ROLE OF GREEN PROCUREMENT PRACTICES ON THE ENVIRONMENTAL PERFORMANCE OF MILK PROCESSING FIRMS IN HARARE, ZIMBABWE

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APPROVAL FORM

The undersigned certify that they have read and recommend to the Bindura University of Science Education for acceptance: A dissertation with title, “Role of Green Procurement Practices on Environmental Performance of Milk Processing Firms”,

by Ottilia T Nyatondo in partial fulfillment of the requirements for Masters of Science degree in Purchasing and Supply Chain Management.

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DECLARATION FORM

I, Ottilia T Nyatondo, do hereby declare that this dissertation is the result of my own investigation and research, except to the extent indicated in the acknowledgements, references and by comments included in the body of the report and it has not been submitted in part or in full for any other degree to any other University.

________________________________________  __________________________
SIGNATURE                                                              DATE
DEDICATION

I dedicate this project to my beloved family for their love and support.
ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my supervisor, Dr F Chari for his incredible support, guidance and motivation during the development of the project.
ABSTRACT

The aim of this study was to explore the role of green procurement practices (green product and green supplier) on the environmental performance of milk processing firms including establishing the extent of implementation of green procurement practices and challenges to green procurement practices within the milk processing firms in Harare. The research used case study design. Eight participants, from milk processing firms were interviewed. The study concluded that green procurement practices specifically, green product and green supplier play a significant role on the environmental performance of organizations. The study further concluded that green procurement practices are being implemented to a considerably high degree in milk processing firms in Harare. The study identified two major challenges to green procurement practices namely economic reasons and inadequate suppliers/supply of green products/services for selection in the market in the context of milk processing firms in Harare. The major recommendation of the study was that milk processing firms including other manufacturers should consider adopting green procurement practices since there are potential benefits that the firms may realize from implementation of green procurement practices.
CHAPTER ONE

INTRODUCTION

1.0 Introduction

The business organisations are increasingly focusing their procurement strategies on reducing the adverse impacts of their operations on the environment in response to growing concern from the government, consumers and other stakeholders on the impact of corporate activities on the natural environment. In view of the above, the concept of green procurement has received attention of the industry and academia because of its potential to contribute to sustainable production, consumption and most importantly sustainable development.

This chapter provides the background to the research and further describes the concept of green procurement. This is followed by research objectives, research questions and significance of the study.

1.1 Background to the Study

Sustainable procurement has been identified as having the potential to transform markets and address environmental and social impacts of economic activities. The United Nations General Assembly acknowledged that sustainable procurement can be leveraged to drive sustainability along value chains by including it in Sustainable Development Goals (SDGs) for the period 2015 to 2030, UN (2017). Sustainable procurement is therefore, a key part of the 2030 Agenda for Sustainable Development and is embodied in SDG12, targets 12.6 and 12.7 focusing specifically on promoting “public procurement practices that are sustainable, in accordance with national policies and priorities” and encouraging “companies to adopt sustainable practices and sustainability reporting”. Sustainable procurement is a component of sustainable practices that businesses are being called to implement mainly because it has been recognized that businesses may contribute to the realisation of sustainable development goals. Through procuring sustainable products and services, public authorities and businesses can improve
environmental performance of their operations and products as well as convey a strong market signal and help scale the market for these products and services; and hence drive markets towards more sustainability.

Sustainable procurement draws its roots from the broad concept of sustainable development. The concept of sustainable development seeks to maintain economic advancement and progress while protecting the long-term value of the environment. To this end, the SDGs set by the United Nations General Assembly in 2015 commit to protect the planet from degradation, through sustainable production and consumption and sustainable management of natural resources (terrestrial, marine and ecosystems), as well as taking urgent action to tackle climate change. Sustainable procurement has the potential to impact directly the environment related SDG targets by living up to the 2030 Agenda for Sustainable Development. Similarly, Agyepong and Nhamo (2016) assert that green procurement has been identified as one of the climate change intervention measures.

The concept of green procurement is linked to sustainable procurement. Green procurement refers to basing all purchasing decisions and allocation of contracts on environmental criteria along with other criteria such as quality, price and delivery (International Council for Local Environmental Initiatives—ICLEI 2000). The primary focus of green procurement is environmental impact reduction and prevention of harm to human health. The European Commission defined green procurement as the process of purchasing goods, services and works with a reduced environmental impact throughout their life-cycle compared to goods, services and works with the same primary function which would otherwise be procured, while sustainable procurement refers to a process by which the appropriate balance is achieved between the three pillars of sustainable development - economic, social and environmental - when procuring goods, services or works. Therefore sustainable procurement is broader in scope whereas with green procurement consideration about people and employees is limited to direct exposures from products or services.

As indicated above, there is growing awareness that there is need to sustainably manage the planet’s resources and ecosystems. Marron, (2013) states that environmental issues have become a subject of critical concern for businesses in recent years worldwide. Because of that there has been pressure from the public and civil society and legal and regulatory framework
for greater corporate responsibility and accountability for the impact of corporate activities on
the natural environment. The pressure has meant that an increasingly large number of
organisations have recognized the importance of properly managing their interactions with the
natural environment (OECD, 2012).

Therefore, in response to the current wave of global environmental concern, milk processing
firms like other sectors are adopting green procurement. The impact of green procurement is
notable within existing literature. World Economic Forum (2015) found that by implementing
green procurement carbon gas reduction of 13-22% on overall footprint can be achieved. Chin
et al., (2015) also found that the execution of green purchasing practices including green
product, green process and green supplier have positive impacts on environmental
performance. Potential environmental benefits of green procurement include contributing to
meeting environmental challenges such as climate change, biodiversity loss, and access to fresh
water; contributing to achieving reduction of greenhouse gas emissions (GHG), and energy
efficiency and reduction of health hazards. Khisa (2011) states that different organizations
may adopt different green procurement practices in confronting diverse sustainability issues
depending on their operations and characteristics and industrial sector. For instance automobile
manufacturing companies place emphasis greatly on cleaner energy in addressing climate
change. Similarly dairy plants are intensive users of water and energy which is associated with
GHG emissions. The nature of dairy produce is such that it is highly perishable, needs to be
collected daily and must be refrigerated at all times. As a result, the sector’s procurement
strategies focus on energy, water consumption and waste reduction.

