CAUSES AND EFFECTS OF SUPPLIERS' FAILURE TO MEET ORDERS ON TIME. A CASE OF FOOD RESERVE AGENCY.

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CERTIFICATE OF APPROVAL

This document by TOWELA ZIMBA is approved as fulfilling the requirements for the award of the MSc Operations, Projects and Supply Chain of the Graduate School of business of the University of Zambia.

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DEDICATION

I dedicate my dissertation work to my family and many friends.

A special feeling of gratitude goes to my loving and caring family whose words of encouragement and push gave me an extra impetus to complete the project. I will always be grateful for the rare gesture and unwavering support you rendered to me during the time of undertaking this project.

Above all I dedicate this work to my God the Lord almighty who is great and his grace fills the earth and the heavens.

Towela Zimba

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I, **TOWELA ZIMBA**, hereby declare that this work is wholly my own and all the work of other people have been dully acknowledged; and that it has never been previously produced nor presented at this University nor indeed any other institution for similar purpose.

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This research Project report has been submitted for Examination with my approval as University Supervisor.

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Date……

Eng. Dr. Kasongo Mwale Richard

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ACRONYMS & ABBREVIATIONS

CAADP Comprehensive Africa Agriculture Development Programme

CFT Cross-Functional Team

DAS Delay Analysis System

FRA Food Reserve Agency

GDP Gross Domestic Product

LLT Lean Live Tracking

LVHV Low-Volume High-Variety

MTO Make-To-Order

NAMBOARD National Agricultural Marketing Board

NCC National Council for Construction

NEPAD New Partnership for Africa's Development

OPD Original Promised Date

OTD On-Time Delivery

PARM Platform for Agricultural Risk Management

SPSS Statistical Package for Social Scientists

TOC Theory of Constraints

WFS World Food Summit

ZCF Zambia Cooperative Federation

ZPPA Zambia Public Procurement Authority

ABSTRACT

This research articulates the Causes and effects of suppliers' failure to meet orders on time at FRA for the crop marketing requisites. It was discovered that some of the challenges faced in the supply chain are supply and delivery of crop marketing materials to FRA, delivery times of materials, suppliers failing to meet orders on time and inefficient operation of FRA due to supplier failure to meet orders on time. Data was collected from 75 respondents from FRA staff, farmers who supply grain to FRA and suppliers who supply crop marketing requisites to which was analysed using statistical package for social scientists (SPSS) version 2.0 and Microsoft excel. It was concluded that some of the reasons for failure were lack of capital, lack of capacity for bulk supply and failure to plan execution by suppliers. Delayed delivery of orders and failure to execute contracts timely by suppliers resulting in delivery of poor quality material were some of the effects identified during data analysis. These challenges can be ironed out through establishing capacity building and order financing options with leading banks or financial institutions. There is need to encourage more manufacturers locally through creation of a policy that will favour new entrants into the industry. The study also recommended strengthening engagements with selected suppliers during the process of sourcing and delivering. There is need to come up with a way of clearing crop marketing requisites from suppliers timely so as to attract reputable companies to participate in the crop marketing requisites tenders. The bulk nature and high cost of crop marketing requisites requires a good cash flow by suppliers. FRA must consider having a funding model for requisites even in form of third party such as banks.

Key words: Food Reserve Agency (FRA), Food Security, Procurement, Supply Chain Management (SCM), Farmers, Suppliers, Crop Marketing Materials, Orders, Bidding.

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.1 Introduction

This introductory chapter gives the background to the study. The chapter also presents the problem the study investigated a brief statement of the anticipated usefulness of the study, the limitations and delimitations that governed the study is also included in this chapter. These reasons elicited the researcher's interest to study the causes and effects of supplier's failure to meet orders on time, particularly at the Food Reserve Agency.

1.2 Background to the Study

Maize is the most important grain crop in Zambia, being both the major feed grain for the animal feed industry and the staple food for the majority of the Zambian population.

The Food Reserve Agency (FRA) was established in 1995 by the Government through an Act of Parliament, Cap 225 of the laws of Zambia replacing the operations of the former National Agricultural Marketing Board (NAMBOARD) and Zambia Cooperative Federation (ZCF). FRA was established as a consequence of the various social and economic reforms Government embarked upon since 1991 aimed at creating a market oriented economic system in Zambia. As a result, the agricultural sector, including marketing of agricultural produce, was liberalized and this saw the Government reducing its participation. In executing its role the FRA buys grain from small scale to medium scale farmers in the outlying or rural areas of Zambia, stores and markets the grain. Grain is bought from small scale farmers during the crop marketing season which is announced by government and usually lasting five months between June and October. However, FRA buys grain starting around June/July when the maize moisture content level is below 12.5 percent. It is at this moisture content level that maize grain is dry enough for storage.

According to Lumba (2015) FRA aims at becoming an organization that efficiently manages sustainable National Strategic Food Reserves, ensuring National Food Security and Income through the provision of complementary and high quality marketing and storage services. The FRA's original mandate is to establish and administer a national food reserve alongside private grain trade and to serve as a moderate stock to cushion grain price variability and provide liquidity in the grain market. The FRA role in maize marketing in Zambia is partially because of the Government's wish to resolve the "food price predicament" by ensuring that

maize producers get a higher price, on the one hand while maintaining mealie meal prices at affordable levels for consumers, and particularly the vulnerable households (Deka, 2017).

