ASSESSMENT OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT PRACTICE OF FRESH MEAT AT ADDIS ABABA ABATTOIRS ENTERPRISE

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Declaration

I, Tekola Hailu, declared that this research paper entitled **"ASSESSMENT OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT PRACTICE OF FRESH MEAT AT ADDIS ABABA ABATTOIRS ENTERPRISE"** is my own and I dare to say original research work that has not been produced by others in any other universities for any other requirements in any form. To this end, I acknowledged all sources of information that I used to produce the study appropriately and I would say perfectly.

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Letter of Certification

This to certify that Tekola Hailu has carried out his Masters Degree thesis work on the topic entitled **"ASSESSMENT OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT PRACTICE OF FRESH MEAT AT ADDIS ABABA ABATTOIRS ENTERPRISE"** under my guidance and supervision. Accordingly, I here assure that his work is appropriate and standard enough to be submitted for the award of Master of Arts in Logistics and Supply Chain Management at the Addis Ababa University.

Research Advisor **Signature** **Date**

Shiferaw Mitiku (PhD)

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ABSTRACT

This paper asses the effect of supply chain practices on sustainable supply chain performance at Addis Ababa Abattoirs Enterprise. Sustainable supply chain management as a thriving sub-field of supply chain management has gained significance due to growing concern about environment from both academics and practitioners in the past two decades. Despite the fact that SSCM initiatives have been practiced by manufacturing firms during this period, there is a concern as to whether these practices are being implemented because they are profitable or because of driving forces affecting them.

Until to date the performance implications of sustainable supply chain management are unclear, and therefore this thesis attempts to address this gap. Moreover, the consequences of SSCM adoption is not seen immediately because of its longer time needing nature. Therefore, this research was designed to achieve two main objectives: (i) determining the role of driving forces in the adoption of SSCM practices, and (ii) investigating whether SSCM practices can be both environmentally beneficial and commercially viable.
By using Resources based view theory the study aims to identify the effects of different dimensions of supply chain management practices (SCMP) on sustainable supply chain management practice (SSCP) of the enterprise. A questionnaire was used as a research tool for collecting data where convenience sampling was sent to 287 respondents. Interviews also conducted with some informants. The collected data was analyzed using both quantitative and qualitative statistics and correlational analysis were employed. Main findings of the study depict that, the supply chain management practice of the enterprise along the supply chain is ineffective/poor as the mean values of all variables were below the average mean and there was a positive correlation between supply chain management practice and sustainable supply chain management practice. However, the study indicates that the practices of both customer relationship management and supplier's management have a significant positive effect on supply chain performance effectiveness. Furthermore, the result of descriptive analysis adds a new dimension for supply chain management practices of the enterprise. On the other hand, the study has some limitations are in its focused on the meat production sector. The Practical implications of this study may explain to decision-makers and managers that the importance of supply chain management practices can increase the supply chain management performance.

Keywords: Supply Chain management practice**;** Sustainable supply chain management practice; Sustainable procurement; Sustainable production; Sustainable distribution.

DEDICATION

I dedicate this dissertation to my loving wife Biruk Mamo for her never-ending support and understanding; and my three lovely sons Naol Tekola, Zemanuel Tekola and Eyosiase Tekola and my entire family. Thank you for all of your encouragement, advice, support and love. You are all a constant source of happiness in my life.

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Tekola Hailu

May, 2011

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Abbreviation and Acronyms:

AAAE: Addis Ababa Abattoirs Enterprise

ATTRA: Appropriate Technology Transfer for Rural Areas

CLSC: Closed-Loop Supply Chain

CSCMP: Council of Supply Chain Management Professionals

CSR: Corporate Social Responsibility

DC: Distribution Center

DVS: Department of Veterinary Services

ECD: Environmentally Conscious Design

EIA: Environmental Impact Assessment

EMS: Environmental Management System

EMAS: Eco Management and Audit Scheme

EuP: Energy using Products

FMCG: Fast Moving Consumer Goods

FSC: Food Supply Chains

ISO: International Organization for Standardization

IT: Information Technology

GHG: Greenhouse Gas

GrSCM: Green Supply Chain Management

GRI: Global Reporting Initiative

LCA: Lifecycle Assessment/Analysis

LCSP: Lowell Center for Sustainable Production

MT: Management Team

RL: Reverse Logistics

SC: Supply Chain

SCM: Supply Chain Management

SPSS: Statistical Package for the Social Sciences

SSCM: Sustainable Supply Chain Management

TBL: Triple Bottom Line

UN: United Nations

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CHAPTER ONE

1. INTRODUCTION

The purpose of this chapter is to profile the enterprise fresh meat supply chain actors and to indicate the problem area within the level of the chain in the context of sustainable supply chain management in reliance to fresh meat. In line with, this chapter will provide a general background to the study, problem statement, study objectives and research question, scope of the study and delimitation of the study.

1.1 . Background of the study

Sustainable and Supply Chain is the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements (Mentezer*et.al*. 2001). In the recent years, interest in sustainable supply chain management has gained significance due to growing concern about environment. In a global economy as supply chains are spreading across continents – economic, social and environmental sustainability – commonly referred as triple bottom line (TBL) assumes significance. Supply chain is viewed as a system consisting of focal firm, chains of suppliers, distributors, logistics partners, retailers etc. with the role each member play of supply chain in sustainability goals. Focal firms in supply chain are held accountable for their economic performance by shareholders, social and environmental performance by society. Even the actions of members of their extended supply chain come under scrutiny (Shirish C. Joble,2016).

The UN global compact (2010), work group publication which stated that “the objective of SC sustainability is to create, protect and grow long-term environmental, social and economic value for all stakeholders involved in bringing products and services to market. Through supply chain sustainability, companies protect the long-term viability of their business and secure a social license to operate. It describes sustainability as mechanisms to ensure current actions do not limit the economic, social, and environmental options for future generations (Shirish C. Joble, 2016).

A sustainable company is one which employs good business practices, including product and risk management, the way a company treats employees, customers and location (the community and

the environment), and the robustness of its governance practices. Further Luke Boyle's (2016) added that as part of this supply chain management is an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high-performing business model. It includes all of the logistics management activities noted above, as well as manufacturing operations, and it drives coordination of processes and activities with and across marketing, sales, product design, finance and information technology (Morana 2013).

By practicing this supply chains facilitate economic growth, improve standard of living of people and provide business opportunities to distant locations across the world. However, they have unfavorable environmental impact. In order to preserve natural resources for future generations, sustainability needs to be embedded across the supply chains. Increased customer requirements coupled with competitive pressure from globalization have forced managers to ensure that their organization's resources are well aligned not only across all functional areas but also throughout the entire supply chain. Organizations must rely on many inter-organizational relationships to ensure productive and practical movements within their supply chains. Market opportunities are identified by understanding the competitive environment and translating this into a customer value proposition through the product and marketing strategy. Competitive advantage is achieved if the supply chain can develop a strategy to deliver the value proposition at the lowest possible cost (ShirishC. Joble, 2016).

Abattoir is defined as any premises that is approved and registered by the controlling authority in which animals are slaughtered and dressed for human consumption (Codex Alimentarius 1993). The purpose of an abattoir is to produce hygienically prepared meat by the humane handling of the animal using hygienic techniques for slaughtering and dressing (FAO 1992). At the same time, it enables proper meat inspection to be carried out. The resulting waste materials are thus suitably handled to remove any potential danger or meat borne infectious agents reaching the public or contaminating the environment (FAO 1992). In abattoir operation, certain prerequisite programs have to be considered to provide basic environmental and operating conditions that are necessary for production of safe food. These prerequisite programs include good manufacturing practices, good hygiene practice and standard operating procedures (Declan *et al*., 2004).

As sustainability is a concept reflecting the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. This approach is becoming a major issue for the food industry worldwide for a simple reason: resources have been depleted as demand grows. The meat industry is one of the less environmentally friendly sectors of food production, and therefore, increasing attention toward sustainability have stimulated companies to reconsider their management policy and face problems that have been ignored for many decades (Charis 2019).

Meat processing industry can then be understood as the slaughtering of animals (cattle, shoats, poultry, fish and others) and separation of the edible part (meat offal) from the non-edible (skin, hoof, horn, etc.) and making the carcass cut in the required form (quarters, deboned, etc.), then packed and distributed in required way (frozen, chilled, smoked, etc.) for reaching of consumers. Nevertheless, processing can continue to any further level as required by end consumers even though our focus for this research will remain at the fresh meat processing particularly of beef, mutton and goat, camel and pig meat for reason of significance. Sustainable Supply Chain Management in Reliance of Fresh Meat to the African union site of the capital city of Ethiopia, Addis Ababa, in doing so it will recommend the possible optimization solutions for the problems as per the findings and the conclusion.

1.2. Background of the Organization

Addis Ababa Abattoirs Enterprise (AAAE) is a slaughtering service providing and the largest fresh meat producing industry in the country. The enterprise was established in 1957 with an average daily slaughtering capacity of 1200 cattle, 1000 small ruminants and 10 pigs in the area of 47 hectares around the southern part of the city administration by now the location is highly congested/ populated due to the expansion of the city. In addition to slaughtering service provision, By-product processing of inedible part of the carcass for pet and animal feed is also the other main activities of the enterprise. To run these activities, the enterprise has 1200 permanent employees among which 601 are belonged to slaughtering service, 142 are By-product processing employees and 457 for supporting staff and Akaki branch abattoirs. In which more than 95 per cent of the workforce is administered through binding collective agreements.

Animals produced in different regions of the country are supplied to Addis Ababa market. Addis Ababa Abattoirs Enterprise is a critical juncture for Ethiopia’s rural population, and constitutes

an important source of local earnings. Fresh meat supply Chain is a network of food related business enterprises through which food products move from production through consumption, including pre - slaughtering and post -slaughtering activities. In the supply chain of fresh meat processing there are many stakeholders involved that include live animals traders, domestic abattoirs, government officials/ veterinary service providers/, butcheries, wholesalers, supermarket institutional buyers (such as educational establishments, hospitals etc) and consumers.

Reliance Fresh Meat is the convenience store format which forms part of the retail meat business in city of Addis Ababa by bringing fresh meat to customer's door step. The customer can get meat back with Reliance Fresh after they brought their own animal for slaughtering service, select the products he/she needs, choose the delivery time convenient to him/her and pay through cash (Monalisha 2015).

The research focuses on study of three principal areas in line with the three constituent elements of supply chain (NZBCSD, 2003**).** Procurement: Monitoring the goods and services sourced from external supplier. Internal Operations: The impact of logistics and conversion processes from raw materials through to the consumer and back again and product development and stewardship, Working effectively with customers and sales channels.

The major internal operations in beef processing facilities include: holding cattle, slaughter, hide removal, removing internal organs, trimming, weighing, chilling, boning, meat inspection service, and packaging/ dispatching.

The enterprise has its own procurement policy for sourcing of equipment and machineries to support and facilitate the slaughtering and by-product processing operation leaving the research focus of fresh meat supply of live animal sourcing for the butchers. The enterprise receive animals in assumption of whose hygiene is properly maintained and whose healthiness is medically ascertained. In Addis Ababa there are over 1500customers which are retailing meat to end consumers. These butchers buy fattened animals mainly cattle from nearby markets and get abattoir service from Addis Ababa Abattoirs Enterprise. The enterprise gives the service of checking the health of the animals, slaughter and give back distribution service to the butcheries retail outlets.

The fresh meat supply chain of the enterprise comprises different and comprehensive benefit which has economic, social and environmental dimensions besides the problems seen at different levels of the chain. More specifically, the sustainability makes the enterprise economically viable, socially acceptable, and environmentally friendly hence increase market share by slaughtering huge number of animals, create Job opportunity, reducing illegal slaughtering, building technical and managerial capability. On the other hand, it also used to reduce air, water and soil pollutions.

In contradiction to this the above-mentioned municipal abattoirs a 60 years age complex and poor condition; extremely poor process control and provide fresh meat to a wide range of the city outlet. With this limitation of the current abattoir capacity make the supply chain sustainability to get difficulty. As it has been observed production remains substandard and over capacity, especially in a peak time. Moreover, absence of complete understanding of customer needs and expectations which boosts effective delivery and development of high-quality product and services that surpasses customers' expectations every single time is the problem area need to be intervened.

The enterprise performs quality checks on each slaughter animals (ante and post mortem exam), through the Addis Ababa City Urban Agricultural Development Bureau Department of Veterinary Services (DVS) with low ratio of veterinarians to animals processed. The technology used for production and distribution of meat in the enterprise not helping to increase the productivity and efficiency of the workers beside other constraints they held. The slaughtering operation is held in ideally separated of unclean and clean areas which have no required distance; slaughtering and processing areas are highly congested and poor delivery and dispatch conditions.

Currently the Abattoir reached to slaughter more than 385,000 livestock per year (cattle, Sheep, Goats, pig and camels). It can be estimated how huge quantity by-products and waste water would be produced and are devoid of any measures for control of environmental pollution. Both the Public Health Proclamation (200/2000) and Waste Handling and Disposal Guideline, 1997 of FDRE Prohibits discharge of untreated liquid and solid waste generated from industries in a way which contaminates the environment or affects public health. The researcher experience while working for AAAE has revealed that both liquid waste and effluent are disposed to the nearby

river, The solid waste which obtained from slaughtered animals rendered in the cooker and vapour released from the cooker try to be condensed in the air cooled condenser/deodorizing unit/, non-condensable gases can be extracted from the condensate by means of a chemical, but still there was smell generated from the operation.

1.3. Statement of the Problems

There is a growing need for sustainability in supply chains to reduce the environmental impacts and meet the economic and social needs of a supply chain. Previously work has been done on supply chains. A framework is missing for effective implementation of sustainable practices in supply chains. Many industries started to adopt differing practices towards sustainable development, which they defined as "the creation of goods and services using processes and systems that are non-polluting, conserve energy and natural resources, and are economically viable, safe and healthy for employees, communities and consumers, socially and creatively rewarding for all working people." Sustainable development is one solution for reducing waste by effective resource utilization. SSCM as the "integration of social, economic, and environmental practices within a supply chain provides green products and service.

Addis Ababa Abattoirs Enterprise move to its higher level of production focusing by increasing number of slaughtered animals since its establishment. This is simply because as the population - increases so does the demand for meat and meat products, production is increasing, growth of slaughterhouse waste is directly related to population growth, at the same time the revenue of the enterprise also increasing. Creating job opportunity for the employees and attracting the best people and as the same time the enterprise experience of low staff turnover pay taken as the positive of the economic aspect. Though the growth of the enterprise in terms of economy and social benefits is tremendous, as a sustainable enterprise, its social and environmental impact to the surrounding area was notoriously recognized as a symbolic threat, specifically in relation to generation of odors from slaughtering and rendering activity, untreated effluent discharge (Meateng Consotium, 2014).

Addis Ababa Abattoirs Enterprise (AAAE) which is the sole slaughtering service provider of the city of Addis Ababa by now lacking proper facilities so that the negative impact on the environment is tremendous. The buildings are showing significant deterioration, and the

buildings and operations do not meet modern meat industry construction or hygiene standards, the nature of the site and the presence of old structures make the site prone to vermin infestation and eradication is extremely difficult. Due to this situation, the food safety of the enterprise's products is questionable (Meateng Consotium, 2014).

The process is almost completely manual; lacks technical and managerial capability. In the field, lack of training; it lacks professional ritual killing and stunning boxes/inadequate technology & infrastructure/. De-hiding is a complete manual process resulting in a poor-quality hides/skins. It lacks modern waste management plants which causes poor waste management practice that slaughtered animal blood and punch/ manure discharged into the river instead of value addition products creation (AAAE annual report, 2017). Moreover, the enterprise is not in a position to response the signalizes a growing local market demand in Addis Ababa for a healthy, hygienic and high-quality fresh meat with scale of delivery. The other indicator is that at the time of pick slaughtering like Ethiopian fists the abattoir can't entertain the fresh meat for the butchers and receive a lot of complaints due to poor supply. In addition, the demand side of the meat consumption by the city dweller of Addis Ababa indicates that there have been positive trends in the meat industry sub sector. The growing demand is mostly driven by population growth, urbanization, and income improvement. Besides, some researchers reported that in the next 20 years the demand for the livestock products will double in developing countries as a result of population growth and income improvement (Meateng Consotium, 2014).

Due to lack of providing the required services, proliferation/expansion of illegal slaughtering practices in the city of Addis is becoming prominent. Illegal slaughtering which is the main threat of the city has reached its climax. It is believed that within a year large number of livestock are slaughtered illegally in unclean areas that result in different contaminated diseases and as the same time the government loose huge amount of revenue. In order to alleviate the above-mentioned problems, indeed there is an effort made the city administration by its strategic plan including the ongoing AAAE Relocation and Modernization Project.

Some studies states that, supply chain management plays pivotal role in the effectiveness and value creation in meat producing industries. In connection to this (Thatte 2007, as stated in Inda Sukati *et.al*,2011) related the issue of supply chain management performance of meat industry both from the perspectives of demand side and supply side focusing on supplier-buyer relations.

Theses includes supplier management, customer relationship management, information sharing supply chain collaboration and supply chain responsiveness. Nevertheless, no study has been conducted to identify or assess the determinants of sustainable supply chain management performance in meat industry.

As preliminary study shows the importance of supply chain management practice in core supply chain activities including procurement, production and distribution given little attention. In connection to this even though the growth of the enterprise in terms of economy and social benefits is tremendous, as a sustainable enterprise, its social and environmental impact to the surrounding area was notoriously recognized as a symbolic threat. To mention few of the indicators, the enterprise is not in a position to response customers demand and difficult to serve during festivity time and meat product quality problem are the economic aspect; in regards to environment generation of odors from slaughtering and rendering activity, untreated effluent discharge and rodent infestation are few of them; in the last component of the social aspect fear of consumers growth hormone and antibiotic residual as adversely affect their health and lost workdays of staff due to injury or illness. Addis Ababa Abattoirs Enterprise SSCM practice is therefore will be assessed in terms of the three components as stated below:

Economical: in regards to economic aspect how the enterprise has been practicing sustainable supply chains management that have a major impact in achieving sustainability by making sure that the business is functioning profitability while its operation is not creating negative social and environmental impacts (Rogers *et al.,* 2007) and assessing how the optimal use of the available resources in a responsible and efficient way which may eventually provide long-term benefit will be evaluated.

Environmental: the environmental dimension of sustainability practice of the enterprise will be evaluated how the enablers of the environmental aspect like types of pollutant generated and how it was generated; assessing modern waste management system, how effluent and liquid waste has been disposed, the emission gas generated during distribution; evaluating the presence or absence of code of conduct while sourcing of slaughtered animals and pre-slaughtering stress of animals; how they are practicing the water they used during slaughtering.

Social: With the same token of the two components above the social aspect of sustainability also assessed using enablers of social sustainability such as evaluating types of skill used in

production; how fear of consumers about food additive could be enclosed in their practice; assessing presence or absence of health and safety incidents and it's lost workday; assessing how the contribution of enterprise to the communities in which it is located and the relationship with customers.

1.4. Objective of the Study

1.4.1. General objectives

The general objective of the study is to assess the sustainable supply chain management in reliance of fresh meat at Addis Ababa Abattoirs Enterprise

1.4.2. Specific objective

1. To assess supply chain management practice of fresh meat at AAAE
2. To assess the sustainability of fresh meat supply from economic dimension across the supply chain.
3. To evaluate the sustainability of fresh meat supply practice from environmental dimension at AAAE.
4. To assess the sustainability of fresh meat supply from social dimension across the supply chain.
5. To identify factors affecting the implementation of sustainable supply chain management of fresh meat at Addis Ababa Abattoirs Enterprise.

1.5. Research Question

On the stated objectives the following basic questions were raised and attempt to the researcher want to answer the following questions:

I. How sustainable supply chain management practice of fresh meat at AAAE
II. How sustainable fresh meat supply practices from economic dimension across the supply chain?
III. How sustainable fresh meat supply practices from environmental dimension at AAAE?
IV. How sustainable fresh meat supply practices from social dimension across the supply chain?
V. What are the factors affecting the implementation of sustainable supply chain management of fresh meat at Addis Ababa Abattoirs Enterprise?

1.6. Scope of the Study

Temporal scope: The study will be conducted secondary data related to production, finance and manpower will be collected from the year 2013 to 2017 in accordance to their respective year report delivered for the board of directors.

Geographical scope: Fresh meat that has been produced at the enterprise was distributed for Addis Ababa market which cover the wide range of the city. In this geographic scope the observed positive/negative relationship between geographic scope and performance is taken into consideration.

Conceptual scope: Sustainable Chain Management from the perspective of sustainability (economic, environmental and social). The main focus is to provide a step by step guide for managerial decisions made along the product life-cycle, following a path made up of the following steps: sourcing, production, distribution and reverses logistics.

As studies on sustainable supply chain management in reliance to fresh meat are limited, it will attempt to bridge such research gaps and aware the city administrators and planners towards addressing the strategies to appropriately handle and develop the sector. The study can contribute to improve knowledge about the role of fresh meat supply chain sustainability in the city of Addis Ababa as well as challenges and opportunities of the sector and can be used as one of the baseline references.

