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FERTILIZER AND AGROCHEMICALS SALES PERFORMANCE IN MANICALAND AT ZIMBABWE FERTILIZER COMPANY IN ZIMBABWE

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF EXECUTIVE MASTER IN BUSINESS ADMINISTRATION IN THE COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

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Abstract

This dissertation attempts to highlight the fertilizer and agrochemical sales performance in Manicaland with a case study of Zimbabwe Fertilizer Company (ZFC) during a ten year period that is from year 2009 to year 2019.The paper also highlight the challenges facing fertilizers and agrochemicals demand and supply in Manicaland and put the strategies that will increase the inputs sales. The aim was to assess fertilizer and agrochemicals, to evaluate the shifts in fertilizers and agrochemicals consumption in Manicaland. To assess the causes of sales performance shifts at ZFC, and come up with strategies to increase fertilizers and agrochemical sales. The fertilizer and Agrochemical sales will be increased starting from the production level through the value chain system with the involvement of local ago dealer to the farmers. The financing mechanism such as developing Zimbabwe's fertilizer and agrochemical manufacturing capacity, provision of foreign currency to import raw materials, and agricultural loans to farmers with low interest rates. The Consumption of fertilizers in Manicaland is affected by several factors that include inputs prices (Fertilizers and Chemicals), output producer prices, area under cultivation, weather conditions, irrigation facilities, availability of credits, and cultural farming practices adapted by farmers. The influence of these factors is weighted differently by farmers with various hacterage of land and their impacts vary on the consumption of fertilizers and agricultural chemicals in Manicaland province. The researcher used both quantitative research design and qualitative research to assess the sales performance. The study covered Mutare district, Mutasa district, Makoni district, Nyanga district, Buhera district and will not cover Chipinge district and Chimanimani district. The sale from each district was extracted from Zimbabwe Fertilizer Company board of director's reports and questionnaire was stratified randomly distributed to the customers (Farmers, Agrodelers and NGO) in each district. The Population is 200 customers consist of farmers, Agrodelers and NGO and the sample size is 60, the data was analysed using SPSS statistical package. There was a gradual decrease in fertilizers and agrochemicals from year 2009 to 2019.The slight decrease in fertilizers and agrochemicals in 2007 was due to the introduction of command agriculture. Farmer cited that they considered product availability, bulk delivery, credit facilities, technical support, strength of brand and promotional materials when purchasing fertilizers and agrochemicals. The results will assist Zimbabwe Fertilizer Company adopt advertising and promotional strategies so that it will increase the market share. The results will assist policy makers in making sure that yield is increased at a lower cost that making it sustainable to farmer that will increase the gross domestic product of Zimbabwe. Product availability was considered as the most important factor. Advertising promotional material fertilizer bulk delivery was considered as the most important strategy. In the future need to measure the profit levels of the company and to have crop information and hectarage grown as this affects the sales performance

Key Words: Input Sales; Value Chain; Fertilizer; Agrochemicals; Manicaland Province.

Declaration

I declare that this dissertation is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree.

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Dedication

To my father Tasunungurwa Dera and my late mother Evinnes Malikebhu who laid the foundation of my education.

List of Acronyms and Abbreviations

ARDA	Agricultural and Rural Development Authority
GMB	Grain Marketing Board
NGO	Non-Governmental Organisation
SPSS	Statistical package for social science
ZFC	Zimbabwe Fertilizer Company

Definition of Key Terms

Fertilizer

Fertilizer is defined as a synthetic chemical substance or mixture used to enrich soils as to promote plant growth. In order for a plant to grow and thrive, it needs a number of different chemical elements. A mineral element is considered essential to plant growth and development if the element is involved in the plant metabolic function and the plant cannot complete its lifecycle without the element. The most important elements are Nitrogen, Phosphorous and Potassium. These elements are important for building of basic blocks such as amino acids, cell membranes, and Adenosine Triphosphate (ATP). To make plants grow faster, supply of elements that the plants need in readily available forms necessary (Tisdale, 1997). A sustainable form of agriculture is based on nutrients which are removed with the harvested crops will be replaced. Mineral fertilizers allow farmers to supplement the nutrients which are already present in the soil.

Subsidiary

A subsidy is a form of financial assistance paid to a business or economic sector and is used to support business that might otherwise fail or encourage activities that would otherwise not take place (Pratap & Gupta, 1991). Subsidies may be regarded as a form of protectionism or trade barrier by making domestic goods and services artificially competitive against imports.

Financial assistance in the form of subsidy may come from government. The recipient of the subsidy may need to be distinguished from the beneficiary of the subsidy, and this analysis will depend on elasticity of supply and demand as well as other factors.

Marketing Marketing is an ongoing process of planning and executing the marketing mix (products, price, place and promotion) for products, services or ideas to create exchange between individuals and organisations (David, 1997). Marketing tends to be seen as a creative industry, which includes advertising, distribution and selling. It is also concerned with anticipating the customer's future needs and wants, which are often discovered through market research. Essentially, marketing is the process of creating or directing on organisations to be successful in selling a product or service that people not only desire but are willing to buy. Therefore, good marketing must be able to create a set of benefits for the customer that delivers value through products and services (Wilson, 1997). The goal of marketing is to build and maintain a preference for a company and its products within the target markets. The goal of any business is to build mutually profitable and sustainable relationship with its customers.

Trade Liberalization Free trade is a market model in which the trade of goods and services between or within countries flows unhindered by

government - imposed restrictions (Recardo & Mill, 2004). These restrictions may increase costs to goods and services, producers, businesses, and customers, and may include taxes and tariffs as well as other non – tariff barriers, such as regulatory legislation and quotas (Fuller & Geid, 2003). Trade liberation entails reductions to these trade barriers in an effort for relatively impounded transactions.

Free Market Economy A free market economy is an economic system in which individuals, rather than government, make the majority of decisions regarding economic activities and transactions (Dehaan & Sturm, 2006). A free market is a market in which prices of goods and services are arranged completely by mutual consent of sellers and buyers. By definition, in a free market environment buyers and sellers do not coerce or mislead each other nor are they coerced by third party. In the market place the price of a good or services helps to quantify its value to consumers and thus balance it against other goods and services. In a free market, this relationship between price and value is clearer than in a controlled market. Through competition between vendors for the provision of product and services, prices tend to decrease, and quality tends to increase (Dehaan & Sturm, 2007).

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CHAPTER 1 INTRODUCTION

1.1 Introduction

A fertilizer is any synthetic or natural material that is applied in the soil to supply one or more essential plant nutrients. Fertilizers enhance the growth of the plant by adding additives such as nitrogen, potassium, and phosphate. Some fertilizers are used to improve soil fertility by modifying its aeration and water retention.

Throughout the world, agricultural marketing policies are designed to fulfil political as well as social welfare objectives. Therefore, it should not be surprising to find that political objectives may also be important in the design of key agricultural markets in Zimbabwe. Several studies contend that the reform of the fertilizer markets .The stringing policies imposed by certain governments around the world has restricted the farmers to use fertilizers in their fields.

The demands for the fertilizers and agrochemicals have increased from across the world, but the supplies against the demands are not fulfilled adequately. This has increased prices in the fertilizers market. Furthermore, the production gap due to increased raw material costs and expensive import prices are affecting the fertilizers market growth. The trade cycles have arisen from the changes in supply relative to demand and market forces have operated to restore equilibrium. When there are fertilizers and Agrochemical shortage the Government resort to physical controls on fertilizer distribution. Immobilized price mechanism that might otherwise have operated to bring equilibrium. The administration of the control system has created problems for the fertilizer manufactures and distributors, the solution of which appears possible only through new marketing concepts (Food and Agriculture Organisation [FAO], 2006).

There are three main source of information for specific marketing problems that is information which is stored in a systematic manner of a firm, the experience and knowledge of the decision environment which the decision maker is expected to posses and new data obtained to solve immediate and specific marketing problems. This may be achieved after analyses the sales trends for the organization which is further split into provinces so as to come up with meaningful results.

1.2 Background to the Study

Although the fertilizer industry was in private hands, mandatory government approval of fertilizer compositions and import permit requirements still remained in place (Poulton, 2002). A fertilizer is any material, organic or inorganic, synthetic or natural that supplies plants with the necessary nutrients for plant growth and optimum yield. Agrochemicals demand is growing due to increasing demand for agricultural products. The agriculture industry is driven by global population, income growth and dietary changes that follow. As land is limited, agrochemicals represent the main known way to increase yields in the agriculture industry.

A conceptual framework for measuring the performance of agri-business supply chains has been developed Agri-business supply chain performance indicators are grouped into four main categories: efficiency; flexibility; responsiveness and quality.

The suggested performance indicators may be used at the organizational level as well as the supply chain level. This means that supply chain members, besides their own set of performance indicators, have a common set of performance indicators within four main categories that help them to evaluate their own performance and the

performance of the chain. This common set of indicators for the complete supply chain may be identified as key performance indicators (Agnihorti & Krush, 2015).

Research has identified the positive effect of organizational climate on salesperson performance salesperson satisfaction, and team productivity and that organizational culture is related to sales performance, business performance , and customer satisfaction Although empirical studies show that culture is related to individual behaviour, perceptions of the environment (climate) constitute a more immediate driver of individual behaviour than culture (Agnihorti & Krush, 2015). The use of climate variables to predict organizational and sales effectiveness has not received much attention so for all that to be done there is need for sales analysing a case study.

What are the main influencers or background of performance, and how the salespeople's performance should be measured are topics with little consensus amongst the authors researching such topics. In the beginning of this field theoretical development, the discussions was oriented towards the measurement of constructs, and have contributed to develop and propose a scale to measure the satisfaction with industrial salespeople's work, which became known as INDSALES scale (Churchill & Walker, 1974). Such authors though recognize that the relation between satisfaction with the work and the salespeople's performance is not direct, and intervening variables might help to better understand the sales' performance.

1.2.1 Case study background of Zimbabwe Fertilizer Company

From 2009 to 2019, the sales volume of fertilizers and agrochemicals was low in Manicaland all the sales were below the set target, A Case study of Zimbabwe

Fertilizer Company in Zimbabwe. The study was conducted in Manicaland region. Manicaland region was given yearly target of fertilizer and Agrochemicals sales. To come up with target sales management use information on fertilizer and crop per region and knowledge of farmer acceptance to new farming technology.

1.3 Statement of the Problem

The sales of fertilizers and agrochemicals in Manicaland from Zimbabwe Fertilizer Company were low from a period of 2009 to 2019 (Zimbabwe Fertiliser Company [ZFC], 2009). This has resulted to reduction in market share to 25 % and profitability for the company in Manicaland (ZFC, 2009). The problem of poor sales performances is often caused by a number of challenges chief among them poor differentiation and poor positioning, ineffective sales person, increasing price pressure, ineffective marketing strategy. Walker, Churchill and Ford (1977) suggest that salespeople's performance was influenced by: (1) the perception of their role, and on which activities they should be performed in order to obtain the desired performance; (2) the motivation influencing the amount of efforts used in performing the sales activities; and (3) the skill, which is the quality of such effort. Churchill (1985), in their meta-analysis, classify the background of performance in increasing order of importance: personal factors, organizational and environmental factors; motivation; aptitude; levels of skills, and the perception of their role within the organization and within the sales process.

Table 1.1 Fertilizer Sales (Metric Tonnes) from year 2009 to 2019

Year	Target	Actual	Variance
2009	10000	6500	-3500
2010	12000	8200	-3800

2011	12500	8000	-4500
2012	9300	7500	-1800
2013	9000	8500	-500
2014	9500	6500	-300
2015	8500	5 037	-2 856
2 016	7 893	4 931	-7 302
2 017	12 233	4 232	-2 182
2 018	6 414	4 232	-2 182
2019	7500	4500	-3000

The table 1.1 above shows fertilizer sales in tonnes against the expected sales from the year 2009 to 2019 for ZFC Manicaland province. It could be concluded that for the past 10 years the target fertilizer requirements were not meet. It may be concluded that the fertilizer sales gradually decreased from 2009 sold 6 500 tonnes to the year2019 sold only 4 500 tonnes.

Table 1.2 Chemical Sales ($ Value) from year 2009 to 2019

Year	**Target**	**Actual**	**Variance**
2009	200 000	155 000	-45000
2010	160000	145 300	-14700
2011	160 000	142 200	-17 800
2012	170 000	145 600	-24 400
2013	190 000	160 000	-30 000
2014	200 000	165 230	-34 770
2 015	200 023	156 615	-43 408
2 016	250 030	160 121	-89 910

2 017	176 947	157 082	-19 865
2018	240 000	160 200	-79 800
2019	250 000	165 300	-84 700

The table 1.2 above shows chemical sales in dollar value against the expected sales from the year 2009 to 2019 for ZFC Manicaland province. It may be concluded that for the past 10 years the target of Agrochemicals requirements were not meet. It may be concluded that the fertilizer sales gradually increased from 2009 sold chemical value of $155 000 while in year 2019 sold $165 000 worth of chemicals. The research gap is to find what the causes in sales performance shifts and to come up with strategies to increase sales performance.

1.4 Research Objectives

The research objectives were to:

1.4.1 Assess the fertilizer and agrochemicals sales at ZFC in Manicaland.

1.4.2 Evaluate the shifts in fertilizers and agrochemicals consumption in Manicaland.

1.4.3 Assess the causes of sales performance shifts at Zimbabwe fertilizer company fertilizers and Agrochemicals sales.

1.4.4 Suggest strategies to increase fertilizer and Agrochemical sales in Manicaland.

1.5 Research Questions

The following are the research questions:

1.5.1 What are the sales volumes for fertilizer and agrochemicals sales in Manicaland from year 2009 to 2019?

1.5.2 What are the shifts in fertilizers and agrochemicals sales in Manicaland?

1.5.3 What are the sales the causes of shifts in sales performance of Zimbabwe Fertilizer Company fertilizer and agrochemical sales?

1.5.4 What are the possible strategies that may increase fertilizer and agrochemical sales in Manicaland?

1.6 Assumptions of the Study

For purpose of this study, the following assumptions were made:

The chosen participants were truthful, objective and true representation of the target population.

The information gathered during the research study was credible and accurate and the company continued with its operations in Manicaland.

1.7 Significance of the Study

The significance of the study to ZFC is to provide market information and concentrate on strategies that will increase market share.

To the academic: The study could provide new market information regarding to sales performance on agrichemicals and fertilizers.

To the customers: It will get to know other services and products being offered by ZFC and theirs concerned issues are rectified.

To the researcher: Who is the student m the study become a great benefit development to for their profession. It serves as a reference for their research in the future.

Findings from the study enables Zimbabwe Fertilizer Company in Manicaland to improve on declining sales performance by: Reviewing and improving sales strategy that is executing sales force effectiveness studies to identify the root causes of the problem, and to prioritize investments in performance improvement opportunities. To use our "Voice of the Buyer" and competitive research to identify sales execution challenges and why customers choose your company – or competitors – for solutions. To calculate the number and value of new opportunities required from demand generation activities to surpass sales targets. Assessing talent to identify suitability to specific sales roles, skill gaps and developmental priorities.

The study will enable implementing effective sales processes by defining customer buying processes and preferences. Also to validate and documenting effective sales process, selling stages, and activities to align with buyers. To develop essential selling skills by providing sales people with consistent, repeatable sales methodology and messaging that are aligned with buyer behaviour and preferences. To provide sales managers with process and skills for developing sales teams and coaching performance. Providing continuous learning and reinforcement to master essential selling competencies. To provide sales productivity tools

The study's findings is beneficial to the government and policy makers. The study findings will assist policy makers in increasing farming productivity thereby increase demand for fertilizer thus realizing food security in the country. It is useful to government policy makers in formulating solid, broad and balanced policies.

