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The value contribution of sustainable development in the supply chain of the South African healthcare industry

Research Report

By

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

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ABSTRACT

The concept of sustainable development is not new to companies. However, the impact on the supply chain has only in the recent past been brought to the forefront of company reporting. This thesis examines the value that is brought to companies in the healthcare industry supply chain through environmental sustainable development efforts.

Data was gathered in a qualitative method using semi-structured informal interviews. A range of companies/individuals that forms part of the supply chain formed the sample for the study and two groups of respondents were interviewed. Group 1 consisted of companies and group 2 consisted of doctors/patients.

Value creation due to environmental sustainability efforts could not be conclusively proven. A general consensus from the respondents was an acknowledgement that companies and citizens must act in a responsible way towards environmental issues. However company business models for the creation of sustainable supply chains appeared highly subjective, unfocused and often unexpressed that might guide both employees and suppliers.

Given this absence of clear guidelines, performance levels varied and no consistent approached could be discerned across the healthcare industry. Although international standards for reporting and performance measurements exist, most companies turn to the government for guidance and support.

The apparent ‘low impact nature’ of the healthcare sector was a key consideration for efforts, or the lack thereof, with regards to environmental initiatives. A key finding was the perception shared by most respondents that focus for companies in the healthcare supply chain should be on the quality of product and patient care. These core business operations and efforts could not be sacrificed, or attention shifted away from them, even if a sustainable supply chain could make a difference of the firm’s overall environmental footprint.

DECLARATION

I, Nirvishee Rooplall, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Nirvishee Rooplall

Signed at ……

On the …….. day of …… 2013

DEDICATION

To mum and dad who has inspired me to become the person I am today.

To Vishay, for your enduring love, patience and support.

ACKNOWLEDGEMENTS

The following people are acknowledged due to their direct contribution towards this dissertation:

- Professor Terri Carmichael
- Professor Anton Roodt
- Professor Stuart Woolman
- Jennifer Croll

Acknowledgement goes to all interview respondents for sacrificing their time and for giving their opinion, perceptions and knowledge so freely.

A special acknowledge to my husband for his continuous support and understanding, to my parents and parents-in-law for their patience and understanding, to my Manager for allowing me time off work and understanding when certain sacrifices needed to be made and finally to all my friends and work colleagues whose understanding was unexpected and appreciated.

A final acknowledgement to all the people in my life that have inspired me to come this far and do so much.

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1. CHAPTER 1: INTRODUCTION

1.1 Purpose of the study

The purpose of this research is to understand whether sustainable development, in terms of environmental issues, in the supply chain of the healthcare industry adds value to the individual companies, and to determine how this value is added. This relates to Scope 3 carbon emissions. The study will attempt to assess through qualitative means and methodologies whether there is any perceived value added to companies by incorporating scope 3 sustainable development principles in the supply chain focusing on environmental considerations, and in which ways these manifest. This study will not conclusively provide a solution, and will not attempt to quantify the actual value added or removed, but based on sampled research will provide a platform for further studies by providing an insight into the approach of sustainability in the South African healthcare sector.

The study does not attempt to address each scope 3 category individually. This is not the aim of the study. The study refers to supply chain effects which incorporate all scope 3 categories.

1.2 Context of the study

1.2.1 *Introduction*

Environmental change is happening all around us. Companies and citizens of the world need to take responsibility for these changes. Global mean surface temperatures are continuing to rise. This is a direct result of the increase in greenhouse gases (GHG) in the atmosphere, 57% of which is fossil fuel use generated carbon dioxide (IPCC, 2007).

1.2.2 *Regulatory context*

Legislation like the United States proposed Clean Air Act, carbon tax laws in countries like British Columbia, New Zealand and Canada, emissions trading laws that EU (European Union) countries are subject to, and the Climate Change Levy in the United Kingdom, to name but a few; are in place governing certain actions of companies and the public towards the usage and disposal of environmentally adverse products (Ribeiro, Volkery, Pirc-Velkavrh, Vos, & Hoogeveen, 2011). Attention is now being focused on the supply chain and reducing the impact in upstream and downstream operations (Penfield, 2007). Countries, governments, corporates and independent committees are constantly reviewing the requirements for disclosure and environmental considerations.

There are many environmentally related Acts and Bills within South Africa governing waste, biodiversity, and weather. South Africa has however not regulated the extent of greenhouse gas emissions or the reporting and disclosure thereof. The only guidance provided by the government of South Africa is the National Climate Change Response Strategy by the Department of Environmental Affairs and Tourism.

The South African Companies Act, (Republic of South Africa, 2009), applies to profit and non-profit companies alike whether state owned, private, personal liability or public. The purposes of the Act relevant to this study are;

"...a) to promote compliance with the Bill of Rights as provided for in the Constitution, in the application of the company law;" and

"...b) ...encouraging transparency and high standards of corporate governance as appropriate; given the significant role of enterprises within the social and economic life of the nation."

South African companies therefore must ensure that they comply with the Companies Act. This has relevance to environmental disclosure.

1.2.3 *Healthcare context*

The focus has been mostly on the manufacturing industry due to the energy intensive nature of the business. In comparison, the healthcare sector has escaped the level of scrutiny given to the manufacturing industry. The result of this is a lack of sector specific guidelines or data. This therefore creates an uncertainty of the sector impact, and hence the benefits derived.

The private and public healthcare sector in South Africa, although very different in most aspects, uses similar supply chain principles. The South African healthcare sector consists of hospitals, pharmacies, medical centres, medical suppliers, pharmaceutical companies, and service providers in the technical and waste sectors (SouthAfrica.info, 2012).

The companies comprising the major private healthcare (hospital) groups in South Africa are the Netcare group, Mediclinic and Life Healthcare. These hospital groups, as well as the public hospitals all use the same suppliers and service provider networks in the country (SouthAfrica.info, 2012).

The medical supplier network is varied in sectors and different services offerings, and can be categorised into the following broad categories, pharmaceuticals, medical supplies, plant supplies, building/facility management supplies, medical equipment repair service providers, plant repair service providers, medical and general waste disposal companies, etc. Due to this large network, the supply chain of the healthcare industry is a large complex network (SouthAfrica.info, 2012).

1.2.4 *Carbon emissions scope context*

This study specifically relates to scope 3 emissions as defined in section 1.6 as relating to the supply chain.

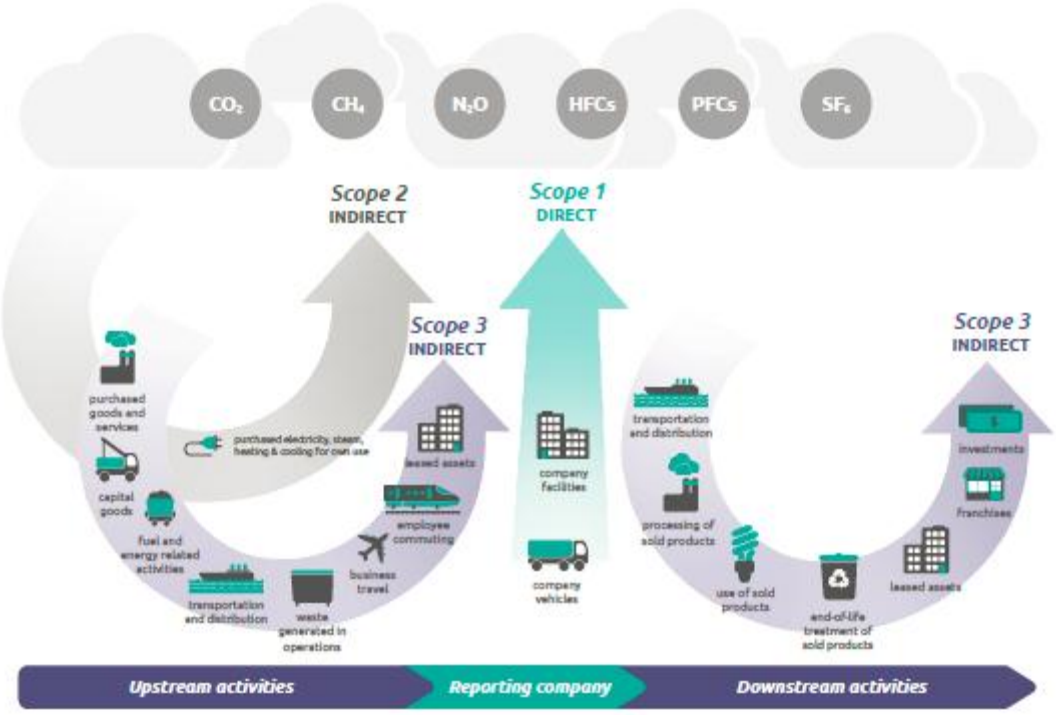

Figure 1 – Overview of GHG protocol scopes and emissions across the value chain

Source: (Bhatia et al., 2011)

Figure 1 depicts the greenhouse gas protocol (GHG) scopes and emissions across the business value chain. Scope 1 emissions are direct emissions and relate to emissions as a result of direct energy generation. Scope 2 emissions are indirect emissions and relate to emissions as a result of a company's direct use of indirect energy sources. Scope 3 emissions are emissions occurring in the supply chain of a company and include all upstream and downstream processes that are associated with the business.

There are fifteen scope 3 categories. These are purchased goods and services, capital goods, fuel and energy related activities, upstream transportation and distribution, waste generated in operations, business travel, employee

computing, upstream leased assets, downstream transportation and distribution, processing of sold products, use of sold products, end of life treatment of sold products, downstream leased assets, franchises and investments (Bhatia et al., 2011). This study therefore relates to accounting for emissions as a result of these fifteen categories.

1.2.5 *Value context*

The argument pertaining to whether environmental investments increase or reduce a firm's value is on-going. The concept further extends itself to the balance between regulatory environmental requirements and shareholder value maximisation (Fisher-Vanden & Thorburn, 2008). Fisher-Vanden & Thorburn (2008) further elaborates that a firm's competitive advantage may improve due to the bias of customers and investors towards environmentally friendly initiatives. This may be so even if the environmental initiatives are cost intensive and may not directly relate to an increase in actual monetary value.

Most firms therefore believe that the value that is perceived by investors and customers, due to a firm's environmental commitment, increase the value of the product or service offering. The value therefore applicable to this report reflects this perception of value.

1.3 Problem statement

1.3.1 *Main problem*

Analyse and evaluate the effect of sustainable development specific to environmental issues in the supply chain of the healthcare industry and ascertain whether the level of focus on sustainable development creates value in most healthcare-related business operations.

1.3.2 *Sub-problems*

The first sub-problem is: Analyse and evaluate whether value is added by sustainable development in the supply chain of the healthcare industry.

The second sub-problem is: Ascertain the level of focus necessary to ensure value creation in business operations.

1.4 Significance of the study

Although the study focuses on the healthcare industry, the results obtained can be extrapolated to provide relevance to all businesses and organisations. The issue of level of focus on scope 3 requirements is relevant to all companies in all sectors.

Currently organisations and those within the health care industry in particular, are disclosing scope 1 and scope 2 carbon emissions. Some companies disclose on scope 3, but these companies are few (Carbon Disclosure Project, 2012). The study will shed some light into what the effect of efforts towards reduction will have on disclosure and hence perceived value.

1.5 Delimitations of the study

Sustainable development in this study refers to environmental issues only. Other sustainable development issues will not be discussed in this study. Supply chain management can be extended so as to embrace every party involved in the provision or the production of a good or service. As per Mentzer et al. (2001), this extends from the ultimate supplier to the ultimate customer Such a vast scope lies far beyond the aims of this investigation. This study will limit its supply chain focus to the parties and the firms identified in Figure 2 and Figure 3.

The basic supply chain model is illustrated in Figure 2. It depicts the supplier, organisation and customer relationship. Figure 3 incorporates the extended supply chain showing indirect suppliers and customers. Figure 4 depicts the

ultimate supplier and ultimate customer as well as the financial provider, the market research firm and the third party logistic supplier. Between the supplier and the ultimate supplier and the customer and the ultimate customer are various suppliers and customers respectively.