1.7. Significance of the Study

This research analyzes the relationships between supply chain management practice which is the independent variable and the three dimension of sustainable supply chain management which is the dependent variable of fresh meat supply chain of Addis Ababa Abattoirs Enterprise and help to develop the traditional supply chains into sustainable supply chain management. The findings of this research can be used to develop a framework for local as well as export abattoirs who have similar practice in Ethiopia. It has also significance importance for researchers by taking the finding concerning the positive impact of SSCM practice of performance outcomes of the enterprise for further investigation.

1.8. Delimitation of the study

The fresh meat supply chain was chosen as one of the studies because of its importance in the city's agri-food system. One of the major challenges to the city of Addis Ababa is getting quality and healthy meat which fulfill the growing demand that driven by population growth, urbanization, and income improvement. However, provision of meat is not sustainable so as to attain protected and healthy products. On the other hand, the city of Addis Ababa is the residence of many international organizations, embassies and diplomats in addition to its local citizen which is estimated to be more than 4 million.

1.9. Limitation of the Study

As studies on sustainable supply chain management in reliance to fresh meat are limited the availability of data in the study area is one of the challenges. In line with this time taking for collection and organizing the data and producing the research is the other limitation for the researcher.

1.10. Definition of terms/ Operational Terms

Key terms used in this study are: - sustainability, supply chain management, sustainable supply chain, environmental sustainability, social sustainability and economic sustainability.

Supply Chain Management as NZBCSD (2003) states, the supply chain considers the interactions between a business and its customers and suppliers. The greatest benefits are derived by extending the focus as far as possible upstream towards the raw materials, downstream towards the consumer and then back again as the products and wastes are recycled.

Sustainable supply chain management a sustainable supply chain is a system of aligned business activities throughout the lifecycle of products that creates value to stakeholders, ensures ongoing commercial success, and improves the well-being of people and the environment‖ (Business for social responsibility 2007)

Sustainability implies that meets the needs of the present without compromising the ability of future generations to meet their needs (Carter & Rogers,2008).

Environmental sustainability Environmental sustainability includes the approach of making decisions and taking actions such that they have the least negative environmental impacts

possible (Blewitt, 2014). It urges the conservation and protection of the natural and non-renewable resources, which our society and economy depend upon (Carter and Rogers,2008)

Social sustainability Social sustainability is generally about enhancing social and ethical values associated with a firm's activities (Carter, 2004). It leads enterprises to be responsible for their operations and business activities demonstrating their ethical behaviors.

Economic sustainability the concept of economic sustainability is well understood and straightforward and is about making sure that the business is functioning profitability while its operation is not creating negative social and environmental impacts (Rogers et al., 2007).

sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Mikko 2015)

1.11. Organizations of the study

This study will be organized into five chapters. The first chapter provides a general background to the study, problem statement, study objectives and research question, scope of the study and delimitation. The second chapter gives a critical review of the relevant literature for the study while the third chapter will present a detailed description of the study area and methodologies employed. The fourth chapter presents and discusses the results, discussion and interpretation while the fifth chapter provides summary, conclusions and recommendations drawn from the study finding.

CHAPTER TWO
2. REVIEW of RELATED LITERATURE

2.1. Introduction

This chapter will cover theoretical literature review, empirical literature review, conceptual framework of the study and the identified literature gap

2.1.1 Supply Chain Management Practice

Supply chain management (SCM) is an integrated approach beginning with planning and control of materials, logistics, services, and information stream from suppliers to manufacturers or service providers to the end client; it represents a most important change in business management practices (Fantazy *et al* 2010). SCM is one of the most effective ways for firms to improve their performance (Ou *et al* 2010). With the purpose of managing the supply chain actions for realizing improvement in enterprise performance, it is necessary to improve the planning and management of activities such as materials planning, inventory management, capacity planning, and logistics (Chandra & Kumar 2000) with suppliers and clients (as stated in Ana B. *et.al* 2014).

Different researchers come upon with different concepts of supply chain practice elements this study focused by agreeing upon with the concept that identified by Thatte (2007), as stated in Inda Sukati *et.al* 2011) as supply chain management practices in form of supplier management, customer relationship management, information sharing and supply chain collaboration. These four dimensions of supply chain management practices lead to supply chain responsiveness. SCM involves an integrated and process-oriented approach to the management, design and control of the supply chain, with the aim of producing value for the end consumer, by both customer service and reduce cost. The supply chain management has dual purpose, in one side is to improve the performance of an individual organization as well as that of the entire supply chain. In other side the supply chain management reduces organization total cost.

The growth of supply chain aims to improve profitability, customer response and ability to deliver value to the customers and also to improve the interconnection and interdependence

among firms. Supply chain management practices as a multi-dimensional construct that encompasses upstream and downstream sides of supply chain.

Resource based view (RBV) has received significant attention in explaining supply chain management practices (Barney & Clark 2007). Resources-based view (RBV) theory include the key concepts of resources, capabilities, and strategic assets. Resource-based view (RBV) can be applied to both internal and external elements of a firms supply chain. RBV examines those resources and capabilities of the firm as to generate above normal rates of return and achieve a sustainable competitive advantage. Resources can be divided as tangible and intangible resources categorized as human, information technology, capital, equipment and knowledge resources. This study aims to identify the effects of different dimensions of supply chain management practices (SCMP) on sustainable supply chain management performance.

SCM practices entail activities related to purchasing and supplier management, defining SCM solely in terms of a firm's involvement in managing its supplier is a biased and narrow perception, as the firm interacts with other trading partners, in addition to suppliers, to achieve supply chain integration. The practice of SCM is therefore, refers to complete set of actions which are done in organizations towards to improve the effectiveness in the internal supply chain. The modern evaluation of the SCM practices that comprises of partnership with the supplier, internal operation, continuousness of process flow and sharing or technology and information by using purchasing the quality and relations with the customer (distribution). Supply base management refers to how firms utilize their suppliers processes, technology and capabilities to enhance supply chain performance and competitive advantage and how the manufacturing, logistics, materials, distribution and transportation functions are coordinated within organizations and it also includes the involved companies planning and strategy for coordination of their supply chain, including collaboration between functions internally as well as across company(Ana B.*et.al*.,2014)

The components that can be considered in SCM practice include customer relationship management (CRM), supplier management, supply chain collaboration, information sharing and supply chain responsiveness are reviewed as follows:

Customers Relationship Management: Organizations depend on their customers and therefore should understand current and future customer needs, meet customer requirements,

and strive to exceed customer expectations. Customer relationship management (CRM) is an important component of SCM. A firm's customer relationship practices can generate the organizational success in supply chain management practices efforts as well as its performance. Customer relationship management can be seen as the consistent organizational activity under usage of integrated selling, marketing and service strategy. That is, trying to define the real need of the customer, by the enterprise integrating various process and technology, in asking internal product and service improvement, in order to dawn effort of enhancing customer satisfaction and loyalty (Balal & Abdelsalam 2012)

Suppliers Management: Supplier's partnership represents the long-term relationship between the organization and suppliers. An effective supplier's management can be a critical component of a leading-edge supply chain. Through strategic supplier partnerships, organizations can work closely with suppliers who can share responsibility for the success of the company. The collaboration with other firms or organizations, also include suppliers, has positive significant impact on process innovation and incremental product innovation. Such strategic supplier partnerships should enable successful SCM (Balal & Abdelsalam 2012)

Supply chain collaboration: organizations collaborate to improve efficiency of their internal supply chain activities such as procuring, producing and distributing. Several organizations collaborate at different levels for specific benefits to the organizations which are in the collaborative relationships such as sharing of resources, joint cost reduction activities, and inventory management in attempting to elevate the linkages within each component of the chain, (to facilitate) better decision making and to get all the pieces of the chain to interact in a more efficient way and thus create supply chain visibility and identify bottlenecks. It also describes the three principal elements of an integrated supply chain model as being information systems (management of information and financial flows), inventory management (management of product and material flows), and supply chain relationships (management of relationships between trading partners).

The vertical collaboration includes internal collaboration, which noted as the most important form where the barriers and enablers according to their predominant characteristic are placed into context, internal collaboration is frequently named as an enabler for external vertical

collaboration. First focusing on internal integration before focusing on external integration is more important (Arjen 2011)

Information sharing: Information sharing is the ability of the firm in sharing knowledge with supply chain partners in an effective and efficient approach effective information sharing is considered as one of the most important abilities of supply chain process. Information sharing is one of the most important tools for achieving an integrated and coordinated supply chain. When information can be interoperable, which means that one system can talk to another. In addition to this technological wave of internet and e-commerce provides a new opportunity to create a smart integrated supply chain. Elements of information sharing comprise, consisting data acquisition, processing, storage, presentation, retrieval, and broadcasting of demand and forecast data, inventory status and location, order status, cost related data, and performance status Internet, Intranet, and Extranet can be distinguished based on characteristics including access, users, and information (Balal & Abdelsalam 2012)

Supply chain responsiveness: the effect of supply chain responsiveness in term of operation system responsiveness, logistic process responsiveness, supplier network responsiveness and competitive advantage of the firm. Operation system responsiveness is the ability of firm's manufacturing system to address changes in customer demand. It includes both manufacturing and service operation. Responsiveness at each company of the chain is an integral component of supply chain responsiveness. Logistic process responsiveness is the ability of company's outbound transformation, distribution and warehousing system to address changes in customer demand. The responsive in logistic process is a crucial component in the supply of a responsive supply chain strategy. Logistics and distribution management encompasses the transformation activities of goods from suppliers to manufacturer to distribution centers to final point of end users. These activities include warehousing, packaging and shipping, transportation planning and management, management inventory, reserve logistics and order tracking and delivery. Supplier network responsiveness is the ability of the firm's major suppliers to address changes in the firm's demand.

A key to responsiveness is the presence of responsive and flexibility partners upstream and downstream of the firm. The ability of the firms to react quickly to customer demand is depending on the reaction time of suppliers to make volume of changes. In the changing world,

competitive advantage emerges from the creation of supplier competencies to create customer value and achieve cost and/or differentiation advantages, resulting in market share and firm profitability. Cost and quality are a part of competitive advantage dimension, dependability and speed of delivery are also some of the critical competitive priorities for manufacturing.

2.1.2 The sustainability shift in the supply chain

Having argued the theoretical background of SCM necessary to establish the foundation of the research phenomenon, this section moves on to discuss how this concept has shifted its focus towards sustainability, setting up the sustainability topics. In recent times societies are beginning to feel the impact of fast depletion of natural resources and thus sustainable development has emerged as the only alternative for future growth. Sustainability can be conceptualized as the intersection of the three dimensions of environment, social responsibility, and economic performance, also known as the "triple bottom line" (Elkington, 1998: 2004 as stated in Mohd. Nishat Faisal [nd]). The triple bottom line concept explicitly directs managers to identify those activities which improve economic performance and dictate the avoidance of social and environmental activities which fall outside of this intersection (Carter and Easton, 2011).

Morana, (2013), also strengthen the concept in that, it is also important to consider the issue of sustainable supply chain management as important concern at present, when the earth itself is beginning to show less and less willingness to accept the industrial misconduct which often occurs in spite of environmental policies. Sustainable construction, production and development are becoming crucial. Of course, it goes without saying that the implementation of a sustainable supply chain management approach is not something that can be done overnight. It must be part of a genuine desire for real change (change which must first come from the directors of a company), and then be enacted by each member of each company within a supply chain. In other words, it is a question of gaining a view of the circumstantial position of each company, improving the workings of the mechanism and particularly coordinating each cluster encountered. This is true for every internal service, but also for every company within a supply chain.

Traditional SCM gradually evolved from being a concept that solely addresses economic and operational issues to being one that comprehensively embraces the broader social, economic and environmental aspects associated with a firm's supply chain. This driven by macro and micro level drivers and pressures including external drivers such like customers' demand for such products; pressures from investors, community groups, the public, and competitors; and compliance with regulations. Internal drivers are normally connected to managerial thoughts, employees' demands, organizational culture, internal pressure on business managers, and social development activities pushes firm's traditional supply chains to be more responsible with respect to social and environmental issues which clears a way for the emergency of SSCM. These consequential changes established the foundation for the transition of traditional SCM towards SSCM. Consequently, conventional SCM has shifted its focus from traditional economic objectives to a comprehensive approach that seeks to simultaneously take social, economic and environmental matters into consideration (Ali 2016)

Luke's (2016) definition of sustainability in business terms "is about long-term performance and our recognition that the long-term success of a company is contingent on stakeholder relationships and capacity to address areas of interest and concern. A sustainable company is one which employs good business practices, including product and risk management, the way a company treats employees, customers and location (the community and the environment), and the robustness of its governance practices. In investment terms we sometimes call sustainability issues environmental, social and governance practices, or ESG. Sustainability may also be referred to as corporate social responsibility (CSR) and sustainability reporting may be referred to as triple bottom line reporting".

The above definition complemented by Nadia (2017) research work, he pointed out that SSCM practices can be seen in five different categories depending on the firm's intention. These categories are discussed below (Beske*et al*., 2013), as stated in Nadia (2017)

1. Strategic orientation: The first category covers the strategic orientation of a firm. This is where the firm's strategic values are focused. The TBL customarily guides businesses following a sustainability strategy. This category includes the SSCM practices of TBL and SCM (Beske *et al*., 2013)

2. Continuity: The second category covers the structure of the supply network. This encompasses the way the SC partners repeatedly interact. It is worth noting that the methods used for the selection of qualified partners, the building of long-term relationships and the development of SC partners are found here (Pagel & Wu 2009; Gold, Seuring & Beske 2010, as stated in Nadia 2017). This category incorporates the SSCM practices of long-term partnerships, partner development and partner selection (Beske *et al*., 2013)

3. Collaboration: The third category connects the structural features to businesses processes. Structural decisions are made regarding how to technically and logistically combine the SC partners and the quality of information shared (Vachon & Klassen, 2008, as stated in Nadia 2017). Joint development wishes to collectively improve new products, technologies and processes. This classification includes the SSCM practices of logistical integration, joint development, enhanced communication and technical integration (Beske *et al*., 2013)

4. Risk management: The fourth category leads firms to adopt numerous methods of risk management to lessen the risks that firms can be subjected to Stellenbosch University if sustainability issues are not addressed (Seuring & Müller, 2008; Holt & Ghobadian, 2009, as stated in Nadia 2017). This category includes the SSCM practices of standards and certification, individual monitoring, and pressure group management (Beske *et al*., 2013)

5. Pro-activity towards sustainability: There is a vast array of stakeholders found in the category of SSCM. By actively engaging with stakeholders, companies are able to foresee further pressure and thus benefit from stakeholder knowledge (Pagell & Wu 2009). This category includes the SSCM practices of learning, stakeholder management, innovation and lifecycle assessment (Beske *et al*., 2013)

According to APICS Insights Innovations, (2016), a variety of international sustainability framework support the practice of supply chain sustainability, with guidance available across all levels of senior management and supply chain management. Three examples are:

- United Nations (UN) Global Compact
- International Organization for Standardization (ISO) 26000 and ISO 14000, which belong to the ISO's family of management and leadership standards
- Global Reporting Initiative (GRI)

The UN global compact (2010), work group publication which stated that "the objective of SC sustainability is to create, protect and grow long-term environmental, social and economic value for all stakeholders involved in bringing products and services to market. Through supply chain sustainability, companies protect the long-term viability of their business and secure a social license to operate". There are 10 principles upon which SSCM is firmly based. These 10 principles are divided into four segments namely human rights, labour, environment and anti-corruption (UN 2010). See a full breakdown in the Table 2.1 below.

Table 2.1: Ten Principles of Supply Chain Sustainability
Human Rights
Principle 1: Firms should respect and support the protection of international human rights;
Principle 2: Firms need to make sure that all areas of their SC are not complicit in human rights abuses.
Labour
Principle 3: Firms should encourage the freedom of association and the recognition of the right to collective bargaining;
Principle 4: Firms should remove of all forms of forced and compulsory labour;
Principle 5: Firms should eliminate all forms of child labour
Principle 6: Firms should be active in the eradication of discrimination in respect of employment and occupation.
Environment
Principle 7: Firms should encourage a precautionary approach to environmental challenges;
Principle 8: Firms should start initiatives to promote greater environmental responsibility;
Principle 9: Firms should inspire the diffusion and development of environmentally friendly technologies.
Anti-corruption
Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

Source: United Nations global compact. 2010

ISO 26000:2010 (guidance on social respect responsibility) and ISO 14000 (environmental management) belong to the ISO's family of management and leadership standards. ISO 26000 is important because "sustainable businesses for organizations means not only providing products and services that satisfy the customer, and doing so without jeopardizing the environment, but also operating in a socially responsible manner."

According to APICS Insights Innovations (2016), the ISO 14000 family of standards seeks to minimize harmful effects on the environment by an organization's activities and to achieve

continual improvement of its environmental performance. The ISO 14000 series addresses various aspects of environmental management and offers a certifiable standard, where an authorized, independent certifying body issues a certificate or written assurance confirming that an organization's management system conforms to the requirements.

Further APICS Insights Innovations (2016), disclose that, the GRI is a network-based organization that produces a comprehensive sustainability reporting framework that is widely used around the world. The reporting framework sets out the principles and performance indicators that organizations can use to measure and report their economic, environmental and social performance. According to GRI (2014) "the framework enables all organizations to measure and report their economic, environmental, social and governance performance, the four key areas of sustainability."

This research paper gives an emphasis on the major economic, environmental and social sustainability indicators of supply chain in AAAE as a resource support UN, ISO14000 and GRI are playing a role for the practice of supply chain sustainability, however, human rights and anti-corruption principles from the UN and governance from GRI are accommodated as part of social sustainability aspect.

Today, sustainability is an integral part of business strategy where the focus is now to leverage it for improving competitive advantage, not just as part of cost reductions for the bottom line (Klimley 2005). Subramoniam *et al.* (2009) concluded that for the implementation of sustainable development, manufacturers have to satisfy customer demand, promote less raw materials usage within operational processes, reduce energy for raw material extraction and processing and encourage use of low-energy consumption for machinery and equipment. Supply chain operations like purchasing, logistics, reverse logistics, and even labor practices are some of the areas that can impact the sustainability (Markley and Davis 2007). Thus, sustainability can only be fully achieved when the focus is on optimizing the whole supply chain operations rather than individual parts. The three dimensions of 'triple bottom line' approach is summarized below. Furthermore, the SSCM approach has its roots in the concept of sustainable development and follows its core dimensions, integrating environmental, economic and social issues throughout the supply chain. Thus, it is necessary to provide a clear definition of this concept, which is widely used in this study as follows (Ali 2016).

Environmental sustainability includes the approach of making decisions and taking actions such that they have the least negative environmental impacts possible (Blewitt 2014). It urges the conservation and protection of the natural and non-renewable resources, which our society and economy depend upon (Carter and Rogers 2008). This ensures that natural systems continue to generate and maintain natural resources for future generations. In the SCM context, environmental sustainability is closely associated with the consumption of energy and other resources within manufacturing firms, as well as the footprint that is left behind as the result of their operations (Emmett and Sood, 2010, as stated by Ali 2016)

Social sustainability is generally about enhancing social and ethical values associated with a firm's activities (Carter 2004). It leads enterprises to be responsible for their operations and business activities demonstrating their ethical behaviors (Zhu *et al*. 2013). It also requires firms to provide equally opportunities, promote social connectedness within society and take actions in the interests of the labour force and community (Rogers *et al*. 2007). Social sustainability encompasses external communities, i.e. people in society, and internal communities, i.e. personnel (Gimenez *et al*. 2012). Furthermore, social sustainability often involves society-related activities such as labour rights, social equity, corporate social responsibility (CSR), human rights, health equity, social support, quality of life and community development (Rogers *et al*., 2007; Blewitt, 2014; Elkington, 1998). Engaging in such social activities can improve firms' social reputation and corporate image and ultimately enhance their social performance (Fombrun 2005, as stated by Ali 2016)

The concept of economic sustainability is well understood and straight forward and is about making sure that the business is functioning profitability while its operation is not creating negative social and environmental impacts (Rogers et al. 2007) and element of higher sales as consumers respond favorably to firms that they perceive to be ethical. In essence, economic sustainability endeavors to undertake traditional economic objectives while taking into account their social and ecological implications (Carter and Rogers 2008) It also involves a process of using the available resources at a firm's disposal to their best advantage (Blewitt 2014), there may be important productivity and cost benefits of engaging in sustainable business practices. In addition, it urges optimal use of the available resources in a responsible and efficient way which may eventually provide long-term benefit. Thus, economic sustainability calls for

establishing profitability over the long term by providing quality of product to its customers (Barbier, 1987, as stated by Ali 2016)

According to Carter and Roger (2008) the definition of SSCM is that, the strategic integration and achievement of an organization's environmental, social and economic goals in the systematic coordination of key inter-organizational business processes for improving the long-term performance implications of the focal firm and its supply chains.