1.7 Delimitations of the Study

The study was based in Manicaland and focused on NGO, Agrodealers and farmers. Manicaland was selected because of its farming activities that are triggered by conducive environment for farming throughout the year. The study's theoretical scope sought to provide a clear understanding of the supply and demand scenario typically mirrors the current status of fertilizer marketing in Zimbabwe over the last decade.

1.8 Limitation of the Study

The Research was done only covering Manicaland province that is not be a true reflection of other provinces in Zimbabwe to make long-term policies for the organization.

1.9 Summary

Chapter 2 is Literature review, Theoretical framework it's important to the study. Chapter 3 is Research methodology, that includes research design that is the plan how data was going to be collected and the data analysis tools. Included in this chapter are Ethical considerations. Chapter 4 is data analysis and results interpretations. Chapter 5 research summary, conclusions and recommendations. It will include areas for further study.

CHAPTER 2 REVIEW OF RELATED LITERATURE

2.1 Introduction

The following chapter seeks to provide theoretical literature to show the current state of the fertilizer industry in Zimbabwe and how it has to be improved. In particular, the chapter emphasizes the most important constructs relevant to the study. Thus, the chapter attempts to present a critical review of the available literature on the concept of supply curve that decepts a relatively inefficient fertilizer sub sector delivery system that delivers a small quantity of fertilizers to farmers at a relatively higher price. The chapter was also discussed literature on Zimbabwe pesticide industry. Lastly, critical review and gap in the literature will be explained.

2.2 Theoretical Framework

Figure 2.1 portrays the supply and demand situation at two levels (Gregory & Bomb, 2006). The first level, demonstrated by supply curve (S1), depicts a relatively inefficient fertilizer sub sector delivery system that delivers a small quantity of fertilizer (Q1) to farmers at a relatively high price (P1). This high cost inefficient fertilizer market is characterized by government interventions, subsidies, poor market information, poor infrastructure and constrained agribusiness finance. Gregory and Bomb (2006) further posit that the industry has a lower fertilizer demand (D1) caused by farmers inability to purchase fertilizer due to cash and credit constraints, high fertilizer prices relative to controlled producer prices and inadequate water to complement fertilizer use. The supply and demand scenario typically mirrors the current status of fertilizer marketing in Zimbabwe over the last three decades. The fertilizer industry needs rejuvenation. We hypothesize that Zimbabwe may deliver fertilizer efficiently to farmers at low cost and this may be attained by shifting the supply curve to (S2) which delivers large quantities of fertilizer to farmers at lower

prices (P2). Increased fertilizer supply has to be matched by adequate demand for the markets to be stable and this is only achievable by removing the demand constraints, so that fertilizers demand shifts from (D1) to (D2) (Gregory & Bomb, 2006).

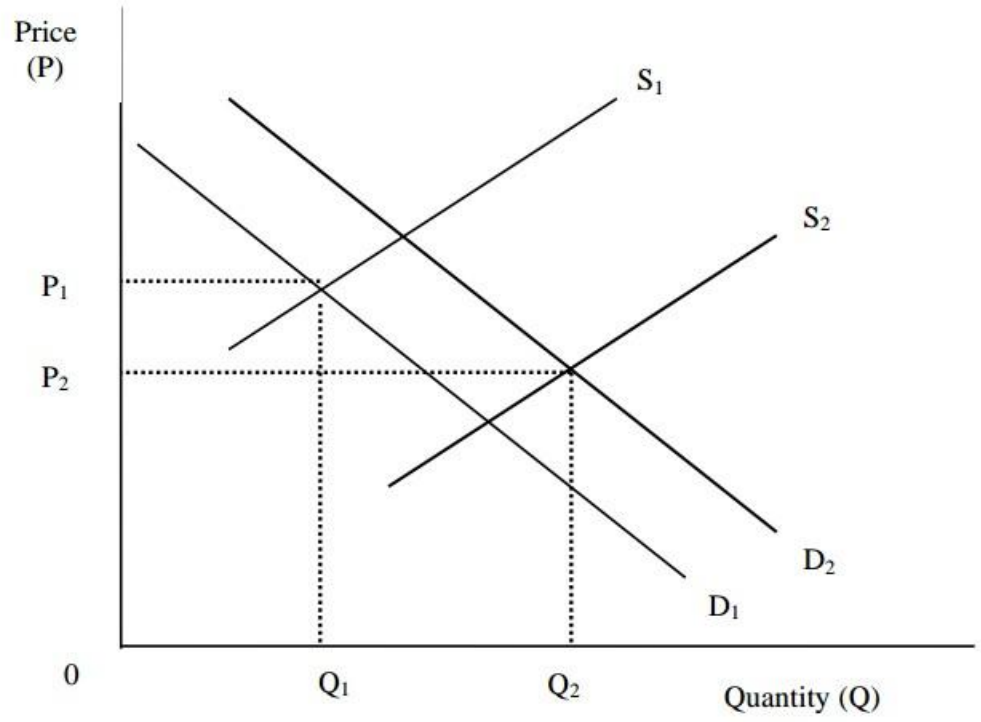


Figure 1.1: The Conceptual Framework, Shifting Supply And Demand Curve (Gregory & Bumb, 2006)

2.3 Relevance of Theoretical Frame Work

The trends in supply of fertilisers in Zimbabwe has been driven by key factors such as government policy, market information and infrastructure while on the demand side farmers capacity to acquire fertilisers availability of water (rainfall) and farmers knowledge on fertiliser use has been key driver Minde (2010) from 1930 to early 1990s the government direct control on fertilizer trading through foreign currency

rationing. The demand for agriculture inputs include fertilizers increased during the period 1980 to 1987 owing to the growth in number and size of smaller holder farmers loans granted by agricultural finance corporation and favourable weather in the 1990s the industry was liberalized (Rohbach, 1989; Rukuni, 2006). The liberalized removed price controls, subsidizes and access to foreign currency by few privileged firms.

2.4 Conceptual Framework of Agri Business

This section discuses a conceptual framework for measuring the performance of agri-business supply chains. Based on a literature review of existing performance indicators for supply chains, a conceptual framework for measuring the performance of agri-business supply chains has been developed (Aramyan, 2006). Agri-business supply chain performance.

Indicators are grouped into four main categories:

- efficiency;
- flexibility;
- responsiveness.
- quality.

The suggested performance indicators according to Bowersox and Closs (1996) may be used at the organizational level as well as the supply chain level. This means that supply chain members, besides their own set of performance indicators, have a common set of performance indicators within four main categories that help them to evaluate their own performance and the performance of the chain. This common set of indicators for the complete supply chain may be identified as key performance

indicators. Efficiency measures how well the resources are utilized (Lai, 2002). It includes several measures such as production costs, profit, return on investment and inventory. Flexibility indicates the degree to which the supply chain may respond to a changing environment and extraordinary customer service requests (Bowersox & Closs, 1996). It may include customer satisfaction, volume flexibility, delivery flexibility, reduction in the number of backorders and lost sales. Responsiveness aims at providing the requested products with a short lead-time (Persson & Olhager, 2002). It may include fill rate, product lateness, customer response time, lead-time, shipping errors, and customer complaints. The specific characteristics of agri-business supply chains are captured in the measurement framework in the category "quality". The latter is based on the framework of food quality developed by (Luning, 2002). Quality is divided into product and process quality. Product quality consists of:

- product safety and health;
- sensory properties and shelf-life; and
- product reliability and convenience.

Persson and Olhager (2002) agree that product safety refers to the requirement that products must be "free" of hazards with an acceptable risk. Sensory perception of a product is determined by the overall sensation of taste, odour, colour, appearance and texture, which are determined by physical features and chemical composition. The shelf-life of a product is defined as the time between productions to the point in time at which it becomes unacceptable for usage. Product reliability refers to the compliance of actual product composition with product description, and convenience

relates to the ease of use or consumption of the product for the consumer (Luning, 2002).

Process quality is divided into:

- Production system characteristics;
- Environmental aspects; and
- Marketing.

Luning (2002) attribute production system characteristics as the way a product is manufactured and includes such factors as pesticides residues, animal welfare and the use of genetic engineering. Environmental implications of agri-business products refer mainly to the use of packaging and food waste management. Marketing efforts determine quality attributes (e.g. promotions, service), affecting quality expectation (Luning, 2002).

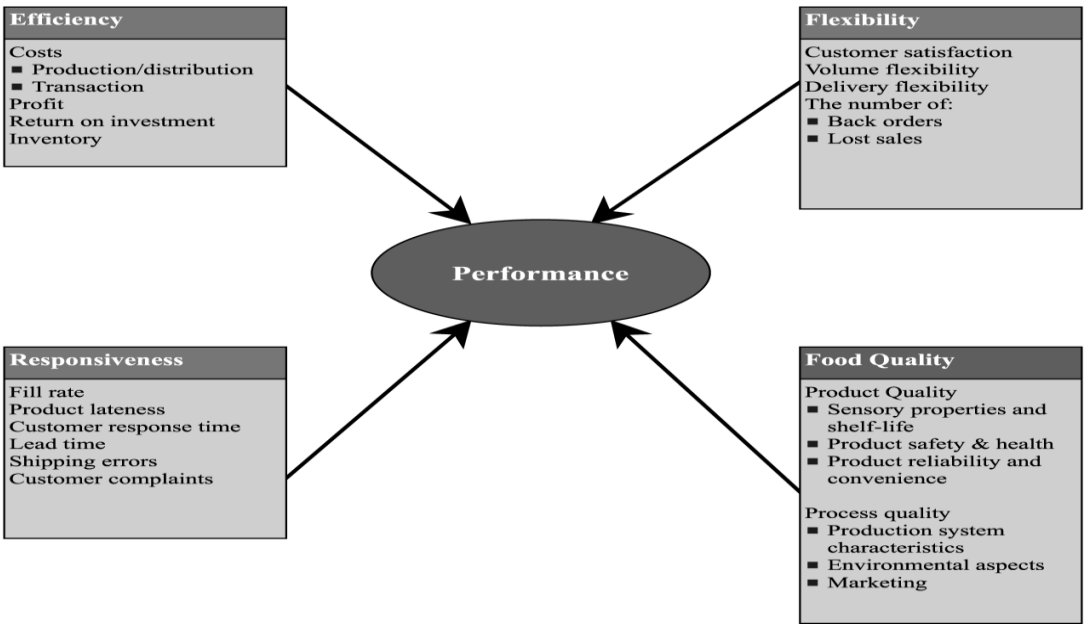


Figure 2: Conceptual Framework of Agri Bussiness Supply Chain Perfomances (Aramyan, 2006)

2.5 Conceptual Framework for Sales Climate and Culture Research

Although organisational climate and culture have been included in research models in the extant sales literature, seldom have they been represented as the focal concept in the investigations. For example, research has identified the positive effect of organizational climate on salesperson performance (Agnihorti & Krush 2015). Salesperson satisfaction, and team productivity and that organizational culture is related to sales performance, business performance, and customer satisfaction (Sengupta, 2000). Although empirical studies show that culture is related to individual behaviour, perceptions of the environment (climate) constitute an immediate driver of individual behaviour than culture. The use of climate variables to predict organizational and sales effectiveness has not received much attention. Thus, a framework with a specific focus for including climate research in sales may improve our prediction and understanding of specific sales performance. Therefore, in addition, Agnihorti and Krush (2015) to the culture perspectives, the influence of climate needs to be considered in efforts to understand how organizations direct employee behaviours toward organizational goals and how effectively the organization goals are attained. As we emphasize the importance of climate and culture perspectives to efficiently understand how organizations derive key sales management decisions, currently, the literature is highly fragmented on how it addresses climate and culture, and the advancement of this literature has been marred by a multitude of theoretical perspectives (Sengupta, 2000). Currently, the field lacks a comprehensive view on how to differentiate organizational variables between climate and culture, integrate within climate and culture, and critically evaluate the state of organizational climate and culture in sales. Particularly, the literature in

personal selling and sales management does not provide an overview or critical evaluation of the research findings related to organizational climate and culture in the sales context. The purpose of this research is therefore to address the research gap by providing an integrated theoretical framework for organizational climate and culture within the sales literature. With an aim to increase market share for ZFC company in Manicaland.

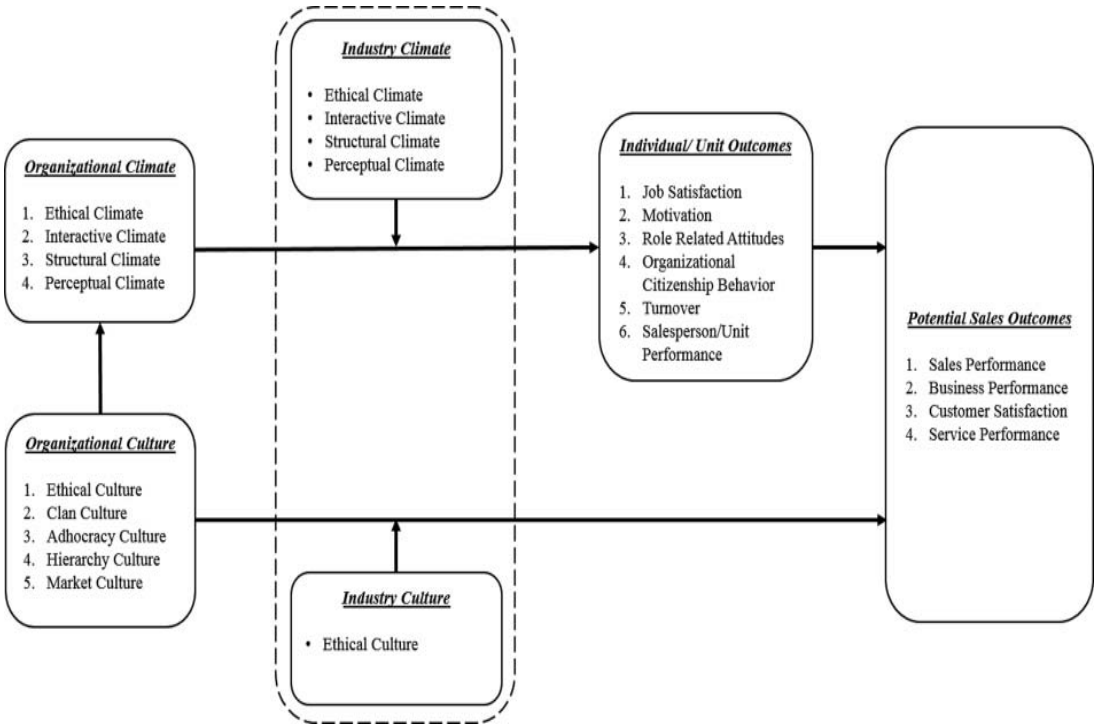


Figure 2.1: A Conceptual Framework for Sales Climate and Research

Source: Agnihorti & Krush (2015)

2.6 Fertilizer Industry Background

The directions taken by the mineral fertilizers market, industry, and farmers' usage was impacted by that of agricultural policies, and, as a consequence, by the intensiveness of different practices and crops produces. A report by the European Fertilizers Manufacturers Association, now Fertilizers Europe, Aldinger (2014)

indicates that, due to the upcoming CAP reform, changes in cropping patterns will result in a more efficient use of fertilizers and in an overall downward trend in the general use of fertilizers. The decrease in consumption is balanced by the reduction in supply capacity in most of Western Europe, as consequence of the closure of several processing plants. In terms of usage, the enlargement of the EU is expected to revive the demand side of the market, while the different agricultural practices may lead to increased opportunities for the development of local markets catering to the different needs of specific production conditions (Aldinger, 2014)

The trends in the supply of fertilizers in Zimbabwe have been driven by key factors such as government policy, market information, and infrastructure while on the demand side farmer's capacity to acquire fertilizers, availability of water (rainfall) and farmer's knowledge on fertilizer use has been key driver (Minde, 2010). From 1930 to early 1990s the government maintained direct control on fertilizer trading through foreign currency rationing. The demand for agricultural inputs including fertilizers increased during the period 1980 to 1987 owing to the growth in number and size of smallholder farmer's loans granted by Agricultural Finance Corporation and favourable weather (Rohrbach, 1989). In the 1990s, the industry was liberalized (Rukuni, 2006). The liberalization removed price controls, subsidizes and access to foreign currency by few privileged firms.