This research will focus specifically on the role of green procurement practices on
organisational performance in the context of milk processing firms in Harare, including
exploring the extent to which green procurement practices are being applied the milk
processing sector and ascertaining barriers to implementing green procurement practices.
1.2 Statement of the Problem

Sustainable procurement has emerged as a key strategy for businesses aiming to address social and environmental impacts of their products and services. Indeed, the relevance and importance of sustainable procurement to organizational and operations management in today’s world is underscored by recent marked increased interest in sustainable procurement. In practical business environment and procurement operations, many organisations adopt sustainable procurement as a strategic approach to take care of the environmental, economic and social demands originating from the government, social and environmental bodies and general public (Nyoike and Ismail, 2017; Kennard, 2012).

A review of the research that has been carried out on sustainable procurement, and specifically green procurement depicts that the subject has been studied more in the manufacturing sector in developed countries, and less in the developing countries. More research related to the developed countries is needed. In the context of Zimbabwe, limited research has been undertaken on sustainable procurement. Specifically, there is no existing research on the role of sustainable procurement practices on environmental performance of the milk processing sector. This study explores the extent to which milk processing firms in Harare are using green procurement practices and how these practices affect the environmental performance of these firms. The study also focuses on barriers to implementation of green procurement practices.

1.3 Research Objectives

The objectives of this research are:

- To establish the extent to which milk processing firms in Harare are implementing green procurement practices.
- To examine the role of green procurement practices (green product and green supplier) on environmental performance of milk processing firms in Harare.
- To establish the challenges to green procurement practices in milk processing firms in Harare.
1.4 Research Questions

1) To what extent are milk processing firms in Harare implementing green procurement practices?
2) What is the role of green procurement practices on the environmental performance of milk processing firms in Harare?
3) What are the challenges that hinder implementation of green procurement practices?

As explained above, this study will focus on core green procurement practices that have been adopted and discussed in previous studies, namely green product and green supplier. The two practices constitute the independent variables for the study while environmental performance constitutes the dependent variable.

1.5 Significance of the study

The study is significant as it will provide additional insight into the growing field of literature examining role of green procurement. The study will bring out an in-depth understanding of the relationship between green procurement practices and environmental performance, especially for firms that have just begun adopting green procurement practices. The study will assist the firms to implement environmental practices, to improve environmental performance in addition to complying with government regulations.

1.6 Delimitation of the study

This study covered milk processing firms in Harare, Zimbabwe and was conducted between October 2018 and April 2019. The study consisted of three parts; first part focused on the extent to which milk processing firms in Harare are applying green procurement practices; second part role of green procurement practices and the third part, challenges to green procurement in milk processing firms. Variables under the study included role of green procurement practices, specifically green product and green supplier on the environmental performance of milk processing firms in Harare.
1.7 Limitation of the study
Due to financial and time constraints, the researcher was forced to limit the investigation to milk processing firms in Harare. While there are a number of green procurement practices that organisations can apply, and implementation of green procurement practices impacts not only environmental performance of the firms but also economic and operational performance, the study only focused on green product and green supplier as components of green procurement practices and their impact on environmental performance. An analysis of the role of comprehensive green procurement practices on environmental, social and economic performance of the firms would enhance understanding of the impact of green procurement practices on organisational performance.

1.8 Ethical Considerations
The researcher took into consideration ethics of the research. The researcher sought informed consent of all participants through letters of consent from Bindura University of Science Education. Only organisations that accepted to participate in the research were included in the study. Confidentiality and anonymity of the information gathered from participants and participating organisations was guaranteed through use of codes for the subjects.

1.9 Conclusion
Chapter one set in motion the research under study. It looked at background issues related to sustainable development and green procurement. The next chapter, that is, chapter two reviews literature on green procurement practices considering both empirical and theoretical underpinnings.
CHAPTER 2

LITERATURE REVIEW

2.1 Introduction
Chapter 2 discusses literature relating to green procurement practices, particularly in dairy processing sector. Discussion of literature is categorized into theoretical and empirical literature. The chapter reviews postulations by different scholars as well as findings by other researchers regarding role of green procurement practices within the milk processing sector.

2.2 Theoretical Foundation
In this study, the institutional theory was applied.

2.2.1 Institutional Theory
Institutional Theory provides a theoretical lens through which researchers can identify and examine influences that promote survival and legitimacy of organizational practices, (Glover et al., 2014; Brunton et al., 2010). Legitimacy here refers to the adoption of sustainable practices seen by stakeholders as being proper and appropriate. Suchman (1995) aptly defined legitimacy as “a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions”.

According to Institutional Theory, there are three forms of drivers that create isomorphism in organizational strategies, structures and processes. These drivers are coercive, normative, and mimetic (DiMaggio and Powell, 1983). Coercive drivers include external pressure from regulatory structures, governmental agencies, laws, courts, professions, and scripts and other societal and cultural practices that exert conformance pressures. Normative drivers ensure organizations conform in order to be perceived as partaking in legitimate actions. Mimetic isomorphic drivers occur when enterprises imitate the actions of successful competitors in the
industry, in an attempt to replicate the path to success and hence legitimize their practices in the view of other stakeholder, (Glover et al., 2017). DiMaggio and Powell, (1983) add that traditionally, institutional theory has accounted for how organisations better secure their position by conforming to the rules and norms of the instructional environment.

Kiswili and Ismail, (2016) state that institutional pressure has led firms to adopt sustainable procurement practices. The practices include conformance to environmental strategies that comply with regulations and adopting industry standards, or reducing the environmental impact of operations beyond regulatory requirements. The strength of Institutional Theory is that it offers explanations of why certain practices are chosen without an obvious economic return (Glover et al., 2014; DiMaggio and Powell, 1983). This study will explore the extent to which milk processing firms are implementing green procurement practices in response to the pressure for corporates to minimise environmental impacts of their economic activities.

