed that the empirical research study highlighted that internal policy has a significantly higher relationship with sustainable procurement when compared to external regulation.

Theodorakopoulos, et al. (2015) found that regulations offer organisations legitimacy to operate as they provide enforceable mechanisms and sanctions in order to drive sustainability objectives. The authors also found that internal organisational processes and procedures, in addition to regulation, serve as institutional structures that guide relationships, behaviour and practices within procurement.

6.5.1.2 Conclusion to Hypothesis One

The research study has showed that internal organizational policy has a greater impact on sustainable procurement which can be attributed to the fact that internal policy, which is usually derived from external regulation, serves as context specific rules and guidelines which are aligned, interpreted and are in accordance with the norms, goals and business models of a specific organisation and thus are able to resonate with the organisation.

6.5.2 Hypothesis Two

Hypothesis Two was set out as follows:

H2: $\rho = 0$, Leaders in a highly regulated procurement environment are unable to influence the adoption of sustainable procurement

The results of the test are presented in Table 19.

6.5.2.1 Interpretation of results

It must be noted that Hypothesis Two was formulated in order to understand the associations that were inferred in Research Question Three and Four.

The hypothesized association is depicted in Figure 20, which indicates that in a highly regulated procurement environment, decisions that are made by leaders around sustainability objectives are, to a large extent, guided by stringent and compliance intensive requirements. It was important to understand whether there is room for leaders to manoeuvre and exercise discretion with a view to advancing sustainability objectives where required.

For this purpose, the test focused on whether leadership, decision-making processes and regulatory compliance can work together towards achieving sustainable procurement.

It has been observed that the results that are depicted in Figure 22 showed that a large proportion of the respondents suggested that compliance to regulations allowed for the use of flexible procurement models that can advance innovation and support procurement from small enterprises towards the advancement of sustainability objectives.

It is interesting to note that the results in Figure 24 have showed the majority of respondents indicated that the decision-making processes follow analytical methods which are guided by preset criteria. While this is the case, an overwhelming number of respondents in Figure 25 believed that they have the power to make a difference in their organisations towards advancing sustainability objectives.

Metcalf & Benn (2013) observed that leadership plays a key role in translating complex standards that must be considered in order to adopt and navigate corporate social responsibility within the business environment while considering the interests of competing stakeholders. The authors suggested that leaders are likely to take a broader view that considers humanity and all form of life and translates this back in a manner that can be adapted into the business environment. Stahl & de Luque (2014) suggested that a leader's ability to pursue the advancement of sustainability objectives plays out within the boundaries of an eco-system that consists of the institutional context, organisational rules, stakeholders and situational context.

6.5.2.2   Conclusion of Hypothesis Two

The research study has showed that decisions that are made by leaders in relation to sustainable procurement objectives occur within the boundaries of the institutional context consisting of organisational policies that require adherence to regulatory compliance. While this is the case, the research has confirmed that leaders play a key role in interpreting and adapting these requirements into outcomes that consider broader views, including the situational contexts and competing interests of diverse stakeholders. Based on the above, it is concluded that leaders that operate in a highly

regulated procurement environment are able to play a key role in influencing the achievement of sustainability objectives.

6.5.3   Hypothesis Three

Hypothesis Three was set out as follows

H3: $\rho = 0$, The interaction between the identified research themes is NOT significant to influence the successful adoption of sustainable procurement

Hypothesis Three was formulated as a platform to understand how the research themes that were identified in this study, namely regulatory compliance, leadership and decision-making processes within organisations interact and work together towards facilitating the successful adoption of sustainable procurement. To this end, the test was set out to understand which of the identified research themes has the most influence on sustainability. The results of the statistical test that was conducted are presented in Table 20.

6.5.3.1   Interpretation of results

It was observed that the results in Table 20 show that the covariances between the factors are positive and significant. This implies that the factors assist each other in driving sustainability. It is interesting to note that though decision-making processes on their own, reported an insignificant relationship, the interaction between decision-making processes and leadership is significant in driving sustainability.