The Ministry of Agriculture in Zambia indicates that there are three broad categories of farmers: small-scale, medium, and large-scale. Small-scale farmers are generally subsistence producers of staple foods with occasional marketable surplus. Medium-scale farmers produce maize and a few other cash crops for the market. Large-scale farmers produce various crops for the local and export markets. Most farmers are subsistence farmers. Agriculture contributes about 19 percent to GDP and employs three quarters of the population. Domestic production is comprised of crops such as maize, sorghum, millet, and cassava while exports are driven by maize, sugar, soybeans, coffee, groundnuts, rice, and cotton as well as horticultural produce. The Zambia territory is 75 million hectares (752,000 km2), out of which 58% (42 million hectares) is classified as medium-to high-potential for agriculture production. Zambia enjoys 40 percent of sub-Saharan water resources. Despite this, there is very little mechanical irrigation. The majority of farms are dependent on rain-fed growing cycles (ZDA, 2011).

The importance of nutrition for the development of a nation cannot be overemphasized. According to the Global Nutrition Report of 2015, Malnutrition has the potential to threaten the world's post-2015 development ambitions. Zambia has one of the highest rates of childhood under nutrition in the world. In 2014, stunting was reportedly 40% and wasting at 6%, alongside high levels of micronutrient deficiencies: 53% of school aged children are deficient in vitamin A, while 46% have iron deficiency anemia (Zambia Demographic Health Survey, 2014).

Maize is the predominant and staple crop accounting for 60-70 percent of cultivated land (Saasa, 1996). It is one of the most rain-fed crops grown in Zambia by small scale to medium scale farmers. In terms of value, it is the most important economic commodity next to copper and possesses considerable potential as an export earner (Saasa, 1996).

The Food Reserve Agency targets to reserve 500,000 metric tons of white maize annually and other designated agricultural produce for national food security. FRA procures empty grain bags and other crop marketing requisites through open bidding annually with delivery periods of up to 10 weeks. However, there have been government pronouncements in the recent past for the Agency to buy every grain from small scale farmers thereby increasing the quantities of crop marketing requisites. These pronouncements have come with challenges in procuring

more quantities than the average in crop marketing requisites. Other crop marketing requisites include bailing twine, pest control chemicals, platform scales, grain sieve sheets, black polythene sheets and crop marketing books. In the past 4 years the Agency has engaged over 50 suppliers of crop marketing requisites. The crop marketing requisite attracts various suppliers such as manufacturers and traders countrywide. As such, wide participation is received at FRA for these open bidding tenders.

The major crop marketing requisites that have poised to be a challenge in the supply chain are empty grain bags, pest control chemicals and polypropylene bailing twine.

FRA provides empty grain bags for crop marketing exercise at point of screening (sieving) to all the farmers that deliver to the depots. These empty grain bags are ultra violet rays treated, meaning they are able to withstand longer periods of exposure to sunlight without getting damaged. In order to maintain the stated qualities during handling and storage, the farmers are requested to transfer their maize into FRA bags after the maize is screened. The screening is the only consumption point for the empty grain bags. Once the maize is transferred into the FRA empty grain bags, the grain is weighed on the platform scales and sealed. The sealing process is done with the use of polypropylene bailing twine. The bailing twine has a fabric weave density of 1.0 grams per meter which helps to withstand the breaking of the bags once sealed due to pressure of stacking or handling. Pest control chemicals are provided for the control of insect pests and rodents during the procuring process and storage. The major chemicals provided are Aluminum Phosphide which is utilized the most in the fumigation process and 'Actor Super' which is provided in liquid form for routine residual spraying.

Table 1 below illustrates what FRA has been demanding from its suppliers and what had been supplied between 2015 and 2018. This table shows that for the period under study empty grains bags were not supplied as per order. Bailing twine balls and chemicals were only supplied according to the order in 2017 when the quantities requested where very little in comparison to other years (2015 and 2016).

Table 1: FRA orders demanded from its suppliers and the actual items supplied between 2015 and 2018

	2015		2016		2017		2018	
	Ordered	Supplied	Ordered	Supplied	Ordered	Supplied	Ordered	Supplied
Empty Grain Bags	20,000,000	12,846,500	20,000,000	15,625,000	3,000,000	950,000	4,500,000	2,700,000
Bailing Twine (balls)	35,000	20,490	28,000	23,490	8,000	8,000	4,000	4,000
Aluminium-Phosphide-Chemicals (kgs)	30,000	12,000	30,000	22,000	3,000	3,000	32,000	12,000

(Source: FRA).

The Agency also sets to procure various crop marketing requisites (empty grain bags, bailing twine, black sheets, tarpaulins, chemicals, platform scales). These requisites are procured through prescribed bidding process as a requirement in accordance with the Public Procurement Act as regulated by the Zambia Public Procurement Authority (ZPPA), being a public institution. The marketing requisites are procured through national open bidding which is above the K500, 000.00 thresholds due to their value. However, suppliers contracted annually to supply the crop marketing requisites poised to be a critical have consistently failed to meet targets and time frame. This affects operations, and timely procurement of national strategic reserves.

1.3 Statement of the Problem

For any organization to successfully carry out its operations in the modern, globalized business environment it needs to mobilize its suppliers to co-operate in order to reduce unnecessary costs and inefficiencies. It is logical that a problem in one part of the supply chain affects the workings and efficiency of the organization as a whole. FRA is one such organization which relies on its suppliers for the delivery of necessary materials for the purchase of maize. The requirement for the smooth operations is the procurement of matching crop marketing requisites to that of the grain targets through open bidding.