### 2.3 Sustainable Procurement

Agyepong and Nhamo (2017) argue that the realisation that procurement impacts sustainability has given rise to the development of the sustainable procurement concept. Sustainable procurement reflects broader concerns to achieve sustainable development. It builds on the traditional procurement practice which it seeks to extend through the adoption of sustainability principles. The United Kingdom commissioned Sustainable Procurement Task Force (SPTF) in 2006 defined sustainable procurement as “a process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to society and the economy, whilst minimising damage to the environment.” In other words, sustainable procurement involves taking social and environmental factors into consideration alongside financial factors in making procurement decisions. It is about looking beyond the traditional economic parameters and making decisions based on the whole life cost, the associated risks, measures of success and implications for society and the environment. (CIPS, 2014).

Sustainable procurement therefore integrates economic, social and environmental factors to ensure real value for money throughout the procurement cycle.
The four primary goals of sustainable procurement are: to minimize any negative impacts of goods, works or services across their life cycle and through the supply chain; to minimize demand for resources; to ensure that fair contract prices and terms are applied and respected that meet minimum ethical, human rights and employment standards; and to promote diversity and equality throughout the supply chain (Berry 2011).

As indicated above, the concept of green procurement is linked to sustainable procurement. The concept rests on two pillars, namely, the general procurement pillar and the environment pillar. The sustainable development discourse has brought the two together, (Agyepong and Nhamo, 2015). The term green procurement is used interchangeably with other terms such as green purchasing, environmental preferable purchasing, environmentally friendly procurement, environment-oriented procurement and sustainable procurement (Agyepong and Nhamo, 2015; Bolton, 2008:1). Green procurement involves procuring environmentally-friendly parts, materials, and services from environmentally-conscious suppliers. Environmentally-friendly parts, materials and services refer to parts, materials and services free from any specifically banned substances and those with low environmental impacts. Environmentally-conscious suppliers comply with environmental laws and regulations, make efforts to reduce environmental impacts and have Environmental Management Systems (EMS) in place.

According to UNEP (2016), principles of green procurement include considering whether or not a product is needed before purchasing it; purchasing a product considering the various environmental impacts over the product’s lifecycle from extraction of raw materials to disposal; selecting suppliers who make a conscious effort to care for the environment and collecting information on products and suppliers. The ultimate goal of green procurement is to reduce environmental impact of sourcing and to increase resource efficiency. Green procurement is applied as a useful tool to mitigate the environmental impact of consumption and to promote clean production technology, (Dubey, et al 2013).

This study adopts product and supplier attributes highlighted by UNEP as elements of green procurement practices. Further, this study adopts the above definition of green procurement provided by the European Union.
2.4 Green Procurement Practices

Green procurement practices refer to initiatives that any firm adopts to comply with environmental legislations, reduce its operations’ negative impact on the environment and improve its performance (Younis et al, 2015). Green procurement practices may include reducing packaging and waste, assessing suppliers on their environmental performance, safety record, ability to develop eco-friendlier products, and performance in reducing carbon emissions.

The measures of greenness were summarized by (Khisa, 2011; Hamner, 2006) as seven basic green procurement activities. These are product content requirements (buyers specify that purchased products must have desirable green attributes such as recycled or reusable items); product content restrictions (buyers specify that purchased products must not contain environmentally undesirable attributes such as lead, plastic foam in packaging materials); product content labeling or disclosure (buyers require disclosure of the environmental or safety attributes the contents of the purchased product. Such disclosure can be done using green seals and indicators of relative environmental impact such as scientific certification system offered by various commercial organizations); supplier questionnaires (buyers send questionnaires to suppliers asking them to provide information about their environmental aspects, activities and/or management systems); supplier environmental management systems (buyers require suppliers to develop and maintain an EMS); supplier certification (buyers require suppliers to have an environmental management system that is certified as fully compliant with one of the recognized international standards such as the ISO 14001 from the ISO); and supplier compliance auditing (buyers audit suppliers to determine their level of compliance with environmental requirements).

All these green procurement activities centre on product and supplier attributes and can therefore be categorized into green product and green supplier. Chin et al, 2015 identified green procurement, green process and green supplier as core green procurement practices. Onyinkwa
and Ochiri, (2016) discussed green purchasing, green production, green distribution and reversing logistics as elements of green supply chain management practices. In this research, green product and green supplier will be considered as elements of green procurement practices. The other practices will not be discussed since they are treated as components of green supply chain management, not green procurement.

2.4.1 Green product
Green products have less of environmental impact or are less detrimental to human health than the traditional products equivalent. They are produced in a manner that consumes less natural resources or uses them more sustainably. For example, they may contain recycled material or use less packaging. Green products may involve less energy in their manufacture and may consume less energy when being used, and they contain less hazardous or toxic materials. In addition, green products or services are designed to last longer and may have higher safety standards, (Sarhaye and Marendi, 2017).

Chin et al (2015) found green product as the main predictor of the environmental performance of manufacturing companies in Malaysia. Further, Green et al (2012) argues that sustainable procurement is now a strategic imperative because of customer demands for products that are environmentally sustainable themselves and that have been produced by processes that are designed and operated to enhance environmental sustainability. Keulemans and Van de Walle (2017) found that citizens are most strongly inclined to accept a more expensive procurement offer if that price difference is due to the inclusion of environmental and social objectives. These studies underscore the importance given to green products.

From the above discussion, procurement of green products involves incorporation of environmental criteria in the selection of goods and services. It involves application of life-cycle analysis and life-cycle costing which entails considering environmental impacts of products and services over their life-cycle. The concept calls on buyers and suppliers are to consider not just the up-front purchase costs of a given solution, but its total economic and environmental cost from cradle to grave. The criteria for environmentally friendly green products has been identified as bio-based, biodegradable, compostable, renewable materials,
recyclable, recycled content, reduced packaging, low toxicity, sustainably sourced materials, extended durability and reduced water and other natural resource consumption.

2.4.2 Green Supplier
In recent years, the rising popularity of green practices has encouraged companies to complement traditional supplier selection criteria, such as quality, delivery times, and costs, with green attributes. “Green” refers to the environmental aspects within the sustainability concept. The UK Carbon Trust poll found that 65% of consumers want to purchase products from environmentally responsible companies (Carbon Trust, 2011).