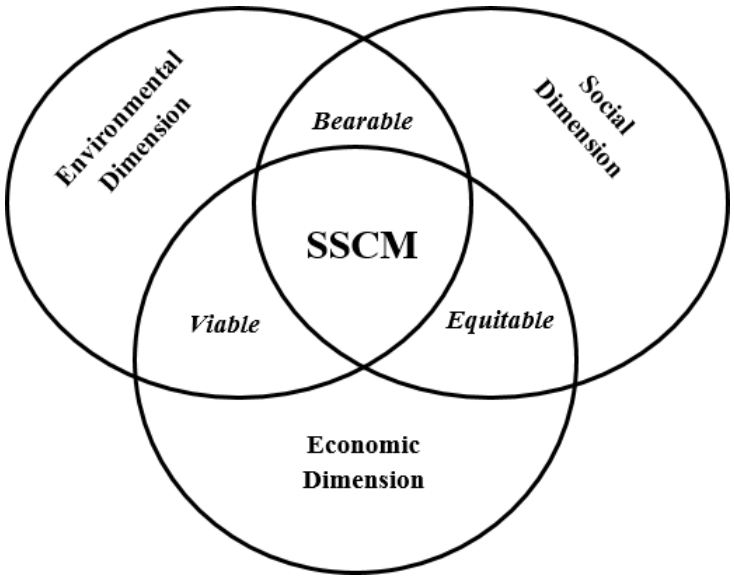


Figure 2.1 Conceptualization of SSCM (Carter and Rogers 2008)

According to Mohammed (2011), fulfilling either one or two of the components of triple bottom line will not help to achieve sustainability. For instance, with integration of environment and economic factors the process is viable (feasible), similarly when there is integration of environment and social factors the process is bearable (manageable), and when there is integration of social and economic factors the process is equitable (fair); but a process is sustainable only when there is an integration of all three elements i.e. social, economic, and environmental.

Mohammed (2011) further disclosed that, in order to achieve sustainability, there has to be a strategic, transparent integration of organization 's social, environmental, and economic goals in the systematic coordination of key inter-organizational business processes for improving long-term economic performance of the individual company and its supply chains.

In connection to this the SSCM practice (Svensson 2007) is incorporated as the management of raw materials and processes from suppliers to manufacturer to final-customer, along with product take-back for the purpose of minimizing environmental impacts (Huand Hsu 2010). In light of this the sustainable supply chain concept endeavors to cover the core activity of SSCM components which have their roots in the main activities of SCM, and are derived from them including sustainable procurement, which requires purchased inputs to have low environmental impacts; sustainable production, which facilitates internally driven environmental activities such as reproduction and reuse; sustainable distribution, which minimizes the logistical impact of material flows; and reverse logistics, which attempts to close the loop with a focus on disposal and recycling initiatives (Vachon 2007). These components of SSCM approach are involved in a simplified of sustainable procurement, sustainable production, sustainable distribution and reverse logistics and each of them is briefly discussed in the following sub topics.

The SSCM concept simultaneously addresses environmental, social and economic objectives within the supply chain context. While the SSCM components follow the principles of the key activities involved in SCM, they further extend the scope of the traditional supply chain practices to more broadly address and undertake sustainability-related supply chain initiatives (Seuring and Muller 2008).

The objective of supply chain sustainability is therefore, to create, protect, and grow long-term environmental, social and economic value for all stakeholders involved in bringing products and services to market. At every stage in the life-cycle of specific products there are social and environmental impacts, or externalities, on the environment and on people. In addition, governance, or the accountability of organizations to their stakeholders for their conduct, is important at every stage and throughout the supply chain (BSR 2010).

Having discussed the concept of SSCM from a holistic perspective now it is important to have understanding how SSCM concept can be operationalized.

2.1.3 Sustainable Procurement

Sustainable procurement builds on the traditional procurement practice which it seeks to extend through the adoption of sustainability principles. Matthew (2012) defined Procurement as acquisition of goods, works and/or services from the supplier (this may be an individual or organization) (Matthew 2012). The procurement process is viewed as involving sourcing (planning: needs identification and assessment, supplier selection) contracting, monitoring and evaluation, and expediting. Further Matthew (2012) stated that sustainable procurement is a "process of acquiring goods, works and services from a supplier that provides the optimum combination of whole life costs and benefits to meet the customer's requirements. On the same token sustainable procurement sits under the umbrella of sustainability, which involves making decisions that maintain the right balance between the environment, society and economy to ensure long-term organizational success. It is a process whereby organizations 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 organization, but also to society and the economy, while minimizing damage to the environment. Procurement has been recognized as a subject of immense strategic importance that has high impact on organizational performance, since it is guided by principles of transparency, accountability and value for money by focusing on three dimensions; price, quality and time. With dynamics in modern procurement practices there has emerged yet another (fourth) dimension: sustainability (Fredrick and 2018)

Studies have focused primarily on the activities of supply chain management in the relation with suppliers targeting supplier codes of conduct, supply or supplier criteria and supplier requirements. Based on internal decisions with regard to sustainability or inspired by the codes developed firms require suppliers to live up to the same standards. Environmental and social criteria are taken up to complement economically based supplier evaluations, in which focal firm translate internal codes of conduct into purchasing criteria and/or include sustainability as an additional key performance criterion (Anne &Rob 2017)

In his argument Matthew (2012), disclosed that sustainable procurement is about the process of purchasing goods and services that takes into account the social, economic and environmental impact that such purchasing has on people and communities. It is about considering what the products are made of (no toxic subsistence), where they have come from (origin of the product), who has made them, how they are transported and how they are eventually disposed.

Sustainable procurement means taking into account economic, environmental and social impacts in buying choices. This includes optimizing price, quality, availability, but also environmental life-cycle impact and social impacts linked to product/service's origin. It should also be considered if the product is necessary in the first place (Matthew 2012).

Matthew (2012) further argue that environmental aspects of sustainability tend to affect resources utilization and non-environmentally friendly matters. Environmental consideration in procurement process can only be achieved through embracing green procurement in the entire lifecycle of products right from acquisition to disposal. While social aspect is inclined to the main actors (employees, customers and the community) who implement these activities. The last pillar of sustainability economic sustainability activities focusses on business efficiency, productivity and profit.

According to Matthew (2012), contemporary commercial practices show that business organizations and business partners are focusing their procurement strategies on reducing the environmental 'foot prints' of their procurement and supply chain activities. Procuring organizations and other supply chain partners are more seriously involved in designing and implementing sustainable procurement policies focusing on how environmental issues and issues relating to other aspects of the sustainable development pillars (Society and Economy) can be integrated in the procurement process activities (Matthew 2012). Organization's procurement managers are more relevantly positioned here as they can impact (positively or negatively) the environmental and social performance, through for example product or service specification, evaluation and supplier selection, and evaluating performance of the provider either by developing the performance evaluation criteria or using that criteria to evaluate the providers fulfillment of the contract for which the provider was contracted (Matthew 2012)

Since sustainable procurement focuses on cooperating with suppliers to provide manufacturers with raw materials or services that are environmentally sustainable (Carter 2005). It primarily deals with supplier evaluation and selection in order to purchase materials that are in line with environmental requirements and criteria (Carter 2005) and minimize environmental impacts. This highlights a need to establish good relationships with suppliers to effectively undertake environmental initiatives in order to develop more environmentally friendly products and services (Paulraj *et al*., 2008).

2.1.4. Sustainable Production

Since the concept of sustainable production emerged at the United Nations Conference on Environment and Development in 1992 as one of the key components of sustainable development, sustainable production is therefore considered as a term used to describe production practices that do not harm the environment during any part of the production process. It emphasizes the use of processes that do not pollute the environment or harm consumers, employees, or other members of the community. Sustainable production includes recycling, conservation, waste management, water supply, environmental protection, regulatory compliance, pollution control and a variety of other related issue. Sustainable production is also known by different names like environmentally conscious production, environmentally benign production, environmentally responsible production, and green production. Sustainable production emphasis on designing and delivering products that minimize negative effects on the environment through their production, use, and disposal (Priyanka 2017).

According to Lowell Center for Sustainable Production (1998) (LCSP), the above definition implies to describe the following terms: (1) the creation of goods and services by using processes and systems that are non-polluting; (2) the conservation of energy and natural resources; (3) economic viability; (4) safe and healthful for employees, communities and consumers; and (5) socially and creatively rewarding for all the people involved (Glavič and Lukman, 2007; Tseng *et al*., 2009). O'Brien (1999) suggested that sustainable production had to see the development of production firm's ability to meet society's needs, not only to create wealth. White (2001) argued that the investigation of sustainable production requires an understanding of both the social and the economic aspects of consumption.

The use of sustainable design practice, which represents the sustainable production approach primarily deals with the consideration of environmental concerns in all phases of the product's life cycle. The sustainable design approach requires focal (producers) firms to design their products and services in a way that minimizes the usage of energy and materials consumption and facilitates the recovery, reuse and recycling processes (Grote *et al*. 2007). The success of sustainable design requires cooperation with customers and can be obtained through a number of practices such as cooperation with customers towards cleaner production and eco-design (Green *et al*., 2012). Hence, the success of sustainable production activity and its main sub-

attribute of sustainable design depends on cooperation with customers and suppliers.

Furthermore, sustainable production activity with the help of sustainable design practice can help producers to develop their products in an energy-efficient way that minimizes energy consumption and avoids the use of harmful substances within their production processes (Kuik *et al*. 2011). It can also facilitate closing the supply chain loop through the reuse and reproducing of by-products, minimizing life cycle environmental impacts (Preuss 2001). Sustainable production activity is positioned near the middle of SSCM, between suppliers and customers, attempting to develop products or services that are environmentally sustainable. Continuous improvement is not enough and a step change in environmentally related performance is required. Environmental considerations must be integrated into the corporate culture and business planning at all levels of design, manufacturing, distribution, and disposal (D. Krajnc & P. Glavic2003)

In his argument Maria A.O. Dos Santos (2013), further disclosed that food items tend to be produced in a complex system made up of many processes connected in SCs. The operations and marketing functions of the SC members play a critical role in developing management systems and implementing decisions that affect sustainability performance. Green marketing is greatly influenced by the sustainability credentials of most SC members' production capabilities. Customer concerns about environmental and social responsibility must nowadays be properly integrated with other dimensions of value when managing stakeholders. Whilst process design and technology typically determine waste generated and resources and energy consumed, stakeholder relationships (e.g. supplier partnerships), logistics, and customer relationships magnify or attenuate sustainability performance and risks related to production. It also differences in sustainability performance outcomes need to be evaluated in order for SC actors to gauge their sustainability contribution and identify where improvement is needed. Such differences can be examined against key sustainability indicators: efficiency, flexibility, responsiveness and product quality.

The source of pollution in meat industry particularly in meat processing /slaughter house predominantly generated from on-site fat rendering, washing of vehicles, cleaning of production area, clearing secondary process areas (e.g. stomach washing, tripe, casings, etc.) and sludge from rendering plants which have organic nature such as blood, bones, manure,

pieces of meat etc, during slaughtering of animals. In this regard collection and processing of waste takes place in accordance with rigorous regulations. Each category must respect traceability procedures, which necessitates strict and complicated administrative and regulatory approaches (Ing. Ľubica 2013).

Increasingly though, both meat production and consumers demand by volume as of AAAE are looking beyond environmental practices to a broader concept of overall sustainability. Based on the triple bottom line approach (3BL), overall sustainability integrates profit, people, and the planet into the culture, strategy, and operations of companies (Elkington, 1999). For the meat industry, this means slaughtering animals and producing fresh meat in ways that are environmentally sound, socially equitable, and economically viable

Increased consumption of food proteins is associated with increased greenhouse gas emissions, increasing both liquid and solid waste disposal and overutilization of water. Consequently, concerns exist regarding impacts of meat production, processing and distribution of fresh meat on the environment, ecosystem, and sustainability.

In the food sector, consumers are now demanding more stringent quality control. They are concerned not only about price and convenience but also about food safety and healthy food. Importance is also given to sustainability and ethical issues, which include animal rights and the environmental friendliness of the food that is being consumed (Reisch and Lorek, 2013; Vermeir and Verbeke, 2006; Wahlen, Heiskanen and Aalto, 2012). Partly as a consequence of this breadth of coverage, many terms are used in the literature in relation to sustainable production.

A number of authors have investigated various aspects of sustainable food production. Bhaskaran *et al.* (2006) explored how consumers and value-chain intermediaries in Australia responded to food production that conformed to environmental standards and confirmed that the number of consumers demanding sustainable food is starting to increase at a slow rate. However, the researcher conceded that a firm was still unlikely to adopt environmental standards due to the low overall consumer demand and the high cost of compliance with those standards. Moreover, they also report that the myriad of terminologies in food production was confusing for both consumers and value-chain intermediaries (Bhaskaran *et al.*, 2006).

Pullman *et al*. (2009) expanded the view on sustainability by adding social elements to the environmental aspects in their analysis of the performance of the food industry. They depicted the causal relationships between environmental and social sustainable practices, and the associated quality and cost performance. Despite the lack of a relationship between sustainable practice and cost performance, a direct effect of sustainable practices on quality performance was detected. They also suggested that the integration of sustainability and quality programs within an enterprise may enhance performance. If these programs were not integrated, the benefits from the sustainability program were weakened.

Ilbery and Maye (2005) explored the economic impact of implementing a sustainable food supply chain by assessing a number of 'specialty' food supply chains operated by small rural enterprises around the border between England and Scotland. The authors' interest was in shorter supply chains and fewer 'food miles. However, they concluded that even though these enterprises had more control over their supply chains, it doesn't necessarily lead to sustainability, because of the economic imperatives. The authors argued that without a bigger economic drive, for instance public procurement and cooperative/ community food schemes for the niche market, the widespread implementation of sustainable production was not imminent.

In their study of these economic imperatives and local markets, Rezai, Mohamed and Shamsudin (2015) explored sustainable production in the meat industry. This can be seen as a local market for consumers but extended to a global scale. The authors similarly saw the economics to be the important driver for consumers in this segment of the food market, perhaps despite the expectation that fresh meat production would anyway cover elements of hygiene, food safety, environmental friendliness, organic production, animal welfare, and fair trade.

Browne *et al.* (2000) claimed that the motivation for consumers to select organic produce largely related to health and the environment, rather than social issues. Those authors further defined ethical trading according to criteria in four areas: (i) workers' salary and a range of rights and conditions, which include health and safety, non-exploitative and nondiscriminatory labour practices for men, women and children, and effective monitoring and auditing procedures; (ii) improving livelihoods through fair prices and a commitment to social

development; (iii) sustainable production methods that favour the environment and development; and (iv) animal welfare. Browne et al. concluded that organic production can be ethical when the social criteria combine with the standards of the authorities regulating the organic food industry

2.1.5 Implementation of Sustainable Supply Chains

Meat producing firms play important roles in shaping the food industry's social and environmental impacts. Given this, sustainable practice on the part of meat producing firms may support the environmental, social and economic development aspects. However, the increasing demand for fresh meat product and increasing production volume that have sustainably produced is questionable or have not yet been convinced to sustainable practices. The barriers to the implementation of sustainable practices are higher costs, the coordination effort and complexity, and insufficient communication within supply chains (Seuring and Müller 2008).

The factors motivating companies to embark upon sustainable development include social responsibility and investor demands, government regulations and international standards, and increased customer consciousness (Arun N. Nambiar 2010). That is why the concept of sustainable production emerged at the United Nations Conference on Environment and Development in 1992 and is a key component of sustainable development, which balances three principal requirements: the social, economic and environmental objective (D. Krajnc, P. Glavic, 2003).

To offset the emerging environmental issues of meat producing firms need to express keenness to explore a solution to reduce waste generated from current supply chain practice in their firm start to implement environmental practices in their existing supply chain management i.e. SSCM practice. On the other hand, both internal and external drivers for SSCM implementation enables for adoption. External drivers include customers' demand for such products; pressures from investors, community groups, the public, and competitors; and compliance with regulations. Internal drivers are normally connected to managerial thoughts, employees' demands, organizational culture, internal pressure on business managers, and social development activities (Ali 2016).

Moreover, the food industry has to comply with many sets of standards such like ISO 1400; 26000 standards and by the implementation of various non-regulatory quality assurance schemes, including those for animal welfare, and the net effect on the quality, cost, and competitiveness needs to be addressed. Since sustainability standards are mostly voluntary and do not tend to provide an immediate benefit to the firm (i.e. profit, return of investment), sustainable food has been implemented to a rather limited degree.

ISO 1400 advocated that the first step in an eco-design approach is to put in place an environmental management system (EMS). This system is defined as a "component in an organization's management system used to develop and implement its environmental policy and manage its environmental aspects" (ISO 14050 standard: 2009). Many internal and external advantages to the implementation of an EMS in an organization is shown on Table 2.2 below.

Table: 2.2. The advantages of an environmental management system

Internal advantage	External advantage
Rationalization of production/reduction of costs	Improve competitiveness advantage
Respect of environmental law/legal security	Better image in the eyes of the customers and the public
Technological innovations/pollution prevention	Better relation with the authorities/active cooperation
Motivation of collaborators	Greater transparency to shareholders, banks, insurers, etc

Source: ISO 14050standard, (2009)

The question remains as to how different sustainability practices specifically contribute to a firm's competitive advantage; many feels that practicing sustainability is good business if it increases profitability. According to the resource-based view (RBV), sustainability practices could serve as part of a firm's capabilities that contribute to variability in performance across firms. Products containing attributes acquired from sustainability processes and supply chain practices are differentiated by their credence attributes both physical and process-related. A physical attribute refers to content properties of the product such as whether it contains elements like genetically modified organisms (GMO), herbicides, and pesticides. A process attribute refers to characteristics of a production or supply chain process such as country-of-origin, fair trade, free-range, no-till, ethical labor practices, or sustainably harvested (Golan et

al., 2004, as stated in Madeleine 2010). To have an impact in the market place, the processes creating products with credence attributes must be assured and communicated throughout the supply chain to the market. From a fresh meat producer's standpoint, it is important to understand both whether their sustainability efforts have been successfully communicated to the market place and what impacts these efforts have actually made.

2.1.6. Sustainable Distribution

Logistics management is defined by the Council of Supply Chain Management (SCM) Professionals as follows: 'Logistics is that part of the supply chain process that plans, implements and controls the efficient, effective flow and storage of goods, services and related information from the point of origin to the point-of-consumption in order to meet customer requirements and satisfies the requirements imposed by other stakeholders such as the government (new rules and regulations such as the General Food Law) and the retail community (e.g. Global Food Safety Initiative)'. Included within this definition are logistics decisions related to network design (e.g. plant site selection), sourcing, order fulfillment (including demand forecasting), transportation management, inventory management, materials handling, and return goods handling. In addition, aspects of product development such as designing packaging variants of products and associated product labels are also important (Lambert *et al*., 1998 as stated in Jack *et. al.* 2014).

Sustainable distribution generally refers to the process of the transportation of products or services throughout the supply chain from suppliers to producers to final-customer with the purpose of having the lowest possible negative environmental impact (Wu and Dunn, 1995& Svensson 2007).It generally encompasses the whole distribution process, including order processing, storage and warehousing, packaging and labelling, delivery to the customers and taking back packaging (Seuring and Muller, 2008). Sustainable distribution sits between the customers and manufacturer, dealing with product transportation with the purpose of having the least negative environmental impacts possible. The success of sustainable distribution requires cooperation with customers throughout the whole distribution process and can be obtained through a number of proactive practices such as cooperation with customers for green packaging or using less energy during product transportation (Green *et al*., 2012)

In line with this Xu Yang, (2013) disclosed that, Procurement, producing, distribution, warehousing, inventory and information systems are important logistics functions, among which, distribution is a key function in the entire logistics system and the key link between producers and customers in a supply chain. In addition, distribution is a major driver of profitability in a company, because it has a direct impact on both the logistics cost and the customer experience (Xu Yang 2013).He also mentioned that, there are several important factors to consider when designing a distribution network: cost, quality, delivery reliability, service level, lead time, product availability, technical ability, warranties and so on.

Moreover Yang (2013), stated that, satisfying customers' needs is becoming increasingly important because only when customers' needs are met, can the company's profits be maximized. Managers in a company must not only consider trade-offs among facility cost, inventory cost and transportation cost, but must also focus on customer service issues there are many factors influencing customer satisfaction, e.g., response time, product variety, product availability, customer experience, order visibility and return ability. Increasingly, customers not only expect low price, but also demand a high-quality service, which is generally measured in terms of speed, flexibility and reliability. As the result of this, customer loyalty can be changed easily if the firms cannot satisfy any of their needs. Each customer is looking for special treatment in design, production, and delivery, which is the main reason for the firms must view flexibility from a supply chain perspective instead of equipment or process perspective. Consequently, how to balance operating costs with service performance issues is one of the major concerns for companies (Xu Yang 2013).

In connection to this Jack *et.al*. (2014), distribution aims at getting the right product, at the right place, at the right time, according to the right specifications (including quality and sustainability requirements) at the lowest cost. Actors in the chains understand that original good quality products might be subject to quality decay because of an inconsiderate action of another actor, for example storing fresh meat in a cold room under the required temperature. These chains produce goods for the higher end of the market, and are mainly characterized by closed relationships between producers and retailers with agree upon contracts for a longer term.