The results further reported the highest covariance between leadership and compliance whilst indicating that regulatory compliance has the highest significant relationship with sustainability when compared to the relationship that exists between leadership and decision-making. It was interesting to note that the r-squared value of 0.61 that was reported in Table 20 is much higher than the r-squared values that were reported in the tests that were conducted on the individual factors in Table 7 and Table 3. These results showed that the collaboration of the factors does result in the improved adoption of sustainable procurement.

Meixell & Luoma (2015), in their study, observed that the impact of various stakeholders in conjuction with the context in which a decision is made within procurement, has an influence on the adoption of sustainable procurement by organisations. Research has shown that government pressure, in the form of regulation, plays a key role in the adoption of sustainable procurement (Hoejmose & Adrien-Kirby, 2012). Lastly, it has been observed that leadership plays a pivotal role in connecting the organisation with the environmental context within which the mechanics of sustainable procurement unfold (Metcalf & Benn, 2013).

6.5.3.2 Conclusion of Hypothesis Three

The research study has shown that it has been observed that the adoption of sustainable procurement is a function of the combination of various factors that work together. It was also observed that the combination of the three factors presented an improved r-squared value which confirmed the strength of the relationship that exists between the factors. Research has further confirmed the influence of the three identified factors; regulatory compliance, decision-making process and leadership, on the adoption of sustainable practices by organisations.

6.6 Concluding remarks

In this chapter, the research questions that were posed and the hypotheses that were formulated in Chapter Three were discussed in view of the literature that was discussed in Chapter Two. This chapter also sought to interpret the results that were presented in Chapter Five in relation to the research objectives that were set in Chapter One through the lens of the respondents who provided different perspectives around the adoption of sustainable procurement by organisations.

CHAPTER 7: CONCLUSION

7.1   Introduction

This research study set out to understand the role and influence of regulatory compliance on the adoption of sustainable procurement practices by organisations. The aim of the study was to assess the impact of pressure exerted by regulatory compliance and to assess whether leaders that consider procurement decisions in highly regulated procurement environments are able to balance this pressure and the interests of various stakeholders around social, economic and environmental considerations.

The literature reviewed identified four main research themes; sustainability, regulatory compliance, leadership and decision-making. These informed the four research questions that were formulated while the three hypotheses that were set out were based on the associations that were observed from the research questions. Confirmatory factor analysis and structural equation modeling were the main statistical techniques that were used to test the raw data that was collected from 247 procurement and sustainability practitioners within different levels of management in the private and the public sector.

This chapter presents the main findings of the research study and provides recommendations for future research, organisations, managers and practitioners.

7.2   Summary of Findings

Regulatory compliance has a significant relationship with sustainability and has an influence on the adoption of sustainable procurement objectives by organisations. To this end, the results of the hypotheses testing also revealed that internal organisational policies drive better sustainable procurement practices when compared to external regulations. It is believed that this new insight is attributed to the inherent alignment between internal policies, the corporate strategies and norms of the organisation which are adapted to resonate with the business environment and culture.

It was also observed that leaders in a highly regulated environment are able to influence the adoption and achievement of sustainability objectives where required, as they are able to contextualise stakeholder requirements and apply a broader view that can be translated back into the requirements that are compliant.

It was also interesting to note that while a large proportion of the practitioners followed rational analytical based methods in the decision-making processes, the majority of the respondents believed that they have the power to influence and advance the achievement of sustainability objectives within organisations.

The study revealed that the interaction of the identified research themes, namely, decision making, regulatory compliance and leadership work together to drive sustainable procurement. It was also observed that the research themes have varying influence on sustainability where the structural equation modeling indicated that the influence of regulatory compliance on sustainability is almost higher than that of leadership. This new insight was particularly intriguing as the researcher observed the emergence of a model which was derived from the structural equation model that was used to test the associations that were hypothesised by the researcher.

This model is depicted in Figure 26 and shows the relationship between regulatory compliance and sustainability in a procurement context.