Figure 2 – Direct supply chain

(Source: Mentzer et al, 2001)



Figure 3 – Extended supply chain

(Source: Mentzer et al, 2001)

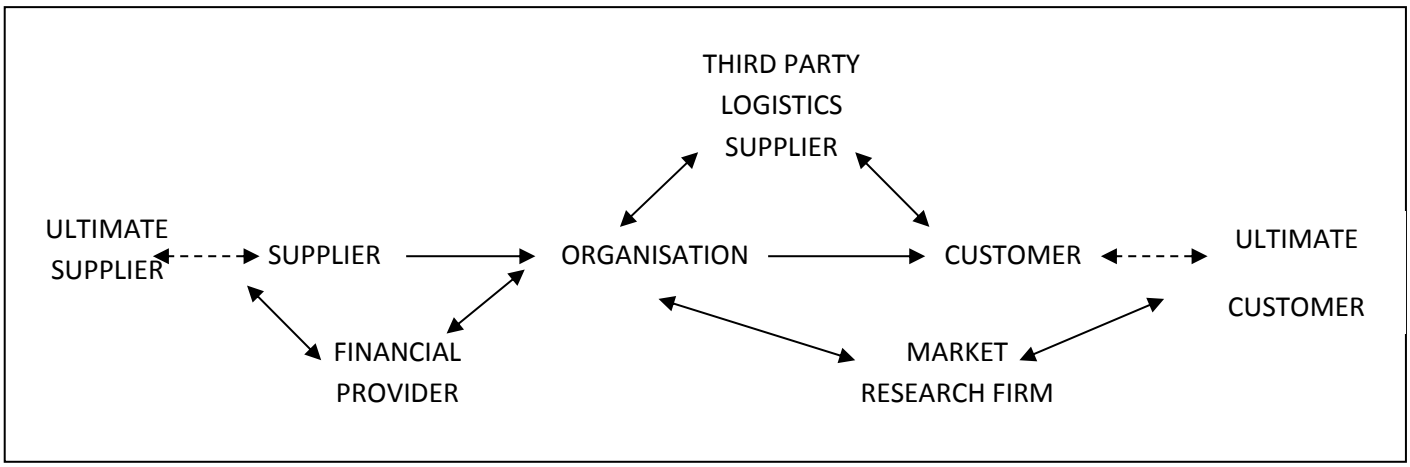

Figure 4 – Ultimate supply chain

(Source: Mentzer et al, 2001)

Geographically, the study will be limited to South African health care industries. The study will refer to international companies and situations for (a) illustration of best practices and (b) purposes and comparison.

1.6 Definition of terms

Adaptation policy – Refers to the concept of preparing for the consequences brought on by the changes in climate due to the increase in the earth's atmospheric temperatures (Cimato & Mullan, 2010).

Greenhouse gases (GHG) – Gases in the earth's atmosphere that cause warming of the earth's atmosphere by absorbing the reflection of the rays of energy emitted by the earth. The four principal greenhouse gases are carbon dioxide, methane, nitrous oxide and the halocarbons (IPCC, 2007).

Key performance indicators (KPIs) – Are quantifiable measurements for defining and measuring certain defined progress towards a specific organisational outcome (Reh, 2012).

Mitigation policy – Mitigation policy, in the climate change context, refers to policy that addresses the permanent elimination or reduction of the long term risk and hazards associated with climate change (Glantz, Gommes, & Ramasamy, 2009).

Scope 1 emissions – These refer to direct emissions that emanate from actual operations of the business and includes emissions from the use of diesel, petrol and other gases in the direct processes of the business operations (Ranganathan et al., 2004)

Scope 2 emissions – This generally refers to indirect emissions due to electricity usage in the processes of the business operations (Ranganathan et al., 2004).

Scope 3 emissions – This refers to emissions as a result of operations in the supply chain of the business and generally refers to indirect business operations (Grice, 2010).

Supply chain – A supply chain involves the people and processes that are required to fill the customer's request, which includes all processes required to

make and deliver the product or service to the customer (Chopra & Meindl, 2004).

Supply chain management – The definition of supply chain management is defined as “the systemic, strategic coordination of the traditional functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole” (Mentzer et al., 2001, p. 18).

Sustainable development – relates to providing for the fundamental needs of society in a way that does not compromise nature and maintains the balance between nature and human kind (Kemp & Martens, 2007).

Value – The concept of value in the context of this report is “perceived” value and relates to the bias of customers and investors towards environmentally friendly initiatives and how this sentiment may add value to a firm’s product or service offering (Fisher-Vanden & Thornburn, 2008).

Value Chain – The concept of ‘value chain’ was coined by Michael Porter in his popular publication, “Competitive Advantage”. The value chain is described as “a connected series of organisations, resources, and knowledge streams involved in the creation and delivery of value to end customers….The objective of value systems is to position in the supply chain to achieve the highest levels of customer satisfaction and value…”, (Ventureline.com, 2013).

1.7 Assumptions

The study assumes the following:

- Samples will be drawn from within the supply chain and the specific industry. Any other stakeholders are deemed to be insignificant to the study. This assumption is valid as the focus is on the relationship between the industry and the supply chain.
- The selection of respondents is assumed to be knowledgeable in aspects of health care supply chain management and sustainable development or affected by activities due to sustainable development.

2. CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

Does sustainable development add value to the supply chain? This section will first attempt to posit via a literature survey whether sustainable development brings value addition to the general supply chain of healthcare companies. The supply chain in the healthcare industry will then be discussed. Finally, the value addition of sustainable development in the healthcare supply chain will be assessed.

In the second part of this section, the levels and standards of performance measurement in the sustainable development arena will be considered with key considerations of what the world is currently focusing on and how performance measurement is commonly practiced. The theoretical significance of performance measurement and how it extends to supply chains and the healthcare industry will be reviewed.

2.2. Background discussion.

The world is experiencing global temperature increases and fluctuations in weather patterns. The Intergovernmental Panel on Climate Change (IPCC) has published evidence of rising global atmospheric temperatures in their fourth and latest assessment. Figure 5 below shows scientific evidence of the rise in global atmospheric temperatures, the rise in global average sea levels and the drop in the northern hemisphere snow coverage as recorded from the 1850's until today. Environmental changes are occurring all around us and the world needs to take responsibility for these changes (Penfield, 2007). These are facts that are posed by environmental scientists and physicists at institutes like the IPCC which is a globally recognised body on scientific research. These studies have led to the issue of climate change becoming a key consideration at corporate level of most companies and has spurred governmental bodies worldwide to demand that companies take early action (Dewick & Pietikainen, 2008).

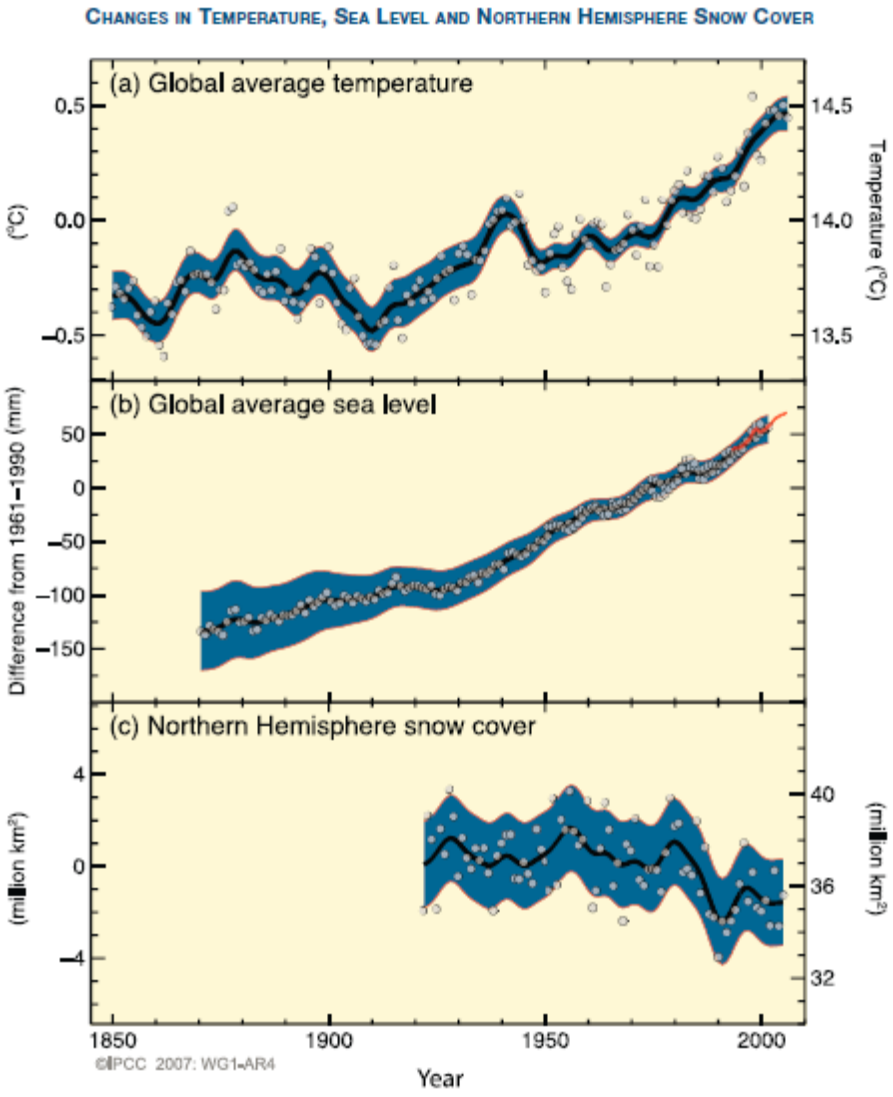

Figure 5 - Scientific evidence of the rise of global atmospheric temperatures

Source: IPCC, 2007

2.3. Sustainable development value addition and the supply chain

2.3.1. Sustainable Development

Sustainable development has been in the business focus area for the past 25 years, and continues to feature as an important concept in business. In recent times the definition of the concept is being challenged. The term is now more of

a catchphrase for organisations to market the supposed responsible business principles. Sustainable development incorporates sustainability and development and sustainability comprises literal, ecological and social factors whereas development comprises process and objectives (Lele, 1991).

Sustainable development has become a worldwide concept closely associated with long term business success. The United Nations, European Union, Swedish government, United Kingdom, Germany, Norway, Denmark and the United States are some of the countries and institutions that have taken an active stance with respect to laws, regulations and guidelines governing sustainability. In South Africa, the JSE launched the SRI index in 2004 and the Department of Environmental Affairs and Tourism (DEAT) underwent a long term mitigation scenario on climate change. No laws to date, have however been passed in South Africa regarding climate change (Institute of Directors in Southern Africa, 2009). Bhatia et al. (2011) emphasises that by addressing concerns related to carbon emissions, a company can bolster profitability by identifying opportunities that will reduce risk and allow for competitive advantage.

2.3.2. Supply chain operations

A supply chain involves the people and processes that are required to fill the customer's request which includes all processes required to make and deliver the product to the customer. Sarkis (2002) divided the supply chain into the product life cycle, the operational life cycle, organisational performance measurement and environmentally conscious business practices. Stages may include; customers, retailers, wholesalers/distributors, manufacturers and component/raw material suppliers (Chopra & Meindl, 2004). These stages can be analysed further to determine variables and components that allow for sustainable efficiencies.

2.3.3. Supply Chain in the Healthcare sector

The traditional healthcare supply chain design looks at the core functions around the healthcare environment. The healthcare supply chain is defined as “the information, supplies, and finances involved with the acquisition and movement of goods and services from the supplier to the end user in order to enhance clinical outcomes while controlling costs” (Schneller & Smeltzer, 2006, p. 30). The development and delivery of care has been linked to understand the interactions and effect of supply chain on core processes. These core healthcare processes begin with the development of care and end with the delivery of care. In between these lie medical devices, pharmaceuticals, biotechnology and healthcare finance (Sinha & Kohnke, 2009). Services and systems required to supply these optimally in order to achieve the required delivery of care, are part of the extended supply chain.

2.3.4. Value addition of sustainable development

Many companies are now moving towards incorporating responsible environmental practices into their operations. Apart from mandatory regulation driven programs, various organisations have taken up voluntary participation on the understanding that this will improve competitive advantage. The empirical study conducted by King and Lenox (2001) asks the question whether going green does indeed add financial value to a business. Organisations have begun to realise that there may be value in extending environmental initiatives to the supply chain by accounting for emissions in the upstream and downstream processes (Sarkis, 2002). The study has drawn the conclusion that empirical evidence points towards a positive relationship between financial performance and pollution reduction, however these results are not conclusive.

The Porter hypothesis asks the question, “Can environmental regulation enhance innovation and competitiveness?” The traditional view held by most economists at the time and even currently, was/is that environmental regulations hinder competitive advantage against rivals and thus reduce company profits. Michael Porter believed that the opposite was true and that

environmental regulations actually enhance firm competitiveness (Ambec, Cohen, Elgie, & Lanoie, 2011). Ambec, et al., (2011) states that Porter and his co-researcher suggested a reduction of pollution can result in an improvement in productivity in the use of resources. Figure 6 illustrates the main causal links involved in the Porter Hypothesis.