As noted in the Eurostat glossary, a fertilizer is "…a substance used in agriculture to provide crops with nutrients to grow such as Nitrogen (N), Phosphorus (P), and Potassium (K)." Fertilizers are divided into inorganic (or mineral) and organic fertilizers. Mineral fertilizers, manufactured by firms in the agro-chemical industry, are commercial products that either may encompass one macronutrient (simple

nutrient fertilizers, such as urea) or made of compounds mixtures (mineral fertilizers containing NP, NK, and NPK, such as diammonium phosphate). Organic fertilizers include instead, for example, manure or compost and their production is not necessarily associated with the agro-chemical industry (Wesseler, 2015).

ZFC Limited according to Rukuni (2006) is the largest local manufacturer and distributor of fertilizer and the third largest distributor of agrochemicals in Zimbabwe. ZFC manufactures a wide range of granular fertilizers suited to Zimbabwean soils and cropping. Special mixtures may also be produced for export. The raw material requirements for ZFC's fertilizers are obtained from both local and external sources and are processed at ZFC's two granulating plants at Aspindale Park and Msasa in Zimbabwe (Rukuni, 2006).

FAO (2006) points that, ZFC imports more than 150 different agricultural chemicals that include herbicides, fungicides, fumigants, insecticides and specialty chemicals such as tobacco desuckering agents. All crop chemicals are imported with the smaller volume products being ready for use while the large volume products are formulated, re-packed and labelled at ZFC's crop chemical plant in Kwekwe. ZFC has distribution agreements with several of the world's leading principal manufacturers of agricultural chemicals such as Bayer, FMC, Monsanto and Syngenta. ZFC has 13 depots established throughout the country (FAO, 2006). The company also has an extensive network of stockists and agro dealers nationwide. It is ZFC's objective to continually improve the distribution of its products to promote fertilizer use in order to improve agricultural yields and the general produce output in the country. TA Holdings Ltd has a 22, 5 % stake in this operation.

Following the agrarian reform in 2000, the country was plunged into various problems ranging from foreign currency shortages, political instability and hyperinflation and this affected fertilizer production and consumption (FAO, 2006). Crop productivity dropped significantly and this was compounded by a series of droughts. The government started distributing subsidized seed and fertilizers to the resettled farmers while majority of the farming community continued accessing fertilizers from the private sector which was however expensive and in short supply. The government subsidized programme was affected by corruption, beauracracy and widespread defaults and it failed to stimulate increased productivity (FAO, 2006). Poverty and food insecurity stemming partly from low agricultural productivity persisted in the country resulting in the donor community responding by distributing relief seeds and fertilizers to the vulnerable households to boost their crop yields. Such relief programmes are still operational to date but with varying distribution channels as well as total amounts (Rohrbach, 2004).

Chikanda (1990) avers that the plant protection agents or Agrochemicals market may be segmented by the type of product (herbicides, fungicides, insecticides) and the type of crop the compounds are used to protect (cereals and grains, oilseeds and pulses, fruits and vegetables. Agricultural chemicals are a major input into crop and livestock production thereby sustaining Zimbabwe's agricultural productivity and output (FAO, 2006). These agricultural chemicals may be grouped into insecticides, herbicides, fungicides, growth stimulants, dips, anthelmintic and rodenticides. It is estimated that the agricultural sector now uses chemicals worth US$ 20-30 million per annum (Chikanda, 1990). Most of these chemicals are imported as active ingredients and then formulated into end use products in the country**.**

The development of input markets has always been an important issue for the agricultural sector and its stakeholders. Price and quality developments in the input markets affect the comparative advantage of agricultural production among regions and types of production; these developments also affect the income of farm households and may have implications beyond the farm level (FAO, 2006; Chikanda, 1990). Concerns regarding the concentration in input markets have been expressed by different stakeholder groups, including farmer unions, advocacy groups, and policy makers. The concerns arise especially with respect to market power of input suppliers as this may result in higher input costs and a distribution of rents different from what a competitive market would produce (Wesseler, 2015).

Zimbabwe is supplied through a mixture of domestic production and imports (commercial and aid imports). On the domestic market, Sable Chemicals and Zimphos have comparative advantages in the production of ammonium nitrate and phosphate fertilizers respectively and they supply them to ZFC and Windmill in proportions to their market shares FAO (2006) and this have in the past benefited Sable and Zimphos because they reduced inventory costs, and ZFC and Windmill had guaranteed raw material supply. The donor community have been actively providing relief fertilizer to vulnerable smallholder farmers since 2000, following food insecurity problems stemming from chaotic agrarian reform, series of droughts and political instability. To support the agrarian reform programme, the Government started distributing subsidized fertilizer to newly resettled and smallholder farmers through state agencies (e.g. Grain Marketing Board (GMB). The programme was however plunged by bureaucracy, corruption and arbitrages by the recipient farmers. On the other hand a few Non-Governmental Organizations have been pilot testing fertilizer distributions through retail shops.

A number of indicators are available to describe the market concentration of sectors and sub- sectors. Although economic theory predicts that an increase in market concentration should lead to higher industry margins, this does not necessarily imply additional market power and higher prices. An increase in market concentration may also result in lower input prices through efficiency, perhaps, achieved via mergers and acquisitions. Increases in input prices might also be driven by an increase in demand. Intensification in agricultural production triggered by a global decrease in supply, as observed in 2008 and 2009, increases the demand for variable inputs and may result in a price increase if the input supply is not perfectly elastic. Separating the effect of concentration on market power and efficiency is not an easy task (Wesseler, 2015).

The difficulty is the separation of pricing power and other forces on input prices; forces that include changes in the demand for inputs as well as changes in policies. Tighter regulation, which may, for example, be in place to protect consumers from ingesting potentially harmful compounds in their food, may result in higher entry barriers and increase entry costs, reducing the number of products available by banning specific products or compound; this could increase market concentration and push prices up. Trade policies may also increase market concentration via tariffs and subsidies. Furthermore, the protection of property rights via patents and trademark may both limit market access, but also provide economic incentives for market entry (Wesseler, 2015).

2.7 Importance and Structure of the Agricultural Sector

Agriculture is the backbone of Zimbabwe's economy; Zimbabweans remain largely a rural people who derive their livelihood from agriculture and other related rural economic activities. It provides employment and income for 60-70 percent of the population, supplies 60 percent of the raw materials required by the industrial sector and contributes 40 percent of total export earnings. Despite the high level of employment in the sector, it directly contributes only 15-19 % to annual GDP, depending on the rainfall pattern Government of Zimbabwe [GoZ] (1995), and this is a statistic that understates the true importance and dominance of the agricultural industry. It is generally accepted that when agriculture performs poorly, the rest of the economy suffers.

FAO (2006) records that, Zimbabwe has a total land area of over 39 million hectares, of which 33.3 million hectares are used for agricultural purposes. The remaining 6 million hectares have been reserved for national parks and wildlife, and for urban settlements. The distinguishing characteristic of Zimbabwe agriculture is its dualism, i.e. the existence of two major subgroups based on the size of landholdings. While Chikanda (1990) supports that the larger group is unsophisticated and comprises about 7.1 million smallholder and communal farmers occupying a total of 21 million hectares. In general, communal and smallholder farmers occupy areas of lower natural potential for agriculture in terms of rainfall, soils and water for irrigation. In addition, these areas are of lower economic potential because of the distances from markets and poor communication and social infrastructure. Until recently, the other group comprised about 4 000 large-scale farmers with very sophisticated production systems and occupies about 11 million hectares of land, primarily located in the areas of high agricultural and economic potential.

Communal and commercial farmers are also distinguished by the fact that the former produce mainly for own consumption, and the latter produce mainly for commercial. The main agricultural products produced by communal farmers are maize (the staple food), groundnuts, other grains, beans, vegetables, meat, milk and fuel wood. Commercial farmers concentrate on cash crops such as tobacco, horticultural products, particularly cut flowers, coffee, maize, groundnuts, sorghum, soya beans, sunflowers, and cattle for slaughter, pigs, goats and sheep. Zimbabwe's principal agricultural exports in descending order include tobacco (60 percent of total agricultural production), cotton lint (about 10 percent), raw sugar (9 percent), tea and coffee, horticultural products and maize (in non-drought years). Imports of agricultural products are limited mainly to wheat and maize in drought years (FAO, 2006).

2.8 Zimbabwe's Pesticide Industry

The Zimbabwe agro-chemical industry has its roots in the 1960's when locally based companies were selling agricultural chemicals directly to end-users. At that time, most of the companies were subsidiaries of multinational chemical corporations. However, as time went by a number of small independent local companies were also established to distribute some agricultural chemicals. Most of these localised companies were set-up during the period 1965 to 1975 as a reaction to the imposition of international economic sanctions against the unilateral declaration of independence when international companies invested from Zimbabwe. Currently, there are close to 40 companies involved in formulation and marketing up to 450 agro-chemical products (Chikanda, 1990 & FAO, 2006). They all belong to the Agricultural Chemical Industry Association (ACIA) that affiliate to the International

Group of National Association of Pesticide Manufacturers/Distributors. The ACIA and its members have subscribed to observe the International Code of Conduct on Distribution and Use of Pesticides.

2.9 Government's Role and Involvement in the Pesticide Industry

Prior to the market reforms and decontrol in 1991, the Zimbabwean government to some extent had a direct role in the importation and marketing of agricultural chemicals. One aspect of the role was and still is through the registration and regulation process intended to ensure that the right types of chemicals are imported and safely used in Zimbabwe. This was discussed in detail in section 6. The second aspect was through price control and foreign exchange rationing. Although, the private firms were responsible for the sourcing and distribution of the pesticides, the government had some influence through the process of allocation of foreign currency.

The importation of chemicals was subject to import controls as a way of effecting foreign exchange rationing and control that was characteristic of the macro-economic management policies of the 1965 to 1991 era of foreign exchange shortages. The Agricultural Chemical Industry Association, acting on behalf of its members, compiled a list of the required ingredients and chemicals to be imported and worked out the foreign currency requirements. The list was submitted to the Ministry of Lands, Agriculture and Water Development for presentation to the Agricultural Inputs Priority Committee (AIPC), through the Agricultural-chemicals Sub-Committee. This sub-committee was chaired by the Ministry of Lands, Agriculture and Water Development, and included representatives of the Ministry of Industry

and Commerce, Commercial Farmers Union, Zimbabwe Farmers Union, the Department of Research and Specialist Services, and the Tobacco Research Board.

In considering foreign exchange requests and allocations, the sub-committee took four factors into account (Chikanda, 1990). One was to ensure that the right quality of agricultural chemicals was imported. The second was to have these available for use at the right time. The third, intended to protect the industry and farmers, was that the structure of the industry and the foreign currency allocation system did not lead to overpricing, shortages, or importation of unsuitable or inferior quality chemicals. The fourth was that a large proportion of the chemicals were imported in active ingredient form. This was in order to maximise employment creation and save on the limited foreign currency.

2.10 Soil Fertility

Virgin soils in Zimbabwe are infertile with low levels of nitrogen, phosphorus and sulphur, though under natural vegetation most have a good topsoil structure and surface cover of growing vegetation and litter. Conventional tillage practices (mould-board or disk plough) lead to soil structure deterioration, loss of nutrients and erosion. Commercial farmers usually try to maintain or improve nutrient levels through the application of fertilizer and may incorporate some of the crop residues into the soil. Traditional farmers may apply manure or small amounts of fertilizer, or may harvest so little that crop produce removal hardly affects nutrient levels. Although conservation tillage and other improved farming practices may help restore the organic matter content and topsoil structure, soil loss through erosion is basically an irreversible process.

Zimbabwe's agrarian structure is historically dualistic, with large-scale commercial farming on the one hand and small-scale subsistence production on the other. Seventy per cent of Zimbabwe's soils are sandy and inherently infertile, low in organic matter and prone to leaching. Nitrogen (N) and phosphorous (P) are the most limiting factors, with multiple micronutrient deficiencies in degraded areas. Soils are largely low pH (acidic) which reduces the effectiveness of nutrient inputs. A number of methods have been used historically by smallholder farmers for soil fertility management in Zimbabwe. The most important of these include the addition of soil organic matter (SOM) through a variety of sources including soil from ant heaps; animal manure especially from cattle and humus from rotting leaves; and nitrogen fixing including through agroforestry, rotations with grain legumes like groundnuts, tree legumes like *Faidherbia albida,* and intercropping of cereals.

2.11 The Agricultural Economy of Zimbabwe

Zimbabwe is divided into five agro-ecological zones known as Natural Regions (NRs). The quality of the land and natural resource base declines from NR I through to NR V. Small-scale farming households tend to be concentrated in zones that are less amenable to agricultural production. Zimbabwe's total land area is over 39m ha with an estimated 16m ha of agricultural land. Urban settlements, national parks and wildlife conservancies comprise around 6m ha. Based on soil quality, vegetation and rainfall regime, among other factors, the country is divided into five agro-ecological zones known as Natural Regions (NRs) (Figure 2.4). The quality of the land and natural resource base declines from NR I through to NR V (Moyo, 2000). The major determinant of agricultural production patterns in Zimbabwe is rainfall. Generally, crops are planted at the beginning of the rains in November/December and harvested

between April/June of the following year. In the dry season, various horticultural products, barley, and winter wheat grow under irrigation. Irrigation schemes are also key in enhancing tobacco, maize, cotton, soya beans, groundnuts and coffee production.

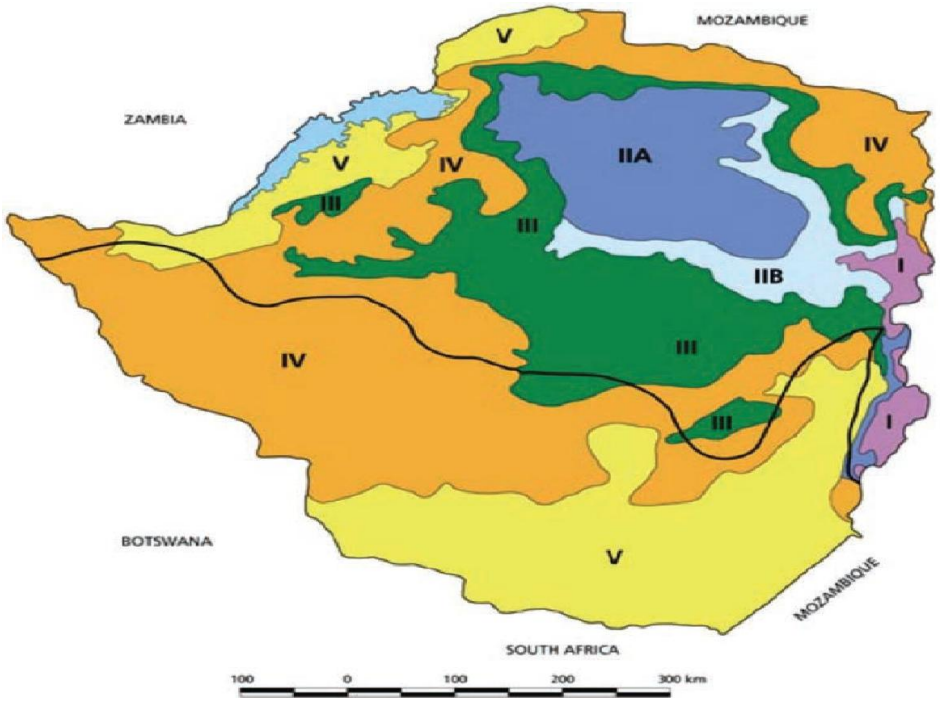


Figure 2. 1: Five Agro Ecological Zones
Source: (FAO, 2006.)