**Figure 26: Regulatory Compliance and Sustainability in Procurement model**
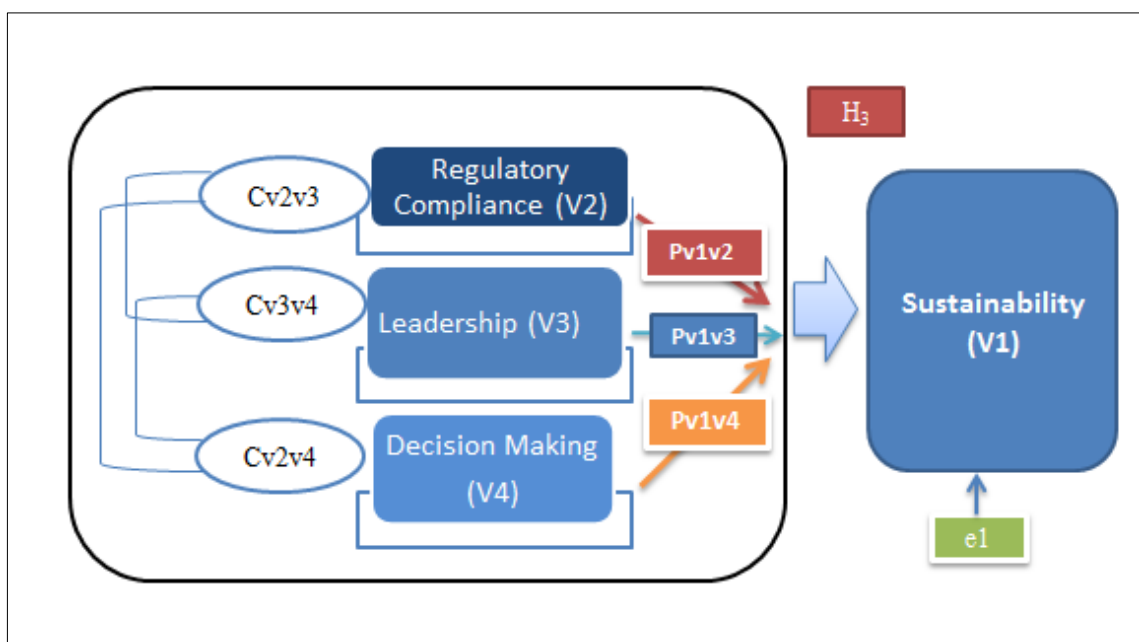
The model illustrates that the adoption of sustainable procurement is a function of the regulatory compliance to rules that guide the organisation, the leaders that link the external environment with the organisation as well as the decisions that relate to social, economic and environmental considerations within the procurement process.

It was observed that the sustainable procurement model can be related to the research study literature surveyed in Chapter 2 which indicates that responsible leadership behaviour exists within the institutional and the situational environmental context within which organisations operate (Stahl & de Luque, 2014). The link between the two models was discussed in Chapter 6. To this end, the researcher suggests that the elements that are required for responsible leadership behaviour are similar to the elements that are required for organisations to adopt responsible procurement behaviour. The model that has emerged from the findings of this research study is captured in Figure 27 and is explained in detail in the next section.

7.3   A model to guide the adoption of sustainable procurement

The empirical findings of the research study indicated that the collaboration of the main research themes has an influence on the adoption of sustainable procurement within organisations. The interaction of the three factors was integrated into a model which is depicted in Figure 27.