Annually, the agency targets to reserve 500,000 metric tonnes of white maize and other designated agricultural produce for national strategic security. However based on the records from the year 2015 to 2018, it has been observed that contracted suppliers fail to deliver on time or to execute contractual obligations. This presents a problem for the smooth running and timely delivery of FRA to the nation. If this is not addressed it will result in failure by the FRA to procure national strategic food reserve which will lead to food insecurity. The pertinent question that this study seeks to answer therefore is “what are the causes and effects of supplier’s failure to supply and deliver orders on time?”

1.4 Objectives of the study

The study objectives are of key importance as they will unlock the causes and effects of supplier failure to deliver on given orders. This is key in enabling a smooth supply chain of the necessary requirements. The study objectives consist of the main objectives and specific objectives of the study.

1.4.1 Main Objectives

To establish the causes and effects of suppliers failure to supply and deliver orders on time at FRA, with a view to improving delivery of materials

1.4.2 Specific Objectives of the Study

i. To establish effects of suppliers failing to meet orders on time to FRA**.**
ii. To determine measures to be put in place to improve delivery
iii. To analyze delivery times of materials
iv. To investigate the tender processing of supplying materials to FRA

1.5 General Research Question

What are the causes and effects of suppliers' failure to supply and deliver orders on time at FRA?

1.5.1 Specific Research Questions

i. How has the suppliers' failure to deliver on time affected the operations of FRA?
ii. What measures can be put in place to improve delivery of materials by contractors at FRA?
iii. What are the current delivery times for the supply of materials at FRA?
iv. What tender processes are in place for the supply of materials by FRA?

1.6 Justification of the study

It is evident that FRA has been having challenges with its suppliers in the past in terms of timely order delivery. However, it has been difficult to find studies that have been done in Zambia to establish the causes and effects, on the operations of the organisation, of suppliers failing to supply and deliver orders on time. This study fills this gap through establishing the causes and effects of suppliers failing to supply and deliver orders on time on the operations of an organisation, a case of FRA.

This study intends to investigate the causes and effects of suppliers failing to supply and deliver orders on time in the operations of the national strategic food reserve and also to the farmers that sell their crops to FRA. It is intended that the findings of this study will be useful to FRA in strengthening the acquisition, implementation of procurement of the requisites in its strategic national food reserves.

The study will also enlighten government and other policy makers to come up with strategies to alleviate challenges in national strategic food reserve. The study will also form a basis on which academicians can do further studies on national strategic food reserves.

If this study is conducted it will have practical solutions to solve issues faced by the national food basket, FRA.

1.7 Scope

Supply chain analysis is the study of how a product reaches a consumer, from the time demand is predicted to the time the good is delivered. It examines the performance of all players and activities involved in the supply chain. Food security is cardinal to every nation's welfare and the government is entrusted to ensure consistent supply of basic commodities through the Food Reserve Agency, FRA. In the recent past there has been some challenges which could have likely threatened food security. It is against this background that the research was conducted. The study was carried out at FRA, Head Office in Lusaka Zambia. Secondary data will be used for the period 2015-2018. All the Suppliers that supplied to FRA between the given years will be included in the research. This paper is about FRA and generalization to other organization might not be plausible. The target departments are procurement and supplies unit, and the Food Reserve Marketing departments within the FRA. Contractors will also be targeted in order to get the needed data for the analysis of causes and effects of suppliers' failure to supply and deliver orders on time at FRA.

1.8 Limitations

Maize is a staple food in Zambia, hence the need for huge quantities stored to maintain food security in the country. This is a study of the causes and effects for supply failure to meet orders as case study of FRA, the main buyer and storage for the grain on behalf of the State. The main objectives of this study were to investigate the tender processing of supplying materials to FRA, to analyze delivery times of materials at FRA, to establish effects of suppliers failing to meet orders on time to FRA and to determine measures to be put in place to improve delivery. The population sample selected was that of suppliers, farmers and FRA staff as it could reveal the necessary data for the research. The study only focused on the supply of critical crop marketing requisites. The years in study are 2015 to 2018 as they provide the most recent trends regarding the research topic and can be used as a basis for future action.

1.9 Delimitations

The study was based on information obtained and available. The research sample was from available participants which, to some extent, might not represent the whole sample size required in terms of geographic scope. Results will be affected by the activities that happened between 2015 to 2018.

1.10 Dissertation structure

This describes the structure of the dissertation. Chapter One is the introduction to this research and defines the problem statement and objectives of the research. Chapter Two delves into literature review from other scholars regarding the subject matter. Chapter Three focuses on the theoretical and conceptual framework of the research. Chapter Four focuses on the methodology while Chapter Five is the presentation and analysis of data. Finally Chapter Six looks at summary of the findings and conclusion.

1.11 Chapter Summary

Chapter One showed us that maize is the most important grain crop in Zambia, being both the major feed grain for the animal feed industry and the staple food for the majority of the Zambian population. It defined our problem statement - "what are the causes and effects of supplier's failure to supply and deliver orders on time?" Our main objective is to establish the causes and effects of suppliers' failure to supply and deliver orders on time at FRA, with a view to improving delivery of materials required for the crop marketing exercise.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In chapter two, both theoretical and empirical literature was discussed to place the study within the board of knowledge. The gap identified in literature was also identified, with a view to filling it. Finally the methodology was discussed. The methodology used in this study is one that helps the researcher to answer the research questions and make recommendations based on the findings.

The literature review focused on research from other scholars regarding the subject matter. It will look at empirical literature from a Global, African, Regional and local perspectives. It was critiqued and at the same time highlighted emerging issues.