Manicaland is in region I and Region 2 receiving rainfall above 600 ml per year round and Specialised and diversified farming: dairy, forestry, tea, coffee, fruit, beef, summer Intensive farming: maize, tobacco.

Prior to the fast track land reform programme, communal farmers farmed on about 50% of the country's agricultural land. Roughly 30% of the agricultural land was under large-scale private ownership which comprised about 5 000 large-scale commercial farmers with very sophisticated production systems. Most of the remainder of the land was under resettlement or utilised by smallholder farmers

outside the communal areas, with the state holding a very small portion of land. While land reform has altered the agrarian structure this has not been a complete transformation as the communal areas have remained the same. The Resettlement programme more than doubled its share of the land area by 2007. There was a 20% rise in the land area under medium-scale farms, off a relatively low base, but the area under large-scale farms dropped sharply. It had already dropped by 25% from independence to 1999, but in the period from 1999 to 2007, the land area under large-scale farms decreased by a further 58%. While the fast track land reform programme has led to important redistribution, the overall agrarian structure inherited from Zimbabwe's colonial between communal and commercial land remains intact. Fast track land reform overall appears to have resulted in a shift towards smaller and more diversified production units than in the past, which has implications for agricultural technologies and their dissemination. This shift has taken place during the period of Zimbabwe's extensive economic and political crisis, which has not yet relented. Appropriate agricultural support is essential for a productive sector, but external investments are few and far between and systems and institutions have shrunk or decayed. Agriculture plays a key role in the Zimbabwean economy, contributing 14–18% of the formal gross domestic product (GDP), over 40% of recorded national exports, close to 60% of raw materials to agro-industries, and generates livelihoods for over 70% of the population.

2.12 Distribution and Marketing

The two companies that produce fertilizer compounds and blends in Zimbabwe distribute their compounds, straights and blends to wholesalers and retailers, who constitute the dominant marketing channels for fertilizers. The other distribution

channel is the public-sector input support scheme through which the State purchases fertilizers for distribution to farmers. Large agro traders, including farmers' buying cooperatives and syndicates or input-buying clubs, obtain stocks from the producers for onward sale to farmers. Individual farmers and agro supply retailers also buy fertilizers directly. Entry into and exit from the sector is easy. There are no legal restrictions on the types and numbers of marketing channels (FAO, 2006).

In the smallholder subsector (mainly communal lands and resettlement areas), the supply of inputs is mainly through general dealers and small agro dealers. These operators have the advantage of proximity to the farmers. Some private-sector agro firms involved in buying tobacco, cotton and sorghum have their own input support or loan schemes through which they acquire fertilizer for distribution to the producers of the relevant commodities. The farmers reimburse by selling their commodities to the companies. A number of non-governmental community development organizations, Care International, World Vision and Citizens Network for Foreign Affairs working with the ACFD ran a programme for training and establishing agro dealers in smallholder areas. About 2 000 dealers were trained in the basic principles of storing, retailing, pricing and service (FAO, 2006).

2.13 Public-Sector Distribution Channel System

The government agencies involved in fertilizers include agricultural extension departments and parastatals, the Grain Marketing Board (GMB) and the Agricultural and Rural Development Authority (ARDA). The GMB is responsible for the importation, storage, transport and wholesaling of the main food grains, i.e. maize and wheat. The ARDA is responsible for running State farms as well as promoting

rural and agricultural development through infrastructure support and development. These channels are used by the Government to supply subsidized fertilizers, seeds and other inputs to smallholders on communal lands, resettlement areas and to A1 and A2 farmers in the new farming areas. Because of bureaucratic ordering and distribution processes and the limited amount of money, not all farmers are able to access fertilizers in a timely manner through this system. However, the major problem has been the failure by some of the farmers to repay the sums they have borrowed.

2.14 Cooperatives

After achieving majority rule in 1980, the Government promoted the establishment of input supply and production cooperatives. However, very few input supply cooperatives are currently functioning.

2.15 Government Role in Promoting Fertilizer and Agrochemical Supply Use

The Government of Zimbabwe has established some measures for promoting the supply and use of fertilizers. These include:

- price controls fixing the maximum wholesale and retail prices for agricultural inputs;
- subsidized credit scheme for input purchases;
- crop input schemes providing seeds, fuel and fertilizers to smallholder farmers;
- Support for the agro-input dealer programmes.

2.16 The Fertilizer Sub Sector

Figure 2.3 showed that fertilizer in Zimbabwe is supplied through a mixture of domestic production and imports (commercial and aid imports). On the domestic market, Sable Chemicals and Zimphos have comparative advantages in the production of ammonium nitrate and phosphate fertilizers respectively and they supply them to ZFC and Windmill in proportions to their market shares FAO (2006) and this have in the past benefited Sable and Zimphos because they reduced inventory costs, and ZFC and Windmill had guaranteed raw material supply. The donor community have been actively providing relief fertilizer to vulnerable smallholder farmers since 2000, following food insecurity problems stemming from chaotic agrarian reform, series of droughts and political instability. To support the agrarian reform programme, the Government started distributing subsidized fertilizer to newly resettle and smallholder farmers through state agencies (e.g. Grain Marketing Board (GMB). The programme was however plunged by bureaucracy, corruption and arbitrages by the recipient farmers. On the other hand a few Non-Governmental Organizations have been pilot testing fertilizer distributions through retail shops.

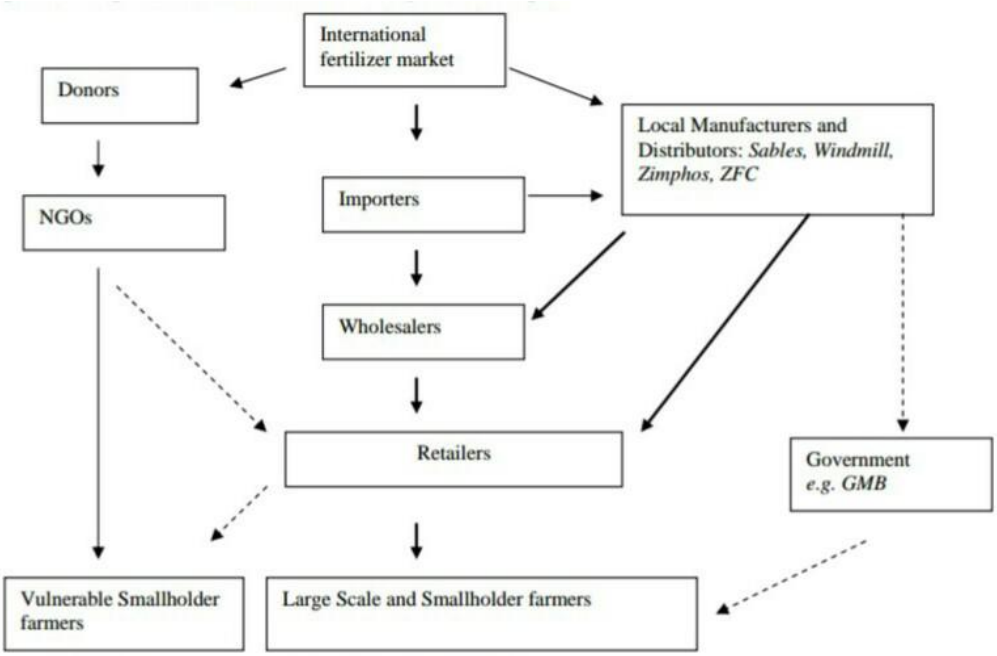


Figure 2.1: The Current Fertilizer Sub Sector in Zimbabwe

Source: (FAO, 2006)

A major constraint facing distributors is the above-mentioned general shortage of fertilizers. The shortage is in terms of both absolute quantities and timing. Some fertilizers arrive well after peak application time. The distributors then have to carry over large unpurchased stocks. Another problem concerns the price controls. These result in reduced profit margins, particularly for rural traders who face high transportation costs. The Government input schemes through which fertilizers are provided to farmers through the GMB and other government agencies also have an adverse impact on agro dealers as they reduce the quantities purchased from the dealers. A further constraint is the lack of storage capacity among small agro dealers.

2.18 Factors Affecting Fertilizer Use by Farmers

Fertilizer use in the large-scale commercial farming subsector declined sharply between 2000 and 2004, the production of the major cash crops such as tobacco, cotton and soybeans being disrupted by the agrarian reform programme (Mashingaidze, 2004). Crop production by the new farmers who took over the land from white commercial farmers' remains depressed at a level well below that of the former farmers. The majority of the A2 farmers had not begun production by 2003. A significant number of A1 farmers were farming with reduced levels of fertilizer use. Fertilizer consumption by smallholders is low and variable because of several economic, political, technical and institutional factors (Bhandari, 2004). These include the poorly developed marketing system, which results in fertilizers often being unavailable to farmers when they need them. Most smallholders have to travel long distances to purchase fertilizer. The increases in rural bus fares as a result of fuel price increases since 2001 have made the purchase of fertilizers in urban centres expensive. Fertilizers in local shops tend to be more expensive as dealers increase their margins to cover their transaction. Prior to 2001, most fertilizers were sold in 50-kg bags but many farmers needed to buy in smaller quantities of 5 kg and 10 kg. It is estimated that only one-fifth of smallholder farmers use fertilizers. One factor is the non-availability of finance as the demand for fertilizer is heavily dependent on the availability of credit and cash. The majority of smallholder farmers on the communal lands and resettlement areas and the new farmers lack the finance to purchase and use adequate fertilizer levels. In the period immediately after majority rule in 1980, the availability of subsidized credit and cash income from the sale of food and cash crops drove smallholder fertilizer demand. Fertilizer was affordable because producer prices were high in relation to the fertilizer prices. According to

Zimbabwe Farmers' Union [ZFU] (2002), smallholder farmers then reduced their fertilizer procurement following the Structural Adjustment Programme in 1990 as a result of the increase in the prices of fertilizer and other inputs.

2.18 Summary

The literature review has covers concepts of demand and supply situations at two levels. The first level demonstrated by supply 1, decepts relatively inefficient fertilizer sub sector to a small quantity at a relatively high price. The fertilizer industry needs to be rejuvenated, so that it will deliver fertilizer efficiently to farmers at a low cost by delivering large quantities. The study also showed that there are several factors that affect the fertilizer and agrochemicals industry. The conceptual framework of Agribusiness supply chains was explained and their performances grouped into efficiency, flexibility, responsiveness and quality. Research has identified the positive effect of organizational climate on salesperson performance salesperson satisfaction, and team productivity and that organizational culture is related to sales performance, business performance, and customer satisfaction. The chapter also extensively discussed literature on soil fertility in Zimbabwe that has an impact on fertilizer uptake, also the importance of agricultural economy in Zimbabwe. Lastly, critical review and gap in the literature was explained.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This chapter outlines the methodological perspective that was adopted in conducting the study including the reasons for the selection. The chapter discussed the study's research design that was used. The chapter presents the population, sampling procedure, as well as the research instrument used for collecting primary data. The chapter also presents data collection procedures, ethical considerations, validity and reliability, as well as the data analysis procedures used.

3.2 The Research Design

Research design is the basic plan that indicates an overview of the activities that are necessary to execute the research projects. There are various distinctions used for classifying research designs but the most common mode of classification is grouping into either qualitative or quantitative. The suitability of a research design for a given study is determined by the context, purpose and nature of the research study in question (Cooper, 2010). For purposes of this study, the researcher used both quantitative research design and qualitative to assess sales performance of fertilizers and agrochemicals in Manicaland province.

A qualitative research design seeks to understand research phenomena in its natural setting. In addition, a qualitative research design seeks to understand not only people, but also their social and cultural contexts within which they live (Barbour, 2008). Under a qualitative research design, the researcher is also considered the primary instrument for the collection and analysis of data. Moreover, qualitative research

designs collect primary data using open ended textual data through interviews and focus group discussions. According to Easterby-Smith, Thorpe and Jackson (2012) who argue that a qualitative research design is constructed to stress the relationship between the researcher and the topic under study.

Quantitative research designs seek to measure variables and express any causal relationships between these variables using inferential statistics such as correlations, regressions, relative frequencies or differences between means (Bouza & Al-Omari, 2012). The main basic purpose of a quantitative research design would be to describe, and for comparisons. Most quantitative research designs make use of experiments and surveys to gather data, which will be analysed using statistical methods.

Since the findings from the study are expected to be factual elements comprising of descriptive statistics, a quantitative research design was found appropriate. According to Hussey and Hussey (2007), a quantitative research design may be adopted for a study, because it is reliable and it uses structured tools to generate numerical data. A quantitative research design uses statistical methods to interpret, organize and present the collected data.

Descriptive survey methods were used in this study to capture the qualitative and quantitative variables that are important in explaining the relationship between demand and supply of fertilizer and agrochemicals in an agricultural enterprise. Descriptive research is used to obtain information concerning the current status of the phenomenon to describe, "what exists" with respect to variables or conditions in a situation. According to Singh (2006) says "in survey we are concerned with conditions or relationships that exist, practices that prevail, beliefs, points of view or

attitudes that are held, processes that are going on, influences that are being felt, and trends that are developing".

3.3 Source of Data

Both primary and secondary data were used. The secondary data was archived data from Zimbabwe Fertilizer Company sales data of previous years. Interviews with structured and semi structured questions were also used. The questionnaires were used to collect data.

3.4 Population and sampling

3.4.1 Population

Punch (2003) defines population as the total target group who would, in the ideal world be the subject of the research and about whom one is trying to say something. A population is a complete set of cases or group members (Saunders, 2000). The population of the study are fertilizers and agrochemicals customers in Manicaland. They are the ideal population because of convenience to the researcher. The population was 200 (those who bought more than 10 tonnes per season) that consist of small scale farmers, large scale farmers, agro dealers, stockists, Non-Governmental Organisation and who are into farming in Manicaland, that is, Mutare, Makoni, Mutasa, Buhera and Nyanga districts. Usually, the minimum and acceptable sample size for a quantitative research design would be 30% of the population (Blenkinsop & Zdunczyk, 2014).

3.4.2 Sampling

Both probability and non-probability sampling techniques were used in the study. For probability sampling, random sampling was employed. For non-probability

sampling, convenience sampling was used since there is a lot of privacy involved with agricultural companies. The researcher also used stratified random sampling is to achieve desired representation from various subgroups in the population. In stratified random sampling, subjects are selected in such a way that the existing subgroups in the population are more or less reproduced in the sample. In stratified sampling, the population is divided into two or more groups using a given criterion and then a given number of cases are randomly selected from each population subgroup. The sub-groups were divided into districts and the customers were subdivided into farmers, NGO and Agrodealers that were randomly picked using hat method.