Figure 27: Model for adoption of sustainable procurement
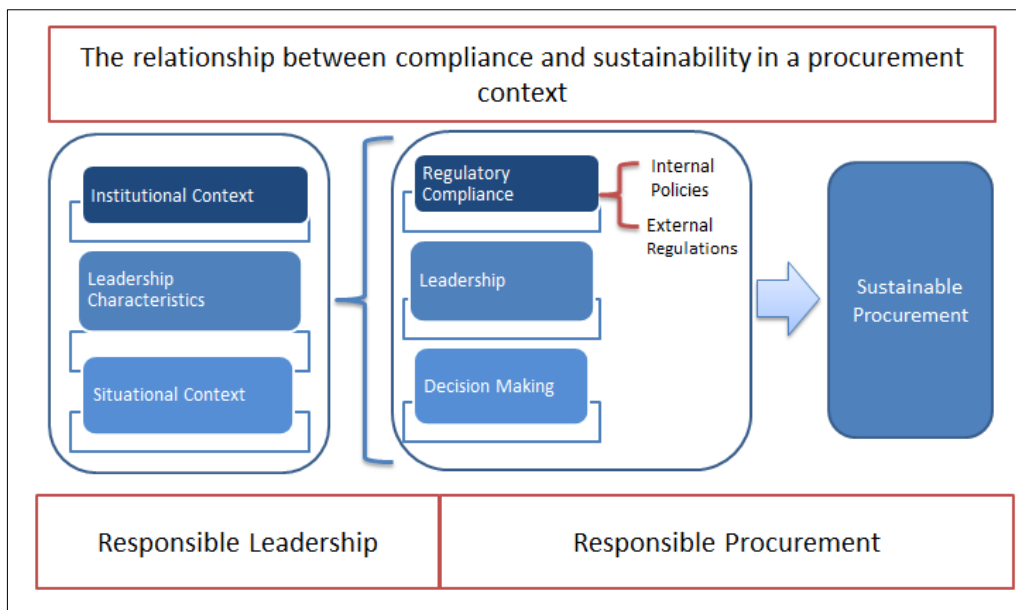
The model consists of three sections where the first section indicates a link to the institutional context, leadership characteristics and situational context which are precursors for responsible leadership behaviour (Stahl & de Luque, 2014). The second section indicates the three research themes from this study, namely regulatory compliance, leadership and decision-making; which interact to influence the adoption of sustainable procurement. Further to this, it must be noted that the second section also highlights that regulatory compliance consists of internal policies and external regulation. Lastly the arrow indicates that the interaction of the research themes influences the adoption of sustainable procurement.

7.4   Contributions to Research

It is believed that this research study contributes to existing literature as follows:

Firstly, it contributes to existing research study around the adoption of sustainable procurement. Secondly, the empirical research that was conducted has confirmed that regulatory compliance influences the adoption of sustainable procurement by organisations while adding to the existing body of knowledge by indicating that internal policies have a higher influence on the adoption of sustainable procurement. This new insight implies that internal policies can drive better sustainable procurement practices as they are adapted to resonate with the business environment and culture. Lastly, this research study has been able to use the lenses from various areas of research to develop a model that has shown a link between responsible leadership and sustainable procurement theories.

7.5   Limitations of Research

The following limitations should be noted:
- The impact of sustainable procurement on the overall performance of organisations was beyond the scope of this study
- The research sample may not be representative of the entire population as purposive sampling was used for this study. It is noted that membership to the procurement professional body which the majority of the respondents were affiliated to, is not compulsory for procurement and supply chain management practitioners

- The research study does not look at the impact of supplier relationships on sustainable procurement
- The leadership lens does not extend to leader-follower relationships which may be an element that influences the adoption of sustainable development

7.6   Managerial Implications

7.6.1   Recommendations for regulators

The findings of this study have shown that regulatory compliance contributes to business decisions that ultimately contribute towards advancement of social, economic and environmental considerations. To this end, regulators should endeavour to create an enabling regulatory environment through progressive prescripts that guide inclusive development by business and government.

7.6.2   Recommendations for organisations

To reiterate, the private and the public sector have a role to play in advancing social, economic and environmental considerations through the day-to-day business activities. The procurement function cuts across various business requirements that are key to the functioning of the organisation. To this end, organisations should realise that beyond the compliance lens that is often used to look at the role of procurement lies a key proposition to deliver and enhance the impact on development outcomes.

7.6.3   Recommendations for managers

The findings of this research study have provided a model that may be used as a map that can guide managers in the process towards adopting sustainable procurement practices. To this end it is recommended that, organisations should aim to implement and drive internal policies that consider compliance whilst offering flexible models for advancing sustainability objectives. Last, but not least, this research study has highlighted the important role that is played by leaders in the adoption of sustainable procurement within the organisation. It is recommended that managers in their interactions with various stakeholders should aim to interpret sustainability objectives to users and translate it in a manner that is cognizant of compliance requirements.