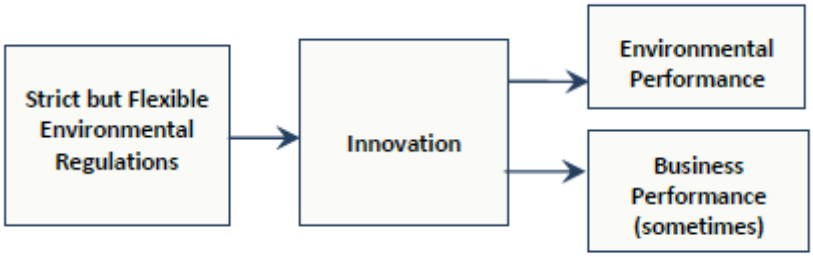

Figure 6 - Schematic representation of the Porter Hypothesis

Source: Ambec et al., (2011)

Porter and van der Linde state that regulations signals companies about resource inefficiencies and potential technological improvements, regulations help raise corporate environmental awareness by focusing on information gathering, regulations add more clarity in the value add in investments to address the environment, regulation motivates innovation and progress by creating pressure and the transitional playing field is levelled (Ambec et al., 2011).

2.3.5. Regulations and compliance

As mentioned in section 1.2.2, there is a strong regulatory context to the behaviour of businesses in South Africa and worldwide. This regulatory behaviour extends itself to the behaviour of companies to environmental issues. The following clauses from the Companies Act, 2009, of South Africa are relevant;

"...a) to promote compliance with the Bill of Rights as provided for in the Constitution, in the application of the company law;" and

"...b) ... encouraging transparency and high standards of corporate governance as appropriate; given the significant role of enterprises within the social and economic life of the nation" (Republic of South Africa, 2009, p 43). These clauses provide guidance on disclosure requirements of companies, specifically, with reference to transparency and high standards of corporate governance.

Apart from the Companies Act, 2009, listed companies within South Africa are expected to comply with the King Reports on Governance (King I, II and III). The King report on corporate governance I was written with the context of increasing emphasis on comprehensive reporting and disclosure. The report was a response to the "comply or else" requirement placed on companies in the United States by the Sarbanes-Oxley Act. All United States companies were expected to comply with the Act with no provision for any extraordinary circumstances. This requirement has cost the United States in excess of US$264 billion since 2002. The King III requirement is an apply or explain requirement. (The South African Institute of Chartered Accountants, 2011).

The King III report places great emphasis on leadership, sustainability and corporate citizenship, and key to this report is sustainability. The effects of business on society and the environment is the focal point here (The South African Institute of Chartered Accountants, 2011).

2.3.6. South African environmental regulatory framework

South Africa has certain obligations in terms of the United Nations framework convention on Climate Change (UNFCCC) and the Kyoto Protocol. South Africa is a FCCC non-annex I party which means that South African has not taken on a quantified emission limitation and reduction commitment in terms of Article three of the Kyoto protocol. South Africa therefore finds itself under a non-legal commitment to reduce greenhouse gas emissions (Warburton, Gilder, Shabalala, & Basterfield, 2007) . The legal dimensions of South Africa's environmental law originate in the South African Constitution Act (no. 108 of

1996) and specific acts are in the form of the National Environmental Management Act (no. 107 of 1998) and the National Environmental Management: Air Quality Act (no. 39 of 2004).

Warburton, et al, (2007), further found that there is no comprehensive updated summary of South Africa's regulatory actions to address climate change. The Department of Environmental Affairs and Tourism (DEAT) has proposed a National Climate Change Response Strategy for South Africa setting out the government's proposals to deal with the challenge of climate change. The National Treasury has also published a green paper on carbon tax.

2.3.7. Sustainable development principles in the supply chain of the healthcare industry creates value for all role players in the industry

More and more attention is being focused on the supply chain and on reducing the impact in upstream and downstream operations. If more consideration is placed on the inputs to production, then the production transformation process should yield less waste. By-products from the transformation process should not be discarded but ways need to be discovered to turn these by-products into environmentally friendly profitable products (Penfield, 2007). The author further elaborates that these by-products can be used to produce alternate products whose production meets environmental best practices. Reduction of waste as a result of usage of the by-products will result in a lesser environmental impact of the original production process.

Companies are now being held accountable or are affected by, the action of suppliers. Companies need to therefore ensure that they deal with reputable suppliers with a responsible attitude towards environmental issues (Penfield, 2007).

As the empirical study conducted by (King & Lenox, 2001), states, due to the various factors and variances involved in performance measurement, it is very

difficult to conclusively prove the value addition of sustainable development of the supply chain.

Reporting on sustainability in the supply chain is challenging. Large data collection and processing is required which can be costly and can offset the benefit achieved which cannot be justified (Baier, 2012). Hervani, Helms, and Sarkis (2005) states that the problem of cross organisational performance measurement is multidimensional. These problems include data that is non-standardised, or not in the correct format required for reporting and measurement puposes, lack of the correct technology for the purposes of data collection and measurement and further worsened with the lack of technological integration, and perhaps the most limiting problem for performance measurement is the lack of understanding the need for inter-organisation performance measurement (Hervani et al., 2005).

2.4. Performance measurement levels and standards of sustainable development

2.4.1. Levels of focus of sustainable development and performance measurements

The Greenhouse gas protocol initiative is a partnership that consists of various parties; private, governmental, non-governmental and others (Ranganathan et al., 2004). The protocol has defined scope 1 and 2 carbon emissions and provided guidelines on reporting these emissions. Recently, the GHG protocol has defined scope 3 emissions, as finalised in 2011, into very wide and divided fifteen categories (Baier, 2012). Scope 3 emissions account for the supply chain of business. These fifteen categories are; purchased goods and services, capital goods, fuel and energy related activities, transportation and distribution in upstream and downstream activities, waste generated in operations, business travel, employee commuting, leased assets in upstream and downstream operations, processing of sold products, use of sold products, end-of-life treatment of sold products, franchises and investments (Bhatia et al.,

2011). The environmental level of focus of sustainable development as per GHG protocol guidelines should ideally consider scope 1, scope 2 and scope 3 emissions.

2.4.2. Value creation of sustainable development for the business operations of companies in the healthcare sector does require a performance level of focus

Most guidelines advocating sustainable reporting expect a high level of performance measurements. Companies are expected to comply with most of the Global Reporting Institutes (GRI) guidelines on sustainability. The costs associated with future environmental damage are expected to be quantified. Competitive advantage and reputation seems to be the guiding reason on reporting and disclosure. The theoretical levels of focus are therefore set quite high with no practical reasoning behind this (Carbon Disclosure Project, 2012).

2.5. Conclusion of Literature Review

2.5.1. Sustainable development principles in the supply chain of the healthcare sector creates value for all role players in the sector

Theory and literature are not conclusive with regards to the value addition to supply chain operations and the company due to sustainable development efforts. Due to the complexity of general supply chains and the higher complexity around that of the healthcare industry, unless proper and clear cost effective data collection and analysis methods are applied, one cannot prove bottom line financial value addition.

2.5.2. Value creation of sustainable development for the business operations of companies in the healthcare sector does require a performance level of focus

Literature and international guidelines encourage a high level of performance measurement. Most companies however report only if required by law that which is not restricted by resources and system constraints. Large costs are

associated with full reporting and the costs generally cannot theoretically be justified. Further studies are encouraged to determine methodologies for proper accounting and data capturing to improve the process of performance measurement.

3. CHAPTER 3: RESEARCH METHODOLOGY

The research methodology used for the research will be outlined in this section. A qualitative research methodology was chosen to gauge the perceptions of the selected sample regarding the value add of sustainability in the supply chain of the healthcare industry. The reasons for selecting this methodology and the theory behind qualitative methodologies will be discussed.

Data was gathered from two different types of stakeholders using customised interview guides.

The population and sample and reasons for selection of the sample were discussed and data collection and analysis methodology used were elaborated on.

The discussion will show clearly how validity and reliability of data was assured.

3.1 Research methodology /paradigm

A qualitative research methodology was used purely because the study aimed to gauge people's belief system, perspective and experiences around the research topic. Some qualitative research methods are seen as in-depth explorations of what people think, feel or do (Sheldon, 2001). The methodology used followed a semi-structured interview style. The reason for a semi-structured design is to encourage freedom of expression and greater elaboration on the topic by interviewees (Sheldon, 2001).

3.2 Research Design

A semi-structured interview process was used. The choice of semi-structured interviews was based on the nature of the research and the need to gather as much information from the respondents as possible. The semi-structured approach also assisted the researcher in keeping the interview on track.

A benchmarking exercise was performed to understand the approach taken, within this area of concern, by leading nations and to gauge the differences in approaches taken in South Africa as compared to these nations. The European Union (EU) and the United Kingdom were used as key benchmarking locations, with a focus on the UK. The EU and the UK are currently the leaders in climate change policy and reporting and disclosing guidelines. Secondary data in the form of reports and journal articles were used to perform the benchmarking exercise.

3.3 Population and sample

3.3.1 Population

The population consists of all companies within the supply chain of the healthcare sector in South Africa providing services and products to all private and public hospitals and medical facilities as well as all clients/customers of these companies. The following type of companies/individuals are part of the supply chain of the health care sector; pharmaceuticals, catering, electrical, air conditioning supply, wet services engineering, fire system design and maintenance, security system supply and design, civil construction companies, medical equipment suppliers and agents, doctors and patients, all other employees and users of the healthcare facilities (Sinha & Kohnke, 2009).

3.3.2 Benchmarking

Benchmarking is effective to understand the progress of an entity relative to another by comparing different goals achieved with the aim of identifying practices that lead to superior performance (Wright, 2006). It is important to select successful entities in a certain field and benchmark against these entities.

The benchmarking exercise attempted to show what the global approach and focus area to climate change is currently and focused on the stance taken by the European Union with a focus on the United Kingdom. The choice of these

countries was based firstly on the need to understand the approach taken by a developed nation and to allow for a gap analysis between leaders in the climate change arena and a developing nation like South Africa. The aim of the benchmarking exercise was:

- To assess what countries that are leading in this arena are doing with regards to climate change policy and reporting,
- To understand why companies are doing this,
- To understand what, if any, value that is received and performance measures used to monitor value creation.

3.3.3 Sample and sampling method

The sample for data collection was taken from each of the different types of companies, as illustrated in Table 3, that form part of the supply chain of the healthcare sector in South Africa. The research plan was to choose two companies in the different disciplines (electrical, air conditioning, wet systems, security, fire and civil) and four pharmaceutical and medical equipment companies. The sustainable development manager/engineer or the company secretary was expected to be interviewed since they deal with aspects of sustainability and Corporate Governance. In addition, two doctors and four patients/customers were also to be selected as part of the sample. The details of the selection of these respondents will be elaborated on in section 4 of this report. Therefore, a total of 24 interviews were to be conducted.

Each respondent was first contacted by telephone (patients/customers were approached personally) to discuss the requirements and to obtain agreement for an interview. The interview memorandum as well as interview questions were sent to all via email, prior to the interview. A time and place for the interview was agreed upon.

Table 1 - Type of companies selected for interviews

Type of Company	**Role of Person**	**Number of companies (interviews)**
Pharmaceuticals	Sustainability Manager or Company Secretary	4
Medical Equipment Supplier/Agents	Sustainability Manager or Company Secretary	4
Electrical contractors	Operations Manager or Engineering Manager	2
Wet systems contractors	Operations Manager or Engineering Manager	2
Air conditioning contractors	Operations Manager or Engineering Manager	2
Security	Sustainability Manager or Company Secretary	2
Civil	Sustainability Manager or Company Secretary	2
Doctors	Doctor or representative	4
Patients/Customers	Patient	4
TOTAL		**24**

3.4 The research instrument

A 2-phased, semi-structured interview method was used to obtain the qualitative data required. The first phase was a semi-structured face-to-face interview that followed the interview guidelines as per Appendix A. The second phase was a telephonic follow-up interview to obtain clarity on issues discussed or to confirm validity of statements made. Not all respondents underwent two interviews.

Two different interview questionnaires were designed that catered for different stakeholders in the supply chain. The first questionnaire catered for the first group that comprised the companies servicing or providing products to the health care industry and the second questionnaire catered for the second group of doctors or their representatives that deal with the medical facilities and patients of these facilities.

The interview questions were designed to allow respondents to provide data for the actual research questions.

Respondents were contacted well in advance to allow for difficult schedules and diaries. An average of four interviews per week were conducted due to time constraints and busy schedules.