Purchasing function in relation with other functions has a greater role to play in environmental management performance of an organisation. A firm's environmental efforts may not succeed without integrating the company's environmental goals with its purchasing activities. According to Zhu et al. (2010) in Nielsen (2014), purchasers are key personnel for ensuring environmental preferable decisions in supplier selection. Selecting a supplier can be regarded as an important decision, not only in the sense of providing the purchasing organisation with the right materials, products or solutions at a competitive cost level, but also in the sense of improving its environmental performance, e.g, through avoiding hazardous materials or considering alternative solutions that require less materials and/or energy. Environmental supplier selection criteria may be developed with intent of focusing on meeting government regulations, focusing on nature of product, focusing on process improvement, and focusing on buying company’s environmental policy.

2.4.3 Environmental performance
Environmental performance relates the ability of manufacturing plants to reduce air emissions, effluent waste, and solid wastes and the ability to decrease consumption of hazardous and toxic materials and improve an enterprise’s environmental situation (Zhu et al., 2008) ISO 14001 defines environmental performance as measurable results of the environmental management systems relating to the management of the environmental aspects performed by the
organization based on its environmental policies and objectives (Gupta et al., 1998). It is focused on reduced levels of environmental pollutants (Green et al., 2012).

2.4.4 Barriers to green procurement practices
Green procurement practice has its own shortcomings that may make implementation hard, (Kamonyo, 2013). Several studies point out various challenges that limit implementation of green procurement practices. Zhao, (2017) analysed nine barriers that face the application and adoption of green procurement practices. The challenges included: economic reasons; lack of awareness of top management; low commitment of employees; poor supplier commitment; suppliers with low competencies; lack of transparency from suppliers on social and environmental issues; lack of environmental policies and regulation; non proactive compliance with government regulation and weak return on investment to sustainability. The main identified barriers were economic reasons; weak returns on investment in sustainability; a lack of environmental policies and regulation; a lack of transparency from suppliers on environmental and social issues and poor supplier commitment. The rest were identified as non-barriers.

Fourteen sustainable procurement studies carried out between 1996 and 2013 found that economic preoccupations remain the principal barriers to green supply management, (Appolloni et al, 2014). Similarly, Chari and Chiriseri (2014) examined the factors that inhibit the implementation of sustainable procurement in Zimbabwe. The research found out that lack of management support, unavailability of sustainable products, lack of knowledge and wrong perception that sustainable products are expensive as barriers preventing the use of sustainable procurement practices.

According to Islam et al., (2016) literature identifies considerable barriers to the development, adoption, and implementation of sustainable procurement practices which vary across countries, organisations, and sectors. For example, perceived costs or financial constraints pose the most significant barrier in the UK, Eastern and Western Europe, the USA, and Canada
(Brammer & Walker 2011; Blair & Wrigh 2012). Awareness is identified as the main barrier in Malaysia (Islam et al. 2014), while the lack of sustainable procurement policies and strategies are found as top ranked barriers in the United Nations (Hasselbalch et al. 2012). Other significant barriers to sustainable procurement include the lack of effective leadership, lack of management support, and lack of training including the lack of skill and competency of procurement professionals. Additional barriers include the lack of suppliers of sustainable assets or services, the lack of cultural integration, lack of transparency, decentralized or devolved purchasing structures, time pressures, conflicting priorities, lack of the quality of sustainable products, lack of political support and government regulations including contract processes for commercial firms, lack of contract management, and conflicting environment or social factors, lack of guideline, poor supplier commitment. This research investigates the same barriers identified by Chari and Chiriser (2014) in the context of milk processing firms in Harare, Zimbabwe.

2.5 Empirical Evidence

2.5.1 USA

Green et al. (2012) conducted a study to examine and assess the impact of implementing green supply chain management practices on performance using a large sample of 159 managers in the USA manufacturing organisations. The study found that green supply chain management practices by manufacturing organisations lead to improved environmental performance. The authors analysed responses of 159 manufacturing managers to a survey questionnaire.

2.5.2 Kenya

Nderitu and Ngugi, (2014) conducted a case study of East African Breweries Limited on the effects of green supply chain management practices on organizational performance in manufacturing industry. The study found an important contribution of green procurement practices to company performance. The study adopted descriptive research design. Data was analysed using both descriptive and inferential statistics where regression analysis was used to establish the effect of independent variables on the dependent variable. The findings revealed that Performance of manufacturing
industry is a contribution of more than one factor (green procurement attributes, competence of staff contribute to the performance of an organisation).

Further, evidence of positive relationship between and corporate performance can be found in Chin et al. (2015). The study aimed at investigating the impact of green purchasing practices in the context of Malaysian manufacturing firms. Using responses from 156 survey questionnaires from manufacturing organisations in Malaysia, the study found that green purchasing practices including green product, green process and green supplier were significantly related to environmental performance.

Similarly, the work of Muma et al. (2014) reported same results. The study investigated the effect of green supply chain management on environmental performance among tea processing firms in Kericho County, Kenya. The authors found that green supply chain management has positive effect on environmental performance. The study analysed data from 32 tea processing firms. The study used correlation study design.

A recent study conducted by Sarhaye and Marendi. (2017) to establish the role of green procurement on organizational performance of manufacturing firms found strong positive relation between both reverse logistics and supplier assessment and organizational performance of Coca-Cola Company. The study used descriptive research design. The study used stratified random sampling. The study used a sample size of 64 staffs from all levels of Coca Cola.

2.5.3 South Africa

Agyepong and Nhamo (2016) conducted determine the extent to which green procurement is practised in South African metropolitan municipalitie. The research concluded that legislative provisions mandating green procurement in South African metropolitan municipalities are not entirely lacking, although more work needs to be done to roll this out to cover all the existing metropolitan municipalities.
2.6 Chapter Summary

This chapter looked at institutional theory upon which this study is anchored. The green procurement practices including potential benefits of green procurement practices and barriers to green procurement practices were also enshrined in the chapter. There was also consideration of related literature in the international, regional and Zimbabwean scenario.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction
This chapter explains the research methodology, design, target population, sample and sampling techniques, instrument, data collection procedure, pilot test, data processing and analysis.