3.5 Sample Size

A total of 60 participants (20 farmers, 20 agro dealers, 20 Non-Governmental organisations were randomly selected and given a questionnaire. 12 participants were randomly selected in each District that is from Mutare, Nyanga, Mutasa, Makoni and Buhera Usually, the minimum and acceptable sample size for a quantitative research design would be 30% of the population (Blenkinsop & Zdunczyk, 2014; Scandura & Williams, 2013).

3.7 Data Collection Instruments

3.7.1 Questionnaire

Questionnaires that were structured were used as the study's main research instrument. On developing the questionnaire convert the research question in the simple understanding to cater for all aspects of sales analysis. Open-ended questions were set to gather as much information meaningful as possible from the consumers and were arranged. The semi-structured questionnaires were used as a

data collection tool in this study. The questions were standardised so that the respondents were be able to interpret the questions the same way. A letter requesting authorisation for, and assistance with the research was sent beforehand to all respondents through the ZFC Office. The survey introductory letter was attached to the questionnaire to introduce the researcher to the respondents and to outline the objective of the research. The letter also assured the respondent that all the information provided was very confidential. The researcher chose structured questionnaires for the study in effort to cover most important issues pertaining to sales of fertilizers and agrochemicals. Questionnaires also offer opportunities for clarifications required by respondents and they may be collected immediately after they have been fully completed. Furthermore, questionnaire requires minimal resources in terms of time, human resource and costs where literacy rates are high and respondents are cooperative. The literacy rate is high on the NGO and are more cooperative that is why less number of questionnaires were distributed to them.

Demographic and background data may also be gathered using this method. Other variables in the questionnaire include the value of chemicals and fertilizers consumed per season and from which company they got the inputs from and what was their consideration in purchasing fertilizers and agrochemicals. The questionnaires administered electronically and individually by the researcher, to cover respondents.

3.7.2 Pilot Study

According to Scandura and Williams (2013), questionnaires must be pretested in order to observe reactions and attitudes of the respondents. A pilot study was done to check if all the questions make sense to the respondents and they are able to understand them and answer in a meaningful way, as intended. It was noted

averaged time taken to complete three paged questionnaire was 15 minutes. Some questionnaires are sent electronically whilst others are handed directly to the respondents by the researcher and this gives the researcher an opportunity to introduce the topic and encouragement in answering the questionnaire. The feedback from the pilot study was used to revise the questionnaire before the commencement of the fieldwork.

3.8 Data Collection Procedure

The researcher used secondary data that has been reported in annual reports for ten years from Manicaland province, The Primary data was collected from the questionnaire that was distributed electronically and physically. Primary data is the data which is collected by the researcher directly from his own observations and experiences. Data is collected for the first time from a sample, representing a population. It is not published data, it is problem specific data collected by the researcher, first time. When primary data is published by the researcher, it becomes the secondary data for everybody, other than the researcher. The researcher collected primary data using a self-administered questionnaire in the selected respondents. The researcher also used stratified random sampling is to achieve desired representation from various subgroups in the population. In stratified random sampling, subjects were selected in such a way that the existing subgroups in the population were reproduced in the sample. In stratified sampling, the population is divided into two or more groups using a given criterion and then a given number of cases were randomly selected from each population subgroup. The subgroups were divided into districts, the customers were subdivided into farmers, NGO, and Agro dealers that were randomly picked Stratified random cluster sampling to divide their sample into clusters to make the administering of the questionnaire simpler and effective.

Questionnaires were sent out to Agrodealers, NGO and farmers in Manicaland. All questionnaires were to be distributed are with a cover letter assuring confidentiality of data and results. After the questionnaires were responded to, the researcher engaged into general discussions with the respondents pertaining to the topic of research. The data 60 collected in questionnaires was checked and organised by using SPSS and this package was also used as a tool for data presentation. . Secondary sources of data are those data sources, which are already published. It may be useful for many other people other than the researcher who has published it. Secondary sources offer interpretation or analysis based on primary sources. They may explain primary sources and often are used to establish a thread of an earlier academic conversation, to provide background information, to give more support to a specific thesis or argument, to persuade the reader to accept a certain point of view. The researcher used statistics from ZFC as a source of data in chapter one.

3.9 Validity and Reliability

In this study, the main purpose was to assess the buying behaviour of customers in purchasing fertilizers and agro inputs in Manicaland. An analysis of sales trends from year 2015 to 2017 was covered in this study.

According to Cohen, Manion and Morrison (2011) a research instrument has content validity if it is made up of items covering the real issues to be measured. For this research, content validity was assured through the use of extensive review of the literature pertaining to fertilizer and agrochemical consumption in Zimbabwe.

3.10 Analysis and Organisation of Data

Data from the field was combined, sorted and coded to come up with the necessary quality, correctness and accuracy. Data was entered into the computer system using

the Statistical Package for Social Sciences (SPSS v20.0) for presentation and analysis. The software program creates a data sheet that is used for analysis. SPSS statistical package was used to analyse both qualitative and quantitative data. Descriptive statistics in the form of frequency and percentages are also used to summarize and organize the data. Frequency tables, percentages and cross tabulations are used in the data analysis. The data was presented in the form of tables and graphs. Tables are very effective in presenting a large amount of data. Data is organised and it is made visible. Graphs are also used to make the communication of data easier.

For analysis of all the study, correlation and multiple regression analyses are used to establish the factors considered most when buying and to how significant is that factor. Correlation coefficient was used to measure relationships among various variables. Pearson's correlation was used to establish the relationships among the study variables at 90% confidence level. In order to establish the most contributory factors in the relationship between the variables, the multiple regressions will be conducted. Multiple linear Dummy variables with interactions between some variables used to establish the relationship between sales and predictor variable. The generalised regression model is of the form:

$$\boldsymbol{Y = \beta_O + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + B_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X + \varepsilon \ (error\ term)}$$

Where the β_O is a constant and β_1 to β_9 are the coefficients of the predictors/independent variables. The size and sign of each coefficient together with each sign explain the magnitude and direction of the relationship between the regress and regressor.

3.11 Ethical Consideration

The researcher sought and gets clearance from responsible authorities to carry out the research. The researcher sought and got clearance from Graduate Studies Committee to carry out the research. The researcher has an obligation to respect the rights, needs, values and desires of the respondents. All primary data collected from the respondents is treated with confidentiality, without any disclosure of their personal identity. The researcher ensures that anonymity of the participants is maintained throughout the study. All collected data was analyzed and reported only in aggregate form.

The researcher informed the participants on why the study was conducted. It was guided by the principles of informed consent which views unethical to collect data from people without informing them why the study was being conducted.

The researcher did not force the participants, they voluntarily contributed and were given the room to withdraw if ever they decided during the process of data gathering. Researcher gave the purpose and a brief description of the benefits reasonably to be expected. In order to address this, the researcher asked the participants to fill in consent forms.

The names of the respondents stayed unspecified and data collected was treated confidential. No names were written on the questionnaire and during interviews. The researcher also provided contact details and her personal email, in case there were further clarifications and concerns that needed to be addressed during the research.

3.12 Summary

This chapter discussed and justified the research methodology used to obtain data that was used to answer the research questions. The research used both qualitative

and quantitative methods and a descriptive survey was used. The questionnaire was developed based on the study's conceptual framework that is developed from the literature review. Data was collected in through the use of questionnaire. The use of each method was discussed and the presentation and analysis of data was also highlighted. Some ethical considerations are also covered. The chapter further provides an explanation of the statistical procedures used in analysis of the primary data.

CHAPTER 4 DATAPRESENTATION, ANALYSIS & INTRERPRETATION

4.1 Introduction

This chapter presents the research findings on Fertilizers and Agrochemical sales trends in Manicaland from year 2009 to 2019 at Zimbabwe Fertilizers Company in Zimbabwe. The research findings were derived from data obtained through ZFC annual reports and questionnaires that were directed at Farmers, Agrodealers and Non-Governmental organisations. Both quantitative and qualitative techniques were used. The data obtained was tabulated, analysed, and presented using SPSS version 20.0 statistical package. It highlights the summary statistics, discussions and summary of the findings.

4.2 Data Presentation and Analysis

4.2.1 Response Rate

The researcher distributed a total number of 90 questionnaires to Farmers, Agrodealers and Non-Governmental Organizations in Manicaland. Of the 90 questionnaires, 35 were administered to farmers, 30 to Agrodealers, and 25 to Non-Governmental Organizations. The results are tabulated below:

Table 4.1: Questionnaire Response Rate

Respondents	**Distributed Questionnaires**	**Received Questionnaires**	**Response Rate**
Farmers	35	19	54.2%
Agrodealer	30	20	66.6%
Non-Governmental	25	21	84%
Total	**90**	**60**	**66.67 %**

The highest response rate was from Non-Governmental Organization.

4.2.2 Demographic Data

Regarding the gender of the respondents, the study found that out of the 60 research participants 28 were males, whilst 32 were females. Therefore 46.7% of the study's respondents were male, whereas 53.3% were females. These findings are illustrated both in the table and column diagram below:

Table 4.1: Gender of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	28	46.7	46.7	46.7
	Female	32	53.3	53.3	100.0
	Total	60	100.0	100.0	

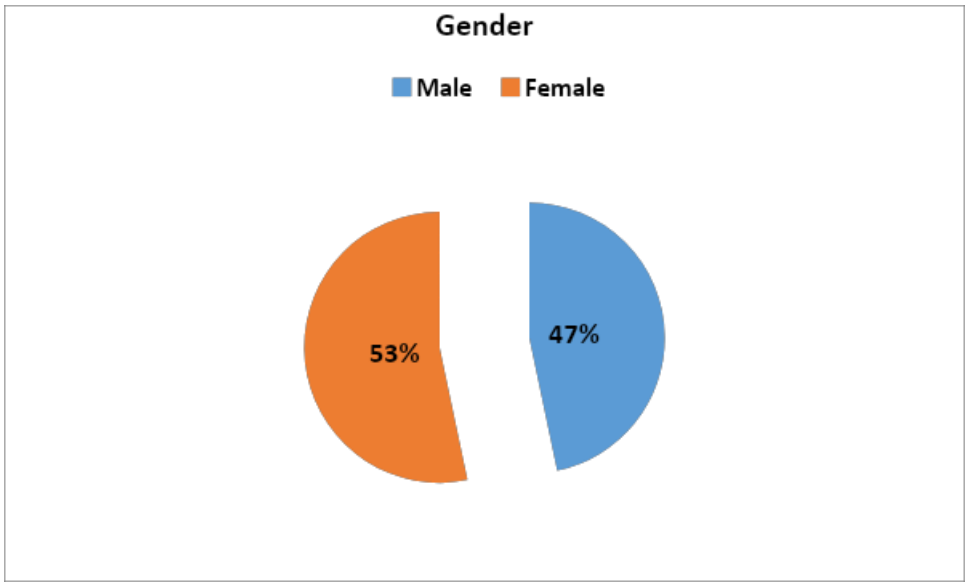


Figure 4.1: Gender of Respondents

4.2.3 Data Analysis

Multiple Linear Dummy Variable Regression (MLDVR) with interactions between some variables was used to establish the relationship between the dependent variables (Sales) and the predictor variables. The independent variables were of a

categorical nature with two levels. The independent categorical variables were modelled as dummy variables in order to enable the researcher to observe the effect of the regressors (independent variables) on the regress and (dependent).Once the categorical variables are appropriately coded and enter the regression their interpretation is similar to that in multiple linear regressions with continuous independent variables.

Setting the Level of Significance (Confidence Interval)

The level of significance is a key input into hypothesis testing. It controls the critical value and power of the test, thus having a consequential impact on the inferential outcome. It is the probability of rejecting the true null hypothesis, representing the degree of risk that the researcher is willing to take for Type I error. It is a convention to set the level at 0.05, while 0.01 and 0.10 levels are also widely used. However in order to correctly choose the p value to use a few important factors must be carefully considered when setting the level of significance. For example, the level of significance should be set as a decreasing function of sample size (Leaver, 1978). That is to say as sample size gets smaller the significance level (p value) should increase and vice versa. A good estimate of the margin of error (or confidence interval) is given by $1/\sqrt{N}$, where N is the number of participants or sample size (Niles, 2006). As such for this study the sample size was 60 and the significance level is set at 10% rather than 5% since the formulae proposed by Nile $(1/(\sqrt{N}))$ yields 12.9%.

4.3 Discussion and Interpretation

4.3.1 Objective 1: Fertilizer & Agrochemicals Sales at ZFC in Manicaland

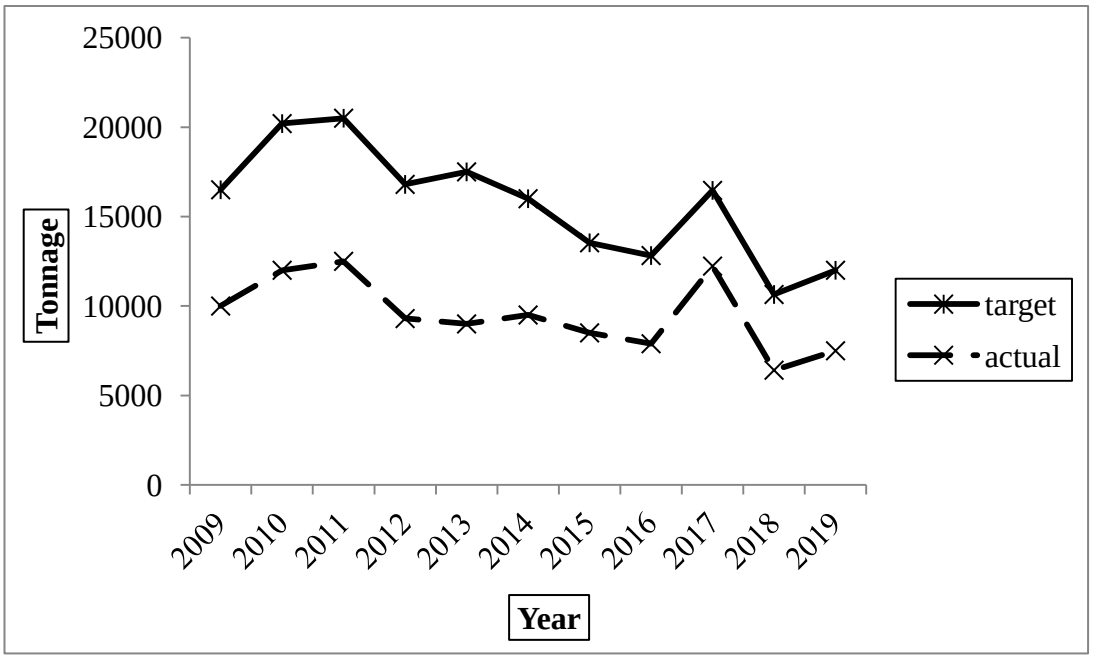


Figure 4. 1: Fertilizer Annual Consumption From Year 2009 To 2019

The above graph shows that from year 2009 to year 2011 was a gradual increase in fertilizer tonnage from 6 500 to 8 000 tonnes, from year 2011 to year 2016 there was a gradual decrease in fertilizer tonnage from 8000 to 4931 tonnes, from year 2016 to year 2017 there was a slight decrease from 4 931 to 4 232 tonnes, from 2017 to 2019 there was a slight increase from 4 232 tonnes to 4 500 tonnes. Overally there was a gradual decrease in sales in year 2009 to 2019 from 6 500 tonnes to 4 500 tonnes.