3.5 Procedure for data collection

Permission was obtained from all interviewees to record the interviews. Notes were also taken during the interviews. Any other supporting documentation that the respondent felt was relevant was also captured. The interviews were conducted over a forty minute to one hour period and followed telephonic and email confirmation to ensure that the respondent was aware and agreeable to the questionnaires and interview arrangements.

The aim of selection of the respondents was to ensure some involvement within their professional and personal capacity in the topic to facilitate correct and reliable data collection.

Interviews were conducted at a venue that was appropriate and convenient for the respondent.

3.6 Data analysis and interpretation

Content and thematic analysis of the data was used to analyse the data collected. Content analysis can be defined as a way of analysing messages from a certain source (Elo & Kyngäs, 2008). Coding was used to associate a theme with a set of data as an attempt to transform the raw data into data that can be analysed (Lianputtong, 2009). The data collected was summarised and placed into appropriate categories. Each category was defined in terms of relevance to the study and colour coded accordingly. Key terms, patterns and trends were identified and conclusions were drawn based on the key categories.

Thematic analysis, as the name suggests looks for themes or patterns within the data. This method was utilised for its benefit of flexibility, i.e., it is not bound by detailed theoretical and technological knowledge of approaches (Braun & Clarke, 2006).

Key themes were identified based on the number of occurrences of the specific theme within the dataset. No specific set of rules was used to identify the distinguishing of the number of occurrences to classify a theme as a key theme. This is the nature of thematic analysis which is not governed by steadfast rules or theory (Braun & Clarke, 2006). The data content of the key themes were then analysed to ensure strong relevance and importance to the research problems.

3.7 Limitations of the study

Typical limitations to qualitative research are small sample sizes, a lack of rigour in the analysis, the subjectivity of the researcher on the respondents, influencing the results and the analysis of the data possibly being biased by the researcher's own opinions (Patton & Cochran, 2002). These limitations also affected this research. The supply chain of the healthcare industry is vast. Many

service providers are associated with a single facility and many processes go into producing the service or product offered by the healthcare industry. A sample size of 26 will therefore not be able to sufficiently cover the entire scope of the supply chain.

3.8 Validity and Reliability

Due to the qualitative nature of the study, it is imperative to ensure validity and reliability. According to Mays and Pope (1995), general criticism commonly associated with the qualitative research methodology is that it is strongly prone to researcher biasn and it lacks reproducibility.

3.8.1 External validity

Although external validity mostly applies to quantitative research methods, aspects of external validity were checked to ensure complete data validation.

External validity was a challenge in this study due to the large scope of the supply chain under discussion. The concept of the study however will hopefully be useful in similar contexts.

In this study, all efforts were made to ensure external validity. The respondents were selected in a semi-structured manner. Representatives from the different members comprising the supply chain were required; however the selection of these companies/members was done in a random fashion to avoid bias.

No respondent was pre-tested. A pilot study was conducted to test reliability of the interview guide used. However, the data from the pilot study is not in the final data analysis. The research method was improved based upon the results of the pilot study.

The reaction of respondents who are affected by the knowledge of the research methodology of interviewing was minimised by selecting, wherever possible individuals who have experience in being interviewed and who are expected to exhibit professionalism.

The limitation on generalisability is more appropriate for the researcher who may influence the responses by knowledge of previous responses and possible bias towards the outcome. Questions to respondents were open-ended (Refer to Appendix A for interview design) and the interview style that was adopted allowed the respondent to talk about a topic in a conversational manner without much direction or influence from the researcher. This is typically due to the style and design of the research instrument being semi-structured.

3.8.2 Internal validity

Validity of the data collected in qualitative analysis depends on the skills of the researcher and points to the validity and reliability of the researches data collection and analysis. Therefore research instrumentation used, selection of respondents and selection interactions are important concepts to ensure reliable and valid data (Thyer, 2001).

The objectivity, reliability and validity of the research measurement depends quite heavily on the research instrument (Thyer, 2001). The danger of the qualitative method chosen of not achieving validity in this respect is high, due to the nature of the interviewing methodology. A semi-structured approach will eliminate to some extent subjectivity by directing responses to a specific structured approach.

The research design incorporated two different interview templates; one for doctors and patients and a different one for other supply chain respondents. Analysis of the results from the two different interview templates must be treated differently where appropriate and similar topics must be analysed carefully with the context of the topic in mind.

3.8.3 Reliability

Reliability is concerned with the consistency of the results of a study over time, whether the study sample is an accurate representation of the total population and the reproducibility of the study results in similar conclusions under a similar

methodology (Golafshani, 2003). By selecting a representative from one type of company/member of the supply chain and by ensuring a certain level/role of respondent within the company selected, the sample selected consisted of individuals who possessed the characteristics and knowledge relevant to the study topic (Mays & Pope, 1995). Reliability of data was ensured by recording interviews and reviewing these recordings as required. Results obtained were compared to the literature survey to establish comparisons with findings and literature studies.

4. CHAPTER 4: PRESENTATION OF RESULTS

4.1 Introduction

The results of the research will be presented in the way the data has been analysed. As mentioned in section 3, content analysis was utilised for data analysis. The key themes determined via a thematic analysis will be highlighted in this section. A content analysis coding methodology was then applied to these themes to determine the relevance of the comments and the number of comments per theme. Themes were then matched relevant to each research problem and key themes were identified based on the number of comments.

4.2 Demographic profile of respondents

The respondents were chosen based on two methodologies.

Firstly the sample that represented companies consisted of different type of companies from the supply chain of the healthcare industry.

Secondly, the sample that consisted of doctors or doctors' representatives were chosen to obtain a range of data from different experiential and work backgrounds. Three respondents were interviewed; one a doctor from a public healthcare facility, the second a doctor from a private healthcare facility and the third an employee of a doctor's practice from a private healthcare facility. The range of experiences varied from 4 years to 15 years. All were from professional backgrounds.

Lastly, the sample that consisted of patients or customers was also chosen to ensure a diversified range of experiences, but this time the variety came from the different type of facility visited. The range of facilities included a private healthcare facility, a public healthcare facility and a primary care facility.

Table 2 - Type of companies actually interviewed

Type of company	Number of respondents	Role of respondent
Pharmaceuticals	3	Factory manager, Marketing executive and Procurement Executive
Medical equipment suppliers	4	Industrial Merchant & Healthcare Director, Director of Sales[1], SHEQ manager
Security	2	Operations Director and Marketing Director
Civil	1	Facility manager
Hospital	1	Energy Manager
Patients/customers	4	N/A[2]
Doctors/representatives	3	N/A[2]
TOTAL	**18**	

Notes:

1 – Director of Sales interviewed at two medical equipment companies

2 – Roles have been described in the paragraph above

Twenty four respondents in total were targeted and only eighteen were interviewed.

Of the first group, being the companies, 20 were targeted and 11 were interviewed. The specific individuals interviewed were chosen by the companies themselves. The roles were more senior than targeted.

Of the second group, being the doctors and patient group, four people were targeted and seven were interviewed. The number of people in this group was larger than targeted.

4.3 Thematic analysis of data

A thematic analysis was used to identify key themes. The following key themes were identified from the interview transcripts:

1. Hazardous waste
2. Societal impact
3. Balance between business (cost) and environmental considerations (cost vs environment)
4. Healthcare impacts
5. Quality/safety
6. Environmental awareness
7. Recycling/efficiency
8. Management and performance measures
9. Wastage
10. Society involvement
11. Value add
12. Involvement of company and individual
13. Standards and procedures
14. Reporting
15. Government/institutions
16. Supply chain

4.4 Content analysis

A content analysis approach was used to further analyse the data and categorise and determine patterns. Themes were distinguished from each other by colour coding them. Figure 7 illustrates the different themes and the number of significant comments from the interviews per theme.

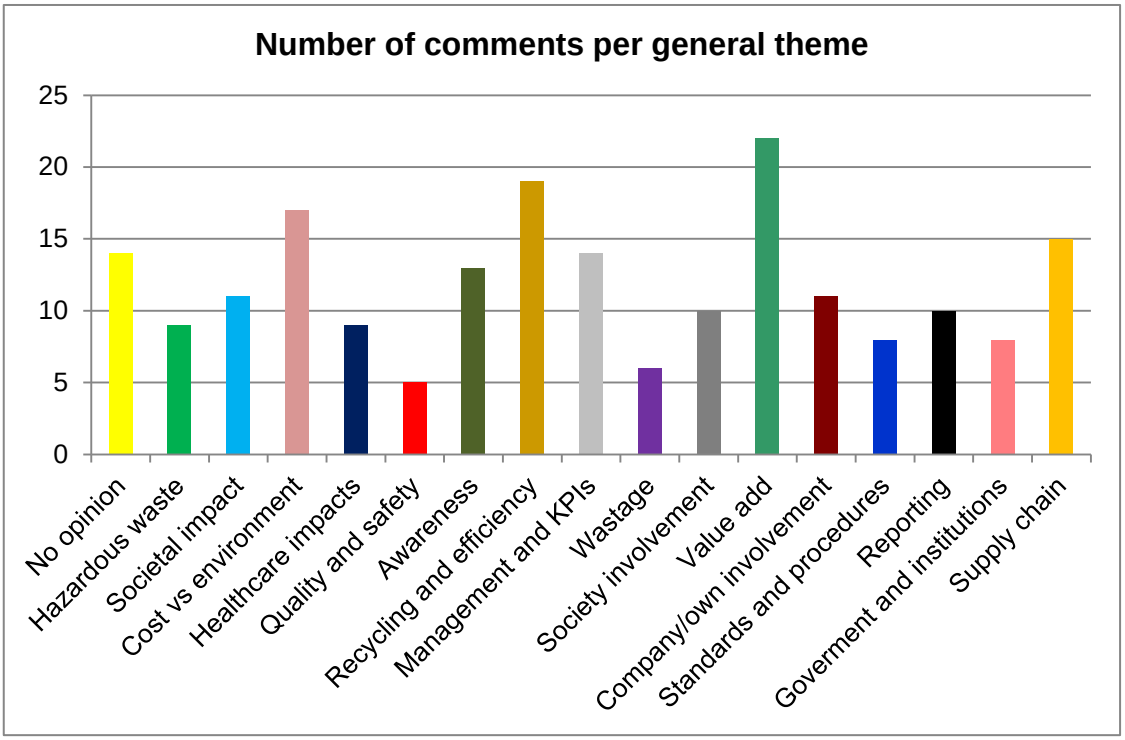

Figure 7 - Number of comments received per general theme

From the groupings, it was easy to discern the key themes and group these key themes into the two different research problems.

The themes were then ranked according to the number of comments and grouped as illustrated in Table 3.

Table 3 - Number of comments per general theme

Number	Rank	General theme	Research problem	Number of comments
1	1	Value add	1	22
2	2	Recycling and efficiency	1 & 2	19
3	3	Cost vs environment	1	17
4	4	Supply chain	1	15
5	5	Management and performance measures	2	14
6	5	No opinion	-	14
7	7	Environmental awareness	2	13
8	8	Company or own involvement	2	14
9	8	Societal impact	1	14
10	10	Society involvement	2	10
11	10	Reporting	2	10
12	12	Healthcare impacts	1	9
13	12	Hazardous waste	2	9
14	14	Standards and procedures	2	8
15	14	Government and institutions	2	8
16	16	Wastage	1	6
17	17	Quality and safety	1	5

4.4.1 Results pertaining to research problem 1 – creation of value in the supply chain of the healthcare sector

As illustrated in Table 3, the broad themes as applied to this research problem are:

1. Value add
2. Recycling and efficiency
3. Balance between business needs and environmental considerations (cost vs environment)
4. Supply chain
5. Societal impact
6. Healthcare impacts
7. Wastage
8. Quality/safety

Of these broad themes, the main themes common to most of the interviews that summarise all the themes collected for this research problem were:

A) Value add,
B) Balance between business needs and environmental considerations,
C) Supply chain, and
D) Societal and healthcare impacts.

4.4.2 Results pertaining to research problem 2 – focus of performance level requirement for sustainable development in the supply chain of the healthcare sector

As illustrated in Table 3, the broad themes as applied to this research problem were:

1. Recycling/efficiency
2. Management and performance measures

3. Environmental awareness
4. Company/own involvement
5. Societal involvement
6. Reporting
7. Hazardous waste
8. Standards and procedures
9. Government/institutions

Of these broad themes, the main themes common to most of the interviews that summarise all the themes collected for this research problem were:

A) Recycling/efficiency,
B) Management and performance measures,
C) Environmental awareness, and
D) Company, own and societal involvement

4.5 Summary of the results

Fewer interviews were conducted than was planned for. In total, 18 interviews were conducted and 26 were planned, of this, 11 were group 1 company interviews and 7 were from the doctor/patient group 2. One more respondent was interviewed from group two than originally planned.