Due to food related diseases consumers have become more aware of the origin and nutritional content of their food. This leads to a growing interest in traceability, freshness and quality of products. It is clear that next to the traditional logistics management objectives, such as cost reduction and responsiveness improvement, sustainable agro-logistics management requires a different management approach that also considers intrinsic characteristics of food products and processes next to sustainability considerations: (1) cost reduction and improved responsiveness, (2) improved food quality and reduction of food waste, and (3) improved sustainability and traceability (Jack *et.al*. 2014).

Nowadays, consumers ask for safe and high-quality products with a competitive price throughout the year. In food supply chains (FSCs), the quality of the product continuously changes starting from the time the raw material leaves the grower (or the slaughter for meat products) to the time the product reaches the consumer (Jack *et.al*. 2014). This quality change (often degradation) necessitates keeping track of and preserving perishable product quality along the FSC to increase its freshness. Perishable products require management approaches and models that can cope with additional challenges such as temperature controls, quality decay or waste reduction methods (Jack *et.al*. 2014). Technological improvements (e.g. temperature-controlled facilities and trucks) enable FSCs to manage food quality throughout the chain.

Related to food quality is the concept of food waste, dealing with preventing or reducing food spoilage in the supply chain. For example, it is estimated that in Addis Ababa context about 5 to 6 kg of fresh meat is wasted, predominantly at the butcher shop in the supply chain due to handling problem both in production and distribution of fresh meat. The industrialized countries food waste practice is seen at the consumer end in the supply chain while low income countries show relatively large food losses in the early stages of the chain, with decreasing wastage levels in consecutive stages (Jack *et.al*. 2014).

Logistics flexibility is the ability of a firm to respond quickly and efficiently to continuously changing customer needs in inbound and outbound delivery, support, and services. It enables firms to satisfy demand as it occurs rather than forecast sales and react to future orders. With logistics flexibility, a firm can delay commitment, embrace change, and fine tune delivery to meet specific customer needs. Logistics flexibility is supported by a market-oriented strategy

where all parties work together to create a fast, efficient, and reliable supply chain. Flexibility becomes particularly relevant when the whole supply chain is considered, consisting of a network of supply, production, and delivering firms. In this case, many sources of uncertainty have to be handled, such as market demand, supplier lead time, product quality, and information delay (Ömür and Fahriye 2016)

2.1.6. Reverse Logistics

Reverse logistics is the opposite of traditional or forward logistics, and is referred to as a process where unused or end-of-life products are retrieved from the point of consumption for possible refurbishing and recycling purposes and eventually appropriate disposal (Van-Hock 2000).

The reverse logistics approach can potentially extend the initial life of materials and products through possible recycling and reuse, mitigating life cycle environmental impacts (Jayaraman and Luo 2007). This implies that the reverse logistics approach plays a crucial role in the SSCM context, as it attempts to effectively close the supply chain loop, which can minimize life cycle environmental impacts and deliver environmental performance improvements (Zhu *et al*. 2008). Therefore, producers that adopt reverse logistics initiatives can become more environmentally efficient and are expected to have better performance outcomes. The meat industry as a sub-segment of the production sector is a good example of this approach, where reverse logistics are widely employed in which meat product collection services are offered by meat industries due to quality defect or reprocessing of the product into other type and purpose.

In connection to this, reverse logistics can be viewed through the lens of two types of returns. Firstly, collection of products from customers for repairing, disassembling, reproducing, recycling, and disposing purpose associated with environmental as well as quality and wear-dating issues; then, returns or recalls of products to the manufacturers (e.g. faulty or contaminated products) Morana (2013). The point of return of these products or waste products in a reverse logistics network may be the initial producers, a different player from the same industry or an actor from other sectors of activity.

Further Sergio Rubio and Beatriz Jiménez-Parra (2014) disclosed, there are numerous reasons for implementing or operating an RL system. The most important of these are the economic reasons (decreasing the use of raw materials, reduction of disposal costs, creation of added

value for end-of-use products) which of direct one and indirect reasons (demonstration of environmentally responsible behavior, improved customer relations). The other is legal reasons, in many countries (within the European Union, for example) companies are held accountable for the recovery or correct disposal of waste generated by products they produce or distribute. The last is the social reasons, the increased social awareness of the need to protect the environment has led to increasing demands for environmentally responsible behavior by companies, particularly in terms of carbon emissions and waste generation.

The strong drive for reverse logistics is fueled by current patterns of customer behavior which result in volatile food markets and shorter product life cycles and returns of faulty goods which are not meeting customer requirements. The significant of reverse logistics in the food industry is evident in the requirement to provide quality and safe food to consumers without posing any threat on human health, wellbeing and the environment (Sergio and Beatriz 2014).

In connection to this Ilias (2014), stated that, despite the importance of reverse logistics in handling growing amount of food product returns reverse operations during the product life cycle have received little attention. The major challenge for reverse logistics in the food industry relies on the perishable nature of food and agricultural products which have short shelf life and require fast and efficient logistics operations. Even the smallest deviation from required standards may create a food safety incident and subsequently pose a possible threat to consumer's health. The fresh meat, while there was no absolute threat to consumer health, is a clear indication that deviations from the promised food quality may harm public confidence and generate distrust even among loyal customers. Poor reverse logistics can have devastating legal and economic repercussions. Exchanging Christian for Muslim or that beef for pig or camel and returning product with defect.

2.2. Empirical Literature Review

This part of the paper intends to focus on empirical studies and findings on sustainability issues associated with the supply chain management of meat in Reliance to Fresh. Various relevant empirical studies have been reviewed on the procurement of slaughtered animals from live animal traders, production and distribution/dispatch of the same to the customers considering the hygiene and quality perspectives giving emphasis on social, economic and environmental

aspects. An exhaustive review has been carried out on supply chain analysis as well taking in to account the different cases in various countries.

2.2.1. Economic Aspect

In India (2015), Reliance Fresh started the retail journey in November 2006 with the first Reliance Fresh store. Today they operate over 93 cities across India with 700+ stores, Reliance Fresh is a supermarket chain which forms part of the retail business. It includes an entire value chain starting from the farmers to the end consumers. Reliance Retail has decided to minimize its exposure in the fruit and vegetable business and position Reliance Fresh as a pure play super market focusing on categories like food, FMCG, home, consumer durables, IT and wellness, with food accounting for the bulk of the business.

Reliance Fresh offers convenience of shopping for everything that the customer needs for his/her home - be it Fresh Vegetables and fruits, rice, dals, oil, packaged food, bakery and dairy item, frozen and pet food, household cleaning items, specialized beauty and personal care products from a single virtual store.

Reliance Fresh makes its purchase of green vegetables and fruits from the local farmers. They have established the rural business hubs in many parts of the country. The objective of Reliance Fresh is to make the entire value chain more effective, robust and responsive. By approaching farmers directly, it thereby reduces the procurement wastage that further paves the way for better returns to Indian farmers and wholesalers as well as it renders greater value for the Indian consumers. In the first phase vegetables and fruits are procured from the suppliers and wholesalers followed by processing, separating rotten ones and finally packaging for sale (India 2015).

The objective of the Collection Centre is to buy fresh and good quality of vegetables and fruits. Reliance started its retail operations of Reliance Fresh store by following the supply chain model comprising of procuring vegetables and fruits directly from the farmers and operating with moderate margin. From the collection point, the store(company) uses its own logistics for transportation and processing in collection point, then transported to processing point or DC and ultimately to the customers through the retail outlets (India 2015).

In the case of Australia Ferry Jie*et.al* [nd], food quality, flexibility and responsiveness have a significant influence on producer's processor's and retailer's/wholesalers of the chain competitive advantage. In the long term, beef producers need to demonstrate to processors reliable, quick response or on-time delivery, high quality products and services, attention to processors'/customers' needs, and the flexibility to respond to those needs adequately. Beef processors should also start with building core competencies that focus on customer requirements by having appropriate quality for beef and then delivering beef in a manner that results in high levels of customer satisfaction. Specific examples include quick response and responding professionally to customer returns.

As Damian M and Brian (2006), in England producers reported having informally based business relations with selected suppliers. When asked to explain supplier selection, various, potentially contradictory, factors emerge. Overall, price is the central criterion influencing selection.

The desired quality of inputs (e.g. rennet, organic feed) and the lack of local availability also explain why some businesses source from outside the region. In dairy, for example, it is important to note that the main product and ingredients for processing (e.g. milk, cream, eggs, and jam) are usually sourced from the farm or through a local supplier. Other ingredients are often less available in the region, with businesses accessing whatever node they can to source the right product at the right price. With limited economies of scale, this may involve using second or third level national and/or international intermediary suppliers (Damian M and Brian 2006).

Most red meat livestock producers also aim to minimize input supplies. However, contrasting pictures emerge. So, while some surveyed organic and rare breed producers have developed supply links with other likeminded producers (e.g. links with other local, organic or rare breed farmers to buy stock/materials), other on-farm and traditional butchers source some or all of their product from 'mainstream' suppliers (e.g. livestock marts, livestock agents, wholesalers, producer cooperatives, other butchers), in some cases outside the study region (Damian M and Brian 2006).

In contrary to the above supply chain system, livestock producers revealed that in many cases these chains are relatively insignificant, at least in terms of volumes sold. Thus, while a number of businesses sell some product through direct marketing channels (e.g. farm shops,

Farmer's Markets, mail order), they also rely heavily on more mainstream outlets to sell large proportions of stock; for example, two pig farms sell to a large commercial cooperative and a cheese farm sells the bulk of its product to Sainsbury's supermarkets. Producers also seek more 'stable' direct marketing options, particularly establishing their own farm shop. Downstream links and contracts are usually verbally based and informal, with contact often initiated by the livestock producer. The ability to control the food chain and where the product is sold is a significant factor (Damian M and Brian 2006).

According to Moya Kneafsey *et.al. (*2013), in France some 107,000 enterprises which sell some of their produce through Short Food Supply Chains. In general, farms using circuits courts are small-scale but have a larger than average workforce. Circuits courts are valued in France for their economic impacts in terms of sustaining small farms and generating employment.

2.2.2 Environmental Aspect

India (2015) also stated that, in India Reliance Fresh gives all that the customers want, wide range of brands and products to choose from exclusive ranges like organic, regional delicacies and many more. It offers on - time delivery at customers‟ convenience and dedicated workforce network and infrastructure to ensure it. It provides convenient options of delivery slots, customer friendly interface, user friendly and easy to navigate website. It also ensures fresh, hygiene and high-quality products stored and transported in high standards of hygiene and temperature control.

Reliance Fresh poses itself unique by offering vegetables and fruits known for their "Freshness, Quality and Hygiene". Reliance Fresh procures fresh vegetables and fruits from the distribution centers headed by a category head who is responsible for the inbound operations such as collection of vegetables and fruits from local suppliers/regional suppliers/state level suppliers and wholesalers (India 2015).

Ferry Jie*et.al* [nd] also recommend that in Australia the framework (integration of supply chain practice, supply chain performance indicators and competitive advantage) might potentially be useful for other red meat industries (such as sheep, lamb or kangaroo). Additionally, that framework might be a good idea also for other agricultural products (for instance, fresh vegetable produce, seafood, etc).

According to Damian and Brian (2006), in England the shortened nature of the food chain downstream is the key difference. Downstream, traditional livestock channels such as abattoirs, wholesalers and food processors have also not been abandoned. So, although meat producers have set up their own cutting units for value-based processing, they must still 'dip into' more established nodes. In the meat sector, the obvious link is the abattoir. These businesses are usually smaller than the abattoirs that supply supermarkets, and better suited to specialist producer requirements. In dairying, surveyed cheese farms use wholesalers to sell product, although again many are more specialist enterprises dedicated to sourcing product from artisan producers.

Moya Kneafsey *et.al.* (2013) supplement that, in France the environmental impacts also seen in terms of territorial and environmental management made possible through the maintenance of traditional farming practices. There appears to be great institutional thicknesses with regards to the governance, development and implementation of strategies for developing circuits courts. National frameworks developed by the Ministry of Agriculture and the Chambers of Agriculture provide guidance and tools which are implemented through regional and local structures which are able to adapt to local circumstances, using local knowledge.

It is exhibited from the above empirical researches that all the cases have their own unique status in supply chain management and the respective sustainability issues connected with the products along the processes. For sure, the case in Ethiopia particularly Addis AAAE is not different from the others, mean that there is an expectation of diverse issues in terms of both supply chain management and sustainability patterns probably specific to Addis Ababa case.

2.2.3 Social Aspect

India (2015) also added that, in India the customer can get started by registering with Reliance Fresh, select the products he/she needs, choose the delivery time convenient to him/her and pay the way he/she wants to-through cash/credit card/net banking and food coupons. Reliance Fresh will handpick the customer's order the way he/she would have done it himself/herself and deliver it to his/her home just when he/she wants it. Well-trained customer service agents to assist customers during order booking and enquiries.

Ferry Jie*et.al* [nd] added that, in Australia beef retailers on the other hand should understand and keep building partnerships with processors and end customers by providing good alliance experiences, good communication and information sharing. Planning Forecasting Replenishment (CPFR) is a good approach for beef retailers to strengthen partnerships, provide analysis of sales and upstream and downstream order forecasts and use point of sales to improve forecast accuracy.

One significant problem for Australian beef supply chain performance was unskilled and inexperienced staff or personnel. The results of the survey also indicated that the first concern when managing the supply chain in Australian beef enterprises is unskilled and inexperienced personnel, With the unskilled and inexperienced personnel problem, there are several suggestions for the beef industry to apply. First, they need to improve their general, specific and technical knowledge and also general, interpersonal and supportive managerial skills by providing training and short course programs. (Ferry Jie *et.al*[nd]).

Damian and Brian (2006), also include that, in England establishing transparency in the food chain is a key concern for livestock businesses. As one organic poultry producer explained: 'The main characteristic of the whole business is the fact that they are traditionally reared and they are killed and processed on the farm. That is the main selling point really. It goes back to this buzzword traceability.

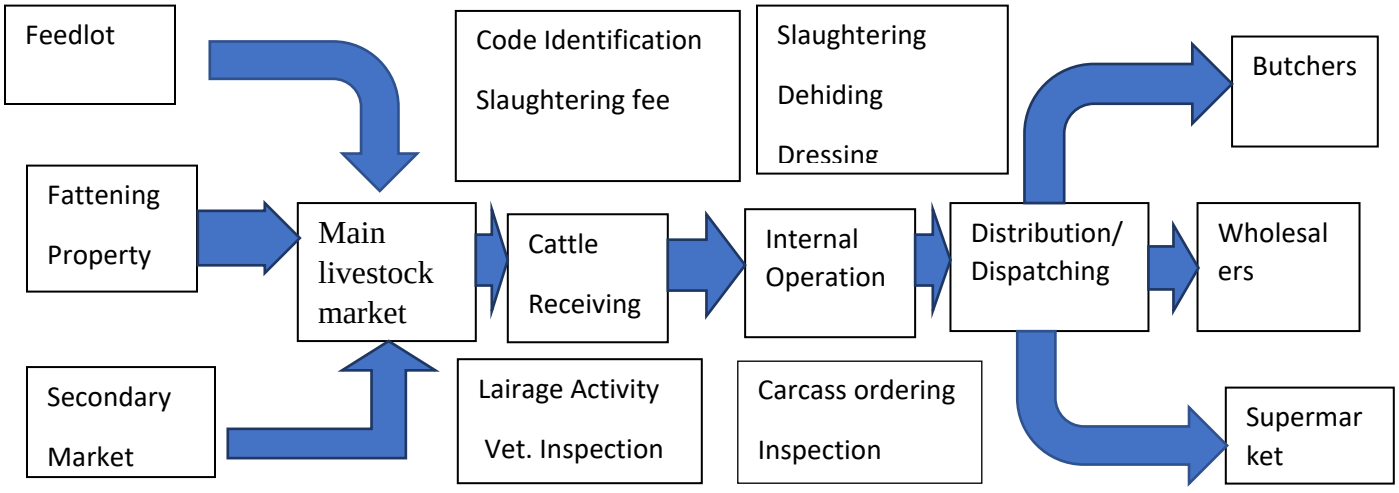
Moya Kneafsey *et.al*. (2013) also stated that, in France the social impacts circuits courts in France considered as it was maintaining ways of life, valued traditions and knowledge. Its use is being made of EU funding to develop a vector of knowledge exchange about circuits courts. Consumer interest in circuits courts remains strong but restricted mainly to middle- and higher-income groups due to issues of access, availability and affordability. The consumers we surveyed demonstrated a strong loyalty to local producers and wanted to support their local economy as well as have access to fresh, high quality food.

2.3 Conceptual frame work of the study

According to Meteng Consotrium (2014), and annual report AAAE (2017), supply chain of fresh meat in Addis Ababa Abattoirs Enterprise has its mains operations in the southern part of the city of Addis Ababa, with the main livestock market close at hand. The enterprise involved in the production and distribution of fresh meat for the city. Supply chain of study was mapped

based on nature of production of food which start from production. Since the enterprise is entirely a service operation i.e. it owns neither the livestock nor the meat processed, and it has no involvement in sales or marketing of these products. It is one of the largest abattoirs in the country and provide fresh meat citywide in which its customers gain the largest market share. Under its current business model, AAAE charges a service fee to its customers and also retains some offal and other by-product items for its own account. Besides the slaughter operation, AAAE conducts rendering (manufacturing of meat meal and tallow). Animals are usually slaughtered within hours of arrival at abattoir and carcasses dispatched to butcheries within hours of the slaughter process where the meat is sold the same day. Based on 1500 customers who has been recorded on the Enterprise's customer records, in terms of an annual average the enterprise routinely processes large kills on a 5-7-day schedule, daily throughput is approximately 1200 head of cattle, however, peak demand events see slaughter levels rise to more than twice the average on twelve or more days each year. This traditional supply chain management need to adopt the SSCM practice to improve its performance and to be competitive in the market.

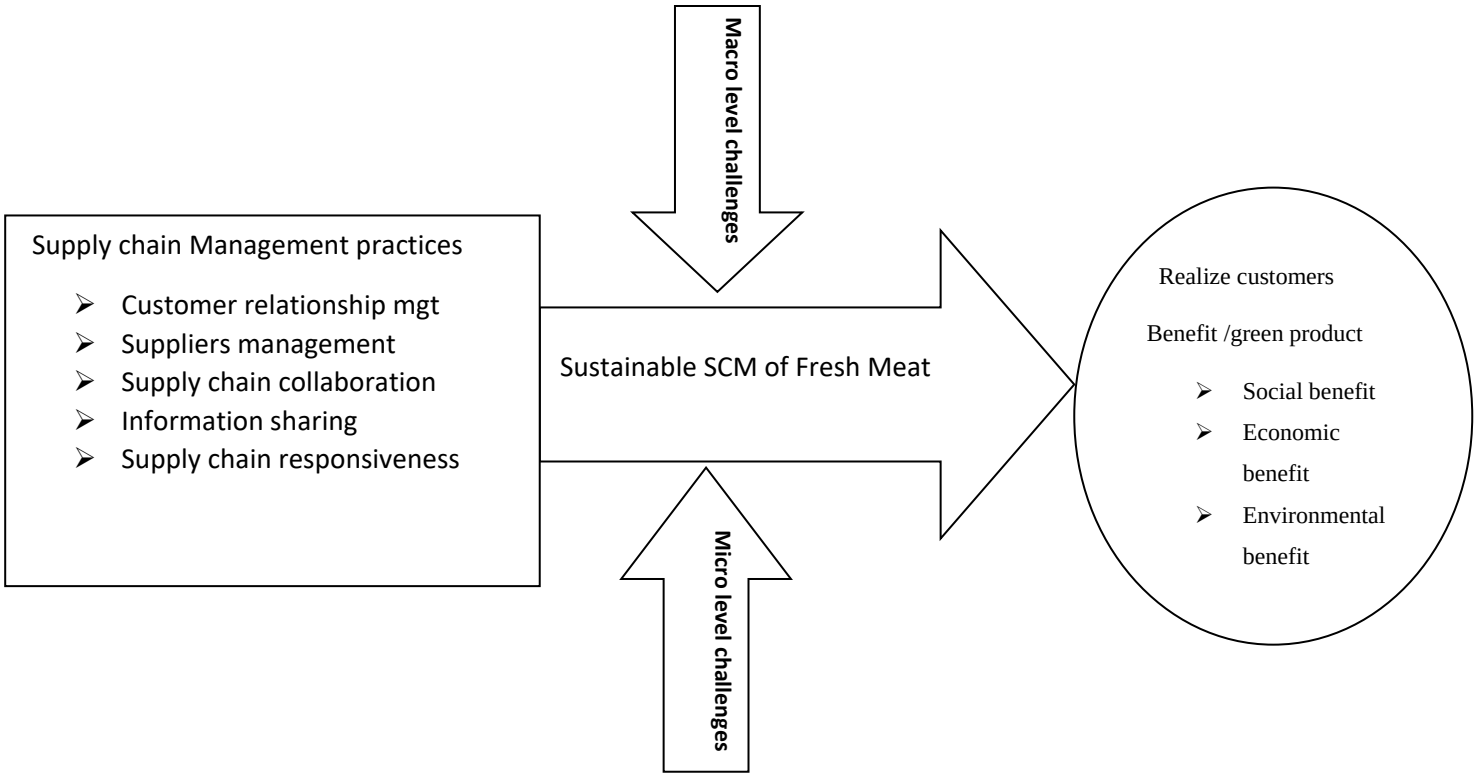
Figure: 2.2 Supply Chain Maps of AAAE



From the review of sustainable supply chain and generic supply chain literature a conceptual framework has been developed which illustrates how the traditional supply chain practice integration with SSCM practice will benefit customers. The framework, shown in Fig. 2.6, that, the traditional supply chains should develop into sustainable supply chain management

(SSCM) regarding social, economic, and environmental benefits. Specifically, in meat industry pollution, and solid or untreated waste disposal generated during slaughtering and by product processing and traffic congestion and emission gas generation during distribution are a day to day practice. When this traditional practice of supply chain integrated with SSCM practice which encompasses the macro and micro level drivers and pressures resulted customers in to economic, environmental and social benefits. Supply chain management has core operational activities starting from the procurement of raw materials to the delivery of finished products (forward supply chain). Collecting used products from customers is also a part of SCM (Reverse supply chain management), (Clare and Lynn 2014).