The slight decrease in fertilizer sales from 2016 to 2017 was due to the introduction of command agriculture since those people cited that they get their inputs from government. The slight increase from 2017 to 2019 was due to the fact that those who defaulted in repayment of command inputs were not given the next seasons so they were forced to buy themselves. Overally there was a gradual decrease in

fertilizer sales from 2009 to 2019 in both the target and the actual consumption of fertilizers in Manicaland. The factors cited was competition since the introduction of new fertilizer companies and also limited stock level to stock all the depots in Manicaland when the product was needed, farmers preferred to be given cash discounts and bulk delivery for free.

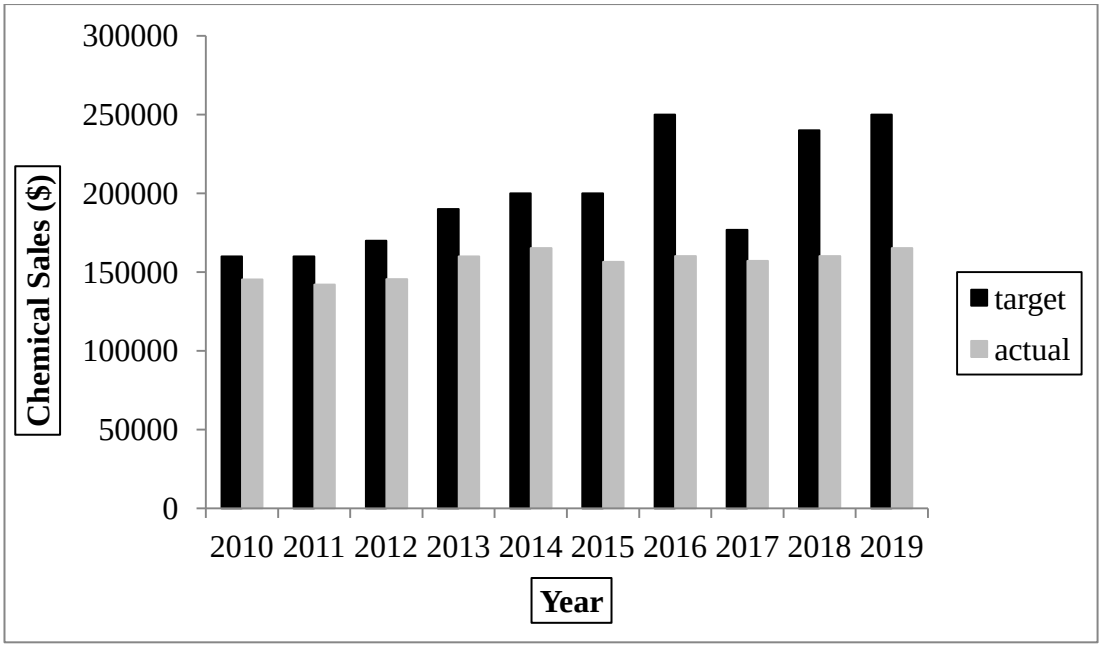


Figure 4. 2: Agrochemical Sales From Year 2009 To 2019

The above graph shows that from year 2009 to year 2010 was a gradual decrease of Agro chemical sales from $155 000 to $145 300, from year 2010 to year 2016 there was a gradual increase in Agrochemical sales from $145 300 to $160 000, from year 2016 to year 2017 there was a slight decrease from $160 000 to $157 082, from 2017 to 2019 there was a slight increase from $157 082 to $165 300. Overally there was a gradual increase in sales in year 2009 to 2019 from $157 082 to $165 300.

The slight decrease in fertilizer sales from 2016 to 2017 was due to the introduction of command agriculture since those people cited that they get their inputs from

government. The slight increase from 2017 to 2019 was due to the fact that those who defaulted in repayment of command inputs were not given the next seasons so they were forced to buy themselves. Overally there was a gradual increase in Agrochemical sales from 2009 to 2019 in both the target and the actual consumption of fertilizers in Manicaland. The factors cited was competition from new companies was low as farmers perceived that the chemicals were from China that is strength of brand, Technical advice on how to use the chemicals, promotional materials, product availability were among the reasons.

4.3.2 Objective 2: Shifts in Fertilizers & Agrochemicals Consumption

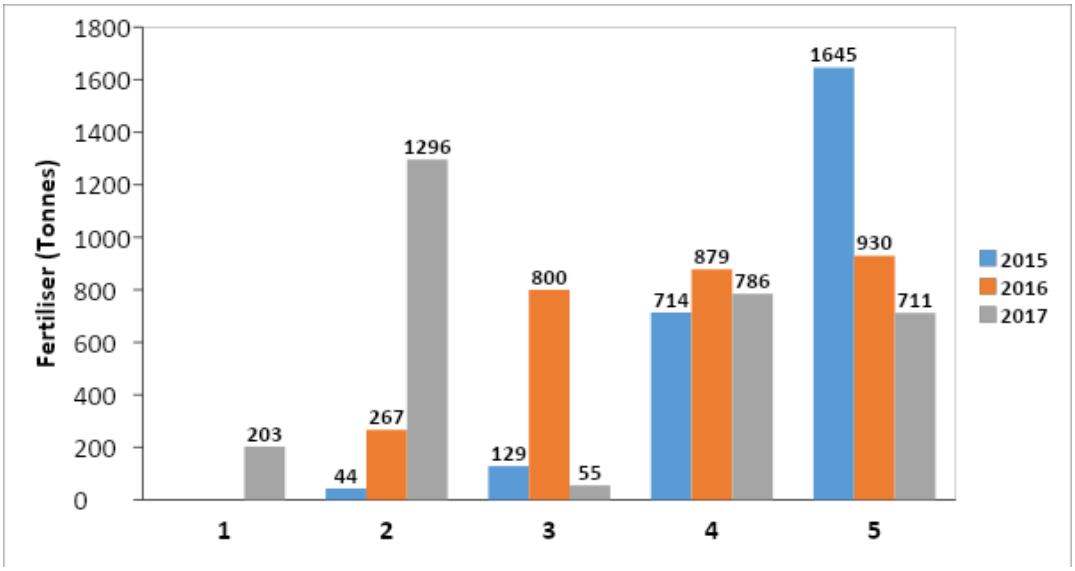


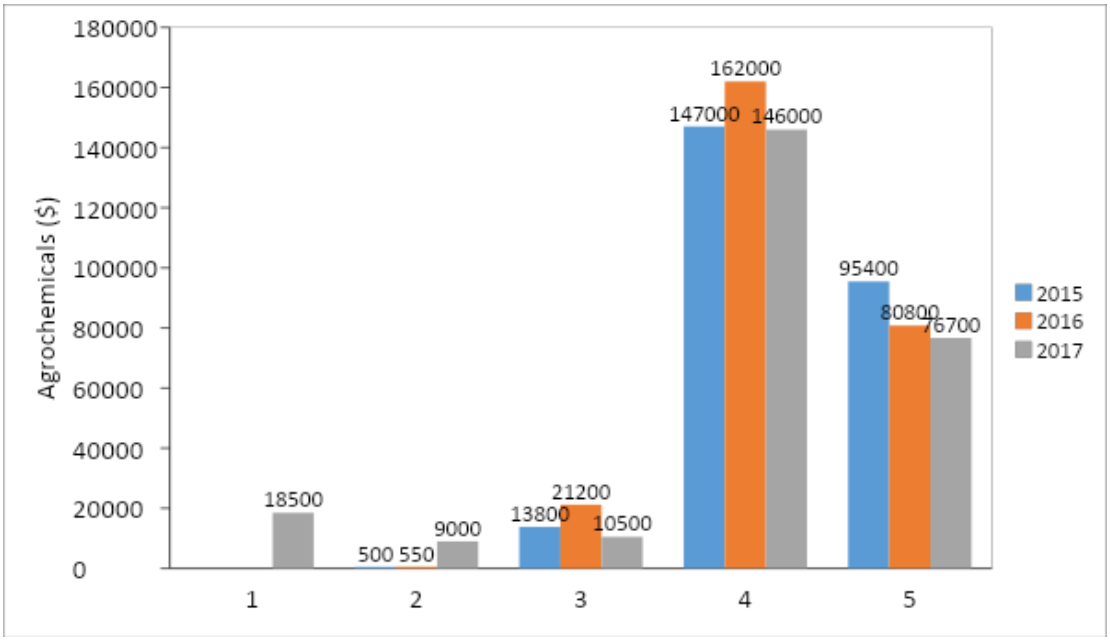
Figure 4.1: Fertilizer Consumption By Fertilizer Company

The above graph shows fertilizer consumption in Manicaland from the year 2015 to year 2017 by company. For government, there was no sales from 2015 to 2016, and then sales were from 2016 to 2017 this was due to the introduction of command agriculture.

Superfert there was a sharp increase in sales from 2015 to 2017, since it was a new company in the market it had low sales the when its brand gained popularity by offering affordable prices and their product were readily available it increases its sales and market share. Omnia fertilizers has much sales in the year 2006 this was because it won most of the tenders to Tobacco contracting companies to due competitive prices they offered. Windmill Company maintained their customers without much growth by first priorities their loyal customers when the product was in short supply

ZFC fertilizer sales sharply decreased from 2015 to 2016 this was due to completion from new companies in the market that were offering low prices and their product was readily available for the farmers.

To conclude, farmers cited that they considered price offered, product availability, bulk free delivery, credit facilities, package sizes, Technical support and promotional materials offered.



Govt Superfert Omnia Windmill ZFC

Figure 4.2: Agrochemical Annual Consumption Sales By Company

The above graph shows Agrochemical consumption in Manicaland from the year 2015 to year 2017 by company. For Government there was no sales from 2015 to 2016, then sales were from 2016 to 2017 this was due to the introduction of command agriculture.

Superfert and Omnia agrochemical names were not common in the market farmers perceived that they were from China and also they offered limited technical support on how to use the chemicals since they did not have sales agronomist based in Mutare.

Windmill Company maintained their customers without much growth by first priorities their loyal customers when the product was in short supply at affordable price and their brand was common in the market

ZFC fertilizer sales sharply decreased from 2015 to 2017 most farmers cited package size, did not offer credit facilities, product was not readily available, and high prices that its offered. Some farmers were happy with ZFC because it maintains its brand and it offered technical support on how to use the agro chemicals. To conclude, farmers cited that they considered price offered, brand strength, product availability, bulk free delivery, credit facilities, package sizes, technical support and promotional materials.

4.3.3 Objective 3: Sales Performance at ZFC Fertilizers & Agrochemicals

Table 4.1: Multiples Linear Dummy Variable Regression With Interactions

Research Question	**Purpose of the MLDVR**	**Dependent Variables**	**Independent Variables (Predictors)**
1. What are the causes for the shifts in fertilizer and agrochemicals sales in Manicaland from year 2009 to 2019?	**Investigating the (demand side)** Causes of Agrochemicals sales $ / Determinants of Agrochemical sales in Manicaland 2009 to 2019	**Agrochemical Sales ($)**	1. product availability 2. affordable price 3. credit facilities 4. strong brands 5. Promotional materials 6. Quality products 7. Delivery 8. Technical Support **9.** Credit affordability (Interaction term , showing joint effect of credit and affordability on the dependent variable)
	Investigating the (demand side) causes of Fertiliser Sales (tonnes) / Determinants of fertiliser sales in Manicaland 2009 to 2019.	**Fertiliser Sales (tonnes)**	1. Product Availability 2. Affordable price 3. Credit Facilities 4. Strong Brands 5. Promotional Materials 6. Quality Products

			7. Delivery 8. Technical Support **9.** Credit Affordability

Table 4.2: Determinants Of Agrochemicals Sales

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant β_o	8195.330	2911.624		2.815	.007
product availability (X_1)	**2281.978**	**1384.620**	**.224**	**1.648**	**0.06**
Affordablepric (X_2)	**2017.643**	**2357.123**	**.161**	**.856**	**.096**
credit facilities **(X_3)**	-3960.327	4133.799	-.427	-.958	.343
strong brands (X_4)	**1222.446**	**1126.134**	**.173**	**1.086**	**.083**
Promotional materials (X_5)	**834.209**	**4310.310**	**.031**	**.194**	**.047**
Quality products **(X_6)**	-953.025	1651.957	-.098	-.577	.567
Delivery **(X_7)**	1252.439	1151.176	.180	1.088	.282
Technical Support (X_8)	**346.157**	**2026.956**	**.025**	**.171**	**0.065**
Creditaffordabil	**5429.222**	**4355.968**	**.561**	**1.246**	**.019**

ity (X_9)						

In order to identify effect of the various factors on the agro chemical sales between 2009 and 2019. The data for the sales between 2009 and 2019 was collected and then centred (average). The Average Agrochemicals Sales (Y) was then used as the regress and in the regression. The generalised regression model is of the form:

$$Y = \beta_O + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + B_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X + \varepsilon \text{ (error term)}$$

Where the βO is a constant and β1 to β9 are the coefficients of the predictors/independent variables as shown in the table below. The size and sign of each coefficient together with each sign explain the magnitude and direction of the relationship between the regress and regressor.

The product availability, affordability, strength of brand, technical support and credit affordability (interaction term) were all found to be significant at 90% confidence interval (p=0.1). The easy availability of agro chemicals increases the sales by around $2282 or put in another way individuals/agents who indicate that agro chemicals are available in their locality may be shown to purchase agrochemicals worthy $2282 more than those who do not indicate that availability is there. The individuals/agents who indicate that the agro chemicals are affordable generally purchase agrochemicals worthy $2017 more than those who find them unaffordable, inversely if agrochemicals are affordable the sales of these are generally higher by up to $2017 more than for those sellers whose agro chemicals are relatively unaffordable. Where the customers perceive the brand of a company to be strong there is generally a positive impact on sales that may be shown by sales bigger than

the perceived brand by a magnitude of $1222 on average per year. Presence/availability of technical support has a positive influence on agrochemical sales, with individuals/agents who indicate that technical support is important generally inclined to spend $346 more on the agrochemicals than those who do not. Finally those who indicate that credit is an important factor and at the same time indicate that agrochemicals are affordable (credit affordability) tend to purchase agrochemicals worthy $5429 more than those who do not.

This is logical since availability of credit to an individual who already found the product affordable only amplifies the buying power of that particular individual, hence the very large influence on average agro chemical sales. To conclude chemical product availability, strong brands, technical support, Promotional materials and credit affordability were statistically significant at 90 % confidence interval.

Table 4.3: Analytic Model Coefficient of Fertilizer Sales

Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
	(Constant)	93.230	36.212		2.575	.013
	product availability	**-29.988**	**17.220**	**-.232**	**-1.741**	**.088**
	affordable price	-29.066	29.315	-.183	-.991	.326
	credit facilities	13.608	51.412	.115	.265	.792
	strong brands	-14.564	14.006	-.161	-1.040	.303
	Promotional materials	21.633	53.607	.063	.404	.688

	Quality products	-10.183	20.545	-.083	-.496	.622
	Delivery	15.125	14.317	.171	1.056	.296
	Technical Support	12.167	25.209	.069	.483	.632
	credit affordability	22.638	54.175	.184	.418	.678

Fertilizer product availability were found to be statistically significant at 90 % confidence interval. The product was found to be a factor influencing decision of to buy there was an additional fifteen availability and delivery was found to be statistically significant. Where the delivery of fertiliser's tonnes purchased compared to where it was not a factor. Inversely one may say that companies who deliver their fertiliser closer to the customers sell on average sell 15 tonnes more than those who do not. Product availability for fertiliser was found to be negatively related to the fertiliser sales. The farmers who cited that fertiliser availability was a factor in buying fertiliser spend $29 less than those who found it not to be a factor. This could be a result of presence of small agro-dealers who have the fertiliser in stock but inflate prices.