3.2 Research Methodology
Research methodology is broadly classified into qualitative and quantitative research methodologies. Qualitative research methodology was adopted for this study. The main focus in qualitative research is to understand, explain, explore, discover, and clarify situations, feelings, perceptions, attitudes, values, beliefs and experiences of a group of people, Kumar. (2014). The researcher adopted qualitative research because the research questions provide answers which cannot be quantified or measured in numbers. Qualitative research involves analysis of data such as words (e.g., from interviews), pictures (e.g., video), or objects (e.g., an artifact). Furthermore, as the objective of this study was to gain an in-depth understanding of the extent of application of green procurement practices, their role on environmental performance and barriers to their implementation in milk processing firms, qualitative study was an appropriate approach.

3.3 Research Design
The study adopted case study design. The merit of case study design is that outcomes can lead to an in-depth understanding of behaviours, processes, practices, and relationships in context, (Harrisons et al. 2017). Kothari (2004) asserts that it allows for a detailed profiling and description of the collected data, followed with a detailed explanation of the relationship between the variables. Additionally, it allows use of smaller sample sizes and digs deeply for data. Hence, this made case study design appropriate for this study. The research was conducted to establish the extent to which milk processing firms in Harare are applying green procurement practices; identifying barriers to green procurement
practices and to demonstrate association between green procurement practices and environmental performance of the same firms.

3.4 Sampling Procedures

3.4.1 Population
The targeted population for the study were milk processing firms in Harare. There were five milk processing firms in Harare. Because of the small number of the firms, all the firms were included in the study.

3.4.2 Sample
The study used convenience sampling approach. The researcher took into consideration geographical proximity as it was going to be difficult to contact participants from various parts of the country. Therefore, the study only focused on milk processing firms in Harare. There are five milk processing firms in Harare. The unit of analysis of this study was the milk processing firms and the unit of observation was the Procurement Managers/Executive and Quality Assurance Managers of each of the five firms. The sample size was of the research was five milk processing firms.

3.4.3 Research Instruments
Primary and secondary data was used in this study. Interviews were conducted to collect data because they were suitable for detailed qualitative responses required for the study. Interviews have the potential to generate rich data to explore a range of perspectives and develop a holistic viewpoint (Glover, et al., 2017; Cassell and Symon, 1994; Kvale, 1983, 1996). The interviews were semi structured. Implementing semi structured interviews permitted the researcher to ask specific questions but also allowed the interviewees to answer questions to the extent and detail they wanted. Using semi structured interviews ensured that questions were standardized between the milk processing firms. This made it possible to compare the responses uniformly.
3.4.4 Data Collection Procedures

The researcher conducted semi-structured telephone interviews with Procurement Managers/Executives and Quality Assurance Managers from each of the milk processing firms in Harare. In selecting participants, purposive sampling approach was used. Procurement Managers and Quality Assurance Managers were considered to be informed about green procurement practices and were therefore in a position to provide the best information to achieve the objectives of the study.

The researcher visited the organisations to seek permission from the Human Resources Department of each targeted organization to conduct the study using introductory letter from Bindura University of Science Education to conduct interviews with the participants. A total of 10 interview guides were issued for the participants in advance to enable them to prepare. Four organisations agreed to participate in the study. The participants were conducted to schedule appointments for telephone interviews. Interviews were conducted with 8 participants from the organisations that accepted to take part in the study.

3.4.5 Pilot Study

Before conducting the interviews, views of two experts working for milk processing firms not participating in the research were sought. The interviews helped the researcher frame appropriate questions to be asked.

The interview schedule was broken down into 4 sections. Section A covered demographic information; Section B extent to which green procurement practices are being used by the organizations; Section C role of green procurement practices and Section D challenges to green procurement practices. The interview schedule is attached as Appendix 1. The questions were based on list of items identified from similar studies which were conducted in the past.
3.4.6 Data Analysis Techniques

Data was analyzed qualitatively since the sample size was small and unsuitable for statistical analysis. Saunders et al. (2003) recommended using a sample size greater than 30 for statistical analysis. The sample size for this study was five.
CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4.0 Introduction:

This chapter presents results of the study as well as provide analysis of the data and interpretation of the findings. The findings are arranged as per the objectives of the study. The main objective of this study was to determine role of green procurement practices (green product and green supplier) on environmental performance of milk processing firms in Harare. The chapter also seeks to answer research questions.

4.1 Response rate

The sample size for the study was 5. Four out of these five firms agreed to participate in the study representing a response rate of 80%. Eight semi structured telephone interviews were conducted with the intended interviewees.

4.2 Demography

The demographic information of informants and targeted firms sought for this study was: the view point from which the participant intended to answer the questions; length of operation of the participating company, position of the interviewee in the organisation, period of service with the organisation and the Office responsible for environmental management in the organization. All participants provided responses from whole organization perspective. The results are shown below in table 4.1.
Table 4.1: Demographic information of informants and targeted firms

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Demographic information of informants and targeted firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Length of operation of the firm</td>
</tr>
<tr>
<td></td>
<td>Frequency</td>
</tr>
<tr>
<td>Less than 5 years</td>
<td>0</td>
</tr>
<tr>
<td>Less than 10 years</td>
<td>0</td>
</tr>
<tr>
<td>Above 10 years</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
</tr>
</tbody>
</table>

| 2.      | Position in the organization of informant                |
|         | Frequency | Percentage |
| Head of Procurement Department | 3 | 75% |
| Head of Operations Department | 1 | 25% |
| Total | 4 | 100% |

| 3.      | Duration of service                                     |
|         | Frequency | Percentage |
| Less than 5 years | 0 | 0% |
| Less than 10 years | 0 | 0% |
| Above 10 years | 8 | 100% |
| Total | 8 | 100% |

| 4.      | Overall responsibility for environmental performance of the organization |
|         | Frequency | Percentage |
| Top executive | 7 | 75% |
| Quality Assurance Department | 1 | 25% |
| Total | 8 | 87.5% |
On length of operation of the business the study revealed that all the businesses had been in operation in Zimbabwe for over 10 years. This showed that the businesses had been in operation for long enough to give dependable information as well provide responses to questions regarding role of green procurement practices. Similarly, all the participants indicated that they had been working for the organisations for a period of over 10 years and were responding from a whole organization perspective. The participants were therefore experienced and had capability to provide reliable information. The study also established that the majority of participants were all at management level as Heads of Procurement and Quality Assurance Departments except for one who was Head of Operations Department as Procurement function for that organization was under Operations Department. The participants were therefore the most appropriate persons to offer reliable information as they were in charge of activities of their departments. In relation to the Office responsible for Environmental Management, 3 participants indicated that the Safety, Health and Environment Departments were accountable for environmental management and the top executive was responsible for the same and one indicated that the Quality Assurance Department was responsible for environmental management. The information aimed at testing commitment of top management to environmental management. This indicated that the businesses were placing importance on environmental management.