The demographic profile of the respondents was of a higher level than was expected to be interviewed.

The thematic analysis produced 17 broad themes. The content analysis allowed assessment of relevance of each theme with the research study. Each of these themes was ranked in terms of relevance and number of comments. Themes were also matched with regards to appropriateness to the different research problem.

Eight of the broad themes fell into research problem 1 and nine into research problem 2 category. These broad themes were then narrowed to select key themes per category. Research problem 1 key themes included value add, cost vs environment, supply chain and societal and healthcare impacts. Research problem 2 key themes included recycling/efficiency, management and performance measures, environmental awareness and company/own involvement. These key themes will form the basis for further discussion in chapter 5.

5. CHAPTER 5: DISCUSSION OF THE RESULTS

5.1 Introduction

This chapter begins with a description of the demographic profile of the respondents. The interview process is then discussed and the different stages of the interview are elaborated on; interview preparations, pilot interview and the actual interview process.

The research instrument was discussed outlining the differences between what was expected to actual data received using the research instrument.

The method of data analysis was discussed focusing on the thematic and content data analysis techniques.

The actual discussion of the results was divided into four broad sections;

- discussion pertaining to research problem 1, where the results of the key themes relating to research problem 1 were discussed,
- discussion pertaining to research problem 2, where the results of the key themes relating to research problem 2 were discussed,
- applicability of results to literature, where the data obtained was compared and linked to the literature survey conducted, and
- validation and reliability of data, which focused on how the data was validated and how reliability of data was ensured.

The chapter ends with a benchmarking study that compares South Africa's maturity with respect to climate change policy and reporting as compared to developed nations and countries in similar economic situations.

5.2 Demographic profile of respondents

The actual number of respondents was less than anticipated for the study. It was expected to interview twenty four respondents and only eighteen were interviewed.

The decrease was noticed in the company interviews (group two). This can be attributed to the fact that companies allowed very high level individuals within the organisation to be interviewed. Availability of these individuals was a challenge due to their busy schedules. Although climate change and disclosure is not a new concept to South Africa or South African companies, reduction of carbon emissions and voluntary reporting requirements has only been actively practiced by the South African healthcare sector in the last four years.

The low impact nature of the sector as understood by most respondents has not created a need for companies within the sector to integrate environmental processes to the full extent as companies in developed nations have done. It was very clear from the role of respondents that most companies that were approached are therefore handling environmental disclosure and reporting at a very high level in the organisation. This creates great logistical issues due to the availability of respondents for interviews.

Many companies refused to participate in the interview due to their non-participation is environmental sustainability reporting and initiatives. The companies' representatives felt that they could not contribute to the interviews and subject matter. While other companies, although large and reputable, handled disclosure and reporting on environmental issues at the mother company level. South African subsidiaries were only used for data collection for reporting purposes.

Of the three pharmaceutical companies interviewed, two respondents were at very senior levels in the respective organisations and one was at operational level. The different perspectives offered due to the differences in level provided an insight into the approach taken at different levels. The roles are marketing

executive, procurement executive and factory manager. The marketing and procurement executives offered the overall company approach more on a conceptual level, providing information on perceptions and opinions taken, whilst the factory manager offered more tangible evidence of reporting.

The roles of respondents from the medical equipment supplier companies were industrial merchant and healthcare director, directors of sales[1] and Safety, Health, Environment and quality (SHEQ) manager. Once again, in this case, three very high profile individuals and one on operational level. The same observation was made here.

A similar observation was made with the security and civil company. The two respondents from the security company were high level individuals who provided higher level feedback on the company's approach and the respondent from the civil company provided data on reporting processes and performance measures.

The expected roles of the respondents differed greatly from those that were actually interviewed. Expected roles included corporate sustainability manager, environmental manager, energy manager, energy engineer, etc. It is evident from the roles actually interviewed that these expected roles do not exist within these companies. Although most of the candidate companies are JSE listed companies, some of these companies did not keep dedicated teams or individuals to focus on sustainability. Their focus was directed on the core business operations.

The effect of this on the results obtained was that companies offered more of perceptions and insights into possible future endeavours rather than concrete evidence of actual processes in place. Companies have not yet established a dedicated focus to environmental sustainability. This function is being filled by individuals with another key role.

The range in age and experience of the group doctors/patients expected was exactly that which were interviewed. Results obtained from this group were anticipated and fit the expectations.

5.3 Interview process

5.3.1 Interview preparation

Two different approaches were used for the two different groups.

For the company group, all respondents were first contacted telephonically. The purpose of the study and the reason for the interview was explained to the respondents. The relevant interview questions (Appendix A) and a letter describing the purpose of the study was emailed to the respondents. The respondents were asked to consider the information and revert back with an appropriate time, date and location for the interview if they felt comfortable with being interviewed.

For the doctor/patient group, the management of the different type of facilities was approached. These different facilities were a primary healthcare facility, a public healthcare facility and a private healthcare facility. The facility management was contacted telephonically to explain the purpose of the study to request the identification of appropriate respondents that could be interviewed. The criteria for these respondents was a certain experience level and to have a professional working level. In all cases, the facility management allowed for contact to be made directly to specific individuals that fit the profile and suggested respondents for the interview. These respondents were approached in a similar manner as described for the group 1 respondents.

5.3.2 Pilot interview

Pilot interviews were conducted for each group. This allowed for understanding:

- the appropriateness of the questions,

- whether the questions would allow for an open and informal interview,
- whether the questions were relevant to the respondents,
- whether the questions would elicit the responses required, and
- the atmosphere required to be built up to allow for the respondent to feel comfortable and to feel a sense of trust.

The pilot interview for the group one respondents was a success and did not require any adjustments to be made to the research instrument (refer to Appendix A3). The pilot interview for the group two respondents provided clarity into the level the interview needed to be pitched at. The initial set of questions (refer to Appendix A1) was of a business level understanding and contained terms and concepts that the respondents were not necessarily familiar with. The questions were modified to expand on the low level concepts these questions were addressing. The modified research instrument was a large success eliciting appropriate and valuable responses.

5.3.3 Interview process

The actual interview process was loosely divided into a formal section, the interview section and a closing informal section.

The formal section included a preamble where the respondent was allowed to introduce themselves and describe their role and functions within the organisation. The respondent was then provided with an explanation on the purpose of the study and the relevance the interviews played in the study. The scope 3 and supply chain relevance was explained to allow the respondent to understand the context of the study to allow for focused responses.

The interview section utilised the research instrument (Appendix A) as a guide but did not follow a strict question and answer session. The respondents were allowed to divert from the question to elaborate on their point of view or provide further context to their responses.

The closing informal section allowed for the respondent to elaborate on anything else they felt could add relevance to the study. Most took the opportunity to explain the companies' approach and understanding on environmental sustainability and reporting.

5.4 Research instrument

Although it was important to allow the respondents to elaborate on their answers and general point of view on a certain question or concept, the interview questionnaire was designed to allow for optimal data collection for the research problem.

5.5 Analysis of data

A thematic analysis was conducted to identify the broader themes that were common amongst all responses received. Each theme was identified and then colour coded to distinguish the different themes from each respondents responses. Colour coding allowed for easier content analysis to identify the key themes in the broader category that were more common than the others. The key themes, ranking of the themes, number of respondents per theme and number of comments received per theme are illustrated in Table 3 in section 4. The key themes relating to the specific research problems will be discussed further below. Themes that were weakly linked to a research problem, or did not have many or significant comments associated with them, were grouped with other stronger themes.

5.6 Discussion pertaining to Research Question 1

5.6.1 Value add

Description: This theme is actually the key theme for research problem 1. The theme relates to the value that the company, stakeholders or society obtains

whether directly or indirectly from environmental sustainability efforts that the company implements and/or the benefits derived from reporting and disclosure.

Comments received: These are the typical comments received that lent itself to the concept of value add:

> *"Does not add to your bottom line but to respect and reputation"*
> *"It helps to differentiate yourself with a sustainable product. Allows your clients to be more responsible – allowing for people to focus on what they are doing. To be competitive one needs to offer products to customers that add value to them"*
> *"The time taken to do initiatives and comply with laws takes very long – technology becomes dated – technology is quite important and the business risk of competitiveness is being compromised."*
> *"I do not believe compliance has done anything for the company or country. All that happens is that companies comply for the sake of complying."*
> *"Healthcare is a sustainable industry; depending on whether upstream or downstream. Being not a manufacturing company there is not a lot you can do to manage the big wins."*
> *"Initial outlay is quite high but one has to look at the long term benefit – one need to try and be self-sustainable, etc – one needs to consider all possible alternatives."*
> *"The pressure is more social than financial. However inevitably there will be cost savings but not tangible."*

Discussion: Both positive and negative responses were received pertaining to the theme of value add. Some respondents felt that there would definitely be a quantitative value addition to the bottom line of a company but this was more of the exception than the rule. Most of the respondents comments on the value addition as being more of a societal knock-on effect value addition and would feature as a value addition to the respect and reputation of a company.

Most respondents were concerned that although environmental initiatives and energy reduction initiatives may add to the negative effects of global warming

as perceived by society, the time, effort and resources required to provide any kind of value in the healthcare sector outweighs this value add to a large extent. One responded was of the strong opinion that even the manufacturing sector which is a large impact sector would find it highly cost intensive to make changes to existing processes and facilities and that efforts can only be placed on new projects. The general consensus was that the costs associated with implementing any kind of initiative would have a negative impact on the end user in the form of increase in costs.

Patterns and relationships: There is a strong relationship with societal impact and with the sustainable health of the company.

Perceptions: The strong perceptions common in most of the respondents was that the sector is low impact; it is also a sector that is providing a key service to society, therefore focus should not lend itself to initiatives that are believed not to be required in this sector. The perception of high costs associated with environmental initiatives, energy reduction, etc. was also very common among most of the candidates as well as the large effort and complexity required to implement any such initiative.

Significance to general study: This theme is central to the study and is significant specifically to research problem 1.

5.6.2 Cost vs environment

Description: This theme is very similar to the theme of value add. It also links throughout the themes as a central theme for the entire study. The difference between this theme and the value add theme is that the value add theme specifically looks at the value that can be contributed to the company. This theme relates to the balance that is required to ensure that a business is operational and that the environment is safe and sustained and the ‘allowable sacrifices’ that are to be made to keep this balance.

Comments received: These are the typical comments received that lent itself to the concept of costs vs the environment:

> *"Costs on lab procedures however need to be cut down. Due to high costs still outstanding to the NHLS, tests were not being done. This poses a risk to healthcare. Staff was asked to be more efficient with regards to tests requests."*
> *"Cost driver mostly. People really only consider how their bottom line is affected."*
> *"Obviously there needs to be efficiency with staff but one need to consider acuities – and there is never enough staff – people are really busy and rushed and therefore there is extra wastage when you are trying to rush."*
> *"Analysts look at end game – more longevity and investors at the bottom line."*
> *"Cost driver definitely but also a softer side to that as well. Need to consider a better earth for our children."*
> *"The environment is definitely important but quality cannot be sacrificed so costs are and should be allocated away from the environment for the greater good of the business and stakeholders."*
> *"In South Africa, healthcare is already very expensive. The impact on the final user of the healthcare system must be considered. The South African model is far off from an Australian or British model."*

Discussion: There was a resounding agreement with regards to the allocation of costs to environmental concerns relating to greenhouse gas emissions. In all the companies interviewed, allocating costs to the environment resulted in some sacrifice elsewhere. The concern for the company respondents is that the healthcare sector in South Africa is so regulated that patient care should be topmost on the list of priorities and nothing should sacrifice this. The patient/doctor respondents also were concerned about the effect this will have on costs passed on to them. Respondents however all claimed to adhere to governmental regulations regarding disease and infection control. These issues are viewed as basic healthcare issues and strong focus is placed on mitigating these issues.

Patterns and relationships: The pattern that is emerging here is the case of business survival or the individual's own survival and needs. In fact one

respondent interestingly likened the situation in this country to Maslow's hierarchy of needs. In the environmental and basic healthcare hierarchy of needs South African healthcare is still at the bottom, trying to satisfy just the basic needs.

The public healthcare sector is South Africa has major budgetary restraints. One candidate spoke strongly of the large debt owed by the Department of Health (DOH) to the National Health Laboratory Services (NHLS) which affected the conducting of test for patient diagnosis. The country faces a large demand for healthcare from the public that cannot afford the services. Funds therefore are diverted to provision of basic healthcare needs. On the environmental front, as mentioned, companies interviewed adhered to all environment regulatory requirements as a minimum.