7.7 Suggestions for future research

This research study showed that a large proportion of the respondents have adopted sustainable procurement practices within the organisations. Future research may consider interpreting the findings of this research study in relation to legitimacy theory in order to understand the motivation that drives organisations to voluntarily adopt sustainable procurement practices.

The research study has shown that leadership behaviour plays a role in the conversations around sustainable procurement. It would be interesting for future research to use empirical evidence that includes the attributes of responsible leadership and test the relationship between responsible leadership and responsible procurement.

Lastly, the focus of the research study was focus on the themes that the researcher identified in the literature. Future research may consider a study to develop indicators and metrics for sustainable procurement in order to assist organisations to track and report performance.

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APPENDICES

APPENDIX A: SURVEY COVER LETTER

Research study: The relationship between compliance and sustainability in procurement

Good day,

The purpose of this survey is to understand the impact of legislation on achieving sustainability objectives. The study specifically focuses on the role of sustainability managers and procurement managers as change agents that drive the corporate sustainability agenda and influence the impact of sustainable development in organisations. The procurement and supply management profession is increasingly being called upon to **contribute to broader organisational goals of sustainable development such as economic empowerment of suppliers and sustainable development through the inclusion of social and environmental criteria within procurement processes.**

The benefit of this study will depend on the honesty of your responses. It should take no more than 15 minutes of your time. Your participation is voluntary and you can withdraw at any time without penalty. All data will be kept confidential. By completing the survey, you indicate that you voluntarily participate in this research. If you have any concerns, please contact my supervisor or me.

Our details are provided below.

Researcher :	**Research Supervisor**:
Faith Mashele	Mahendra Dedasaniya
Email letshegom@yahoo.com	**Email** patelmahendra9@yahoo.co.in

The survey is available online using this link

https://www.surveymonkey.com/r/ZHPM85G

Thank you for your participation.

Yours sincerely,

Faith Mashele

APPENDIX B: SURVEY QUESTIONNAIRE

The relationship between sustainability and compliance in procurement

SECTION A: PERSONAL QUESTIONS

* 1. What is your gender?

○ Female

○ Male

* 2. What is your job role?

○ Executive director/ Executive Committee Member

○ Procurement/Supply Chain/Sourcing Manager

○ Procurement/Supply Chain Team Member

○ Contracts Manager

○ Sustainability Manager

○ Other

* 3. WHICH BUSINESS SECTOR DOES YOUR ORGANISATION OPERATE IN?

○ Private Sector

○ Public Sector

* 4. WHICH INDUSTRY DOES YOUR ORGANISATION OPERATE IN?

○ BANKING AND FINANCE

○ INFRASTRUCTURE

○ INFORMATION TECHNOLOGY

○ MANAGEMENT CONSULTING

○ MINING

○ PETROCHEMICALS

○ RETAIL

○ OTHER

* 5. WHICH OF THE FOLLOWING PRACTICES HAVE BEEN ADOPTED IN YOUR ORGANISATION?
You may choose more than two options from the list below

☐ Sourcing from **local suppliers**

☐ Sourcing from **Black owned suppliers**

☐ Sourcing of **green or environmentally friendly products**

☐ Sourcing from **Youth Owned** Suppliers

☐ Practices that **conserve natural resources and recycling of waste material**

☐ Practices that **promote energy efficiency and water conservation**

* 6. WHAT IS THE TOTAL YEARS OF WORK EXPERIENCE - THAT YOU HAVE BEEN INVOLVED IN PROCUREMENT PROJECTS?

○ 0 to 5 years

○ 5 to 10 years

○ 10 to 15 years

○ 15 to 20 years

○ Over 20 years

SECTION B: GENERAL QUESTIONS

This section contains statements that relate to your personal views on the adoption of sustainable procurement within your organisation

Please choose your selected answer on a scale of 1 - 5, where 5 is "strongly agree " and 1 is "strongly disagree. Please answer all sub questions under each section.