4.3 Extent to which milk processing firms in Harare are implementing green procurement practices

In order to meet the first objective of the research, participants were asked to indicate the extent to which their organisations were implementing green procurement practices. Only two participants indicated that their organization was taking into consideration water use or efficiency of the machines and equipment over their lifecycle, in their procurement decisions. The rest stated that water use was not being considered at all citing the reason that water was a key medium in milk processing.

Hundred percent of participants indicated that to a very large extent their organisations were taking into consideration the following environmental aspects of products when procuring products and services:
4.3.1 Energy usage and efficiency of products/equipment;

One participant illustrating the consideration of energy efficiency of equipment/products undertaken by his organization in the procurement process mentioned that:

“We engaged manufacturers of boilers to assist us in defining specifications of the most energy efficient boilers as we were planning to procure modern boilers. We consulted manufacturers to ensure that our organization secured energy efficient boilers.” The participant added that “Our organization also further engaged Zimbabwe Electricity Authority of Zimbabwe to help us do correctional factors to reduce energy consumption of our machines and equipment”.

Another response was that:

“We always take into account energy efficiency of equipment and machinery and ensure that equipment or appliances designed to be more energy efficient are procured. For instance the conveyer packaging machine and our batch pasteuriser machines that we are currently using were selected because they met energy efficiency criteria. The batch pasteurizer has an energy efficient electric motor with capability to allow us to use energy on demand rather than providing a constant level of supply.”

4.3.2 Efficient use of water;

As indicated above only two interviewees from the same organisation indicated that water use was being taken into consideration in procurement choices. One of them explained that:

We installed water saving technological solutions recently in order to conserve water. We have also started applying automated cleaning-in-place (CIP) systems for cleaning aiming to control and optimise water use.”

4.3.3 Minimal hazardous substances;

All the participants confirmed that specifying that the products should not contain toxic chemicals was one of the green procurement strategies that their organisations were using. As one interviewee put it,

“Raw materials undergo tests before they are used as inputs in the production process to ensure public health protection for milk and milk products is achieved. Quality
control tests are performed on the milk and milk products from production, processing and packaging to the consumption point

4.3.4 Packaging of products (minimal, biodegradable or recyclable);

All participants indicated that their organisations were committed to minimizing environmental impact of their operations and therefore considered what the packaging material is made of before making a purchase. The participant organisations considered packaging made of recyclable and biodegradable material for their dairy products without compromising product safety. Materials used for dairy products included high density polyethylene (HDPE), PET, polypropylene, plastic and paper packaging which are all recyclable. One participant added that:

“We use recyclable and biodegradable packaging for our products in compliance with the government and regulatory authority. Moreover, as brand owners and environmentally conscious organisation, sustainable packaging is important to our products’ success.”

4.3.5 Environmental life-cycle impacts of the products

All the participants agreed that their organisations compare environmental impacts when selecting products and services. One of the respondents highlighted that:

“Our company emphasises pollution prevention as part of the procurement process. Therefore, the users and procurement teams are required to obtain information about the environmental performance of various products and services to facilitate decision making in the procurement process.”

4.3.6 End-of-life options, including the reuse, repair, recycling and disposal options.

All the interviewees indicated that they examine end of life options, including the reuse, repair, recycling and disposal options when selecting products or services.

“Our organization places so much emphasis on procurement of recyclable products to the extent that we have a Recycling Agent operating within our business premises. The initiative was taken mainly to address environmental pollution due to post consumer polyethylene terephthalate (PET) bottles. The Recycling Agent is responsible for
On requirements to be fulfilled by suppliers in respect of green procurement, all the participants reported that their organisations considered to a very large extent the following environmental variables in supplier selection: compliance of suppliers with environmental laws and regulations/ establishment of environmental management systems; implementation of processes that minimise carbon footprint; use of sustainable feeds; green packaging practices and sustainable management of soils. Only two participants stated that efficient use of water was an important consideration that their organization undertook to a large extent. The rest of the participants indicated that their organisations were not taking water use into consideration at all. The former participant elaborated that their organization had”

“created positions of Veterinary Doctors and Agronomists assigned responsibility of visiting the farmers, assessing their environmental performance and educating them to ensure that they meet minimal environmental requirements.”

4.3.4 Role of green procurement practices on environmental performance of milk processing organisations

In order to answer the second question of the research, participants were asked to state how their respective organizations had benefited from implementing green procurement practices in relation to the environmental performance dimensions/perspective. As per the majority of participants, a significant reduction in material usage, energy use, emissions, waste water, solid wastes, consumption of hazardous materials and significant improvement in compliance to environmental standards was registered following adoption of green procurement practices.

One participant mentioned that their company’s energy consumption decreased by 30% following procurement of incandescent bulbs and other high energy efficient equipment. Another said that

“Green procurement practices are playing a very important role in reducing energy consumption in our organisation. Coal fired boilers that we procured recently have thermal
efficiency of 90% yet the boilers we were using previously had thermal efficiency of 50%. Consequently, emissions of air pollutants and GHGs have reduced significantly."

In relation to waste water generated, the overwhelming response from all the participants was that the firms had put in place environmentally compliant dairy waste water treatment plants as required of them by the Environmental Management Agent (EMA). One participant highlighted that his organization incorporated green procurement criteria in their procurement of a plant worth close to US$500,000.00 to treat dairy waste water and were now managing wasting in an environmentally friendly manner.

With regards to reduction in solid waste, participants pointed out that the reduction was mainly due to procurement of products with recyclable and biodegradable material and ability of the products to produce less waste. One participant said that their solid waste only consisted of breakages as the company was recycling all solid waste generated from milk production and packaging.