Perceptions: Although most respondents felt very strongly that global carbon emissions is a concern, the perception of spending money on environmental initiatives was that this sacrificed quality of patient care or quality of business. The strong perception brought out was that the South African healthcare sector is not ready yet for any major considerations with regards to environmental issues specifically if it becomes too complex, specifically with regards to scope three supply chain issues. Most perceived that the sector was highly low impact and therefore should focus on business continuity and stakeholder health and welfare.

Significance to general study: This theme allows discussion around the balance between what should and must be done by a company. The value addition as questioned in research problem 1 must be integrated into businesses processes to add true value.

5.6.3 Supply chain

Description: The theme of supply chain relates to the companies and various stakeholders that are related to the healthcare sector. The main research problem specifically relates to the supply chain within the healthcare sector.

Comments received: These are the typical comments received that lent itself to the concept of supply chain:

> *"It's a huge problem. Financial department is very strict. We cannot purchase from non-compliant companies. Certain smaller suppliers are the only ones that may have a specific product that we require – some clients have certain product requirements that can only be obtained from a specific supplier. This poses a challenge to the company if that company is not accredited."*
>
> *"In Africa you deal with companies who do not have a concept of environmental issues or ISO14001. However international companies in Africa comply. If these companies are not prepared to comply we will not supply to them."*
>
> *"If a healthcare sector is to impose strict environmental accreditation criteria on my company, there will a cost impact to my company. This cannot be ignored and cannot become a sunken cost."*
>
> *"My company's focus is on providing high quality pharmaceuticals of standards that passes all quality inspections imposed. That is and should always be the key focus area and adds value to the company and the end user. Small wins on energy reduction, etc, that consumes resources and cost should not become a focus area."*

Discussion: As discussed, all the respondent companies form components within the South African healthcare supply chain. For most of the respondents the companies within their supply chain and other stakeholders are extremely critical and key to their business success. Relationships are extremely important to maintain. Corporate governance and responsible action to all stakeholders is a key consideration to the supply chain in which a company operates.

Patterns and relationships: Once again there is a strong pattern with the theme of balancing of cost and consideration to the environment. The supply chain of any company in the healthcare sector is key to the business success of the company. Quality, stakeholder relationships and the eventual negative knock-on effect on society must be considered when embarking on any initiative.

Perceptions: Interventions that help reduce the greenhouse gas effect and the negative effects of climate change are necessary however business survival is required. The perceptions that were common from most of the respondents were that any company within this sector is providing a healthcare service or product which implies that societal health and survival depends highly on the business processes and philosophies taken. Therefore it is imperative to ensure that any action taken considers the well-being of the supply chain and the effect this will have on all stakeholders within the supply chain.

Significance to general study: Value can only be created if there is strong positive supply chain cohesion and a strong relationship with suppliers. Any action taken regarding sustainability must be taken with a cautious view on the effect of stakeholders in the supply chain. Value of these actions can easily be destroyed if critical business processes are affected.

5.6.4 Societal impact & healthcare impacts

Description: This theme relates to the negative or positive impact that environmental issues that are currently being faced, or future environmental initiatives that will be undertaken, has on all the stakeholders within the healthcare sector and society as a whole.

Comments received: These are the typical comments received that lent itself to this theme:

> *"There is a definite impact on society."*
> *"Constant electricity outages which compromises the safety of patients on ventilators."*
> *"Ones job will become easier – fewer things to think about if there are proper procedures in place to help incorporate this within a person's job."*
> *"It lies in the low impact sector, if they keep to the requirements within the industry."*
> *"The industry is a necessity to aid in making life and the world a better place – ensure that every product is of high quality – keeping efficacy – green laws are*

important – however there cannot be a sacrifice in quality of operations and products."

"Social compact must be launched by the industry together with the government".

"One must consider effects of environment on any activities and the subsequent knock-on effect on society."

"It's the little changes you do. Its a bit of a circle. One cannot take an industry in isolation. There is a broader aspect and not just restricted to an industry."

"The healthcare industry is a large user of electricity due to extensive use of HVAC systems therefore there is scope for energy reduction. Similarly water savings can be realised which should be passed on to the patients/communities."

"Personally experienced that electricity usage is extremely high and often power cuts occurred once a week."

"The healthcare industry should be made accountable for environmental issues."

"Even if not regulatory there should still be focus on the healthcare industry."

Discussion: This theme is very closely linked to most of the other themes. This theme emerges elsewhere in the other themes. The global climate change issue concerns us all. Supporters of the movements to combat climate change are doing so because of the concern on the impact on human life. This is the same concept. The comments around this theme focused on the broader impact to society. The theme explored the lack of focus given by the South African healthcare industry with regard to environmental issues.

The strain on natural resources is already affecting operational activities within the healthcare sector. Patients and employees within the healthcare sector are being placed at risk due to electricity outages experienced at the facilities.

Patterns and relationships: This theme slightly contradicts some of the others already discussed. Here the respondents are concerned of the impact on society due to non-action on environmental issues. The new pattern that emerges here is a genuine concern for the lack of support to the industry. The

theme however is closely related to supply chain and implies as well that the effect on all stakeholders must be considered.

Perceptions: The perceptions strongly brought up here was one of non-support from any major institution or the government to help the sector on environmental issues. The perception in this theme changes the trend a little where deep concern of the impact on the environment and the impact on the end user and the industry is seen. Companies and individuals care about the negative impact to the earth, but needs to ensure business survival. Within a sector that is not a relatively large consumer of electricity or water or does not produce significant amounts of noxious gases, one cannot point the finger. The greatest environmental issue facing healthcare is the hazardous waste and proper disposal of this which is being complied to rather strictly.

Significance to general study: Although this may seem contradictory to the other themes it actually is not, and ties to the significance of the general study. Value can only be created if impact on stakeholders is positive. This implies that negative effects on stakeholders brought on by any company initiative will affect stakeholder sentiment and eventual business health.

5.6.5 Conclusion

The themes discussed above pertaining to research problem 1 are; value add, costs vs environment, supply chain and societal and healthcare impacts. The research problem is, “sustainable development principles in the supply chain of the healthcare sector create value for all role players in the sector. “ The general perceptions in the discussion of this section indicate that this is not the sentiment shared by the respondents. Respondents understand clearly the climate change concern but felt strongly that at this stage, within the South African context and considering the nature of the industry, focus must be on the end user and providing high quality products and the best and safest patient care.

5.7 Discussion pertaining to Research Problem 2

5.7.1 Recycling and efficiency

Description: This theme focuses around efficient operations and processes as well as recycling initiatives taken by the individuals and companies but also a general opinion regarding recycling and efficiency.

Comments received: These are the typical comments received that lent itself to the concept of recycling and efficiency:

> *"You use things that are absolutely necessary and reduce your impact on the earth. Manage resources more effectively. There are people with good intentions and there is a lot of talk around this but not much is done, eg, Gautrain to reduce travel impacts, however the true benefits to be derived have not been thought through properly."*
>
> *"On government tendering, emissions numbers are required. Initiatives are implemented throughout the company, solar geysers, lights, etc. Facility report includes report on all emissions, etc. each factory reports and this pulls through to corporate level."*
>
> *"Water management is important. SA is a water stressed country. Need to educate everyone on these aspects."*
>
> *Initiatives in the new building will consider energy management initiatives."*
>
> *"Biggest emissions are those from vehicles and travel by plane. Need to consider working from home or teleconferencing and videoconferencing as an alternative means to working. This will increase productivity, allow more time for your family and is more energy efficient. Stress will also lower."*
>
> *"Oxygen is allowed to be wasted without being used by patients. This is a fire hazard and a risk to patience as well as a cost burdens.*
>
> *"Huge facility, huge staff and with these staff numbers there is definitely wastage. People are extremely busy to focus on being efficient. Taps are not closed properly, more than one hand towel is used, etc – therefore there must be something easy and obvious. There must be mechanisms and equipment in place to assist people, eg, soap dispensers, sensored taps, etc"*
>
> *"Biological waste must first be handled in a responsible and human friendly way."*

"Question of incineration of medical waste – alternatives must be found, however if no alternatives, the waste must be disposed of in a certain way, even if it is environmentally hazardous."

"Staff is not re-using scrubs which results in a higher volume of waste that need to be incinerated."

"Proper colour coded bins are provided. This works well. All are aware of the procedures however all procedures are not followed. People still use the black and red bins carelessly."

Discussion: A lot of the respondents felt that there should be more emphasis placed by companies (their own or companies within the healthcare sector supply chain) on simpler initiatives like recycling and efficient processes and operations. These initiatives requiring low effort were thought to be more sustaining and to result in long term benefits. This effort should be fully integrated into the day to day operations of the business so as not to take away focus from core operations. Respondents felt strongly that this should be driven from, and supported at, a very high level in the organisation.

Patterns and relationships: This theme has a strong relationship to the theme of value add as well as the impact on society and stakeholders.

Perceptions: The strong perception observed here was the confidence of the benefits being achieved. Respondents strongly believed that a fully integrated solution of more efficient operations would definitely yield a long term cost benefit although most also perceived that quantifying this benefit would be near to impossible.

Significance to general study: The significance here relates both to research problem 1 and 2. It relates very strongly to the perception of value that can be added to the company and all employees. It also relates to performance measurement and the extent of effort to be able to quantify a degree of performance.

5.7.2 Management and KPIs

Description: This theme relates to the actual performance measurements that companies have in place for carbon emission reporting or any other relevant KPIs.

Comments received: These are the typical comments received that lent itself to the concept of management and KPIs:

> *"Currently there is not much support. There are incentives to assist, e.g, budget, etc. There are no restrictions placed, no controls. Because of the nature of public health facilities the cost of operations does not play a role in the actual business. There is therefore no need or incentive to cut down on costs."*
>
> *"Higher level management needs to put procedures in place. People in operation level need to focus on the business."*
>
> *"There's a green aspect to financial incentives. These are driven by corporate policies as well as factory level where targets have to be met."*
>
> *"Five year targets are set at corporate level and drilled down and driven by separate factories."*
>
> *"International Mother Company sets out target and KPIS."*
>
> *"A target has been set for the end of 2013 to be fully ISO 14001certified*
>
> *"Hazardous waste is governed by legislation, therefore we comply very strictly with this in terms of weight of batches due to penalties. We therefore ensure that operation is run efficiently to ensure minimal waste. This is controlled by KPIs for unit managers where the limits are pushed."*

Discussion: It is once again clear that measurement and performance on a green level must be linked to financial incentives. Since costs are associated with environmental initiatives, a return on these costs spent is expected. Management in most of the companies interviewed has set aside some kind of performance measurement, whether formal or informal. At some of the larger hospital and pharmaceutical groups, a structured approach is adopted where international best practice guidelines are adopted. This is however not the case for the medium to small companies in the sector supply chain that were interviewed. I believe this is a trend in the entire sector. Only a two of the

companies interviewed report on Scope 1 and 2 emissions and only one of these companies report on Scope 3 emissions, where only 2 components of Scope 3 is reported on. The other JSE listed companies interviewed are either not reporting on environmental issues at all or have just begun with some initiatives and reporting.

Patterns and relationships: This theme is closely linked to the non-key theme of reporting.

Perceptions: The general perception is that setting environmental targets and KPIs are important but there is constant pressure from management for staff to meet financial or operational targets. Unless environmental KPIs are linked to financial or operational targets, there will always be a struggle to meet the environmental targets. Respondents felt that there should be more support from management with regards to budgetary concerns and even possibly more governmental support in this regards specifically in this sector.

Significance to general study: This is the key theme for research problem 2. Research problem 2 seeks to determine the focus on performance level required for value creation.

5.7.3 Environmental Awareness

Description: This theme lends itself to education and knowledge sharing with regards to environmental issues. This theme was surprisingly common in some of the interviews.

Comments received: These are the typical comments received that lent itself to the concept of value add:

> *"Only paper recycling. Was asked not to be wasteful, lights were switched off and water, but nothing major. No awareness, no procedures."*
> *"More awareness and protocols should be place."*
> *"In a public a facilities there are posters"*

"People will not necessarily do something if they do not know why they are doing it. More awareness and protocols are needed."

"There was nothing approaching non-compliance – a lot of times people used common sense. There was not a lot of awareness. There should be something, some incentive or award to encourage people to do things. People want a reward for doing something since this is not part of their everyday job."

Discussion: Management/companies may be restricted in terms of costs to do something to reduce environmental impact, but environmental awareness requires minimal costs. Although some companies do have energy reduction, water reduction and environmental awareness initiatives, it is not measured or no motivation or performance is linked, to ensure savings or reduction. This seems primarily to be due to the lack of education and knowledge sharing.