Figure 2.3 Conceptual framework of the study



Source: Adopted from Clare Brindley and Lynn Oxborrow,(2013) Work

2.4 Identified Literature gap

The social dimension of sustainability has been poorly investigated when compared to the environmental and economic dimension, especially in sustainable supply chain management studies (Carter and Roger 2008). This lack of attention is problematic for the theory and practice of managing sustainable supply chains. This is the case when companies are not implementing and managing social sustainability into their supply chains or when they are not fulfilling corporate social responsibility (CSR) requirement. It is therefore important to balance the triple bottom line while doing business. By doing so together generate a useful model that can improve our understanding of the complex interactions between the management of supply chains and their social sustainability performance. There are also variations in the supply scheme, that countries experience different sources of throughput, which could have both positive/negative implication on the supply chain management and sustainability issues. And also, both theoretically and empirically, regarding meat products evidences are scares. Meanwhile, most literatures address the issue holistically from procurement to reverse logistics, which is less experienced in Addis Ababa Abattoirs Enterprise.

CHAPTER THREE

3. Methodology of The Study

This chapter of the thesis will discuss how the research study was undertaken based on concepts and frameworks of sustainable supply chain management. By doing so appropriate research design should be selected; sample size determination technique also implemented; data source and collection procedure determined and finally, method of data analysis and presentation are discussed accordingly.

3.1 . Description of the study area

Addis Ababa Abattoirs Enterprise (AAAE) which located at the southern part of the city of Addis Ababa first established in 1957 outside of the residential area. It is a government owned enterprise established to provide slaughtering service to the city dwellers of Addis Ababa and produce by-products of animal's origin obtained from slaughtered animals. The enterprise gives an average slaughtering service for 1200 cattle per day, 1000 sheep and goats, 100 pigs and 10 camels within 8 working hours based on more than 1500 customers. In addition to slaughtering service providing, By-product processing of inedible part of the carcass obtained from slaughtered animals is also the other main activities of the enterprise. To run these activities the enterprise has 1200 permanent employees.

3.2. Research Design

In this research descriptive research design was used. Descriptive research design is employed as a frame work in order to assess the determinants of sustainable supply chain management performance in Addis Ababa Abattoirs Enterprise by identify the extent and nature of cause-and-effect relationships between supply chain management practice and the three dimension of sustainable supply chain management. (University of Southern California 2018).

3.3. Research Approach

The research approach chosen for this research were both quantitative and qualitative type so as to triangulate the instruments from different directions. Measuring the objective and analysis of effect of independent variable on dependent variable was done through quantitative research approach, whereas qualitative research which being framed in terms of using words are used for open-ended questions or interview questions. In qualitative research data analysis inductively

building from particulars to general themes, and the interpretations of the meaning of the data will be made (Leedy and Ormarod 2010).

In this research, as fresh meat producing firm the enterprise was considered as unit of analysis. Based on the responsibility in each category of the supply chain actors respondent i.e. production workers, butchers, wholesalers and supermarket owners are included in the questionnaires responding.

3.4 Population and Sample Design

Population is the totality of entities in which the researcher has an interest which want to be make inferences and sample is part of the population. The enterprise was established in Addis Ababa and are involved in meat production and distribution of fresh meat to Addis Ababa market. Samples are some of the actors in the chain all found in Addis Ababa. By using Yamane's (1967) simplified formula to calculate sample sizes. This formula was used to calculate the sample sizes from the population of 2296 among which 601 slaughtering operation staff 1500 butchers 45 wholesalers and 150 supermarket owners, where A= 95% confidence level and P = .5 and by assuming that where n is the sample size, N is the population size, and e is the level of precision.

$$n = \frac{N}{1 + N(e)^2}$$

However, in the case of butchers the census was employed because all butchers business are similar and they have representative of 21 board of directors who have been assigned by all members of the Addis Ababa butchers association as the same time doing similar business with members. The remaining 796 undertaken by the sampling size determinant formula.

Therefore, when we substitute the values in the formula

$$n = \frac{N}{1 + N(e)^2} \qquad n = \frac{796}{1+796(0.05)^2} = 796/2.99 = 266.22+21 = \underline{\mathbf{287.22}}$$

3.5. Data source and type

As sustainable supply chain management is a new conceptual framework and applied at manufacturing industries, the researcher has identified those supply chain actors involved in AAAE supply chain as a respondent. Accordingly, the respondents are identified as: employees of the enterprise and others the supply chain members. Samples are some of the actors in the chain all found in Addis Ababa and used as primary source of data and secondary sources are publication, reports, relevant research work etc. The population of AAAE supply chain is large and members are varied in category. For this population, the researcher applies non random sampling method.

3.6. Data collection Procedure

Primary data was gathered and measuring information on variables of interest going to be done in an established systematic fashion that enables to answer research questions and evaluate outcomes mainly using questionnaires and interviews, secondary data also collected from reports, publication and other relevant studies. Based on this the convenience sampling of non-probability sampling technique is used in this study (Diamantopoulos & Schlegelmilch 2000).

3.7. Ethical Considerations

Ethics is becoming an increasingly prominent issue for all researchers. Researchers are encouraged to employ knowledge of research ethics in practice. Ethical issues were prominent throughout this research process, including during the data collection, during the analysis and writing up of the final report.

Leedy & Ormrod (2010) identified four main ethical issues that need to be addressed in the process of undertaking a research. These are: protection from harm, informed consent, right to privacy, and honesty with professional colleagues.

Accordingly, the researcher clarifies to the respondents about the objectives of the study and explain that the information would be used only for research and academic purposes. The researcher tries not to expose participants from any physical or psychological harm requests their consent and could participate only on a voluntary basis, respects the participant's right to privacy and reports the findings in a complete and honest fashion. The researcher also

requested the consent of the respondents to conduct the research study with official letter and finally permission was given.

3.8. Method of data analysis and presentation

The data collected has to give meaning to what it is intended for. As discussed by (Diamantopoulos & Schlegelmilch 2000), data analysis begins with doing some data description and followed estimation testing. Data was analyzed using SPSS software specifically with the help of descriptive statistics (frequency, percentage, mean, variability and standard deviation) and inferential statistics were used to analyze data with casual nature based on correlational analysis.

3.9. Validity and Reliability test

Reliability refers to the extent to which the instrument measures what is intended to measure and validity refers to the consistency with which a measuring instrument yields a certain result when the entity being measured hasn't changed (Leedy & Ormrod 2010). They further categorized into internal and external validity where the former refers to the extent to which its design and the data it yields allow the researcher to draw accurate conclusions about cause-and-effect relationship within the data. The external validity refers to the extent to which the research results apply to situations beyond the study itself.

The questioners that designed for this research purpose first tested by 7 key informants who has a logistics and supply chain management profession back ground. Almost all of them replied as it was including the basic supply chain management activities and the components of the sustainability particularly that of the enterprise, but they comment to reduce the questionnaires in manageable way. As many social science researchers argue that the acceptable level of reliability test was a reliability coefficient of .70 or higher is considered acceptable in most social science research situations. The reliability coefficients (Cronbach's alpha values) for the variables of both the independent and dependent variables of this study exceed the ideal recommended 0.70 level, indicating high construct reliability.

Table 3.1 Reliability Test

Variables	Cronbach's Alpha	Item
Likert Scale	0.846	34

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SCCol= Supply chain collaboration	16.4299	10.042	.516	.836
SCInfo= Information sharing	16.4131	10.430	.457	.842
SCCRM= Customers Relationship	16.4703	9.502	.558	.832
SCSM = Suppliers management	16.3571	9.083	.537	.840
SCSCRes =Supply chain Responsiveness	16.5278	9.841	.679	.818
SSCEco = Economic Practice	16.6138	9.376	.736	.809
SSCEnv = Environmental Practice	16.5090	9.648	.667	.818
SSCSo = Social Practice	16.6265	10.216	.597	.828

CHAPTER FOUR

RESULTS, DISCUSSION AND INTERPRETATION

4.1. Introduction

This chapter has presented the results of the data analysis using appropriate quantitative techniques. In the first step, the data administration processes have been addressed, then the data distribution has been statistically assessed, preparing the data for statistical analysis. Thereafter, descriptive analysis has been conducted to statistically determine whether the measuring items truly represent their associated measures. The results relating to the fit of the proposed research method supported the claim of good method fit, indicating that the theorized method statistically fit with the real data collected from the survey.

In essence, the causal relationships in the theoretical aspect are tested generating the results of this investigation. This chapter seeks to provide some statistical procedures involved in conducting appropriate quantitative analysis, establishing the credibility of the results and maintaining the strength of the research findings.

4.2. Demographic Profile of the Respondent

Observing the demographic trend or characteristics of our sample population before starting the data analysis is useful to make the analysis more meaningful for the reader. This part of the questionnaire requested limited amount of information related to personal and demographic status of respondents. The purpose of demographic analysis in this research is to describe the characteristics of the sample such as proportion of male and female in the study area, categorizing of respondents in the chain, identifying the working age in the study area, to get more understanding about the academic qualification of respondents and experience of respondents. Accordingly, these variables are summarized and described in tables shown below.

The table 4.1 below depict that most respondent were from butchery category who has involved in fresh meat trade in the city of Addis Ababa represented by their board members and taken as census (21) 7.5% and followed by slaughtering department workers (195) 69.64% supermarket owners (49) 17.5% and at last the least respondent were from wholesalers

category (15), 5.36% while the least respondent were from human resource department with 15 respondents (13.3%). Overall the sample size is 280. The result indicated that, all the target departments were incorporated on the study at a significant rate.

Table: 4.1. Departments of Respondents

Sample of Data Distributed N=287	Frequency	Percentage
Butcheries	21	7.32
Wholesalers	15	5.23
Production	201	70.03
Supermarket	50	17.42
Total	287	100.0

Source: Own survey result, 2019

Table 4.2. Demographic Profile of the Respondent

Demographic Profile	Item N= 268	Frequency	Percentage
Gender	Male	254	94.8
	Female	14	5.2
	Total	268	100.0
Age	18-28 years	58	21.6
	29-45Years	172	64.2
	46-60Years	38	14.2
	Total	268	100.0
Marital status	Single	73	27.2
	Married	179	66.8
	Divorced	16	6.0
	Widowed	--	--
	Total	268	100.0
Educational status	Below Diploma	221	82.5
	Diploma	31	11.6
	Bachelor Degree & Above	16	6
	Total	268	100.0
Duration of stay at the AAAE (experience)	Less than 2 years	9	3.4
	2-5Years	69	25.7
	6-10Years	117	43.7
	Above 10Years	73	27.2
	Total	268	100.0

Source: Own survey result, 2019

The total number of respondents was 268 among 287 sample size, of which 94.8 %

were men and only 4.2 % women. This division corresponds more or less to the real situation of sex distribution of supply chain actors of fresh meat at Addis Ababa Abattoirs Enterprise.

The age distribution of the respondents also corresponds between the age groups. All respondents were over 18 years old which include the early working age of the country and the majority are between 29-45 years old which accounts 172, the rest of the age group 18-28 years old accounts 58 and 46-60-years old accounts 38 have a percentage of 64.2, 21.6 and 14 2 respectively. The table 4.2 above indicate that the majority of the age category is 29-45 years which is under the prime working age (25- 54).

As the table 4.2. indicates that, the marital status of the respondent is single 73, married 179 and divorced 16 which represent 27.2%, 66.8% and 6% respectively. The Ethiopian constitution explicitly states that the minimum legal age for marriage is 18 for both boys and girls. Lack of education and economic opportunities influence to get marriage. This is supported by the results of this study in which most of the respondent of the chain are below diploma.

Table 4.2 above indicates that, the majority of the respondent's educational back ground is below diploma which accounts 221 followed by diploma 31 and bachelor degree and above 16 with percentage of 82.5, 16.6 and 6 respectively. This is simply because most of the supply chain actors who involved in fresh meat supply are not educated but they run their business with experience.

In all over the country meat trade business is run by experienced people in the field the same is true that most of the stakeholders in the chain are experienced more than 6 years. Accordingly, the finding in table 4.6 indicate that, the respondent which have less than 2 years accounts 9, 2-5 years accounts 69, 6-10 years accounts 117 and above 10 years accounts 73 in which 3.4,25.7,43.7 and 27,2 is their respective percentage

4.3. Appropriateness of the Data

According to Field (2009), before conducting any statistical analysis, two main issues concerning the appropriateness of the collected data are central and must be checked using suitable techniques. These two issues are missing data and normal distribution of data. The risk of missing data was mitigated in this research preventing survey submission if any question remained unanswered, as annex 3 indicate that there was no missing value and the appropriateness of the collected data in terms of its normal distribution through employing a feature using the IBM SPSS statistical package version 20 are presented as follows.

As the result in annex 4 shows, the skewness is both negative and positive. The negative value implies that the distribution of the data is slightly skewed to the left or negatively skewed. It is skewed to the left because the computed value is negative, and is slightly, because the value is close to zero. On the hand the positive value implies that the distribution of the data is slightly skewed to the right or positively skewed. It is skewed to the right because the computed value is positive, and is slightly, because the value is close to zero. When the distribution is close to zero then it is probably close to normal. For the kurtosis, it is possible to have any shape of peak whatsoever when the kurtosis is negative (or positive). kurtosis measures the tail (potential outlier) character of the distribution. With negative excess kurtosis the outlier character of the distribution is less extreme than that of a normal distribution (Field 2009).

Having discussed the appropriateness of the collected data in terms of both the risk of missing data and the normal distribution of the data, it is beneficial to address data quality implications before conducting the statistical analyses. Data quality is a crucial issue in both quantitative and qualitative social science research, as it is one of the most important indicators for establishing the truthfulness and credibility of results, maintaining the robustness of research findings (Kaplan 2004). Reliability is primarily determined by Cronbach's α value (Field 2009) in quantitative studies. Cronbach's α (alpha) is widely employed as an estimate of the reliability which is concerned with how closely a set of indicators are related as a group within a research measure, indicating the consistency of the measure.

4.4. DESCRIPTIVE ANALYSIS OF SUPPLY CHAIN MANAGEMENT AND SUSTAINABLE SUPPLY CHAIN MANAGEMENT PRACTICE

The mean or average is a measure of central tendency that offers a general picture of the data without unnecessarily covering one with each of the observations in the data set. The mean of respondents in each dimensions of supply chain management performance suggest that the average amount that each dimension has positive or negative response of respondents. In this case, the mean of each item together with their respective dimension overall average mean was calculated in order to conclude the overall sustainable supply chain management performance of Addis Ababa Abattoirs Enterprise. The mean statistical values of the items were based on the 5 point Likert scale and will be illustrated through the following assumptions: if the mean (M) score is below 2.5 it implies that the respondents‟ disagree with the statement, if the mean score is equal to 2.5 it indicates that the respondents‟ prefer to stay Neutral, and finally if the mean score is above 2.5 it implies that the respondents‟ agree with the statement.

Accordingly, the mean scores have been computed for all the five-supply chain management performance factors that includes supply chain collaboration, supply chain information sharing, supply chain customer relationship management, supply chain suppliers management and supply chain responsiveness in which all encompasses the independent variables and also the sustainable supply chain management performance indicators including sustainable supply chain management economic practice, sustainable supply chain management environmental practice and sustainable supply chain management social practice are dependent variables. The performance of both independent and dependent variables was computed by equally weighing the mean scores of all the items under each dimension. The average mean results of each independent and dependent variables were separately presented, analyzed and interpreted as follows.

4.4.1 Supply Chain Management Practice of Addis Ababa Abattoirs Enterprise

Table 4.3 Supply Chain Management Supply Chain Collaboration

Items N= 268	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
AAAE contributes with its supply chain actors by sharing its resources to improve its internal Sc activities	36	120	78	30	4	2.43	.911
The enterprise improves its performance by practicing of joint cost reduction activities	33	124	84	22	5	2.41	.876
The enterprise elevates its inventory management by attempting the linkage with each component	51	89	96	26	6	2.43	.979
The enterprise describes the three-principal element of an integrated supply chain model	47	104	83	27	7	2.41	.977
Grand Mean						**2.42**	

Source: Own survey result, 2019

The case study conducted in the agri-food industry A. Matopoulos *et. al*. (2007, revealed that while there is a true need for supply chain collaboration, the structure of the agri-food sector along with the nature of products impinges the intensity of collaboration, to more operational and tactical level, as well as, to logistics-related activities. For example, the companies coordinate on the procurement/supply and distribution process mainly at the tactical level (e.g. arrange procurement details and terms, delivery times), however when it comes to more complicated supply chain activities, such as product design/new product development and demand management or even when they have to plan at the operational level, they are unable to collaborate.

In contrary to this as Balal & Abdelsalam (2012) study in Sudanese manufacturing company, it can be concluded that Sudanese industrial companies are highly practicing of supply chain collaboration above the average mean (M=3.71). In addition, the retail industry of the Croatian national state also has the positive impact on output measures, such as sale, as the highest average (M= 4.18)

Table 4.3 indicate that, the average mean value with regard to supply chain collaboration and the result related to its items stated, respondents which have 56.34 percentage were disagree on its practice with supply chain actors to improve its internal Sc collaboration which have a mean

value score of (M=2.42) which is below average. Supply chain collaboration of the enterprise is weak compared to a study conducted in Sudanese manufacturing company and that of Croatian national state retail industry.

This is also supported by interview conducted with representatives of one from each respondent category in that, as the case study shows that both upstream and downstream integration is difficult to achieve, particularly upstream integration with the entities responsible for developing new varieties; no such links exist. In essence deterioration on the intensity of supply chain collaboration due to product features and the structure of the industry.

Table 4.4 Supply Chain Management Information Sharing

Items N= 268	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Mean**	**SD**
The enterprise shares information with its suppliers by considering as one of supply chain process	42	139	65	18	4	2.26	.857
The enterprise use information sharing as a tool for achieving an integrated and coordinated supply chain	41	98	92	31	6	2.49	.962
The enterprise use elements of information sharing for supply chain management practice	43	105	63	40	17	2.56	1.118
use of informal information sharing	39	137	48	26	18	2.43	1.066
Grand Mean						**2.44**	

Source: Own survey result, 2019

According to Huo and Zhou (2013) study on Chinese manufacturing firms to investigate the relationships among competitive environments, supply chain information sharing (SCIS), and supply chain performance the finding is shows that internal information sharing(3.88) and information sharing with customers(3.87) have a significant positive influence on supply chain performance, whereas information sharing with suppliers(3.27)does not; with a Likert scale 1 to 7 however their average is 3.67. In the case of Sudanese manufacturing company, it can be concluded that Sudanese industrial companies are highly practicing of supply chain information sharing above the average mean (M=3.52)

Information sharing is another element of supply chain management performance Table 4.4 indicate that, the average mean value with regard to supply chain information sharing and the result related to its items stated, respondents which have 60.08 percentage were disagree on its practice with supply chain actors to improve its internal Sc information sharing which have a mean value score of (M=2.44) which is below average. Supply chain information sharing of the enterprise is weak compared to a study conducted in both Chinese and Sudanese manufacturing company.

As personal interviews were conducted with the key actors along the supply chain representative (production, wholesalers, butchers, supermarket) the performance supply chain practice of the enterprise is not influenced by internal information sharing, information sharing with customers and information sharing with suppliers.

Table 4.5. Supply Chain Customer Relation Management

Items N= 268	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Mean**	**SD**
In its service strategy the enterprise understands current and future customer needs.	117	60	28	44	19	2.21	1.341
By its marketing strategy the enterprise tries to meet customer requirements.	35	149	37	41	6	2.38	.970
By usage of integrating selling strategy the enterprise strives to exceed customer expectation	58	64	96	41	9	2.55	1.092
Grand Mean						**2.38**	

Source: Own survey result, 2019

According to Muhammed and Nereida (2013) study finding of Bosnian Small and Medium Enterprises (SMEs) has a customer focused relationship management with a mean score of (M=4.89) in regards to provision of special services/products and examine the needs of key customers. On the other study of Sudanese manufacturing company customer relation management has a mean score of (M= 3.43)

Table: 4.5 summarizes the average mean value with regard to supply chain information sharing and the result related to its items stated, respondents which have 60.08 percentage were disagree on its practice with supply chain actors to improve its internal Sc customers

relationship management with a mean value score of (M=2.38) which is below average. In this case supply chain customer relation management of the enterprise is weak when compared to a study conducted in both Bosnian Small and Medium Enterprises (SMEs) and Sudanese manufacturing company.