All participants further revealed that their organisations had quality testing and assurance systems and only procured raw milk that had undergone quality tests and met accepted standards of chemical level and purity. As a result of implementing these practices, consumption of hazardous substances due to procurement of raw materials with hazardous substances had also decreased to a lot.

On the discussion on the role of green procurement practices on water use, only two participants from one organization mentioned that their water consumption level had decreased to some extent as a result of the efficient dairy plant equipment that their organization was now using.

When it came to the role of green procurement practices on environmental compliance, all the eight participants acknowledged that implementation of green procurement practices had greatly facilitated their organisations’ improvement in environmental compliance. One participant pointed out that his organization was now obtaining green rate in environmental
audits of their operations carried out by the Environmental Management Agent. Another participant mentioned that their organisation was working towards attaining International Organisation for Standardisation 14000 certification for environment.

The study findings are in line with Chin et al.’s (2015), work on Green Purchasing Practices for Corporate Environmental Performance. The study found that green procurement practices positively impacted environmental performance of Malaysian manufacturing firms.

4.4 Challenges to implementing green procurement practices

The third objective of the study sought to establish the challenges to implementation of green procurement practices by milk processing firms. To answer the research question, participants were asked to state barriers that they perceived to be restricting the use of green procurement practices in their company. The results are as shown below in Figure 4.

Figure 4.1 Obstacles to implementation of green procurement practices

(Source Author 2019)
From the findings, 100% of the participants identified cost as one of the key challenges to implementation of green procurement practices. They were all of the opinion that environmentally friendly products are associated with high initial purchase costs. As one interviewee put it,

“We made a decision to buy solar panels years back aiming to start using renewable energy but could not implement the project immediately due to huge initial financial costs involved in changing infrastructure. Similarly, when we reviewed plastic packaging that we were using and decided to replace it with biodegradable and compostable card boxes, we lost about 60% of our suppliers because they could not afford to invest in the new equipment required for production of the type of packaging we required.”

The study finding concur with Appolloni et al., (2014), review of green procurement in private sector. The study found that several academic studies have proposed that economic preoccupations remain the principal barrier to green supply chain management, as supported in the 14 articles found. Zhao, (2017)’s work on Sustainable Procurement in British Dairy Supply also found that the most significant barrier to dairy processors' sustainable procurement practice was economic.

On the discussion on limited availability of green suppliers and green products and services, 100% participants pointed out that this was another barrier restricting their organisations from implementing green procurement practices. The example cited above where 60% of the suppliers failed to continue producing packaging material when they were required to offer green packaging material clearly demonstrates the challenge. The finding is in line with Brammer and Walker (2007), research on the sustainable procurement practice in the public sector in the UK and Hasselbalch et al.’s (2015) investigating barriers to sustainable procurement in the United Nations. Non-availability of sustainable products was identified as one of the obstacles to implementation of green procurement practices.
Hundred percent of participants indicated that lack of senior management support; structural and organisational changes to support green procurement practices and lack of knowledge and capacity were non-barriers to implementation of green procurement practices. All the interviewees mentioned that they had good management support and this was evidenced by availability of organizational sustainable procurement policy and environmental management system. The finding correlates with Walker and Brammer’s (2009) research, which concluded that top management support was the most frequently cited facilitator of sustainable procurement. This support was considered crucial for the incorporation of sustainable procurement in procurement processes and procedures and in government policy. In relation to training one participant explained,

“Knowledge and capacity has improved following training being provided for all staff members involved in the procurement process. Above all technical support is being provided by the Safety, Health and Environment Department.”
CHAPTER FIVE

SUMMARY CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents summary of the findings on the role of green procurement practices on the environmental performance of milk processing firms in Harare, Zimbabwe. The chapter also provides the conclusions and recommendations.

5.1 Summary of findings

Regarding the extent to which milk processing firms in Harare are implementing green procurement practices, the researcher established that various practices of green procurement which include consideration of green product variables namely energy efficiency, minimal hazardous substances, environmental life-cycle impacts, packaging of products and end-of-life options, in the procurement decisions were being implemented by milk processing firms to a very large extent with the exception of water use which was being taken into consideration by one firm. The researcher further found out that green procurement practices related to selection of suppliers on the basis of fulfilling requirements which include compliance with environmental laws and regulations/ environmental management systems; implementation of processes that minimise carbon footprint; use of sustainable feeds; sustainable management of soils; minimal waste generated at farm and product packaging practices were being applied to a very large extent by all milk processing firms. Only one participant organisation was taking water use into consideration to a large extent in selecting suppliers in the procurement process.

In relation to the role of green procurement practices on environmental performance of participant organisation, the literature review identified seven activities related to green products (energy efficiency, efficient use of materials, efficient use of natural resources, minimal toxic/hazardous substances, low impact operations, minimal packaging, and end of life options) and the study established that six of the pre-identified activities are being
implemented by all participant organisations and only one activity, efficient use of water was
being implemented by only one participant organisation.

With regards to challenges to implementation of green procurement practices, the literature
review identified nine barriers but the study found two barriers (economic reasons and
inadequate suppliers/supply of green products/services for selection in the market) which were
both identified in the literature review too.

5.2 Conclusion
The study was concerned about establishing the role of green procurement practices on the
environmental performance of milk processing firms in Harare. From the study’s findings it
can be concluded that green procurement practices play an immense role on environmental
performance of milk processing firms in Harare. The results support the finding by Chin et al
(2015) who found that execution of green purchasing practices including green product, green
process and green supplier have positive impacts on environmental performance.

Furthermore, the study indicates that green procurement is being practised to a considerably
high degree in the milk processing firms in Harare with some participant organisations already
aiming for International Organisation for Standardisation 14000 certification for environment.
This concurs with the institutional theory. The institutional theory recommends that companies
can only gain legitimacy through reduction of their environmental impact and being socially
responsible (Wakulele et al., 2016, Bansal, 2005; Bansal & Clelland, 2004).

Lastly, the data confirms presence of challenges within milk processing firms to implementing
green procurement practices. The study only identified two barriers thereby indicating that a
lot of work has been done by the milk processing firms in Harare to the extent that the other
pre-identified challenges are no longer being felt by the participant organisations.
5.3 Recommendations
Based on the conclusions drawn in the preceding section, the researcher makes the following recommendations; Firstly, milk processing firms including other manufacturers should consider adopting green procurement practices since there are potential benefits that the firms may realise from implementation of green procurement practices.