Patterns and relationships: This theme finds itself under this research problem as it lends itself to the company focus and duties of management to ensure performance and results are obtained.

Perceptions: The perception of the respondents here is a lack of support or passion from management to act on the cost insignificant initiatives. In some instances, respondents felt that they were not given enough support to assist in making day-to-day operations more efficient. Respondents felt that apart from the support in the form of more efficient processes, devices, etc., there was no education on the topic. The strong perception amongst most candidates is that people will change their behaviour if they understand the motivation behind a certain initiative. No results were being achieved because firstly, no support was given and secondly if any initiatives are in place, users/employees did not understand the motivation behind this.

Significance to general study: Environmental initiatives are pervasive in most operational activities. It is easy to incorporate into business processes but unless driven from a managerial level, these easy initiatives will not reap any value. The level of focus required is at a managerial level where systems are developed to allow incorporation and integration of environmentally friendly

activities within day-to-day operations without compromising the focus on employees from their daily tasks.

5.7.4 Company or own involvement

Description: Company or own involvement relates to the efforts put in by the company or the individual towards environmental issues.

Comments received: These are the typical comments received that lent itself to the concept of company or own involvement:

> *"One was encouraged to recycle and there were recycle bins. But all were cost drivers. However there was not much of emphasis."*
> *"If there are things in place people will definitely comply."*
> *"I am already not a wasteful person – physiotherapists are generally women and women are more conscious – the little one does will make an impact, but may not be a huge impact because it's a low impact sector – initiatives like paperless invoice and recycling is being practiced."*
> *"Government should put together a more visible campaign".*
> *"Government has provided great guidelines for BBBEE – but not much for environmental."*
> *"We must have real guidelines, must be a benefit to business to get involved in initiatives and rules of the game must be clear and must be measured and monitored. There needs to be measurable performance measures."*
> *"The staff that leaves the building last knows to switch off all lights and appliances."*

Discussion: Respondents were asked to comment on what the company does and what they believed should be done. Most companies in the sector are conducting waste recycling, paper recycling and switch-it-off campaigns. Respondents also felt that effort should be put in on an individual capacity.

Patterns and relationships: This theme has strong ties with the non-key theme of government/institutions. Own involvement can only be guaranteed if concepts of environmental awareness and issues are addressed at school level.

The issue becomes a country issue and is not only specifically a company or industry issue. The theme finds itself under this research problem because of its link on performance required at company and an individual level.

Perceptions: The strong perception was the results obtained from employee involvement. Respondents felt that effort put in on an individual capacity was quite important to ensure any company initiative succeeded. A strong perception that came through was the non-support from government organisations. Respondents perceived that other countries were provided with government support in the form of funding or guidelines but South Africa trailed behind the rest.

Significance to general study: The theme is significant in understanding the perceptions of the extent of the individual's own involvement and that of the companies' in ensuring results are obtained and can be measured.

5.7.5 Society involvement

Description: Does the responsibility lie only with companies and is it only companies that can make a difference? This theme explores this concept to understand the significant role that society plays, if any.

Comments received: These are the typical comments received that lent itself to the concept of society involvement

> *"Absolutely – one can make a difference. When certain procedures are meant to be sterile and you need to use gowns. Disposable gowns should be used if it is cost effective."*
> *"Mentality of South Africans is not one to think about environmental issues."*
> *"It's the little changes you do. It's a bit of a circle. One cannot take an industry in isolation. There is a broader aspect and not just restricted to an industry."*
> *"Behavioural changes at work will definitely make a difference."*
> *"It's a culture in this country – how do we change this?"*
> *"If we wait for our people to catch up it may be too late."*

Discussion: There is a strong theme of country crisis and the discussion around this point delves into more than just the issues on environment that the country faces.

Patterns and relationships: This theme is very closely linked to the key theme of company or own involvement and with the non-key theme of government/institutions.

Perceptions: Society must definitely be involved in the fight against global warming change, but society must first be at a stage of understanding the issue. People within a certain class status or professional status in South Africa will understand the need for environmental initiatives but the majority of South Africans are unaware of the global crisis at hand. Most of the respondents strongly felt that South Africa has more dire basic issues to focus on. The educational crisis needs a strong focal point because it is through education that people at all levels can start appreciating the global crisis that is upon the world. Society can do a lot in an individual capacity. Individuals need to however, first understand and appreciate the issue at hand.

Significance to general study: The performance level of focus is at governmental level. South African needs to have governmental intervention at all levels to support the initiatives and educate and create environmental awareness in order for any significant value to be realised.

5.7.6 Conclusion

The themes discussed above pertaining to research problem 2 are; recycling and efficiency, management and KPIs, environmental awareness, company or own involvement and society involvement. The research problem is, “value creation for sustainable development for the business operations of companies in the healthcare sector requires a performance level of focus.” The general perceptions in the discussion of this section indicate that before scope 3 can become the level of focus there are many gaps that are required to be filled. Within companies proper systems are

required and within government more support is required. South Africa and the sector itself need to look at the basic needs required by society. Management and government must therefore consider ways in which systems and initiatives can be incorporated into society and operations to allow for automatic performance on scope 3 levels.

5.8 Applicability of results to literature

5.8.1 Sustainable development

The literature survey posited the idea of sustainable development as a concept that is more of a marketing campaign for companies than a concept that incorporates business processes into an efficient, environmental friendly and labour friendly system. Results from the interviews points loosely to this concept. The key observation of the interviews is that the concept of sustainable development is not fully understood amongst the small to medium sized business within the supply chain of the South African healthcare sector. It is also very interesting that a lot of these companies are not actively measuring and reporting on initiatives and efforts to either confirm of diffuse this argument.

If the idea from Bhatia et al., (2011), is to be believed, then there are certainly benefits in measuring and reporting in order to evaluate the benefits obtained from initiatives and sustainable development efforts.

5.8.2 Supply chain operations and the healthcare sector

Section 2.3.3 highlights clearly that supply chain operations within a healthcare sector should ensure clinical outcomes are met while controlling costs (Schneller & Smeltzer, 2006). The discussion of the results echoed this sentiment where emphasis in the comments was placed on focusing on core company processes to ensure that quality of product and patient/end-user benefits were derived. The industry is seen as a critical care industry where

certain standards are to be upheld in order to comply with patient safety and patient needs. The country is perceived as to be in a crisis situation with regards to healthcare and therefore costs and other resources must first be allocated appropriately to ensure primary needs are first met. Once again, the comparison to Maslow's hierarchy of needs is relevant here where the South African healthcare sector is sitting at the bottom of the pyramid.

5.8.3 Value addition of sustainable development

The companies interviewed are all subject to certain South African healthcare regulations. All of these companies abide strictly by these regulations. The hazardous waste regulation is one that is directed at infection control and environmental concerns. In this sense, companies are applying environmentally friendly initiatives which are driven by regulations. The literature survey in section 2.3.4 indicates that there is a trend of companies to move from conducting only regulatory initiatives to voluntary environmental initiatives. The data from the interviews did not point to such a large move in the South African healthcare sector.

"Does not add to your bottom line but to respect and reputation"
"It helps to differentiate you with a sustainable product. Allows your clients to be more responsible – allowing for people to focus on what they are doing. To be competitive one needs to offer products to customers that add value to them"

The above statements show that some of the companies understood that such efforts will improve competitive advantage and to an extent investor and public sector recognition, which can translate into an increase in company value. The general consensus from the respondents however was this will be very difficult to measure and quantify.

5.8.4 Regulations and compliance

Respondents were clear that their respective companies comply in all instances with the requirements of the law. Waste and hazardous waste handling, management and disposal are strictly regulated in South Africa. Companies interviewed all responded to complying very strictly with this. The requirements of the Company Act, 2009, are therefore also considered very strictly in all business activities.

The “apply or explain” requirement of the King Report on Corporate Governance is a less stringent requirement as compared to the Sarbanes-Oxley’s Act of “comply or else” and the United Nations governance Code of “adopt or explain” (The South African Institute of Chartered Accountants, 2011). This allows companies within South Africa freedom to apply best practices as applicable to the context of their operations. Companies can then focus on the core business requirements. From the responses received, this is critical in the healthcare sector due to the focus on patient safety. Most provisions/products aimed at the healthcare sector (pharmaceuticals, medical gases, medical devices) require a high quality intensive process of manufacturing and supply as well as logistics functions that respond to the requirements effectively to the requirements of the industry. If core business activities are compromised, there are potential adverse effects on society. Most of the responding companies therefore apply environmental initiatives, however not before considering the effect that this will pose on core business activities.

5.8.5 Levels of focus of sustainable development and performance measures

Section 2.4.1 differentiates between the different levels of performance measures. Supply chain effects are related to the scope 3 performance measures. Although global corporate guidelines encourage scope 3 compliance (Bhatia et al., 2011), the discussion from the research is clear that South Africa and the healthcare sector need to combine this level of focus with operational

activities and consider the impact on all stakeholders. The balance between negative effects on the supply chain and all stakeholders when scope 3 performance measures are considered, and quality of product and service, must be carefully considered. The sector is perceived to be a critical sector that is concerned with patient care and society's well-being.

5.8.6 Conclusion

Research problem 1 & 2: The literature survey did not conclusively find evidence of actual value added from sustainability efforts in the healthcare supply chain regarding scope 3 related emissions. The research supports this. The understanding is clear that although value cannot conclusively be determined, governmental, company and individual efforts are important to combat the climate change issues, however this should not be at the detriment of core business focus specifically for the healthcare sector.
The level of performance measurement must be weighed against the resource requirements (cost, time and people) as well as the knock-on effect on the end-user and all stakeholders.

5.9 Validation and reliability of data

A semi-structured approached, using a specific research instrument eliminated subjectivity during the interview by guiding interviewee and interviewer by following the questions on the templates. Respondents were allowed to elaborate on their point and divert off the topic to some extent to allow for a free flowing discussion. This assisted in creating an environment where the respondents openly shared information.

The selection of different templates for a different set of respondents was highly successful in ensuring the proper level of interaction of the respondents. The group 1 respondents were from the companies, hence a more company

focused research instrument was appropriate, which allowed for the focus on the interviews to be on company initiatives. This restricted to some extent personal views from coming through, when company perceptions and philosophies were being sought.

The group 2 respondents are users of the healthcare facility so it was very important to establish personal perceptions and to gauge understanding of the concepts being addressed in the study. The research instrument therefore catered well for this purpose.

5.10 Benchmarking Study

Although the focus of the study was to understand the effect of scope 3 emissions accounting in the healthcare industry, the benchmarking exercise did not focus on the healthcare industry. The aim of the benchmarking exercise was to benchmark South Africa's approach to GHG emissions reporting and governance as compared to that of leading countries.

European Union (EU): The EU currently has a climate change policy that governs and guides countries in the EU on mitigation and adaptation aspects of climate change. The central pillar of the policy is measures to mitigate emissions and methods to adapt to the unavoidable impact of climate change. The EU has submitted a white paper to allow for the development of adaptation strategies that will guide member countries to identify optimal resource use allocation, efficient resource use and guidance on spending programs. The aim is to integrate adaptation into key policy areas within the EU member states (Aakre & Rübbelke, 2010). Eight companies in the EU have approved national plans for adaptation with five more in preparation (Massey & Huitema, 2012).