In aligning to the enterprise case all representatives interviewed disagreed that the CRM strategy of putting customer needs at the center of the business played a critical role in customer satisfaction and retention is not support the supply chain management practice of the enterprise.

Table 4.6. Supply Chain Suppliers Management

Items N= 268	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Mean**	**SD**
The enterprise has a long-term experience of relationship with its suppliers	46	105	72	24	21	2.51	1.117
By making strategic relationship with suppliers the enterprise share responsibilities for its successes	48	106	73	37	8	2.47	1.018
Grand Mean						**2.49**	

Source: Own survey result, 2019

Pratima & Rajiv (2014) are used a case study approach to benchmark the SCM performance of two paint companies. Further, they examine the relationship between SCM practices and SCM performance measures, an empirical analysis has been done by formulating research hypothesis. Results show strong support for linkage between SCM practices and selected performance metrics in regards to order time and delivery time fulfillment with a score of mean (M=6.23) of a Likert scale of 1 to 7. In the case of the Sudanese manufacturing company suppliers management strongly support supply chain management practice with the mean score of (M=3.26).

Suppliers management is another element of supply chain management performance. Table 4.6 depict the mean value of each item related to supplier's management, respondents which have 56.90 percentage were disagree on its practice with supply chain actors to improve its internal Sc suppliers management with its aggregate average of (M=2.49) which is below the average. In line to this supply chain suppliers management of the enterprise has a weak linkage with

supply chain management practice when compared to a study conducted in the two paint companies and Sudanese manufacturing company.

In supporting this the representatives interviewed react by disagreeing with the enterprise practice of long-term experience still do not reach climax of its marketing strategy so that as to support the supply chain management of the enterprise.

Table 4.7. Supply Chain Supply Chain Responsiveness

Items N= 268	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Mean**	**SD**
The operation system of the enterprise address customer demand	44	152	57	12	3	2.17	.793
The outbound transformation and distribution of logistics responsiveness addresses customer demand	41	119	81	23	4	2.37	.896
There is suppliers' network in the enterprise for sourcing of slaughtered animals	50	90	95	28	5	2.43	.971
Competitive advantage (market sharing and profitability) of the enterprise gained as result of cost reduction, provision of quality fresh meat and speed of delivery dimension	45	123	78	14	8	2.32	.916
Grand Mean						**2.32**	

Source: Own survey result, 2019

Wafaa & Nasman (2017) findings shows that, the mean of the supply chain responsiveness equals 3.57 (71.43%), the sign of the test is positive, so the mean significantly greater than the assumption value 2.5. It can be concluded that the respondents agreed supply chain responsiveness, influences positively flexibility in production system, ensures delivery on time, maximizes the degree of service reliability, increases the ability to adopt changes, increases positively the suppliers and the end user satisfaction and affects positively the interpersonal relations. While n the case of the Sudanese manufacturing company suppliers management strongly support supply chain management practice with the mean score of (M=3.72).

According to the respondents of both questionnaires and interview, it can be stated that the enterprise weakly provides fresh meat products to customers without examining the needs of key customers. They have a weak strategy on their key customers. They seem to have, to some extent, customer related strategies. In essence the mean of supply chain responsiveness with the mean sore o 2.32(61.94%). In line to this supply chain supply chain responsiveness of the enterprise has a weak linkage with supply chain management practice when compared to a study conducted at Unrwa Gaza and Sudanese manufacturing company. This particular agree with, Inda Sukati *et.al* (2011), as supply chain management practices in the form of supplier management, customer relationship management, information sharing and supply chain collaboration lead to supply chain responsiveness.

4.4.2 Sustainability of Fresh Meat Supply at Addis Ababa Abattoirs Enterprise

4.4.2.1. Economic Sustainability of Fresh Meat at Addis Ababa Abattoirs Enterprise

Table 4.8. Sustainable Supply Chain Management Economic Practice

Items N= 268	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
The enterprise's profitability is not creating negative social and environmental impact	66	105	75	19	2	2.20	.917
The current high position production volume or service level is the result of customers perception as it was ethical	54	99	87	26	2	2.34	.932
The enterprise optionally uses the available resource in responsible and efficient way for its long-term benefits	81	84	69	27	7	2.24	1.071
Bringing and adopting new technologies to replace labour intensiveness work	52	136	68	11	1	2.15	.790
The enterprise provides hygienic and high-quality fresh meat with scale of delivery to its customers	73	88	76	28	3	2.25	1.007
Grand Mean						2.24	

Source: Own survey result, 2019

4.4.2.2. Environmental Sustainability of Fresh Meat at Addis Ababa Abattoirs Enterprise

Table 4.9 Sustainable Supply Chain Management Environmental Practice

Items N= 268	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
AAAE adopted mechanisms that would help to reduce pollution generated during slaughtering and by product processing	39	119	70	35	5	2.43	.956
The layout of the abattoir is convenient for production of polluting agents	41	98	91	32	6	2.49	.966
There is practice of modern waste management system at AAAE	58	85	81	37	7	2.44	1.057
There is no traffic congestion and emission of gas generation during distribution	49	119	80	14	6	2.29	.901
There is no production and distribution of contaminated fresh meat harmful to consumers	59	108	77	21	3	2.26	.927
The enterprise compliance code of conduct while sourcing slaughtered animals with suppliers	60	98	83	23	4	2.30	. 961
The enterprise consumes huge amount of recyclable water during slaughtering and by-product processing	78	97	67	21	5	2.17	.998
Grand Mean						2.34	

Source: Own survey result, 2019

4.4.2.3. Social Sustainability of Fresh Meat at Addis Ababa Abattoirs Enterprise

Table 4.10 Sustainable Supply Chain Management Social Practice

Items N= 268	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
All personnel in production have the necessary knowledge, skills, and training to adopt new technologies	89	83	67	22	7	2.16	1.060
There are no fear consumers about feed additives as growth hormones & antibiotics adversely affect their health	88	93	62	18	7	2.12	1.027
There is no health and safety related incidents which result in lost workdays of	75	106	69	17	1	2.12	.902

staff due to injury or illness							
The enterprise contributes positively by considering the effect of the environment to the communities in which it is located	66	97	83	22	-	2.23	.914
The enterprise creates smooth relationship with customers for mutual benefit	37	91	110	30	-	2.50	.868
Grand Mean						**2.23**	

Source: Own survey result, 2019

Although each dimensions of sustainable supply chain management practice analyzed separately for their interdependency of the result it is preferred to discussed interactively. Accordingly, the discussion is shown as follows:

Wojciech p.*et, al* (2007), presents results of a pilot study of the Best Log (Best Practices in Logistics) research project. The best practice includes industry and sector, supply chain area and relationships which composed of composed of three dimensions: economic, social and environmental with their categories of metrics that could be used to assess the supply chain performance in the form of both hard (quantitative) and soft (qualitative) measures. Hard metrics such as costs, utilization or number of accidents are relatively easy to measure, while the soft metrics will require judgment to determine their relative value. The case study analysis confirmed the domination of purely economic benefits - while social and environmental aspects are often ignored. Results of the analysis are being employed in field work (based on the multi-case study design), running simultaneously in 9 European countries.

Partners were asked to rank the cases from 1 to 5 Likert scale, to reflect how the practices cover economic, social and environmental issues Benefits and measures associated with the economic (business and financial) issues score highly score (M= 4.35). External, longer-term environmental score (M= 3.28) and social issues score (M=2.76) are recognized as important but at a lower level. Correspondingly, a low number of environmental and social indicators are identified in the cases. However, some of the practices presented in the case studies do have a positive impact on the environment, but such an impact is not usually formally assessed by the organization concerned. For example, in some cases a reduction in fuel consumption is listed as a metric. This can be considered as an environmental benefit but is listed only as a cost reduction, an economic measure, instead.

The above findings were supported by a Delphi study (S. Seuring and M. Müller 2007) where experts were asked to contribute their opinion by aiming to address in identifying and measuring impacts on sustainable supply chain management or which major issues and problems experts report regarding sustainable supply chain management at related developments in German literature. Thereby, it also aims at identifying which specific issues have to be addressed in sustainable supply chain management. The findings from the Delphi study will be presented and discussed against the development of the overall field within the frame work of whether 'reducing impacts or improving performance in the single dimensions of sustainability (social, ecological, economic) dominates over an integrated approach which have a mean score of economic 3.36, environmental 3.52 and social 2.76. As the finding of the study indicates, all mean values are close to 3, which implies that supply chain management has to integrate a wider set of objectives than just reaching economic performance. Competitiveness of supply chains has also to be reached including environmental and social performance of all companies involved.

In this research the dimensions are developed based on the separation of elements included by taking this into consideration the major one is discussed, in economic practice as one of the dimensions of sustainable supply chain management quality, efficiency and competitiveness are considered with a mean score of 2.24 based the respondents response(62.54%); in environmental practice as the other components, pollution and resource utilization are considered with mean score of 2.34 based on the reaction of the respondent 59.17% and with the last components of social practice impact on health and impact on society are the major issues considered with the mean sore of 2.23 based on the respondent disagreement 61.57%. In line to this the three dimensions of sustainable supply chain management practice of the enterprise has a weak linkage with supply chain management practice performance when compared to a study conducted in 9 European countries in Germany above. This particular because fulfilling either one or two of the components of triple bottom line will not help to achieve sustainability (Mohammed 2011) there has to be a strategic, transparent integration of organization 's social, environmental, and economic goals in the systematic coordination of key inter-organizational business processes including sustainable procurement, which requires purchased inputs to have low environmental impacts; sustainable production, which facilitates internally driven environmental activities such as reproduction and reuse; sustainable

distribution, which minimizes the logistical impact of material flows; and reverse logistics, which attempts to close the loop with a focus on disposal and recycling initiatives (Vachon 2007).

The interview conducted with the four informants from each category of the respondents and observation field visit of the research area reveal that, until now animal slaughtering in AAAE has been regarded in general as a low-technology operation. As a result, this agro-industry sub-sector has never been the sort of subject that would be taken seriously. In recent times societies are beginning to feel the impact of fast depletion of natural resources and thus sustainable development has emerged as the only alternative for future growth. (Elkington, 1998: 2004 as stated in Mohd. Nishat Faisal [nd]). With the same token, the increase of public awareness on food safety related to and environmental problems caused by slaughtering activities of the enterprise attracts more and more attention not only from the competitive point of view but also from government and environmental regulatory bodies. However, the enforcement measure is not as such serious enough. That is why the government policy to develop the meat sector industry as indicated in table 4.13 below get mean rank of 1.03 by the respondents. This Implies that, although the policy on developing the meat sector industry and pollution prevention and other accompanying legal documents are there, they have not been enforced to the abattoirs still problem exist with them.

In regards to sustainable supply chain management economic practice table 4.8 above all the respondents react by giving their response below average by implying that the enterprise practice that, its profitability is depended on the increasing the number of slaughtered animals while neglecting the social and environmental impacts which results in provision of low quality fresh meat while the available resource are not used based on long term benefits and labor intensive works (Lowell Center for Sustainable Production 1998).

In the table 4.9 of sustainable supply chain management environmental practice above have a mean below the average due to the practice of pollution generation and the mitigation action against to the problem. In corresponding to this the main environmental problems caused by the slaughterhouses/abattoirs are the uncontrolled use of ground and municipal water and the discharge of untreated wastewater with high concentrations of organics including animal feces

and blood that might easily contaminate the receiving environment and endanger human health (Ing. Ľubica 2013).

In corresponding to the results of both the independent and dependent variable above and the respondent's reaction which skewed towards disagreement side is because of that, animals from nearby market are sourced to the enterprise. This situation coupled with the high meat consumption pattern of the town's dwellers of Addis Ababa has created the highest demand for livestock products mainly meat. To satisfy this demand, large number of livestock is being slaughtered in the AAAE and outside illegally, Elkington, (1999). The abattoir, which is constructed 60 years ago, lacks the necessary rooms with facilities that enable to conduct the proper meat hygiene activities.

Abattoirs demand high water use requirement. Hence, an adequate water supply is essential. However, it has been observed that with a reduction of the water use also the waste load decreases (Pham 2006). To support the above discussion the annex 5 and 6 indicate that how huge amount of water with an assumption of beef processing water usage, primarily from carcass washing and process cleanup, has been reported in the range of 150 to 450 gallons per animal processed is used (Pham 2006). This can be computed by the number of slaughtered animals in corresponding years and the amount of untreated waste has been disposed to nearby communities in which as the figure below depict that the current site of the enterprise is at the center of the town and hence was considered to be appropriate in that it has got enough distance from the center of the town. However, due to the ever-growing nature of the population in the city of Addis Ababa, the enterprise area is currently well surrounded by settlers.

In line to this the social impact analysis indicate that, beside the code of conduct that has to be agreed with suppliers not source animals with growth hormones and antibiotic residual and mal practicing of animal handling during sourcing in the lairage and during slaughtering was recognized, as result of the problem of layout design infestation of polluting agent, health and safety related incidents which result in lost workdays of staff and as the same time keeping quality of meat becoming questionable, Pullman *et al* (2009). Hence the introduction of new technology, equipment and procedures it will necessitate substantial change of work culture for the production workers. Furthermore, an extensive period of training by the enterprise has been

allowed for as part of the activities to provide the necessary training for the operator to adopt new technology is necessitated.

Table 4.11. Summary of Dependent and independent variables

Items N= 268	strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
Supply Chain Collaboration	41.75	109.25	85.25	26.25	5.50	2.42	.936
Supply Chain Information Sharing	41.25	119.75	67	28.75	11.25	2.44	1.00
Supply Chain Customer Relationship Management	70	91	53.67	42	11.33	2.44	1.057
Supply Chain Suppliers Management	47	105.50	72.50	30.50	24.5	2.49	1.068
Supply Chain Responsiveness	45	121	77.75	19.25	5	2.32	.894
Sustainable Scm Economic practice	65.20	102.40	75	22.20	3	2.24	.943
Sustainable Scm Environmental practice	54.86	103.43	78.43	26.14	5.14	2.34	.967
Sustainable Scm Social practice	71	94	78.20	21.80	3	2.23	.954
Aggregated Mean						2.37	

In the above discussions the overall calculated mean scores of all the five independent variables of supply chain management performance dimensions and that of the three dependent variables of sustainable supply chain management performance have been shown individually. While table 4.11 depict that the mean of each variable (only from 2.23 and 2.49) the aggregated mean of all independent and dependent variables was below the average and skewed to the disagreed side with the mean score of 2.37(59.81%), which means there is poor supply chain management practice in the enterprise. This indicates that each question enables to determine areas in need of improvement, as well as areas in which the enterprise is thriving. It has to be noticed that there are also areas of concern where initially might have thought things were running smoothly. Moreover, as the result of the analysis the enterprise come up with practical and applicable mitigation measures which shall optimize the positive impacts and reduce the negative impacts to manageable or acceptable levels by saying this, it'd be worth digging into how the results are connected with literature and concepts in related studies.

In contrary to the finding to this thesis previous study shows that a firm has achieved a sustainable supply chain performance when it is creating more economic value than the marginal firm in its industry and when other firms are unable to duplicate the benefits of this

strategy (Barney & Clark 2007). Internal environmental management practices have a positive impact on firm environmental performance. Internal socially responsible management practices have a positive influence on firm environmental performance and social performance. The result shows that conducting sustainable management practice in firms can effectively enhance firm environmental performance and social performance. In consistent to this according to RBV (Barney & Clark 2007) when firm's performance dimension is seen in terms of cost efficiency, customer effectiveness and environmental differentiation the following results are achieved:

Improving supply chain efficiency through the reduction of operating expenses, the efficient use of fixed capital, and the efficient use of working capital, while meeting or exceeding a necessary level of customer service (Christopher and Ryals 1999; Defee and Stank 2005). In essence, efficiency results when wastes are reduced or eliminated resulting in reduced costs. Revenue enhancement is reliant on serving customers at the highest level possible, given strategic goals and cost constraints. Customer service objectives are accomplished through the impact on product availability, fulfillment time, cycle time and convenience, and the ability of the firm's supply chain to handle difficult. Customer service objectives are also accomplished when customer value is created and effectiveness is considered a response-oriented concept; managers identify customer demands and work to create an effective response to meet them. Firms that are able to provide products that are designed, manufactured and supplied to the end customer through processes that are less impactful on the environment this can be achieved by the ability of managers to create a unique image of environmentally friendly products and processes that translate to higher demand.

4.4.3. CORRELATION ANALYSIS

Under research investigation we are expected to understand concepts beyond the means and standard deviations of the dependent and independent variables so we need to know how one variable is related to another which comes with the concept of correlation. Correlation is the relationship between two variables. So, we would like to see the nature, direction, and significance of the bivariate relationship of the variables used in the study. The Bivariate Correlations procedure computes the pair wise associations for a set of variables and displays the results in a matrix. It is useful for determining the strength and direction of the association

between two scale and ordinal Bivariate Correlations. As noted above, a Pearson correlation matrix indicates the direction, strength, and significance of the bivariate relationships of all the variables in the study. According to Field (2005) correlation coefficient is a very useful means to summarize the relationship between two variables with a single number that falls between -1 and +1. The general symbol for the correlation coefficient is „r". So, a perfect positive relationship (r=+1.00) indicates a direct relationship and an „r" of -1.00 indicates a perfect negative relationship. Hence, in this study Bivariate Pearson Coefficient (r) was used to examine the relationship between the five supply chain dimensions by using a two-tailed test of statistical significance at the level of 95% significance, P< 0.05. Interpretation of correlation coefficient (r) size is as follows: if the correlation coefficient falls between 0.1 to 0.20, it is slight correlation or small; if it is between 0.20 to 0.40 is low correlation or weak relationship, if it lies between 0.40 to 0.70 moderate; if it falls along 0.70 to 0.90 high correlation or substantial relationship and if it is within 0.90 to 1.00 it is very high correlation or very strong correlation between variables (B.Burns & R.Burns 2008).

Table 4.12. The Correlation between the Independent and Dependent Variables (diagonal type)

		SCCol	SCInfo	SCCRM	SCSM	SCSCRes	SSCEco	SSCEnv	SSCSo
SCCol	Pearson Correlation	1	.423**	.507**	.245**	.389**	.399**	.332**	.319**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
SCInfo	Pearson Correlation		1	.394**	.239**	.319**	.372**	.256**	.334**
	Sig. (2-tailed)			.000	.000	.000	.000	.000	.000
SCCRM	Pearson Correlation			1	.334**	.413**	.374**	.367**	.425**
	Sig. (2-tailed)				.000	.000	.000	.000	.000
SCSM	Pearson Correlation				1	.488**	.494**	.572**	.340**
	Sig. (2-tailed)					.000	.000	.000	.000
SCSCRes	Pearson Correlation					1	.594**	.692**	.426**
	Sig. (2-tailed)						.000	.000	.000
SSCEco	Pearson Correlation						1	.644**	.757**
	Sig. (2-tailed)							.000	.000
SSCEnv	Pearson Correlation							1	.388**
	Sig. (2-tailed)								.000
SSCSo	Pearson Correlation								1
	Sig. (2-tailed)								

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.12 indicates that, the correlations in the main diagonal are all equal to 1. This is because a variable is always perfectly correlated with itself. Notice that the sample sizes are similar in all cell (n=268). All of the correlation coefficients were positive and significant at the 0.01 level for all of the questionaries' relationships in the research. A significant correlation between two variables denotes a significant association or level of strength in a pair- wise relationship. In essence results of the Pearson correlation indicated that there was a significant positive association with supply chain collaboration as moderately with supply chain information sharing and customer relationship management and the rest weakly correlated with (r = .399, .332 and .319 respectively) ; information sharing has significance weak correlation with all variables with (r = .372, .256 and .334 respectively); customers relationship management is moderately correlated with supply chain responsiveness and social practice while the rest has weak significance with (r =.413 and .425; .334, .374 and .367); suppliers management moderately correlated with supply chain responsiveness, sustainable supply chain economic and environmental practice while weakly correlated with social practice with (r =-.488, .494, .572 and . 340 respectively) and supply chain responsiveness was moderately correlated with sustainable supply chain economic, environmental and social practice with (r = .594,.692 and .426 respectively). Similar analysis was conducted for the relationships between sustainable supply chain management practices of the dependent variables shows a significant positive association in that economic practice was moderately correlated with economic practice while highly correlated with social practice with (r=.644 and .747) and environmental practice has a weak linkage with social practice with (r=.388).

Regarding the relationship between the independent variables each other and with dependent variable the above correlation table depicts that all of the variables are correlated at $P<0.01$ level of significance.