Secondly, on the issue of market barriers where sustainable solutions are nonexistent and firms risk cutting off a significant share of their suppliers if they include sustainability criteria in their procurement these markets may have to mature further, or green procurement initiatives have to meet these challenges more directly and assist suppliers in meeting sustainability requirements (Hasselbalch, 2015; Ehrgott et al. 2013).

5.4 Areas for further research
The researcher recommends that future research should be undertaken in adoption of green procurement practices in other manufacturing and public sectors in Zimbabwe to establish the extent of utilization of green procurement practices. Previous studies indicated that utilization of green procurement practices in developing countries has been limited or fraught with challenges. That picture differs considerably from the findings of this study. It would therefore be interesting to find out progress towards implementation of green procurement practices in the context of 2015-2030 Sustainable Development Goals. It would also be useful to replicate this study with a bigger number of milk processing firms in Zimbabwe. The researcher also recommends other studies to relate green procurement with economic performance of other manufacturing firms.
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APPENDIX 1

APPROVAL LETTER

02 April 2019

To Whom It May Concern

Dear Sir/Madam

RE: REQUEST FOR DATA

This letter serves to inform you that Nyatando Ocilin T(B1850631) is pursuing Master’s Degree in Purchasing and Supply Chain Management in our Department. Please assist her with data for her dissertation titled “Role of Green Procurement practices on the Environmental performance of milk processing firms in Harare”.

The information gathered from this research will be used purely for academic purposes and your response will be classified as private and confidential.

Your cooperation is greatly appreciated.

Yours Sincerely

[Signature]

Mr. L Muchabaivan-Chairperson
Dear Respondent

My name is Ottilia T Nyatondo. I am a final year student at Bindura University of Education Science studying towards Master of Science degree in Purchasing and Supply Chain Management. I am conducting a research in the study titled, “Role of Green Procurement Practices on the Environmental Performance of Milk Processing Firms in Harare.”

The objectives of this research are:

1) To establish the extent to which green procurement practices are being implemented by milk processing firms in Zimbabwe.

2) To examine the role of green procurement practices (green product and green supplier) on environmental performance of milk processing firms in Zimbabwe.

3) To establish the challenges affecting implementation of green procurement practices by milk processing firms in Zimbabwe

I would be most grateful if you could spare some time to respond to the questions. Your contribution will significantly contribute to the research and enable me to come up with discussion points and recommendations for the sector with regard to the area of study. Responses will be kept in strict confidence and the data collected will be used for academic purposes only.

Signed

O T Nyatondo (MSc Student)
Section A: Demographic Information

In answering the questions you may respond from the point of view of the whole corporation, single business unit, or a branch organization whichever is most appropriate level to you.

5. **Indicate the view point from which you will be responding to the questions:**

   It would be appreciated if you would consistently answer all the questions from the perspectives you have chosen above.

   a) Whole organisation
   b) Business Unit
   c) Branch organization
   Other………………………….

6. How long has the company been in operation in Zimbabwe?
7. What is your position in the organization?
8. How long have you been working in this company?
9. Who in your company has overall responsibility for environmental performance of the organization?

Section B: Green procurement practices

10. Elaborate the extent to which your organisation has implemented each of the following green procurement practices? Please provide evidence/give examples.

<table>
<thead>
<tr>
<th>6.1 List of product attributes taken into consideration in procurement decisions:</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Energy efficiency</td>
<td></td>
</tr>
<tr>
<td>• Ability to consume less water</td>
<td></td>
</tr>
<tr>
<td>• Efficient use of materials</td>
<td></td>
</tr>
<tr>
<td>• Minimal toxic/hazardous substances</td>
<td></td>
</tr>
</tbody>
</table>
• Packaging of products (minimal, biodegradable or recyclable)
• Environmental life-cycle impacts of the products
• End-of-life options, including the reuse, repair, recycling and disposal options

6.2 Which of the following requirements do your suppliers have to fulfill in respect of green procurement?

<table>
<thead>
<tr>
<th>List of requirements</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance with environmental laws and regulations/ evidence of environmental management systems</td>
<td></td>
</tr>
<tr>
<td>Implementation of processes that minimise carbon footprint</td>
<td></td>
</tr>
<tr>
<td>Use of sustainable feeds</td>
<td></td>
</tr>
<tr>
<td>Efficient use of water</td>
<td></td>
</tr>
<tr>
<td>Sustainable management of soils</td>
<td></td>
</tr>
<tr>
<td>Minimal waste generated at farm</td>
<td></td>
</tr>
<tr>
<td>Product packaging practices</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
Section C: Environmental performance

11. How has your organization benefited from implementing green procurement practices in relation to each of the following environmental performance indicators? Please give evidence.

<table>
<thead>
<tr>
<th>List of environmental performance indicators</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reduction in material usage</td>
<td></td>
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<td>• Reduction in solid waste</td>
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<td>• Reduction in liquid waste</td>
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<td>• Reduction in emissions</td>
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<tr>
<td>• Reduction in consumption of hazardous/toxic materials</td>
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<tr>
<td>• Reduction in energy consumption</td>
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<tr>
<td>• Improvement in compliance to environmental standards</td>
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<tr>
<td>• Others</td>
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<tr>
<td>• Specify</td>
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</tbody>
</table>

Section D: Challenges to green procurement practices

12. What barriers do you perceive to be restricting the use of green procurement practices in your company? To what extent do they hinder green procurement practice? Give examples.

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Very small extent</th>
<th>Small extent</th>
<th>Moderate extent</th>
<th>Large extent</th>
<th>Very large extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td></td>
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<tr>
<td>Lack of senior management support</td>
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<td>Comments</td>
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<tr>
<td>Structural and organisational changes to support green procurement practices not implemented</td>
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<tr>
<td>Lack of knowledge and capacity</td>
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<tr>
<td>Limited availability of green suppliers/green products and services</td>
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<tr>
<td>Others</td>
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<td>Specify ..................................</td>
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THANK YOU FOR TAKING PART IN THIS RESEARCH PROJECT