* 1. I understand how the subject of sustainability affects the procurement processes in my organisation

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 2. There has been an increase in awareness around sustainability within the procurement function

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 3. I have received training relating to sustainability within the procurement function

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 4. I believe that there is an added premium that comes with the promotion of sustainability in the procurement function

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 5. I believe that as a leader in my organisation, I have the power to make a difference and increase the achievement of sustainability objectives

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

SECTION C: THE REGULATORY ENVIRONMENT

This section contains statements that relate to the regulatory environment that governs the procurement function within your organisation

Please choose your selected answer on a scale of 1 - 5, where 5 is "strongly agree " and 1 is "strongly disagree. Please answer all sub questions under each section.

* 1. My organisation operates in a highly regulated procurement environment

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 2. My organisation has an enterprise wide policy that promotes sustainability

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 3. My organisation has a policy that promotes procurement from local suppliers

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 4. My organisation has a policy for applying preference to suppliers that meet sustainability objectives i.e. social and environmental objectives in the procurement process

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 5. My organisation has a policy that gives preference for sourcing of green and environmentally products

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 6. I believe that regulatory standards aim to balance the interests of various stakeholders in order to achieve favourable outcomes

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 7. Compliance to regulatory standards allows for the use of flexible procurement models that promote innovation

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 8. Compliance to regulatory standards allows for improved spending with local suppliers

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 9. Compliance to regulatory standards allows for improved spend with black owned suppliers and small enterprises

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 10. Compliance to regulatory standards promotes the achievement of sustainability objectives

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 11. It has been easy for my organisation to influence consultations before changes to regulatory standards are introduced

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

The relationship between sustainability and compliance in procurement

SECTION D: SUSTAINABLE PROCUREMENT PRACTICES

This section contains statements that relate to the sustainability practices that are adopted within your organisation

Please choose your selected answer on a scale of 1 - 5, where 5 is "strongly agree" and 1 is "strongly disagree. Please answer all sub questions under each section.

* 1. Sustainability has had an increasing influence on my organization's procurement decisions

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 2. My organisation has set corporate targets for the achievement of sustainability and environmentally friendly practices

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 3. Our senior management team supports the subject of sustainability in the organisation

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 4. Sustainability comes with many challenges but it should be handled with the support of senior management team

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 5. Our internal and external clients understand the need to promote sustainability in the organisation

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 6. Our staff members have received training on the impact of sustainability on procurement processes

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 7. We have made our suppliers aware of our sustainable procurement policy and practices

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 8. My organization favours suppliers that rate highly on sustainability during the tender process

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 9. My organization specifies criteria to promote social objectives and environmentally friendly products in bid documents

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 10. My organization specifies criteria for social objectives and green and environmentally friendly products in our supplier agreements

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 11. It is easy for our internal and external clients to incorporate social and environmental objectives in bid specifications

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 12. There is an opportunity to partner and collaborate with our suppliers in order to deliver greater societal impact

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

SECTION F: DECISION MAKING PROCESSES

This section contains statements that relate to the processes that you follow when making procurement decisions

Please choose your selected answer on a scale of 1 - 5, where 5 is "strongly agree " and 1 is "strongly disagree. Please answer all sub questions under each section.

* 1. I have the delegated authority to approve purchase transactions

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 2. I believe that the procurement decisions that I make are in the best interest of the organisation

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 3. I believe that the procurement decisions that I make are morally driven and are considerate to humanity and all forms of life

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 4. There is always a pre-determined criteria that must be prioritised and considered for decision making

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 5. I believe that there are trade-offs that have to be made when considering requirements that promote sustainability versus conventional or traditional requirements

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 6. I usually consider new ideas and diverse opinions when making decisions

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 7. I usually follow a quantitative analytical process when making decisions

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 8. I have experienced that there are certain QUALITY risks in facilitating sustainability projects or requirements

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 9. I am able to prioritise long-term sustainability objectivity and cost-effectiveness when making decisions

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 10. I have experienced that there are certain TIME risks in facilitating sustainability projects or requirements

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 11. I have experienced that there are certain COST risks in facilitating sustainability projects or requirements

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○

* 12. I consider myself to possess the necessary emotional intelligence to collaborate and interact with others

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
○	○	○	○	○