Supply chain analysis is the study of how a product reaches a consumer, from the time demand is predicted to the time the good is delivered. It examines the performance of all players and activities involved in the supply chain. Efforts to improve processes and flows—termed "supply chain management"—focus on how to efficiently procure, manufacture, transport, warehouse, and distribute a good or service at the "right quantities, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements" (Lu, 2011). Figure 1: RUTF Supply Chain below.

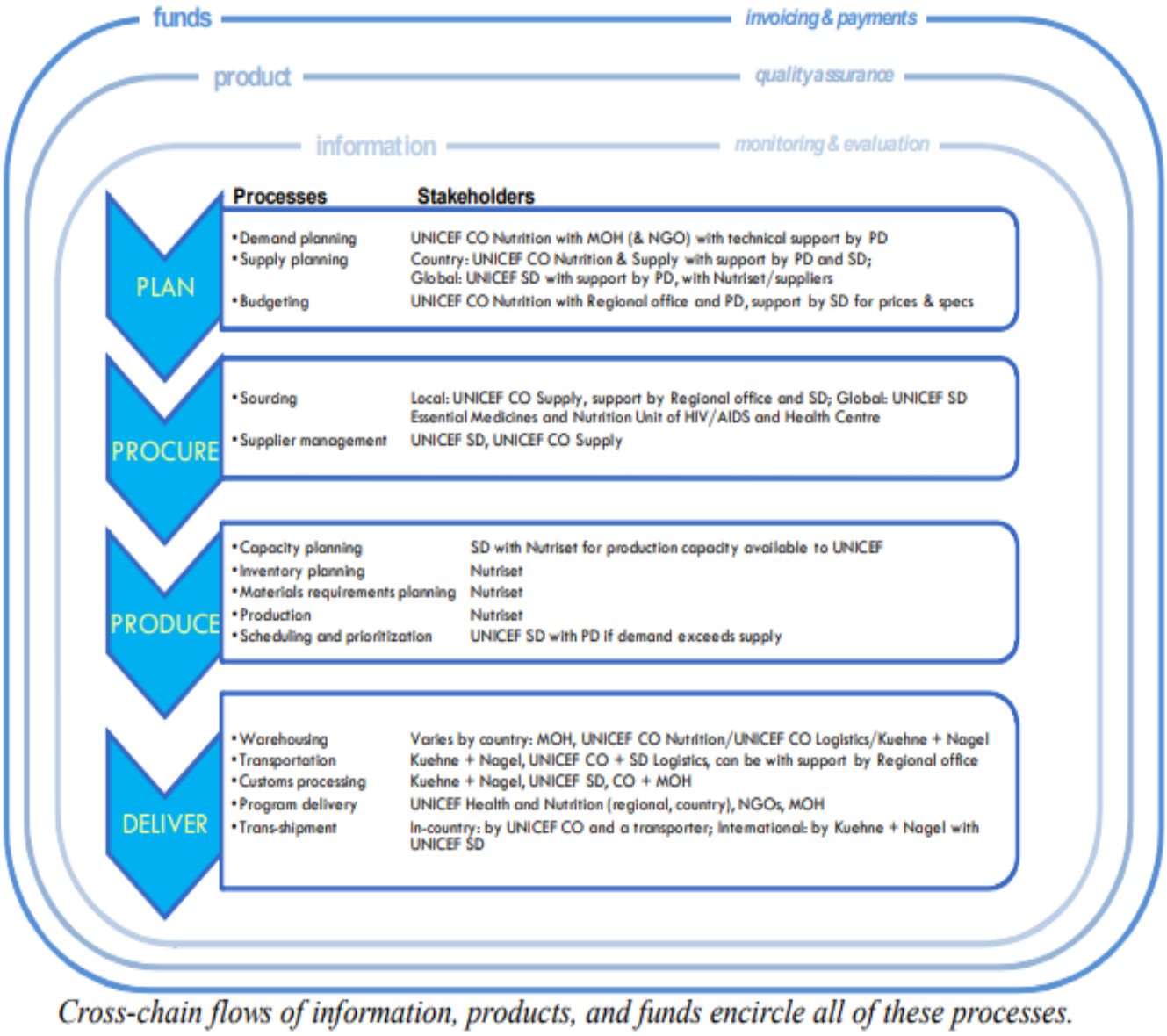

Figure 2: RUTF Supply Chain. **(Source:UNICEF, 2009)**

Every supply chain utilizes a set of fundamental processes to Plan, Procure, Produce and Deliver. Supply chain decisions are made with an objective to streamline three types of flows— product, information and funds—within the supply chain. This is not an easy task because supply chains often involve many stakeholders who have varied and sometimes conflicting objectives. An alignment of these objectives is also an important aspect of effective supply chain management (Cervero, Influences of built environment on the Agricultural economy, 2009).

2.2 Empirical Literature

The empirical literature is divided into the Global, African, Regional and local perspectives. This is in order to synthesize the findings and the different methodologies used in the two distinct regions. This enables the researcher to learn what has already been implemented and identify opportunities in gaps identified and seek ways to focus improvement.

2.2.1 Global perspective

Most of the research that has been done in Europe and in relation to the topic dealt extensively with the effect that delay of delivery of goods has on the operations of the firm. They also discussed the cost implications of delivery deviations with many consequences that are either measurable or immeasurable. Countries in question include Sweden, Britain among others.