4.3.4 Objective 4: Strategies to Increase Sales in Manicaland

Table 4.1: Strategies To Increase Fertilizers And Agrochemicals Sales

2. What are the strategies to increase fertilizer and agrochemical sales in	**Evaluate effectiveness** of Strategies to increase fertilizer and Agrochemical sales	**Agrochemical Sales ($)**	1. credit facility strategy 2. promotional material strategy

Manicaland**?**	in Manicaland 2009 to 2019.		3. packaging size strategy 4. bulk delivery strategy **5.** credit affordability
	Evaluate effectiveness of Strategies to increase fertilizer and Agrochemical sales in Manicaland 2009 to 2019.	**Fertiliser Sales (tonnes)**	1. credit facility strategy 2. promotional material strategy 3. packaging size strategy 4. bulk delivery strategy **5.** credit affordability

The sales for agro chemicals between 2009 and 2019 were averaged and the Average Annual Agrochemical Sales regressed on strategies:

General Model: $Y = \beta O + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \varepsilon$

At 90% (p value=0.1) confidence interval the only strategy that was found to be significant statistically is that of using promotional materials. This strategy when used may yield an extra increase in sales of $1942 (X2) for a seller who uses it compared to one who does not, holding all other factors constant. Credit facility, packaging strategy and bulk delivery strategy are not statistically significant. The correlation coefficient is 62.3% meaning that model explains 62.3% of the observed change in the dependent variable. The coefficient of determination is however a bit low at around 38.8% (0.388) suggesting that the model is not a very good fit for the data. This may be partly attributed to the omission of questions on type of crops grown, type of soils in locality etc as these often are very influential in the choice of fertiliser and agrochemicals adoption. Comparison of the R and the Durbin Watson statistic shows that this is not a spurious regression. Regressing the promotional

material strategy on other regressor demonstrated that multi-collinearity was not a problem.

Table 4.2: Analytic Model on Agrochemicals Strategies

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	90.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Constant β_O	3682.445	918.030		4.011	.000	1841.109	5523.781
credit facilitystrategy (X_1)	1141.419	1433.728	-.132	-.796	.430	4017.113	1734.274
Promotiona materialstategy (X_2)	**1942.516**	**960.656**	**.279**	**2.022**	**.048**	**15.685**	**3869.347**
packaging size strategy (X_3)	-381.976	1127.951	-.048	-.339	.736	2644.360	1880.408
bulkdelivery stategy (X_4)	27.245	1042.957	.004	.026	.979	2064.662	2119.152
Creditaffordability (X_5)	1809.031	1685.832	.187	1.073	.288	1572.320	.382

a. **Dependent Variable:**

Table 4.3 : Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.623[a]	.388	.342	3476.11881	.104	1.231	5	53	.308	1.253

a. Predictors: (Constant), credit affordability, promotional material strategy, packaging size strategy, bulk delivery strategy, credit facility strategy

b. Dependent Variable: Average Annual Agrochemical Sales

Only promotional material as part of promotional material advertising strategy was found significant at 90% level interval.

Table 4.4 Model Summarry on Annual Tonnage

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	90.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Constant **βO**	36.073	11.485		3.141	.003	13.036	59.109
credit facilitystrategy **(X1)**	-4.051	17.937	-.037	-.226	.822	-40.028	31.927
Promotionalmaterialstategy (X2)	**22.289**	**12.019**	**.251**	**1.855**	**.069**	**-1.817**	**46.395**
packaging size strategy **(X3)**	3.731	14.112	.037	.264	.793	-24.573	32.035
bulkdelivery strategy (X4)	**5.995**	**13.048**	**.068**	**-.459**	**.087**	**-32.166**	**20.177**
Creditaffordability (X5)	27.155	21.091	.220	1.288	.204	-15.148	69.458

a. Dependent Variable: Average Annual Fert Tonnage Sold

Table 4.5 Model Summary On Depent Variable And Constant

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.68[a]	.462	.433	43.48887	.135	1.659	5	53	.161	1.267

a. Predictors: (Constant), creditaffordability, promotionalmaterialstategy, packaging size strategy, bulkdelivery stategy, credit facilitystrategy

b. Dependent Variable: AverageAnnualFertTonnageSold

Average Annual Fertiliser tonnage regressed on strategies:

General Model: $Y = \beta O + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \varepsilon$

The promotional material strategy was found to be statistically significant. With extra (additional) of 22.3 tonnes sold for those that use this strategy compared to those who do not. In addition the bulk delivery strategy was also found to be statistically significant (p=0.1) with an extra 6 tonnes sold by those who employ the strategy .The model fit is reasonable though not very good as shown by the coefficient of determination. The exclusion of crop data related questions and omission of this data as variables in the analysis could have contributed to this. However this kind of data is easily available in literature and may be used to augment this analysis by other researchers. The correlation coefficient is 68%, thus the model mostly explains the variation in the fertiliser tonnage (dependent variable). The added interaction term credit affordability computed from the cross product of credit and affordability is not statistically significant and may be omitted in the reduced model without any notable reduction in the R.

4.4 Summary

The chapter analysed the data findings collected from the study sample under consideration. It started by analysing the response rate, the gender variables and all the responses were analysed in both tables and graphs. Descriptive statistics, trend analysis was conducted using SPSS software package version 20. The study gave a comprehensive account of the responses and the trends in the study. The results showed that there was an overally gradual decrease of fertilizer sales from year 2009 to 2019. while the overall sales for agro chemicals gradually increased factors cited was technical advice to use chemical, product availability, product availability, strength of brand were cited as some of the factors. The introduction of command

agriculture has any effect on the sales performance in Manicaland. Meanwhile, product availability and price were singled out to be the major challenges for the shifting of fertilizers and agrochemicals from ZFC. Offering cash discounts and bulk free deliveries were some of the recommendations that were brought forward by farmers, agrodealers and NGOs to improve sales for ZFC. Promotional material and advertising strategy were found significant at 90 % confidence interval. The following chapter discussed the conclusions and recommendations of the study.

CHAPTER 5 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the findings, conclusions and makes necessary recommendations from all the data analysis presented in chapter 4. The chapter begins by giving a summary of the findings and brings how the research objectives were achieved using the collected data. All the conclusions, recommendations and areas of further research are also discussed in the context of the study's research objectives and research questions.

5.2 Summary

The first chapter looked basically at the background of the problem statements on sales performance in Manicaland at ZFC with highlights of the objectives of the research and the research questions. The chapter also looked at the research questions as well as the benefits of the study to various groups of people.

Chapter 2 has literature review that covered concepts of demand and supply situations at two levels. The first level demonstrated by supply 1, decepts relatively inefficient fertilizer sub-sector to a small quantity at a relatively high price. The fertilizer industry need to be rejuvenated, so that it will deliver fertilizer efficiently to farmers at a low cost by delivering large quantities. The study also showed that there are several factors that affect the fertilizer and Agrochemicals industry.

The conceptual framework of Agribusiness supply chains was explained and their performances grouped into efficiency, flexibility, responsiveness and quality. Research has identified the positive effect of organizational climate on salesperson performance salesperson satisfaction, and team productivity and that organizational

culture is related to sales performance, business performance, and customer satisfaction. The chapter also extensively discussed literature on soil fertility in Zimbabwe that has an impact on fertilizer uptake, also the importance of agricultural economy in Zimbabwe. Lastly, critical review and gap in the literature was explained

The third chapter discussed and justified the research methodology used to obtain data that was used to answer the research questions. The research used both qualitative and quantitative methods and a descriptive survey was used. The questionnaire was developed based on the study's conceptual framework that is developed from the literature review. Data was collected in through the use of questionnaires. The use of each method was discussed and the presentation and analysis of data was also highlighted. Some ethical considerations are also covered. The chapter further provides an explanation of the statistical procedures used in analysis of the primary data.

The fourth chapter analysed the data findings collected from the study sample under consideration. It started by analysing the response rate, the gender variables and all the responses were analysed in both tables and graphs. Descriptive statistics, trend analysis was conducted using SPSS software package version 20. The study gave a comprehensive account of the responses and the trends in the study. The results showed that there was an Overally gradual decrease of fertilizer sales from year 2009 to 2019. while the overall sales for agro chemicals gradually increased factors cited was technical advice to use chemical, product availability, product availability, strength of brand were cited as some of the factors. The introduction of command agriculture has any effect on the sales performance in Manicaland. Meanwhile, product availability and price were singled out to be the major challenges for the shifting of fertilizers and agrochemicals from ZFC. Offering cash discounts and bulk

free deliveries were some of the recommendations, which were brought forward by farmers, Agrodealers and NGOs to improve sales for ZFC. Promotional material and advertising strategy were found significant at 90 % confidence interval.

The challenge of low response rate to questionnaire was addressed by distributing more questionnaire, distributed 90 questionnaire but only 60 questionnaire was fully responded to of which it was within the accepted range. The challenge of accessing ZFC Manicaland sales data for previous years was solved by the clearance letter from Africa University stating the information is only for academics.

5.3 Conclusions

From the study results there was a gradual decrease in sales in year, the slight decrease in fertilizer sales from 2016 to 2017 was due to the introduction of command agriculture since those people cited that they get their inputs from government. The slight increase from 2017 to 2019 was because those who defaulted in repayment of command inputs were not given the next seasons so they were forced to buy themselves. Overally there was a gradual decrease in fertilizer sales from 2009 to 2019 in both the target and the actual consumption of fertilizers in Manicaland. The factors cited was competition since the introduction of new fertilizer companies and also limited stock level to stock all the depots in Manicaland when the product was needed, farmers preferred to be given cash discounts and bulk delivery for free. Overally there was a gradual increase in Agrochemical sales in year 2009 to 2019, the slight decrease in fertilizer sales from 2016 to 2017 was due to the introduction of command agriculture since those people cited that they get their inputs from government. The slight increase from 2017 to 2019 was because those who defaulted in repayment of command inputs were not given the next seasons so

they were forced to buy themselves. Overally there was a gradual increase in Agrochemical sales from 2009 to 2019 in both the target and the actual consumption of fertilizers in Manicaland. The factors cited was competition from new companies was low as farmers perceived that the chemicals were from China that is strength of brand, Technical advice on how to use the chemicals, promotional materials , product availability were among the reasons.

From the study, it was concluded that for fertilizers sales, Government there was no sales from 2015 to 2016, then sales were from 2016 to 2017 this was due to the introduction of command agriculture. Superfert there was a sharp increase in sales from 2015 to 2017, since it was a new company in the market it had low sales the when its brand gained popularity by offering affordable prices and their product were readily available it increases its sales and market share. Omnia fertilizers has much sales in the year 2006 this was because it won most of the tenders to Tobacco contracting companies to due competitive prices they offered. Windmill Company maintained their customers without much growth by first priorities their loyal customers when the product was in short supply. ZFC fertilizer sales sharply decreased from 2015 to 2016 this was due to completion from new companies in the market that were offering low prices and their product was readily available for the farmers. In summary, farmers cited that they considered price offered, product availability, bulk free delivery, credit facilities, package sizes, Technical support and promotional materials offered to purchase fertilizers. For agrochemical sales, Government there was no sales from 2015 to 2016, then sales were from 2016 to 2017 this was due to the introduction of command agriculture. Superfert and Omnia agrochemical names were not common in the market farmers perceived that they

were from China and they offered limited technical support on how to use the chemicals since they did not have sales agronomist based in Mutare.

Windmill Company maintained their customers without much growth by first priorities their loyal customers when the product was in short supply at affordable price and their brand was common in the market. ZFC fertilizer sales sharply decreased from 2015 to 2017 most farmers cited package size, did not offer credit facilities, product was not readily available, and high prices that it is offered. Some farmers were happy with ZFC because it maintains its brand and it offered technical support on how to use the agro chemicals. In summary, farmers cited that they considered price offered, brand strength, product availability, bulk free delivery, credit facilities, package sizes, Technical support and promotional materials offered.

The product availability, affordability, strength of brand, technical support and credit affordability (interaction term) were all found to be significant at 90% confidence interval (p=0.1). The easy availability of agro chemicals increases the sales, in another way individuals/agents who indicate that agro chemicals are available in their locality may be shown to purchase agrochemicals more chemicals value .The individuals/agents who indicate that the agro chemicals are affordable generally purchase agrochemicals more worthy chemicals than those who find them unaffordable . Where the customers perceive the brand of a company to be strong there is generally a positive impact on sales that may be shown by sales bigger than the perceived brand. Presence/availability of Technical support has a positive influence on agrochemical sales, with individuals/agents who indicate that technical support is important generally inclined to spend more on the agrochemicals than those who do not. Finally those who indicate that credit is an important factor and at

the same time indicate that agrochemicals are affordable (credit affordability) tend to purchase agrochemicals worthy more than those who do not.

This is logical since availability of credit to an individual who already found the product affordable only amplifies the buying power of that particular individual, hence the very large influence on average agro chemical sales. In summary, chemical product availability, strong brands, Technical support, Promotional materials and credit affordability were statistically significant at 90 % confidence interval. On fertilizers shifts, the product was found to be a factor influencing decision of to buy there was an additional fifteen availability and delivery were found to be statistically significant. Where the delivery of fertilisers' tonnes purchased compared to where it was not a factor. Inversely one may say that companies who deliver their fertiliser closer to the customers sell on average sell 15 tonnes more than those who do not. Product availability for fertiliser was found to be negatively related to the fertiliser sales. The farmers who cited that fertiliser availability was a factor in buying fertiliser spend $29 less than those who found it not to be a factor. This could be a result of presence of small agro-dealers who have the fertiliser in stock but inflate prices.

On agro chemicals strategy only promotional material as part of promotional material advertising strategy was found significant at 90% level interval. On fertilizer sales strategy, promotional material strategy was found to be statistically significant. In addition the bulk delivery strategy was also found to be statistically significant with an extra 6 tonnes sold by those who employ the strategy.

5.4 Implications

The implication of the decline sales trends to the company of ZFC is that it will tarnish its brand image, which it had built over a long period. The low sales means low profit for the company and it will find itself in deciding on the exit strategies such as sell out, bankruptcy or liquidation.

5.5 Recommendations

5.5.1 Fertilizer and Agrochemical Sales Assessment

There is need to use previous sales records and sales team performance to come up with realistic and achievable targets for the sales agronomist. The marketing manager should agree on realistic figures of the target that is agreed at before the beginning of the year .The farmers supported by Command agriculture need to be constantly be given agronomic and technical advice since some of the schemes does not give the farmers full package of inputs timeously and some the following season will not be supplied thereby get those sales.

5.5.2 Fertilizer and Agrochemical sales shifts in Manicaland

There is no small player in the fertilizer industry, have to treat any new company entering the market as a threat rather than depend on brand name. The brand name should be protected so that will retain loyal customers. Every ZFC employee should be proud of their brand and feel motivated to be in the organisation. There is need to have brand ambassadors that are rewarded yearly. There is need to have product available at affordable prices backed with technical support.