From the results achieved by data analysis one of the interesting finding is that the supply chain responsiveness has influence on performance of sustainable supply chain management practice. This aligned with the effect of supply chain responsiveness in term of operation system responsiveness, logistic process responsiveness, supplier network responsiveness and competitive advantage of the enterprise (Inda Sukati *et.al* 2011). On the other side this result did not confirm to the notion that; the four dimensions of supply chain management practices

lead to supply chain responsiveness. As the result of the independence variables shows there was a slight positive correlation of supply chain management practice with sustainable supply chain management practice. In essence current practice of supply chain management need to improve as sustainability would be realized. Of course, as the consequence of this enterprises seem to avoid environmental responsibility and are less willing to take actions associated with initiatives for the environment. Similarly, they neglect the social and customers aspects of responsibilities. It was noticed that the enterprise needs stronger pressure from the external and internal entities than was presented in the more comprehensive way devoted to the sustainable development of supply chains management and thus may contribute to improve performance through effectiveness (Ali 2016).

4.4.4. Factors Affecting the Implementation of SSCM Practice at AAAE

A 1 to 10 variables were considered as factors affecting the sustainable supply chain management practices of Addis Ababa Abattoirs Enterprise having 36 items. Accordingly rank order analysis as of Friedman's test factor analysis was computed to rank the variable items of their respective mean rank. Result is presented as follows:

Table 4.13 Factors Affecting SSCM Practice at AAAE

Friedman test items N=268	**No. of Items**	**Mean Rank**	**SD**	**Rank Order**
Policy and Legal Instrument	9	9.92	.41088	1st
Government policy to develop the meat sector industry	3	1.03	.17049	10th
Management commitment and support	3	3.97	.17049	7th
Usage of environmentally friendly technology	3	3.03	.17049	8th
Laws, Standards and Regulations	3	5.97	.17049	5th
Firms Internal Sustainable Supply Chain Management Practice	3	7.99	.18172	3rd
Sustainable supply Chain Management Practice related to Suppliers and Customers	3	9.05	.29944	2nd
Customers Satisfaction and reputation	3	7.03	.17049	4th
Customers Focused Practice of the Enterprise	3	5.03	.17670	6th
Capacity for Flexibility	3	1.97	.17049	9th

Source: Own survey result, 2019

To find out what factor is more preferred by respondents the researcher has conducted both descriptive analysis measurement tools and Friedman test. In both analysis the mean of each factor is almost similar. For the appropriateness of this study the researcher take the Friedman test result as a choice for ordering the more preferred factor by the respondents, the first preferred is policy and legal instrument with a mean rank score of (M= 9.92) then followed by sustainable supply chain management practice related to suppliers and customers with a mean rank score of (M= 9.05), firms internal sustainable supply chain management practice with a mean rank score of (M= 7.99), customers satisfaction and reputation with a mean rank score of (M= 7.03), laws, standards and regulations with a mean rank score of (M= 5.97), customers focused practice of the enterprise with a mean rank score of (M= 5.03), management commitment and support with a mean rank score of (M= 3.97), usage of environmentally friendly technology with a mean rank score of (M= 3.03), capacity for flexibility with a mean rank score of (M= 1.97) and government policy to develop the meat sector industry with a mean rank score of (M= 1.03) in their order of importance.

The results of the finding demonstrate relatively strong and significant linkages between the supply chain management Practice and sustainable supply chain management practice as well as driving forces of the implementation of SSCM practices of fresh meat at Addis Ababa Abattoirs Enterprise.

As the conceptual framework (Figure 2.3), concepts of supply chain management in section 2.1.1 (Inda Sukati *et.al* 2011) and sustainable supply chain management in section 2.1.2 (Ali 2016), with the driving forces cluster depicts, it is positively and significantly associated with the SSCM practices and also appears as a necessary antecedent to the successful implementation of sustainable procurement, sustainable production, sustainable distribution and sustainable reverse logistics.

Thus, without the internally derived commitment and support from top-level management and externally derived forces/ challenge (Ali 2016) that form the sustainable supply chain management construct, fresh meat production will not be as likely to embark upon the adoption of SSCM practices

Referring back to the results of the data analysis, whilst all of the individual questionnaires were supported, the theoretical concept in literature review holds together reasonably well, in accordance with the good fit of the research questionnaires and the relative statistical support

for the majority of the questionnaires (Cronbach's Alpha SSCEco =.809; SSCEnv=0.818; SSCSo=0.828) which have strongly associated with independent variable. In view of this, the researcher believe that the proposed SSCM practice conceptual frame work (Figure 2.3) which resulted by integrating supply chain management practice is a good representation of the theoretical relationships among the suggested constructs, reflecting the study of main research clusters, i.e. SCM practice, SSCM practices, driving forces and performance outcomes becoming real.

The results related to the linkage between SSCM implementation and the driving force clusters represented as external and internal challenges on the enterprise's core activities such as procurement, production and distribution bring a benefit for customers in terms of economic, environmental and social aspects. In essence from the finding factor affecting implementation of SSCM practice at AAAE sustainable procurement is positively and significantly associated with both environmental perspective (external regulatory pressure) and internal firm commitment give rise to the adoption of SSCM (Mean Ranked 9.92 and 7.99), which in turn delivers environmental benefits by affecting the existing situation of livestock sourcing. This denotes that SSCM practices indeed leads to improved environmental performance in essence the rules and regulation of slaughtered animals handling and the slaughtering technique need to be improved. This also calls for the further development of a more proactive stance on environmental practices within the context of SCM to arrive at better environmental performance together with achieving economic gains.

The statistical results indicate that policy and legal instruments in regards to economic, environmental and social perspective is most largely and significantly associated with sustainable production in its Mean Ranks (9.92, followed by sustainable supply chain management (9.05) and enterprises' internal commitment (7.99) and lastly customers relationship management. This observation is generally consistent with the findings of previous studies (Diabat and Govindan 2011; Green *et al*. 2012; Hsu *et al*., 2013), and can be explained by the fact that those SSCM practices that are more external to the enterprise normally demand more effort in their adoption due to the need for further collaboration with external groups or partners such as suppliers and customers.

The reason for this lies with the fact that most of the environmental impact of a meat product

and its related processes where the performance concerning the reduction of pollution, liquid waste and effluent disposal and implementing the recycling capability of water used during slaughtering and rendering process is mostly determined.

Moreover, sustainability-related to internal firm commitment associated specifically with the top-level management also leads enterprise to target and pay more attention to improve the production system in an attempt to maximize the reduction of environmental impacts, owing to the fact that achieving environmental excellence primarily starts by creating awareness and building their capacity so that the slaughtering workers produce safe and hygienic fresh meat for the consumers. In addition, since the enterprise is able to exercise greater control over the internal practice of environmentally friendly, the commitment and support of the enterprise can be more effective in giving rise to adopting this SSCM practice.

Overall, it is contended that external environmental regulations together with the internal commitment of the top-level management have caused AAAE fresh meat production to adopt sustainable production practice earlier and more thoroughly than other SSCM practices.

Arguably, supply chain management practices that demand more effort to be implemented require more powerful driving forces to be undertaken in practice (Sarkis *et al*. 2010). That is why the magnitude of certain practices Mean Ranks are relatively lower compared to other SSCM practices that can be managed independently by enterprise.

Moreover, the statistical findings further show that the driving forces are significantly and positively associated with sustainable distribution, the best remedial mitigation measure in environmental regulations seeking to limit the use of non-renewable resources such as diesel and petrol during meat product distribution. However, this is some time impossible to practice instead the enterprise need to adopt sustainable distribution practice by embracing environmentally friendly packaging specifically those internal organs which transported with the main product together by meat van and distribution characteristics is largely associated with the coercive pressures behind environmental regulation and internal environmental management.

CHAPTER FIVE

SMMARY, COCLUSION AND RECOMMENDATION

5.1 Summary of major findings

This final chapter concludes this research by revisiting the research objectives and proposed questions and drawing out the study's main contributions along with the key managerial implications stemming from the research findings. In addition, the limitations of the research are outlined and recommendations for future research opportunities proposed.

Accordingly, the establishment of Addis Ababa Abattoirs Enterprise is more than 60 years long. As the result of these much long years of life span no research hadn't undertaken. In this study, the researcher looked for analyzing sustainable supply chain practice of fresh meat at AAAE. The study try to illustrate the relationship that exist between the supply chain management practice as an independent variable and sustainable supply chain management practice as dependent variable along the dimension of sustainability with the intent of knowing the strength of the relationship of the dimensions in the particular case. In order to achieve these objectives, data was collected from the supply chain actors of the enterprise processed in both quantitative and qualitative approach were used.

The analysis result depicts that the mean score value for supply chain management practice dimension were below the average mean value (only between 2.32 and 2.49) which really indicates the supply chain management of the AAAE is ineffective/poor. The study also found a positive correlation among the five components of supply chain management practice and that of the three sustainable supply chain management practice components.

5.2 Conclusions

The increase in sustainability awareness can be clearly observed in the SCM discipline, whose focus has recently moved from considering cost and operational issues such as service improvement or quality, to also include environmental and social aspects as a way to pursue sustainability along the entire supply chain. Sustainable SCM (SCM) embodies the firm's plans and activities that integrate both environmental and social issues into SCM to improve the

firm's sustainability performance as well as that of its suppliers and customers, (Seuring and Muller, 2008).

The focus of the research was on the AAAE as one of the main polluters and resource-consuming sectors within meat producing industries, whilst constituting a major proportion of the city's overall meat product output and the larger revenue generator for the city of Addis Ababa. In line with the enterprise focus of the study, the fresh meat production system appears to be a good representative of the meat producing sector because of its high-volume and heavy production features consistent with the main characteristics and elements of traditional meat production practice. At the end of the assessment of this thesis it has found that the causal relationships exist between SCM practice→ Driving Forces→ SSCM Practices→ Performance Outcomes.

The study findings show that supply chain management practices that include; supply chain collaboration, information sharing, customer relationship management, suppliers management and supply chain responsiveness significantly contributes to sustainable supply chain performance of the enterprise. Hence it can be concluded that supply chain practices are important factors to achieve improvement in the performance of supply chains. Another conclusion drawn from the study findings is that supply chain practices affects the sustainable supply chain performance differently, when the supply chain management practices and sustainable supply chain management practices are integrated together the enterprise having the most significant effect. As a result of this study, top management have the justification to incorporate supply chain management practices as a way of improving sustainable supply chain performance of fresh meat at AAAE.

5.3 Recommendations

The existence of abattoir is expected to assist the city to promote economic prosperity, long-term sustainability, social well-being and healthy community. The intent of the abattoir is to provide a stable and adequate supply of fresh warm meat to the community of Addis Ababa while ensuring the highest international standards for hygienic and safe wholesome meat resulted from environmentally friendly production system. It`s eminent that development can cause changes in several community characteristics including demo-graphics, housing, public services, markets, income, and aesthetic quality. In line to this meat producing industries need

to adopt SSCM practice.

Based on this definition, two important aspects need to be highlighted. On the one hand, to achieve sustainability enterprise should engage on both environmental and social issues. That is, enterprise should not only green their supply chain but also make it more socially responsible. On the other hand, sustainability extends the boundaries of the enterprise and includes not only the implementation of internal sustainable practices (e.g., use of clean technologies and/or the implementation of work/life balance policies) that improve the enterprise's sustainability performance but also the extension of sustainable practices to other partners in the supply chain (e.g., training suppliers on environmental risks) with the aim of having a positive impact on their sustainability performance.

Many companies implement codes of conduct, supplier assessment practices and/or collaboration with suppliers in order to make their suppliers become more sustainable. To improve suppliers' performance, enterprise can implement supplier development strategies such as assessing suppliers, providing suppliers with incentives, instigating competition among them or working directly with them (e.g., training suppliers' personnel).

Further, the study recommends that when enterprise is faced with limited resources to implement all the supply chain practices, priority should be given to modularity manufacturing which affects approximately half of the change in sustainable supply chain performance. Firstly, by proving the positive impact of modularity-based manufacturing, supply chain collaboration, information sharing, customer relationship management, suppliers management and supply chain responsiveness on sustainable supply chain management practice performance; the study suggested top management to make appropriate investments on modular manufacturing, supply chain collaboration, information sharing, customer relationship management, suppliers management and supply chain responsiveness. This will enable the enterprise to efficiently improve their sustainable supply chain management practice performance.

The goal of the Environmental Policy of Ethiopia is to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future

generations to meet their own needs. Based on the results of the existing environmental status and quantified impacts of the enterprise, a detailed Environmental Management Plan need to be formulated for implementation of SSCM practice that guide the whole operation system. A detailed environmental monitoring programme has to be drawn for implementation and effectiveness of the policy. This conventional approach to environmental policy is characterized by laws, standards and regulations pertaining to emissions and products, and a top–down implementation of legislation.

As the city government plan to relocate the existing abattoir to new site is the best solution for pollution prevention it is also helpful to prevent pollution by introducing cost-effective cleaner production measures. Pollution prevention or cleaner production aims at production processes that are more energy efficient, use fewer resources, and re-use waste materials and thus not only reduce environmental impacts but may also reduce economic costs

Meat hygiene is the prevention of contamination of the product. Separation between dirty and clean operations must be taken into consideration. Clean and dirty areas are separated by distance, physical barriers and in certain cases by time.

To address the safety health incident aspect, which is also a key design consideration for relocation of new modern abattoirs ; for the time being it is provision of protection covers and facilities and adequate rails and barriers are necessitated to protect the workers, but in the future, it is better to consider in the design of the new modern abattoirs plan of the enterprise.

Abattoirs demand high water use requirement. Hence, an adequate water supply is essential. However, it has been observed that with a reduction of the water use also the waste load decreases. Water is used mainly for cleaning purpose in the abattoirs. This include run – off – yards, lairage, slaughterhouses, truck washes, uncontrolled surface runoff and wash water for product and equipment. Since the water used for slaughtering activities is not included in the final products, the quantity of wastewater discharged from this industry is equal to the quantity of water used. The untreated discharge of large quantities of this type of polluted wastewater can seriously threaten the water quality of the receiving bodies. The easiest way to limit the current uncontrolled use of ground and municipal water and wastage of organic material at the abattoir is to improve the existing cleaning practices, which is the first and cheapest step in pollution prevention.

Consulting the customers and other stakeholders, particularly slaughtered animals owners, to the extent possible on planning the works, especially how production and distribution of fresh meat is practice in trustworthiness way and instituting effective communication, education and awareness towards the abattoirs beneficiaries for enhanced acceptability and social harmony.

5.4. Future Research Recommendation

As with any research, some limitations are associated with this study that open up several future research avenues, providing further research opportunities. First, the researcher acknowledge that competitor pressures are not reflected within the driving forces construct in this research, in accordance with the corresponding literature that suggests competitive pressures do not play a major role in giving rise to SSCM adoption in practice (Sarkis et al., 2010; Zhu et al., 2013).

Second, although this research sought to cover the whole premise of SSCM in the study, the importance of market orientation is not reflected in the study. This is because more constructs to be added in to the study, further theoretical justification is required along with additional data acquisition, greater time and budget, which was not feasible within the current scope of this research. Therefore, the aforementioned limitations broadly provide opportunities for further research.

References:

- Addis Ababa Abattoirs Enterprise,2017, Production Annual Report: *Plan Budget & Finance Department*
- Ali Esf Ahbodi, 2016, Sustainable Supply Chain Management (SSCM): An empirical analysis of the UK automotive industry
- Ana Beatriz Lopes de Sousa Jabbour, Alceu Gomes AlvesFilho, Adriana Backx Noronha Viana and Charbel Jose´ Chiappetta Jabbour, 2014, Measuring supply chain management Practices
- Anne van Lakerveld, Rob van Tulder,2017, Managing the transition to sustainable supply chain management practices: Evidence from Dutch leader firms in Sub-Saharan: *Routledge.*
- APICS, 2016, Supply Chain Sustainability Uncovering the Triple Bottom Line: *APICS Insights Innovations.*
- Arjen Bout ,2011, Supply Chain Collaboration – barriers and enablers: *Emerald insight*
- Arun N. Nambiar,2010, Challenges in Sustainable Manufacturing: *International Conference on industrial engineering and operation management.*
- Balal I., Abdelsalam A.H., 2012, Investigation into the Relationship between Supply Chain Management Practices and Supply Chain Performance Efficiency: *International Journal of Science and research.*
- Barney, J. & Clark, D. N. (2007). Resource-Based Theory. Creating and Sustaining Competitive Advantage: *Oxford University Press.*
- Blewitt, J. ,2014, Understanding Sustainable Development, 2nd edition: *Aston University*
- Bowen, F.E., Cousine, P.D., Lamming, R.C. and Faruk, A.C. ,2001, Horses for courses: explaining the gap between the theory and practice of green supply: *Greener Management International.*
- BSR ,2010, Supply Chain Sustainability: A Practical Guide for Continuous Improvement: *UN Global Compact and Business for Social Responsibility*
- Business for social responsibility,2007, Perspectives on Information Management in Sustainable Supply Chains: *Scientific Research Publishing.*
- Carter and Easton,2011, Sustainable supply chain management: evolution and future directions: *International Journal of Physical Distribution and Logistics Management.*

- Carter and Rogers,2008, A Framework of sustainable supply chain management: moving toward new theory: *International Journal of Physical Distribution and Logistics Management.*
- Carter, C.R ,2004, Purchasing and social responsibility: a replication and extension: *The Journal of Supply Chain Management.*
- Carter, C.R.,2005, Purchasing social responsibility and firm performance: the key mediating roles of organizational learning and supplier performance: *International Journal of Physical Distribution and Logistics Management.*
- Charis M. Galanakis 2019 Sustainable Meat Production and Processing: *Academic Press is an imprint of Elsevier*
- Christopher, M. and L. Ryals 1999, Supply Chain Strategy: Its Impact on Shareholder Value: *The International Journal of Logistics Management*
- Codex Alimentarius, 1993, Code of Hygiene practice for meat (CAC/RCP 58- 2005): *Food Organization of the United Nation & World Health Organization.*
- Damian Maye and Brian Ilbery,2006, Regional Economies of Local Food Production: *SAGE Journal.*
- Declan JB, Alice MD and James J.S.,2004, Beef HACCP: Intervention and nonintervention system: *Sokoto Journal of Veterinary Sciences.*
- Diabat, A. and Govindan, K.,2011, An Analysis of the drivers affecting the implementation of green supply chain management: *Resources, Conservation and Recycling.*
- Diamantopoulos, A. and Schlegelmilch, B. B.,2000, Taking the Fear Out of Data Analysis: *Business Press/Thomson Learning.*
- Dr.Inda Sukati Prof. Dr. Abu Bakar Abdul Hamid Assoc. Prof. Dr. Rohaizat Baharun Dr. Huam Hon Tat and Fazila Said,2011, A Study of Supply Chain Management Practices: An Emperical Investigation on Consumer Goods Industry in Malaysia: *International Journal of Business and Social Science.*
- Elkington, J., 1998, Cannibals with Forks: *The Triple Bottom Line of the 21st Century.*
- European Union,2006,Tracing Food Chain Links between 'Specialist' Producers and Intermediaries in the Scottish–English Borders: *European Urban and Regional Studies*

- Fantazy et al., 2010, Supply Chain Management Practices and Competitiveness in the National Government of Kenya
- FAO, 1992, Construction and operation of medium sized abattoirs in developing countries: *Food organization of the United Nation.*
- Field, A., 2009: *Discovering Statistics Using SPSS*. Third Edition.
- Fredrick Onyango Aila and Ruth Nyaboke Ototo,2018, Sustainable procurement concept: Does it all add up?: *International Journal of Development and Sustainability.*
- Gimenez, C. Sierra, V. and Rodon, J.,2012, Sustainable operations: Their impact on the triple bottom line: *International Journal of Production Economics.*
- Global Reporting Initiative,2014, A Sustainability report published by a company or organization about the economic, environmental and social impacts caused by its everyday practice: *Undergraduate Economic Review.*
- Green, K.W., Zelbst, P.J., Meacham, J. and. Bhadauria, V.S. ,2012, Green supply chain management practices: Impact on performance: *Supply Chain Management: An International Journal.*
- Grote, C., Jones, R., Blount, G., Goodyer, J.J. and Shayler, M.M. ,2007, An Approach to the EuP Directive and the application of the economic eco-design for complex products: *International Journal of Production Research.*
- Hair, J.F., Anderson, R.E., Tatham, R.L., Black, W.C., 2010: *Multivariate Data Analysis*, Seventh ed.
- Hu, A.H. and Hsu C.W. 2010, Critical factors for implementing green supply chain management practice: An empirical study of electrical and electronics industries in Taiwan: *Management Research Review.*
- Huo, Zhao, and Zhou,2013, Competitive Environment and Information Sharing, The Effects of Competitive Environment on Supply Chain Information Sharing and Performance: An Empirical Study in China: *Production and Operations Management Society.*
- Ing. Ľubica Kováčová,2013, The Integration of Lean Management and Sustainability: *Transfer inovácií.*
- ISO 14050 standard: 2009, General terms relating to environmental management: *International Organization for Standardization.*