2.2.1.1 Challenges faced in the supplying of materials

Darvik et al, 2010 in a Swedish paper postulated that Delivery deviations result in many consequences, which cause additional costs. Some costs can be directly measured and priced, while others are "invisible" and can have a greater impact on a company's performance in the longer run. The costs of time-, quantity- and quality deviations will be described. A late delivery or delivery of incorrect quantity often affects the time plan in a project and Ala-Risku and Kärkkäinen (2006) state that 8-25% of non-complete activities are due to delivery deviations. It is both costly and time consuming to go back and complete work activities later on and many construction sites take actions in advance to avoid situations like this. Material is for example ordered earlier and with greater quantity than the actual need (BIS, 2016). Early deliveries and large order quantities contribute to disorder at site, extra handling, breakage and loss of material, which is costly and unnecessary waste. Storage of material also increases the risk of theft, which in turn results in extra costs for new material and administration. In addition, extra handling of material might negatively affect health and safety conditions. Furthermore, late deliveries, which cause delays in the project, will impact on customer satisfaction (Darvik , 2010).

Neelakrishnan and Ramachandran (2017) argued that one of the main challenges that a low-volume high-variety (LVHV) product manufacturing industry faces is to improve customer on-time delivery (OTD) against the original promised date (OPD) in a make-to-order (MTO) situation. A systematic root-cause analysis was carried out in the LVHV industry to find the true root cause and eliminate it.

This paper proposed a methodology that incorporates the lean thinking methodology, a lean live tracking (LLT) tool, and cross-functional team (CFT) approaches to improve OTD. These are tested using real-time data from an industrial valve manufacturing LVHV firm, resulting in an average OTD improvement from 30 percent to 90 percent in about eight months (Taylor, 2011).

Rahman (2015) also notes that challenges such as poor estimation of materials quality and quality of materials have an effect on performance. The shortage of supply disrupts the progress and reordering can cause prolonged delay and additional costs especially if the material needs to be imported. Consequently, oversupply causes additional costs. Additionally, the quality of materials can delay their usage if the materials do not meet the standard and the defect could be due to improper handling during packaging (Zandi, 2016).

Compliance is one other challenge that suppliers are faced with. This is so because for any company, there are sets of rules and regulations for purchasing products or materials that should be adhered to (Emmanuel, 2018). Non-adherence to the rules and regulations results to a disruptive process in the supply of materials. Therefore it is important for the supplier to know what is required of them from the documents required from the tender process to the delivery of the materials or services being purchased. Consequently, a primary compliance issue includes product regulation, trade controls, and continually changing regulations. Keeping up with the evolving regulations and a moving target seems to be a challenge (Siobhan, 2017).

In manufacturing, delays occur on a daily basis which results in ineffectiveness, inefficiencies, and poor performance of the products and its processes. One of the reasons could be the performance measures which are defined and optimized for each function within an organisation but not for the entire value delivery process (Saleh, 2018). In such cases, the main objective is to improve the communication between the company and other suppliers in terms of sharing methodology and information, and by designing the process in such a way so as to improve and to optimize the throughput, lead-time and cycle time. Moreover, it has been identified in the research work of Arunagiri and Gnanavelbabu, (2013) that 80% of processes delay is caused by 20% time trap. By focusing on that 20% the problem of lead-time and total cost of acquisition, transportation and possession of goods and services can be reduced which creates benefit both to the buyer and seller. As a result, it provides a competitive advantage and improved profits (Abdalla, 2013).

Lekan (2014) studied delaying in the construction process. Delay is one of the biggest problems often experienced on construction project sites. Delays can instigate negative effects such as increased costs, loss of productivity and revenue many lawsuits between owners and contractors and contract termination. The aim of this project was to investigate the causes and effects of delay on construction project delivery time. Random sampling technique was used in this study (Angelin, 2016). Population sample of 150 was used in this work. A total sample of ninety three (93) was deployed. A structured questionnaire in Likert scale was used in data collection. There are many factors that induce delay on construction projects, however in some of identified factors includes: lack of funds to finance the project to completion, changes in drawings, lack of effective communication among the parties involved , lack of adequate information from consultants, slow decision making and contractor's insolvency, variations among others (Ndlovu, 2013).

Xiang (2014) asserts that organizations adopt numerous business improvement methodologies to improve business performance. Logistics as well as supply chain management has been regarded to be the crucial factor for the companies to obtain competitive edge. In fact, logistics as well as supply chain management has received attention since the early 1980s, yet conceptually the management of supply chains is not particularly well understood, and many authors have highlighted the necessity of clear definitional constructs and conceptual frameworks on supply chain management. He argues that effects of supplier's failure to meet demand on operations are many and vary from organization to organization. It is imperative that every organization understands these factors if they have to work more efficiently (Muzah, 2015).

Vrijhoef and Koskela (2000) as cited by Ala-Risku and Kärkkäinen (2005) argue that last-minute improvisation, leads to ineffective practices to guard against material shortages. In a case where materials are ordered very late, the supplier is left with uncertain demand and high material buffers to guarantee service level (Abdalla, 2013). Similarly ordering too early may incur additional costs especially if there are shortages. Additionally, Darvik and Larsson (2010) state that early deliveries and large order quantities contribute to disorder, extra handling, breakage and loss of material, which is costly and unnecessary waste.

Storage of material also increases the risk of theft, which also results in extra costs for new material and administration (CRS, 2011).

2.2.2 African Perspective.

This segment discussed the tender process of supplying materials, the effect of supplier's failure to deliver on time and the causes and effects of delay with a specific focus on African and some selected developing countries. The countries of focus in Africa include, but not limited to South Africa, Nigeria among others.