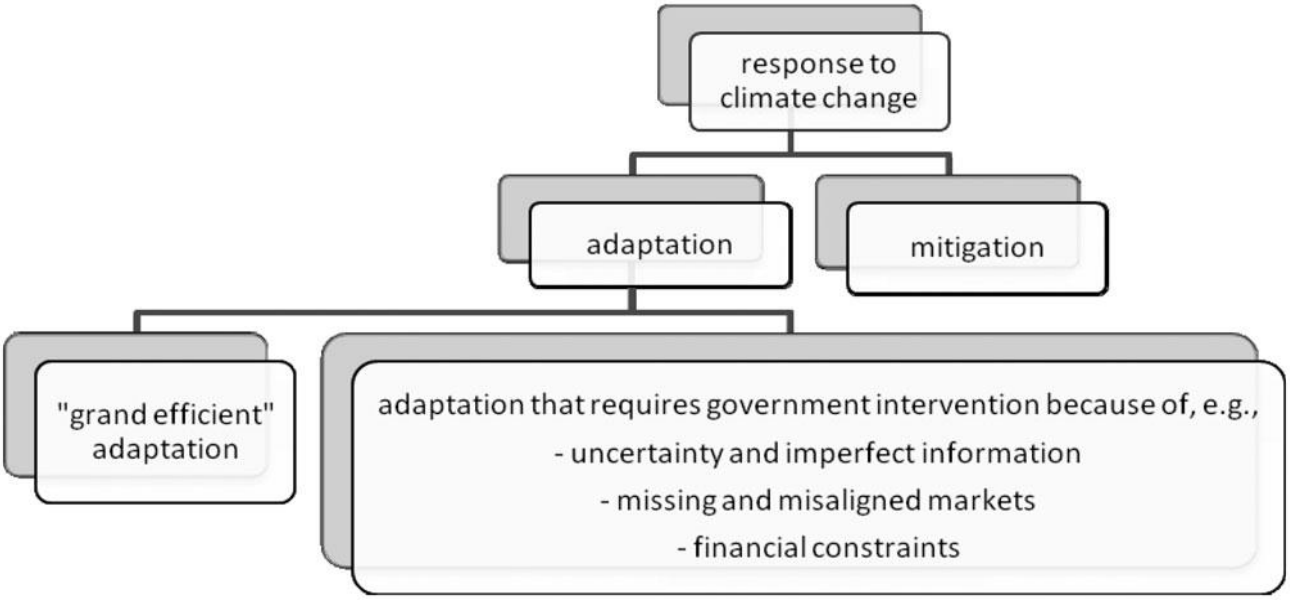

Figure 8 – Different dimensions of climate policy

Source: Aakre and Rübbelke (2010)

Figure 8 summarises the stance taken by the European Union with regards to climate change response. There are two major considerations, adaptation and mitigation. Adaptation has become the global focus area for climate change response and corporate and society requires guidance on how to adapt to current climate change issues.

United Kingdom (UK): The United Kingdom currently has the Climate Change Act that was introduced in 2008. The Climate Change Act included a framework for building the country's ability to adapt to climate change, recommended five yearly risk assessments, an adaptation program to address the high climate change risks and the creation of an adaptation sub-committee. The UK is also actively conducting water management drives, heat wave plans and flood defence to ensure adaptation to climate change effects.

5.11 Conclusion

The first world's focus is on adapting to the changes in weather patterns due to the global warming effect. Guidance from government is required for the promotion of sustainable development where the government enhances environmental awareness, education, provides funding or investment guidance and creates forums for discussion, debate and knowledge sharing (Baker, 2009). Baker, (2009) further emphasises the government's international networks and circles of influence which provide the country access to the rest of the world.

The study focused on issues that are current globally. They are also not new to South Africa. However based on the low impact industry that healthcare finds itself in, Scope 3 considerations are fairly new to the industry and not a key focal point with regards to environmental initiatives and reporting. Corporate governance principles in the form of the Company Act, 2009 and the King III reports, focused on sustainability and the importance of considering sustainability efforts for the success of the business. Business has however not been provided with proof or guidance as to the benefits.

Companies acknowledge that there may be a strong link with company profitability and investor sentiment, but there is also a very strong link with positive and negative impacts on the industry, society and all stakeholders. Supply chain scope 3 carbon reduction efforts affect more people than scope 1 and 2 efforts. It is not only a consideration of reducing carbon emissions but key considerations are important to the knock-on effect of every member within the focal point of consideration.

Various studies have been aimed at this topic and various articles published. There has, however, been nothing that has conclusively quantified the value

add or financial impact on the company or stakeholders with regards to scope 3 accountability. The balance of costs/resources applied to these scope 3 environmental efforts and the benefits derived are not clearly understood.

Disclosure, value add, company/industry motivation and sector/societal impact were strong overriding concepts from the interviews. Respondents felt strongly that, although the global climate change crisis is a concern for all and efforts must be expended to fight the phenomenon, businesses in the healthcare sector need to survive to provide the critical services and products required for society's well-being. Efforts must be linked with a value, whether quantified in monetary terms or stakeholder value. This value must add value to the business whether in terms of end-user value or simplifying processes or logistics. The issue of climate change is a global crisis, therefore support is sought and expected by government and other institutions.

Companies are bound by the Companies Act of South Africa, Act 71 of 2009. Apart from this companies listed on the South African Johannesburg Stock Exchange (JSE) or other similar international listings are bound to comply with the specific disclosure requirements. The interviews clearly point out that compliance, whether for regulatory purposes or other national or international compliance requirements, is being fulfilled. Companies are however asking themselves what else is required that will help the environment yet still add value to their core offering.

6. CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter will begin with a summary of the final conclusions made in the discussion sections. It will then go on to discuss the recommendations and suggestion for future research.

6.2 Conclusions of the study

The main problem statement was to analyse and evaluate the value added by sustainable development in the supply chain of the healthcare industry. As mentioned, the purpose of this report was not to provide conclusive evidence of value addition of scope 3 initiatives (supply chain) to a company but rather to ascertain the sentiments within the sector of value add.

The less than anticipated number of respondents was found not to be a limitation on the quality of results obtained.

“A key challenge for leadership is to make sustainability issues mainstream. Strategy, risk, performance and sustainability have become inseparable...” (Institute of Directors in Southern Africa, 2009, p11). Integrated sustainability efforts and performance and reporting must be embraced by management and government in order for success and to maintain the balance between environmental needs and business success.

Value can only be gained if considerations of climate change issues are incorporated within the business activities. The supply chain of any company

may be large and complicated. Incorporating a dedicated team and effort to address climate change issues within a company, will just lead to a large increase in operational expenditure. Focus must remain on core business processes with more efficiency designed into the operational activities to address climate change issues. Integration and incorporation are the elements that will allow focus to remain on core business processes but doing this by integrating more efficiency and reduction throughout the supply chain.

6.3 Recommendations

Although a global issue, affecting every individual, climate change in companies should be driven at managerial level. Environmental initiatives need to be well integrated into all business processes. There should not be distinct tasks at low operational level specifically focused on environmental issues, specifically relating to companies within the supply chain of the healthcare sector. These companies must focus on their core business activities and provide high quality products or services for patient care. Management must consider ways to incorporate sustainable development efforts into day to day operation. Strain must not be placed on employees to consider an added dimension to their workload, specifically those employees engaged in the direct provision of patient care.

This concept applies to all industries and sectors as well as society. Living an efficient life and incorporating efficiency and social awareness into everyday life and everyday operations, is the most cost effective, less complex way to consider the environment and at the same time add business value.

Leadership in this sector within South Africa is required and to some extent provided by associations like the South African Federation of Hospital Engineering (SAFHE), the Council for Scientific and Industrial Research (CSIR) and the Hospital Association of South Africa (HASA). These associations promote energy efficient operations currently and are supported by the

companies within the healthcare sector who are members of these associations. South Africa requires greater leadership and environmental and social awareness around sector specific climate change initiatives integrating healthcare operations.

The Walmart effect is a case in point. Walmart is a perfect example of how to effectively green the supply chain with their Chinese business (Schell, 2011). This however was possible due to the large Chinese and worldwide presence that Walmart does have and that the company is leaders in its sector. Green supply chain initiatives were driven from as high up as CEO level and were highly integrated into normal retail business processes. Assistance from Walmart was provided to direct business operations as well as those companies within Walmart's supply chain (Schell, 2011).

6.4 Suggestions for further research

The findings of this research are quite interesting and enlightening as to the carbon reporting and disclosure situation of companies in the healthcare sector within South Africa and globally. Respondents interviewed provided a view into the world of environmental sustainability in the healthcare sector within South Africa.

It will be beneficial to delve more into the topic to unearth different approaches adopted by other companies and to understand the maturity level that the sector finds itself in with regards to environmental disclosure and reporting.

From literature survey and perceptions of respondents it is clear that reporting on sustainability is challenging. Large data collection, processing, multidimensional performance measurement, non-standardised data, lack of correct technology and sometimes a lack of understanding of inter-organisation performance measurement (Hervani et al., 2005), is required. The purpose of

this study is not to solve the issues surrounding data collection and reporting but rather to illustrate the possible difficulty in assessing value in scope 3 disclosure. Further study into looking at how companies overcome the above stated hurdles will shed more light into actual value add from scope 3 initiatives.

Based on the freedom provided by South African law and best practices to allow companies to apply environmental requirements, further study into how companies apply these practices and the extent that environmental issues are considered is suggested.

Finally, a study to understand the effect of incorporating stricter environmental measures and compliance on the supply chain and the effect of this to the end-user is suggested.

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APPENDIX A

A1: Interview Questions for Doctors and Patients/Customers before pilot interview

1. What in your view is the stance taken by the healthcare facility on sustainability?
2. What formal best practices/guidelines and/or national and international bodies are you aware that the facility ascribes to?
3. Has the facility/company incorporated environmental sustainability efforts that has added value to you, to the business, to the industry and to the community?
4. Have you been asked or expected to conduct/change your activities/behaviour in order to support sustainable development initiatives?
5. How did you react to this and how has this made you feel?
6. Do you understand the reason behind the request and how it is expected to add value?
7. In your opinion, are sustainable environmental considerations important in adding value to the healthcare industry?
8. Do you feel that the healthcare industry in South Africa should be doing more towards emissions reduction and sustainable practice considering that it lies in the low impact industry?
9. How do you think that you can make a difference that will add value to the supply chain of the healthcare sector?

A2: Interview Questions for Doctors and Patients/Customers – modified after pilot interview

10. State your name, job title and the applicable facility that you have worked in.
11. What do you understand by sustainable development?
12. What do you understand by how the environment fits into this?
13. Have you in your experience with the healthcare facility that you have worked in been exposed to any form of environmental considerations/management at the facility?
14. What in your opinion on the approach adopted by the facility regarding environmental issues?
15. Do you believe that more should/can be done? If so elaborate?
16. Do you know of any formal standards that the facility ascribes to regarding environmental issues?
17. Do you understand the impact on you as a user of the facility with regards to this?
18. Has the facility done anything that has been required/requested by yourself/your colleagues/your department?
19. Are/were there any environmental issues that you believe needs to be addressed by the facility?
20. Have you been asked or expected to conduct/change your activities/behaviour in order to support environmental initiatives?
21. How did you react to this and how has this made you feel?
22. Do you understand the reason behind the request and how it is expected to add value?
23. In your opinion, are environmental considerations important in adding value to the healthcare industry and the community?
24. Do you feel that the healthcare industry in South Africa should be doing more towards emissions reduction and sustainable practice considering that it lies in the low impact industry?

25. How do you think that you can make a difference that will add value to the supply chain of the healthcare sector?
26. As a responsible citizen and member of the facility do you believe that you should be adding towards reduction of negative impact on the environment?
27. Do you have any questions or further comments to add?

A3: Interview Questions for Companies

1. What is your role in the organisation?
2. How does your company fit into the healthcare supply chain?
3. What is the stance taken by your company on sustainability reporting and why?
4. What formal best practices/guidelines and/or national and international bodies does your company ascribe to in the arena of sustainability and sustainable reporting?
5. Does your company conduct carbon reporting and if yes all scopes covered and targets are set?
6. What are the reasons for not reporting on carbon emissions?
7. What is your company's philosophy behind setting targets?
8. Do you believe that incorporating sustainability into your operations has added value to your business? In what way was value added?
9. Do you believe that incorporating sustainability into your operations has added value to your clients? In what way was value added?
10. Has your company been asked by clients to conform to any sustainable procedures or policies?
11. How has environmental sustainability and other aspects of sustainability been incorporated into your operations?
12. How do you intend to ensure that targets and met and initiatives are sustainable?
13. What do you believe should be done in the healthcare industry to improve supply chain value add?
14. In your opinion, are sustainable environmental considerations important in adding value to the healthcare industry?
15. Do you feel that the healthcare industry in South Africa should be doing more towards emissions reduction and sustainable practice considering that it lies in the low impact industry?

APPENDIX B

Consistency matrix

Table 4 – Consistency Matrix

Research problem: Analyse and evaluate the effect of sustainable development in the supply chain of the healthcare industry and ascertain the level of focus of sustainable development required for value creation in business operations.					
Sub-problem	**Literature Review**	**Hypotheses or Propositions or Research questions**	**Source of data**	**Type of data**	**Analysis**
Analyse and evaluate the value added by sustainable development in the supply chain of the healthcare industry.	Sarkis, 2002 Penfield, 2007 Sinha & Kohnke, 2009 Lele, 1991	Does theory suggest any value addition to the supply chain of the healthcare industry?	Actual interview questions that will provide the data, preferably in words	Qualitative data	Thematic and content analysis will be used.
Ascertain the level of focus necessary to ensure value creation in business operations.	Ranganathan et al., 2004 Bhatia et al., 2011	What are the theoretical levels of focus and performance measurements of sustainable development and are they relevant to the healthcare industry?	Actual interview questions that will provide the data, preferably in words. Benchmarking against best practices implemented in other countries.	Qualitative data	Thematic and content analysis will be used.