5.5.3 Causes of Sales Performance Shifts in Manicaland

The company should focus more on making sure the product is available near to the customers at affordable prices matching competitors. The image of the brand should be maintained and protected by also offering technical supports to every farmer using all the channels of communications. Bulk delivery and promotional material to be offered to the consumers by Sales Agronomist. The credit facility to farmers with bank guarantees at affordable interest rates given to qualify farmers that particular individual,

5.5.4 Strategies to Increase Fertilizers and Agrochemicals

The company should invest more on the advertising strategy to target the customers thereby improving on brand awareness. Farmers who has bought at least 10 tonnes within the radius of 100 km from the distribution centre should be delivered free to individual small farmer to do group buying. The Company should have its own 10 tonne truck in the province for delivery as increase sales for the province

5.6 Areas for Further Research

The research gives the reasons for the causes of sales performance shifts, but it does not give the profit levels for the company for each year because the sales might be low but have increased the profit margin hence the need for research in this area. The sales trends are yearly but need to be studied both per summer season and for winter season to see which season is ZFC strong and weak then come up with strategies to

increase the sales per season. To include crops grown and hacterage under cultivation is vital in the consumption of fertilizes.

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APPENDICES

APPENDIX 1: Informed Consent

My name is Herbert Dera, a Masters student from the Africa University. I am carrying out a study on "Fertilizer and Agrochemicals Sales Performance in Manicaland from year 2015 to 2017 at Zimbabwe Fertilizer Company in Zimbabwe." I am kindly asking you to participate in this study by filling in the questionnaire attached.

What you should know about the study:

Purpose of the Study:

The purpose of the study is to establish the Fertilizers and agrochemical sales performance at Zimbabwe Fertilizer Company in Manicaland, Zimbabwe as the case study. You were selected for the study because you are part of the study's target population. The study has 60 participants including yourself.

Procedures and Duration

If you decide to participate you will have to answer a questionnaire that the researcher developed to address the study problem. It is expected that this will take about Fifteen minutes of your time.

Risks and Discomforts

The research will not pose any known risks or discomforts to you as the research participant.

Benefits and/or Compensation

The study will benefit future researchers in the same field of study. Additionally, it is expected that the work will contribute to the Zimbabwe Fertilizer Company future on

developing marketing strategies that will be used to gain market share at the same time helping farmers to achieve their goals and retain Zimbabwe to be the bread basket for Africa.

Confidentiality

The responses given in the questionnaire will be used solely for study purposes and will not be disclosed to anyone they will be treated with confidentiality, names and any other identification will not be asked for in the questionnaires.

Voluntary Participation

Participation in this study is voluntary. If you decide not to participate in this study, your decision will not affect your future relationship with the researcher. If you chose not to participate, you are free to withdraw your consent and to discontinue participation without penalty.

Offer to Answer Questions

Before you sign this form, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think it over.

Authorisation

If you have decided to participate in this study, please sign this form in the space provide below as an indication that you have read and understood the information provided above and have agreed to participate.

---------- ----------

Name of Research Participant (please print) Date

Signature of Research Participant or legally authorised representative

If you have any questions concerning this study or consent form beyond those answered by the researcher including questions about the research, your rights as a research participant, or if you feel that you have been treated unfairly and would like to talk to someone other than the researcher, please feel free to contact the Africa University Research Ethics Committee on telephone (020) 60075 or 60026 extension 1156 email aurec@africau.edu

Name of Researcher: Herbert Dera

APPENDIX 2: Letter of Introduction

Dear Respondent,

My name is Herbert Dera, and I am a fellow Zimbabwe Fertilizer Company employee and an Africa University student studying toward an Executive Masters in Business Administration. In partial fulfilment of the program I am carrying out a study on "Fertilizer and Agrochemicals sales performance in Manicaland from year at Zimbabwe Fertilizer Company in Zimbabwe". I am kindly asking you to participate in this study by filling in the questionnaire attached. The responses given in the questionnaire will be used solely for the study purposes and will not be disclosed to anyone as they will be treated with confidentiality. Names and any other identification will not be asked for in the questionnaires. You were selected for the study because you're a ZFC customer off whom are the study's target population. It is expected that this will take about fifteen minutes of your time. The research will not pose any known risks or discomforts to you as the research participant.

Your participation in this study will be greatly appreciated and please be advised is voluntary. If you decide to participate, please feel free to ask any questions on any aspect of this study that is unclear to you. If you have any further questions concerning this study beyond those answered by the researcher including questions about the research, your rights as a research participant, or if you feel that you have been treated unfairly and would like to talk to someone other than the researcher, please feel free to contact the Africa University Research Ethics Committee on telephone (020) 60075 or 60026 extension 1156 or email aurec@africau.edu.

I thank you for your time.

_____

Herbert Dera – (Student Number 160714)

Contact: Cell+263772199168/+263774951090

Email derah@zfc.co.zw/herbertdera@gmail.com

APPENDIX 3: Questionnaire for Zimbabwe Fertilizer Manicaland Sales Assessment for the year 2015 to 2017

Researcher's name : Herbert Dera

Institution : Africa University

This research aims to determine Fertilizer and Agrochemical sales performance in Manicaland at Zimbabwe Fertilizer Company. Your open views and opinions are of paramount importance in achieving the objectives of this study. I kindly request you to respond to the questions below. Your participation in this study is voluntary and you will not be required to write your name on this questionnaire. Your responses will be treated as strictly confidential and data from this research will be used for academic purposes.

Instructions

1. Put your tick in the box or boxes provided to indicate your opinions as highlighted in the box below

[✓].

2. For open ended questions, fill in the space provided below each question. Use short sentences or words that you think will express your view adequately.

Zimbabwe Fertilizer Company (ZFC) Manicaland Sales Assessment Questionnaire for the year 2015- 2017

---

1. What is your gender?

Male

Female

2. Where is your Agricultural business district in Manicaland?

Mutare

Nyanga

Mutasa

Makoni

Buhera

3. Which farming trade are in ?

Farmer

Agrodealers

NGO

4. What was your annual consumption of fertilizers and Agrochemicals from 2015 to 2017

	Year 2015	**Year 2016**	**Year 2017**
Fertilizers (Tonnage)			
Agrochemicals ($)			

5. Which company supplied you with fertilizer and Agrochemicals for the period of 2015 to 2017 and the quantity purchased

	Company/ Govt	Fertilizers (tonnes)	Agrochemicals(Value $)
Year 2015			
Year 2016			
Year 2017			

Other and comment ----------

What was the biggest consideration you based your decision on ?

---

7. What are your three preferred suppliers and why?

a)----------
---

b)----------
---

c)----------
---

8. What incentives are being offered by competitors that you feel have an influence on your buying decisions?

---

9. Did you talk to any references about our products/ services? What did they have to say?

---

10. What was your experience with our team?

---

11. How would you rate ZFC product/ services? What in particular did you like or dislike?

a) like----------

---

b) dislike----------
---

12. What's the one thing you would advise us to change for next time?

---

13. What is our reputation like within the industry?

APPENDIX 4: AUREC Clearance Letter

AFRICA UNIVERSITY
(A United Methodist-Related Institution)
INVESTING IN AFRICA'S FUTURE

AFRICA UNIVERSITY
RESEARCH ETHICS COMMITTEE (AUREC)

P.O. BOX 1320, MUTARE, ZIMBABWE • OFF NYANGA ROAD, OLD MUTARE • TEL: (+263-20) 60075/60026/61611 • E-MAIL: aurec@africau.edu • WEBSITE: www.africau.edu

Ref: AU1010/19

8 May, 2019

Hebert Dera
C/O CBPLG
Africa University
Box 1320
MUTARE

RE: FERTILIZER AND AGROCHEMICALS SALES TREND ANALYSIS IN MANICALNAD FROM YEAR 2015 TO 2017 AT ZIMBABWE FERTILIZER COMPANY IN ZIMBABWE

Thank you for the above titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal
b) Questionnaires
c) Informed consent form

- **APPROVAL NUMBER** AUREC1010/19

This number should be used on all correspondences, consent forms, and appropriate documents.

- **AUREC MEETING DATE** NA
- **APPROVAL DATE** May 8, 2019
- **EXPIRATION DATE** May 8, 2020
- **TYPE OF MEETING** Expedited

After the expiration date this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before expiration date.

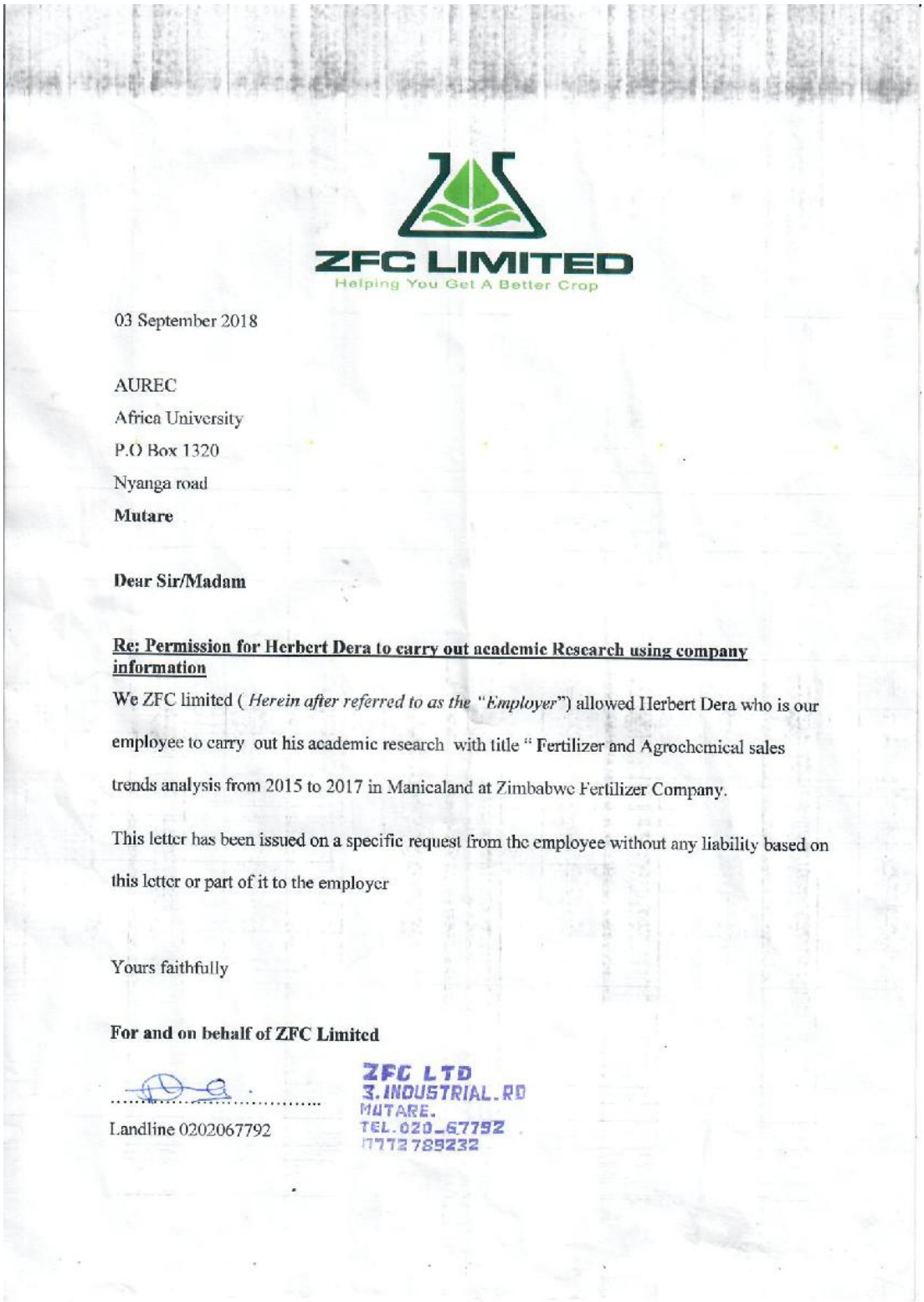
- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

AFRICA UNIVERSITY
RESEARCH ETHICS COMMITTEE (AUREC)
09 MAY 2019
APPROVED
P.O. BOX 1320, MUTARE, ZIMBABWE

Yours Faithfully

MARY CHINZOU – A/AUREC RESEARCH ETHICS OFFICER
FOR CHAIRPERSON, AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE

APPENDIX 5: Letter for Study Permission



ZFC LIMITED
Helping You Get A Better Crop

03 September 2018

AUREC
Africa University
P.O Box 1320
Nyanga road
Mutare

Dear Sir/Madam

Re: Permission for Herbert Dera to carry out academic Research using company information

We ZFC limited (*Herein after referred to as the "Employer"*) allowed Herbert Dera who is our employee to carry out his academic research with title " Fertilizer and Agrochemical sales trends analysis from 2015 to 2017 in Manicaland at Zimbabwe Fertilizer Company.

This letter has been issued on a specific request from the employee without any liability based on this letter or part of it to the employer

Yours faithfully

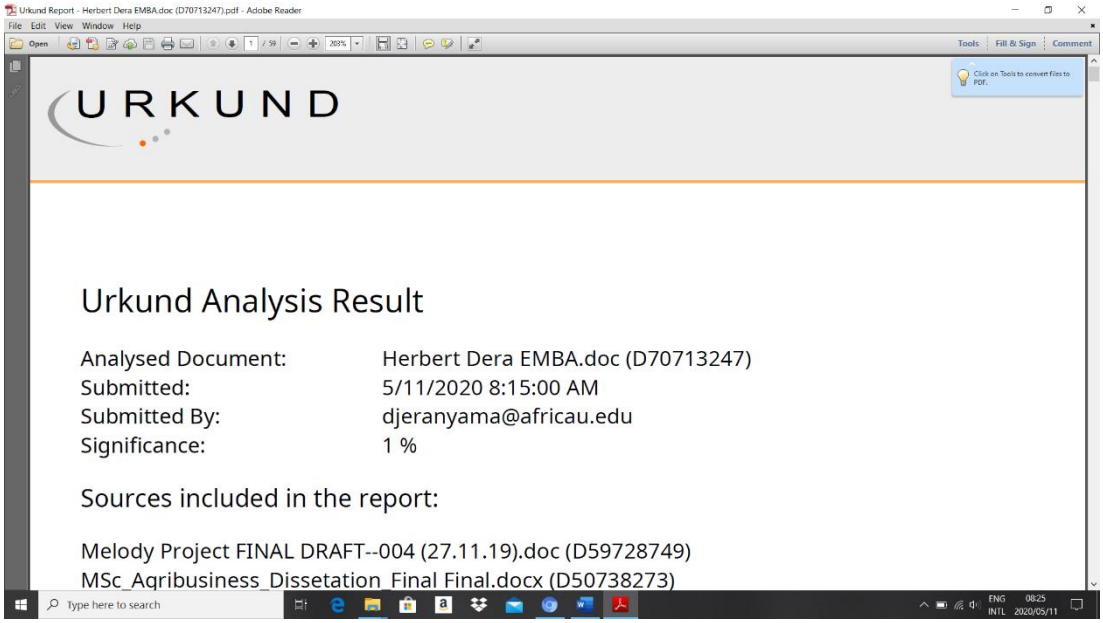
For and on behalf of ZFC Limited

.....

Landline 0202067792

ZFC LTD
3. INDUSTRIAL. RD
MUTARE.
TEL. 020_67792
0772 789232

APPENDIX 6: Anti-Plagiarism Report - Urkund



Urkund Report - Herbert Dera EMBA.doc (D70713247).pdf - Adobe Reader

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URKUND

Urkund Analysis Result

Analysed Document:	Herbert Dera EMBA.doc (D70713247)
Submitted:	5/11/2020 8:15:00 AM
Submitted By:	djeranyama@africau.edu
Significance:	1 %

Sources included in the report:

Melody Project FINAL DRAFT--004 (27.11.19).doc (D59728749)
MSc_Agribusiness_Dissetation_Final Final.docx (D50738273)