2.2.2.1 Agriculture and food insecurity risk management in Africa.

Effective agricultural risk management strategies play a vital role in fostering productive and sustainable investment across the food and agricultural value chain in order to ensure food and nutrition security, eliminate hunger, reduce poverty and achieve the annual target of 6 percent agricultural GDP growth. A real paradigm shift is necessary in order to manage risks efficiently. The underlying approaches to risk management and resilience building need to be based on market, policy and institutional reforms. It is against this background that the Comprehensive Africa Agriculture Development Program in the New Partnership for Africa's Development (NEPAD/CAADP), in collaboration with FAO, decided to prepare this review of innovative approaches and guidelines for mainstreaming agricultural risk management. Food and agricultural markets in Africa are affected by macro-economic disturbances, oil price shocks, disease outbreaks, and adverse weather events, such as floods and droughts, which may have become more frequent because of climate change. On a smaller scale, accidents, illness, death, fire risks, theft and divorce are examples of personal risks that can undermine livelihoods. The problem is compounded by limited access to healthcare services in rural areas (Antón, 2013). Weather variability, price uncertainties, unexpected institutional and policy changes, personal risks, and so on strongly influence decisions pertaining to input use, investments and technology adoption. Production and price risks are major impediments to investment in land improvement, irrigation, farm equipment, inputs, including fertilizers and seeds (Johns, 2013). Agricultural risks are among the major reasons for poverty traps as they may influence decisions of smallholders in favour of subsistence farming with low risks but also low returns, rather than expanding investment into high-return farming enterprises. Unmanaged risks can lead to a cycle of shock, (partial) recovery, shock, eroding capital and natural resources with every shock. Production and price shocks compromise the food and nutrition security of poor consumers in urban and rural areas.

Poor net food buyers could be forced to draw down on their capital (distressed sale of assets, such as land or livestock) to maintain food intake in the event of high food prices. Other

common coping mechanisms may include a reduction of food consumption, cut-downs on school fees, and cuts in health care spending. Reduced income levels have greater impacts on rural women and female-headed households, as they are less likely to be net sellers of food, and have less access to land and other resources (Darvik , 2010).

Apart from producers and consumers, a large number of industries (textiles, biofuel, beverage, food, etc.) along the food supply chain are affected by unchecked risks that can significantly disrupt them. The high cost of doing business (due to production and market risks) can prevent suppliers, processors, transporters and marketing companies from expanding and improving their services (Al-Zhrani, 2010). More importantly, shocks impacting the agricultural sector can adversely impact national gross domestic product (GDP) with long-term consequences for the country's economic growth. Agricultural production and price volatility may also induce instability in government tax revenues and balance of payments, weakening governments' fiscal positions especially in countries heavily dependent on agriculture. Africa is one of the regions in the world most affected by food price volatilities and production variability. Spiking and volatile food prices have created uncertainty and risks for producers, traders and processors, resulting in increased food insecurity for consumers. At the root of the food price and production variability are hydro-meteorological disasters which comprise cyclones, floods, landslides, wild fires and dry spells. Drought affects the largest number of people on the continent, followed by floods and storms. Geological disasters, such as earthquakes and volcanoes, are relatively less frequent and impact fewer countries. At household level, multiple covariant and idiosyncratic shocks have made farming, livestock rearing or fishing very risky in Africa (Dudovskiy, 2018). Crop failure due to erratic rains is often followed by very high prices, starvation and outbreak of diseases. Livestock and crop pests and diseases tend to be rampant in many areas. Rural households may suffer from vulnerabilities associated with chronic illness, disability and death. Valuable possessions such as crops in the field or stocks of grain and livestock can be stolen (Liverpool-Tasie, 2011). Pastoralists living in the border regions (e.g. Uganda, Kenya and Sudan) are affected by cattle rustling which has become more common and dangerous. Fishers and fish farmers are affected by asset risks, production and management risks, market risks, and personal and health risks. Dealing with production, market and other shocks would require various types of risk management techniques, ranging from those managed through market mechanism to catastrophic risks with high rates of frequency that require government intervention (FAO, 2015).

A review of best practices and country experiences has demonstrated that there is no agricultural transformation without risk management.

Therefore, mapping the various risks faced by farmers, value chain operators, and the households' access to food is fundamental. Governments support appropriate risk-hedging instruments, and engage in capacity development to increase the effectiveness of the different measures applied. It should, however, be noted that risk management strategies are context specific and vary from one region to another (UNCTAD, 2015). For instance, developed countries and most countries in Latin America and Caribbean stress market-based instruments, such as commodity exchange, contract farming, and food and agricultural market information system, while many Asian countries rely on irrigated agriculture as well as government-based buffer stocks and strategic grain reserve to stabilize prices and support producers. NEPAD, in partnership with FAO and the Platform for Agricultural Risk Management (PARM) hosted by IFAD, is supporting African countries and regional economic communities in mainstreaming agriculture and food-security risk management into investment plans to make sure that risk management interventions are planned, coordinated, budgeted and effectively implemented (Muche M, 2014). For FAO, reducing risks by enhancing resilience to shocks and stresses of member countries is a new paradigm that is being promoted through its overarching goals to eradicate hunger, food insecurity, malnutrition, and poverty in an economically, socially and environmentally sustainable manner (Alderman, 2012).