- ISO,26000:2010, Guidance on social responsibility: *International Organization for Standardization.*
- Jack G.A.J. van der Vorst &JoostSnels,2014, Developments and Needs for Sustainable Agro-Logistics in Developing Countries: *World Bank Other Operational Studies 17834.*
- Jayaraman, V. and Luo, Y., 2007, Creating competitive advantages through new value creation: a reverse logistics perspective: *The Academy of Management Perspectives.*
- John T. Mentzer, William DeWitt, James S. Keebler Soonhong Min, Nancy W. Nix, Carlo D. Smith and Zach G. Zacharia,2001, Defining Supply Chain Management: *Journal of Business Logistics*
- Kaplan, D.,2004: *The SAGE Handbook of Quantitative Methodology for the Social Sciences.*
- Kuik, S., Amer, Y., and Nagalingam, S. ,2011, Sustainable supply chain for collaborative manufacturing: *Journal of Manufacturing Technology Management.*
- Leedy, P.D. and Ormrod J.E.,2010: *Practical Research Planning and Design*.
- Lowell Center for Sustainable Production ,1998, What is sustainable production?: *University of Massachusetts Lowell.*
- Luke Boyle's ,2016, Urban Facilities Management as a systemic process to achieve urban sustainability in South Africa. *UCT-Nedbank Urban Real Estate Research Unit, Department of Construction Economics and Management, University of Cape Town, South Africa.*
- Madeleine E. Pullman, Michael J. Maloni & Jesse Dillard ,2010, Sustainability Practices in Food Supply Chains: How is Wine Different?: *Journal of Wine Research.*
- Maria A.O. Dos Santos,2013, Indicators of sustainable business practices: Woolworths in South Africa: *Supply Chain Management. An International Journal.*
- Matopoulos, M. Vlachopoulou and V. Manthou B. Manos, 2007, A Conceptual framework for supply chain collaboration*:* empirical evidence from the agri-food industry: *Supply Chain Management. An International Journal.*
- Matthew Kalubanga,2012, Sustainable Procurement: Concept, and Practical Implications for the Procurement Process: *International Journal of economics & Management Science.*

- Meateng Consortium,2014, *Feasibility study for the modernization of the AAAE*.
- Meateng Consortium,2014, *Impact Assessments and Management Plans of the AAAE*.
- MikkoKoho, MikkoTapaninaho, JuhaniHeilala, Seppo Torvinen,2015, Measures and Concept for Realizing Sustainability in Manufacturing Industry.
- Mohammed Hussain,2011, Modeling the enablers and alternative for Sustainable Supply Chain Management: *Spectrum Research Repository.*
- Mohd. Nishat Faisal, [nd], Supply Chain Mapping on Sustainability & Transparency: *Qatar University · Department of Management & Marketing.*
- Monalisha Pattnaik, 2015, SSCM in Reliance to Fresh: A case Analysis on Vegetable and Fruit: *International Conference on Technology and Business Management.*
- Morana,2013: *Sustainable Supply Chain Management, 1st edition*.
- Moya Kneafsey, Laura Venn, Ulrich Schmutz, Bálint Balázs, Liz Trenchard, Trish Eyden-Wood, Elizabeth Bos, Gemma Sutton, Matthew Blackett,2013, Short Food Supply Chains and Local Food Systems in the EU. A State of Play of their Socio-Economic Characteristics: *European Commission Joint Research Centre Institute for Prospective Technological Studies.*
- Mr. Ferry Jie, Prof. Kevin A. Parton, Dr. Roger Jenkins and Mr. Rodney Cox. [nd]. Supply Chain Performance Indicators for Australian Beef Industry: An Empirical Analysis: *School of Management, Faculty of Business, University of Technology, Sydney.*
- Muhammed Kürşad Özlen and Nereida Hadžiahmetović,2013, Customer Relationship Management and Supply Chain Management: *Journal of World Applied Program.*
- Nadia Chandra Gühring,2017, Business is a Key: A Sustainable Supply Chain Management Checklist Could Hold the Solution to Environmental Preservation: *SUN Scholar Research Repository.*
- NZBCSD, 2003, Business Guide to a Sustainable Supply Chain: Business Guide to a Sustainable Supply Chain: *The Supply chain niche.*
- Ömür Tosun and Fahriye Uysal,2016, Physical Distribution Flexibility in Logistics Systems and Its Impact on Productivity: *Journal of Advanced Management Science.*
- Ou et al., 2010, Assessing the Challenges and Implementation of Supply Chain Integration in the Cocoa Industry: *International Journal of Business and Social Science.*

- Pagell, M., and Wu, Z.,2009, Building a more complete theory of sustainable supply chain management using case studies of 10 exemplars: *Journal of Supply Chain Management.*
- Paulraj, A., Lado, A. and Chen, I.,2008, Inter-organizational communication as a relational competency: antecedents and performance outcomes in collaborative buyer-supplier relationship: *Journal of Operations Management.*
- Pratima Mishra and Rajiv Kumar Sharma,2014, Benchmarking SCM performance and empirical analysis: a case from paint industry: *Logistics Research.*
- Preuss, L.,2001, In dirty chains? Purchasing and greener manufacturing: *Journal of Business Ethics*
- Priyanka Pathak, Dr. M. P. Singh,2017, Sustainable Manufacturing: An Innovation and need for future*: International Conference on Recent Innovations in Engineering and Technology.*
- Pullman, M., Maloni, M., and Carter, C.,2009, Food for thought: Social versus environmental sustainability practices and performance outcomes: *Journal of Supply Chain Management*
- Ramesh Subramoniam, Donald Huisingh, Ratna Babu Chinnam,2009, Aftermarket remanufacturing strategic planning decision-making framework: theory & practice: *Journal of Cleaner Production.*
- Rogers, P.P., Jalal, K.F. and Boyd, J.A.,2007: *An Introduction to Sustainable Development.*
- Sarkis, J., Gonzalez-Torre, P. and Adenso-Diaz, B. 2010, Stakeholder Pressure and the Adoption of Environmental Practices: *Journal of operation Management.*
- Sergio Rubio and Beatriz Jiménez-Parra,2014, Reverse Logistics: Overview and Challenges for Supply Chain Management: *International Journal of Engineering Business Management.*
- Seuring, S., and Muller, M.,2008, Core issues in sustainable supply chain management - A Delphi study: Business Strategy and the Environment: *Business Strategy and the Environment.*
- Shirish C. Joble,2016, Sustainable supply chain management; Literature Review: *The Creative Commons Attribution.*

- Svensson, G.,2007, Aspects of sustainable supply chain management (SSCM): conceptual framework and empirical example: *Supply Chain Management: An International Journal*
- United Nations Global Compact,2010, Supply Chain Sustainability: A practical Guide for Continuous Improvement
- Vachon, S.,2007, Green supply chain practices and the selection of environmental technologies: *International Journal of Production Research.*
- Van-Hock, R.I.,2000, From reversed logistics to green supply chains: *Logistics Solutions.*
- Wafaa A. Nasman study,2017, The External Factors Affecting the Supply Chain Responsiveness at UNRWA Gaza: *http://hdl.handle.net/20.500.12358/20379.*
- Wojciech Piotrowicz, Richard Cuthbertson, Gerd Islei,2007, Sustainable Supply Chains – a framework for best practice assessment Results of the pilot study, Best Log project: *The Oxford Research Archive.*
- Wu and Dunn, 1995, Environmental responsible logistics systems: *International Journal of Physical Distribution and Logistics Management.*
- Xu Yang,2013, A Review of Distribution Related Problems in Logistics and Supply Chain Research: *International Journal of Supply Chain Management.*
- Zhu, Q., Sarkis, J. and Lai, K.H. ,2008, Green supply chain management implications for closing the loop*: Logistics and Transportation Review.*
- Zhu, Q., Sarkis, J. and Lai, K.H.,2013, Institutional-based antecedents and performance outcomes of internal and external green supply chain management practices: *Journal of Purchasing and Supply Management.*

Annex: 1

Addis Ababa University School of Commerce

Logistics and Supply Chain Management Master's Program

Questionnaire addressed to Fresh Meat actors: Butchers, supermarket owners, wholesalers and slaughtering production workers

This questionnaire is prepared for academic purpose in the fulfillment of master's degree in Logistics and supply Chain Management in Addis Ababa University. The main objective of the study is to assess the" Assessment of Sustainable Supply Chain Management Practice of Fresh Meat at Addis Ababa Abattoirs Enterprise", the information you will provide is very important for this research to study the existing supply chain management practice to enhance the sustainability of fresh meat. The information you give will be used for only the academic research so that feel free to respond to each question. I ensure that, your response will be kept confidential. The first part comprises the respondent's demographic information while the second part is about the existing state of supply chain management in reliance to fresh meat.

Thank You

Email Address: tekola_hailu@yahoo.com

Part I: Respondents Demographic Information

1. Gender: 1. Male ☐ 2. Female ☐

2. Age: 1. 18-28years ☐ 2. 29-45 ☐ 3. 46- 60 ☐

3. Marital status: 1. Single ☐ 2. Married ☐ 3. Divorced ☐ 4. Widowed ☐

4. Educational status: 1. Below Diploma ☐ 2. Diploma ☐
   3. Bachelor Degree & above ☐

5. Duration of stay in the enterprise: 1. < 2years ☐ 2. 2-5years ☐
   3. 6-10years ☐ 4. above 10 years ☐

Part II: Supply Chain Management Practice

Please show the extent to which you believe about the following statement by Circling (1) Strongly disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly agree.

Items No:		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Supply chain collaboration						
SCCol1	AAAE contributes with its supply chain actors by sharing its resources to improve its internal Sc activities					
SCCol2	The enterprise improves its performance by practicing of joint cost reduction activities				.	
SCCol3	The enterprise elevates its inventory management by attempting the linkage with each component					
SCCol4	The enterprise describes the three-principal element of an integrated supply chain model					
Information sharing						
SCInfo1	The enterprise shares information with its suppliers by considering as one of supply chain process					
SCInfo2	The enterprise use information sharing as a tool for achieving an integrated and coordinated supply chain					
SCInfo3	The enterprise use elements of information sharing for supply chain management practice					
SCInfo4	use of informal information sharing					
Customers Relationship Management						
SCCRM1	In its service strategy the enterprise understands current and future customer needs.					
SCCRM2	By its marketing strategy the enterprise tries to meet customer requirements.					
SCCRM3	By usage of integrating selling strategy the enterprise strives to exceed customer expectation.					
Suppliers management						
SCSMl	The enterprise has a long-term experience of relationship with its suppliers					
SCSM2	By making strategic relationship with suppliers the enterprise share responsibilities for its successes					
Supply chain Responsiveness						
SCSCR1	The operation system of the enterprise address customer demand					

SCSCR2	The outbound transformation and distribution of logistics responsiveness addresses customer demand					
SCSCR3	There is suppliers' network in the enterprise for sourcing of slaughtered animals					
SCSCR4	Competitive advantage (market sharing and profitability) of the enterprise gained as result of cost reduction, provision of quality fresh meat and speed of delivery dimension					

Part III: Sustainable Supply Chain Management Practice

Items No:		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Economic Practice						
SSCEco1	The enterprise's profitability is not creating negative social and environmental impact					
SSCEco2	The current high position production volume or service level is the result of customers perception as it was ethical					
SSCEco3	The enterprise optionally uses the available resource in responsible and efficient way for its long-term benefits					
SSCEco4	Bringing and adopting new technologies to replace labour intensiveness work					
SSCEco5	The enterprise provides hygienic and high-quality fresh meat with scale of delivery to its customers					
Environmental Practice						
SSCEnv1	AAAE adopted mechanisms that would help to reduce pollution generated during slaughtering and by product processing					
SSCEnv2	The layout of the abattoir is convenient for production of polluting agents					
SSCEnv3	There is practice of modern waste management system at AAAE					
SSCEnv4	There is no traffic congestion and emission of gas generation during distribution					
SSCEnv5	There is no production and distribution of contaminated fresh meat harmful to consumers					
SSCEnv6	The enterprise compliance code of conduct while sourcing slaughtered animals with suppliers					
SSCEnv7	The enterprise consumes huge amount of recyclable water during slaughtering and by-product processing					
Social Practice						

SSCSoc1	All personnel in production have the necessary knowledge, skills, and training to adopt new technologies					
SSCSoc2	There are no fear consumers about feed additives as growth hormones & antibiotics adversely affect their health					
SSCSoc3	There is no health and safety related incidents which result in lost workdays of staff due to injury or illness					
SSCSoc4	The enterprise contributes positively by considering the effect of the environment to the communities in which it is located					
SSCSoc5	The enterprise creates smooth relationship with customers for mutual benefit					

Part IV: Rank from the highest impacting factor to the list from 1-10 which of the following characteristics affect implementation of SSCM practice at AAAE

No	Description	Ranks									
		1	2	3	4	5	6	7	8	9	10
1	**Policy and legal instrument**										
	Environmental perspective										
FACIMPPEnv1	The AAAE maintain or improve health and quality of communities in surrounding areas										
FACIMPPEnv2	The AAAE maintain or improve health and quality of fresh meat production										
FACIMPPEnv3	The AAAE maintain or improve health and safety of workers and consumers										
	Economic perspective										
FACIMPPEco1	The AAAE maintain or improve fresh meat production yield										
FACIMPPEco2	The AAAE maintain or improve profitability of enterprise										
FACIMPPEco3	The AAAE maintain or improve Sc actor's income										
	Social perspective										
FACIMPPSo1	The enterprise enhances self-reliance of workers										

FACIMPPSo2	The enterprise decreases risk and hazard of fresh meat production										
FACIMPPSo3	The enterprise improves welfare and quality of life of Supply chain members										
2	**Government policy to develop the meat sector industries**										
FACIMPGov1	There is support in industry modernization										
FACIMPGov2	There is support in capacity building of management team										
FACIMPGov3	There is support in reduction of illegal slaughtering practice										
3	**Management commitment and support**										
FACIMPMgt1	There is a policy integration of Procurement, production, distribution										
FACIMPMgt2	There is initiation to modernize the industry										
FACIMPMgt3	The enterprise provides healthy and safe fresh meat to customers										
4	**Usage of Environmentally Friendly technology**										
FACIMPUsg1	The enterprise replaces manual operation by professional ritual killing and stunning boxes										
FACIMPUsg2	The enterprise adopts usage of modern waste management plants										
FACIMPUsg3	The enterprise adopting modern slaughtering technology										
5	**Laws, standards, and regulations practice**										
FACIMPLaw1	There is pre and post slaughtering inspection/ verification practice at each stage										
FACIMPLaw2	The enterprise visited by authorized body regularly										
FACIMPLaw3	Regulatory body take a measure against mal practice										
6	**Firms Internal SSCM application**										

FACIMPFirm1	Provision of information, IT, and interfaces										
FACIMPFirm2	There is strong relationship with customers										
FACIMPFirm3	The enterprise adopts standards to transform										
7 SSCM practices relating to suppliers and customers											
FACIMPSSCM1	Cooperation with suppliers for sustainable supply chain management objectives										
FACIMPSSCM2	Provide training to build supplier sustainable supply chain management capacity										
FACIMPSSCM3	Cooperation with customers for bringing healthy and safe livestock										
8 Customer satisfaction and reputation											
FACIMPCust1	There is fast & accurate delivery of fresh meat to customer										
FACIMPCust2	The enterprise Provide safe and good quality of fresh meat to customers										
FACIMPCust3	The enterprise Offer fair price for the service delivered										
9 Customer focused practice of the enterprise											
FACIMPCust91	The enterprise delivers fresh meat with trust and reliably										
FACIMPCust92	The is responsiveness to customer demand										
FACIMPCust93	There is agility with respect to customers & suppliers										
10 Capacity for flexibility											
FACIMPCap1	There is an enabling facilities or technology in the enterprise										
FACIMPCap2	There is skilled and professional manpower										
FACIMPCap3	There is staff motivating tools and techniques										

Annex: 2

Interviews Guides for other supply chain actors.

1. Do you have long term relationship with the customers?
2. Is the enterprise capable to serve slaughter which are needed for the market of Addis Ababa?
3. Do you have an experience of any regulatory agencies inspected the enterprise's facility in the last five years?
4. What are the major difficulties for practicing supply chain management in the enterprise?
5. Do attributes such as flexibility, efficiency, food quality and responsiveness influence customers/butcher's competitive advantage in terms of price reduction, provision of quality product, on time to market
6. How sustainable supply chain management practice of fresh meat at AAAE
7. How sustainable fresh meat supply practices from economic dimension across the supply chain?
8. How sustainable fresh meat supply practices from environmental dimension at AAAE?
9. How sustainable fresh meat supply practices from social dimension across the supply chain?
10. What are the factors affecting the implementation of sustainable supply chain management of fresh meat at Addis Ababa Abattoirs Enterprise?

Annex: 3 Missing Data

	N	Mean	SD	Count	Percent	Low	High
SCCol	268	2.5205	.66939	0	.0	21	15
SCInfo	268	2.7080	.43151	0	.0	9	0
SCCRM	268	3.1269	.4909	0	.0	0	0
SCSM	268	3.8172	.46624	0	.0	0	0
SCSCRes	268	2.7080	.43151	0	.0	9	0
SSCEco	268	2.9463	.38485	0	.0	23	32
SSCEnv	268	2.9936	.35009	0	.0	2	0
SSCSo	268	2.8455	.34945	0	.0	0	15

a. Number of cases outside the range (Q1 - 1.5*IQR, Q3 + 1.5*IQR).

Source: Own survey result, 2019

Annex: 4 Normality Test

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
SCCol	268	2.4198	.62643	.236	.149	.344	.297
SCInfo	268	2.4366	.58114	.268	.149	.062	.297
SCCRM	268	2.3794	.71657	.159	.149	-.952	.297
SCSM	268	2.4925	.83461	.384	.149	-.096	.297
SCSCRes	268	2.3218	.54928	-.078	.149	-.111	.297
SSCEco	268	2.2358	.60749	-.021	.149	-.531	.297
SSCEnv	268	2.3406	.59806	.397	.149	.654	.297
SSCSo	268	2.2231	.52237	.320	.149	-.219	.297
Valid N (listwise)	268						

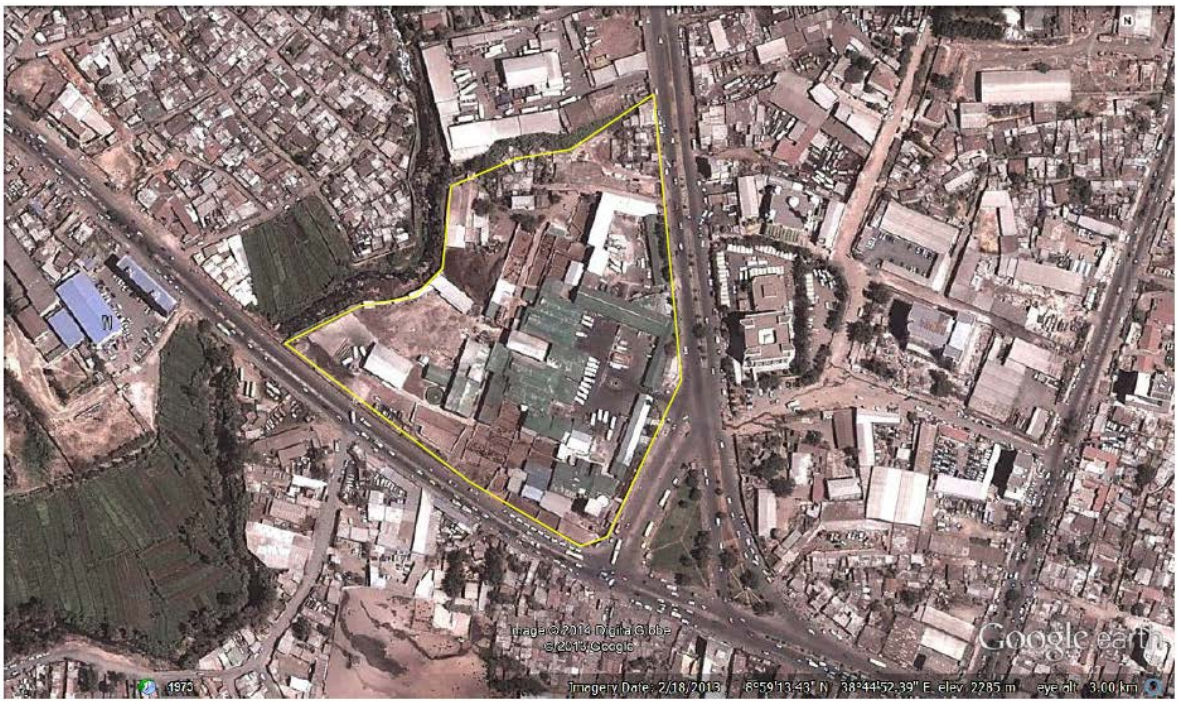
Source: Own survey result, 2019

Annex: 5 Slaughtered Animals at AAAE on year basis

No.	Year	Cattle	Sheep	Goat	Pig	Camel	Total
1	2013	239,405	122,120	43,926	1823	2,411	409,685
2	2014	251,386	101,451	48,296	1410	2,403	404,946
3	2015	238,922	82,040	41,736	874	2,920	366,494
4	2016	256,733	90,882	38,492	809	2,600	389,516
5	2017	264,167	83,201	35,543	892	2,629	386,432

Source: AAAE Production Report, 2017

Annex: 6 Current sites of Addis Ababa Abattoirs Enterprise



Source: Google Earth,2007