2.2.2.2 Tender processing of supplying materials

Antón et al (2013) observes that technical specifications, scope of work, and terms of reference are documents that describe what is needed, and should be clear enough to avoid confusing suppliers, contractors, service providers or the evaluation panel. A delay in preparing these documents ahead of schedule means that the procurement process is delayed even before it starts. Special expertise is needed in preparing these documents, if this is not taken into consideration, a huge delay is the result because of the period of time it may take to find or hire such a person (Egbuna, 2010). From the perspective of supply chain management, materials dictate the set of possible suppliers. It is for this reason that the best communication tools should be available for a proper purchase of products. However, one of the most significant challenges of implementing transparency tools in project supply networks is that the networks are mostly created for a single project, and disbanded after the project is completed (Antón, 2013).

The tendering process is carried out in several stages that vary according to the procedure or procurement method adopted. A tender process may include the following stages; Request for prequalification, Prequalification, Invitation to tender, Tender evaluation and Selection of best tender and award (Saleh, 2018).

The tender will depend on a number of variables related to the institution's requirements, but may stipulate the quantity, quality standards, delivery terms, packaging and guarantees, among other specifications (Siobhan and Swenson, 2017).

Suppliers who are interested in doing business with the Food Reserve Agency (FRA) are encouraged to look out for FRA tenders in the print media and on the FRA website.

Interested suppliers are also free to visit the procurement and supplies unit offices for other business opportunities and are required to bring their business profiles which should contain; company registration certificate, valid tax clearance certificate, National Council for Construction certificate (for contractors), list of directors, list of current/ previous clients and Zambia Public Procurement registration certificate.

The agency considers the suppliers past performance. Suppliers who therefore willfully fail to perform in their contracts with the Agency may not be considered for any future business opportunities (FRA, 2018).

MMU (2017) adds that the tender document comprises of the documents such as Invitation to tender, Instructions to tenderers, General Conditions of Contract, Special Conditions of Contract, Schedule of Requirements, Technical specifications, Form of tender, Price schedules, Contract form, Performance security form, Bank guarantee for advance payment form, Manufacturer's authorization form and Confidential business questionnaire form. An addendum is issued in accordance with clause five of these instructions to tenders (Madungwe E, 2012).

According to (FRA, 2018) the procurement committee meets as and when there is need to consider purchase applications which are valued above K50,000.00 for goods and works. When it comes to the approval of purchases, the executive director approves all purchases valued up to K50, 000.00 whereas the procurement committee approves all purchases valued over K50, 000.00.

FRA (2018) states that as a public institution the Agency procures its goods, works and services by use of the procurement methods and thresholds prescribed in the Public Procurement Act. The following are the procurement methods in use; open bidding (used for procurement of goods, works and non-consulting services which are valued above K500,000.00, bids are deposited in the tender box), limited bidding (shortlist of suppliers are invited to participate in a tender for supply of goods, works and non-consulting services valued above K500,000.00 which are only available from a limited number of suppliers), Open selection (used for the procurement of consulting services valued above K300,000.00), direct bidding (used where goods, works or consulting services are only available from a single source) and simplified bidding (used for procurements valued below K500,000.00 for goods and works and K300,000.00 for consulting services).

Other researchers have however argued against the current status quo in the tendering process. For example, Ngobeni (2011) argues that in the tender process of purchasing materials, departments should normally use standard contract forms when inviting tenders such as; Tender for the Supply of Goods, Tender for Services, Tender for the Purchase of Articles or Materials from the Government,

Articles of Agreement and General Conditions of Contract for various types of works contracts and Standard Terms and Conditions for IT tenders for the design, supply, implementation and maintenance of IT systems issued by the Office of the Government Chief Information Officer.

The primary objective of this study was to analyse national government tender system, and identify the tendering problems facing South African national departments. The study further made practical recommendations to National Government, National Treasury, and all the relevant stakeholders relating to the management of tendering process. Data from 355 questionnaires completed by participants, represented 45 national department was collected and analyzed.

2.2.2.3 Effects of suppliers' failure to meet demands on operations

Lack of proper transparency tools results in results in low long-term commitment, which is needed for most information technology development projects. This is so because companies want to deal with suppliers they can have a proper communication channel with as well as those who are able to show proven trust by delivering their products on time.

Transparency should begin from providing the tendering process documents to the process itself until product is delivered in the exact quantity as required by those who ordered (Ala-Kärkkäinen, 2005).

2.2.2.4 Causes and effects of delay

Few selected related articles were presented in this section on causes and effects of delay on construction works. Yates (2003) studied construction delays, the study developed a decision support system for construction delay analysis called (DAS). The main categories of delays in DAS according to the study, includes engineering, equipment, external delays, labour, management, material, owner, subcontractors, and weather. Similarly, Mansfield et al., (1994) studied the causes of delay and cost overrun in construction projects in Nigeria. The results showed that the most important factors are financing and payment for completed works, poor contract management, changes in site conditions, shortage of material, and improper planning. The results indicate that delays are extensive: the average ratio of actual completion time to the planned contract duration is 160.5% for road projects and 120.3% for building projects.

Construction industry in Nigeria is faced with a lot of problems, among which is delay in project execution due to delay in material delivery (Lekan, 2014).

Delay is one of the biggest problems often experienced on construction project sites. Delays can instigate negative effects such as increased costs, loss of productivity and revenue many lawsuits between owners and contractors and contract termination. The aim of this project was to investigate the causes and effects of delay on building construction project delivery time. Random sampling technique was used in this study. Population sample of 150 was used in this work. A total sample of ninety three (93) was deployed. A structured questionnaire in Likert scale was used in data collection. There are many factors that induce delay on construction projects, however in some of identified factors includes: lack of funds to finance the project to completion, changes in drawings, lack of effective communication among the parties involved , lack of adequate information from consultants, slow decision making and contractor's insolvency, variations among others. Also, project management problem, mistake and discrepancies in contract document, equipment availability and failure, mistakes during construction, bad weather, fluctuation in prices of building materials, inappropriate overall organizational structure linking to the project and labour. The factors above could be observed and could be a clue to preventing delay on construction sites he contended.

Prakash (2014) also studied delay in the construction industry and argued that delays on projects are a universal phenomenon. They are almost always accompanied by cost and time overruns. His research aimed to establish the root causes of delays, delay analysis methodologies and impact of delays in the mining/manufacturing projects in India. Generally, mining projects are based on the establishment of infrastructure that supports mining and the workings that are developed as the ground is moved. Globally more research has been done in the area of construction projects. The effects of delays are only linked in some cases of research. The literature available from the construction industry is relevant to mining as the process of planning and execution of a project in mining is basically the same as any construction process.

2.2.3 Regional perspective

This section focuses at the food insecurity in the sub-Saharan Africa. It suggests improvements that have resulted as a result of improvements made to reduce malnourishment in this region.

2.2.3.1 Regional Overview of Food Insecurity (FAO, 2015).

The prevalence of undernourishment in Sub Saharan Africa declined from 33 percent to 23 percent between 1990-92 and 2014-16. However, the total number of undernourished people continues to increase with an estimated 220 million in 2014-16 compared to 175.7 million in 1990-92. Western Africa has made significant achievements. It has reduced the proportion of hungry people by 60 percent thus achieving the MDG target on halving the proportion of people suffering from hunger. With respect to the World Food Summit (WFS) goal on halving the absolute number of undernourished, the sub-region reduced the number of undernourished people by 11 million since 1990-92. The Eastern and Southern Africa sub-regions also made some progress towards the MDG target while Middle Africa1 is lagging behind with respect to both targets. Of the 40 countries in Sub-Saharan Africa considered in SOFI 2015, seven countries achieved both the MDG and WFS targets, 11 achieved the MDG target and made progress on WFS while 12 countries made some progress in reaching the MDG and/or WFS targets.

Food availability in Sub-Saharan Africa has increased by nearly 12 percent over the past two decades. The poverty rate also declined by 23 percent between 1993 and 2011 and many countries are on course to meet the MDG 1.A target of halving the proportion of people living with less than $ 1.25 a day by 2015. These trends are having a positive effect on food security and nutrition. The number of underweight children in Sub-Saharan Africa has

declined over the last two decades, while stunting has stagnated and overweight is on the rise among children below five years.

High level leadership and good governance are required, besides political commitment, to translate Government policies and strategies into concrete actions in all the relevant sub-sectors: agriculture, health, water and sanitation, social protection, and education.

Ensuring effective participation of all stakeholders and setting up effective accountability systems is necessary to provide oversight and track the performance of comprehensive food security and nutrition programmes, as well as respond to the needs of targeted communities. Involvement of the private sector plays an important role in strengthening linkages within agricultural supply chains, while the public sector has oversight of social welfare, disaster risk management and equitable distribution of benefits. Well-designed Private Public Partnerships (PPPs) not only enhance investment, but also develop capabilities, introduce innovations, provide technical assistance and knowledge to small producers. Benefits include increased employment and agricultural productivity, infrastructure development and strengthened market access.

Beside the need to adopt an integrated approach, sustained implementation of a mix of complementary and comprehensive food security and nutrition policies and programs is required over time to effectively make an impact on hunger, food insecurity and malnutrition in Sub-Saharan Africa.

2.2.3.2 Procurement challenges in the South African public sector (Johns, 2013)

This article reports on an exploration of challenges experienced in the field of procurement within the South African public sector. To institute procurement best practices, a supply chain management system was adopted in South Africa in 2003. The procurement process was granted constitutional status and has been used to address past inequitable policies and practices. It promotes aims which are, arguably, secondary to the primary aim of procurement. For the exploration, a conceptual analytical approach was employed and some of the key guiding pillars of public procurement in South Africa divulged. The challenges restraining effective and efficient implementation of public procurement are also revealed. The article concludes by recommending the development of competency through customized (separate) training materials and programs, the involvement of stakeholders in the bidding process and the employment of good strategic sourcing practices.

2.2.4 Local perspective

This section focuses at the local perspective on the importance of nutrition and the criticality of maize as a staple food in Zambia. The importance of nutrition for the development of a nation cannot be overemphasized. According to the Global Nutrition Report of 2015, Malnutrition has the potential to threaten the world's post-2015 development ambitions. Zambia has one of the highest rates of childhood under nutrition in the worlds.

In 2014, stunting was reportedly 40% and wasting at 6%, alongside high levels of micronutrient deficiencies: 53% of school aged children are deficient in vitamin A, while 46% have iron deficiency anemia (Zambia Demographic Health Survey, 2014).

Maize is the predominant and staple crop accounting for 60-70 percent of cultivated land (Saasa, 1996). It is one of the most rain-fed crops grown in Zambia by small scale to medium scale farmers. In terms of value, it is the most important economic commodity next to copper and possesses considerable potential as an export earner

2.3 The critique of Literature

The study recognizes many researchers that have done similar studies in the same field; however the following gaps have been identified. Firstly, most of the literature reviewed focused on profit making organizations whose aim is to make profits.

There is need to understand the causes and effects of suppliers' failure to meet orders on time in a government organization whose sole mandate is to compliment government efforts in serving the citizenry better. Lastly, it was difficult to find research that was conducted in Zambia focusing on either a non-governmental organization or a profit making organization. This paper will fill that gap and provide a basis for future research in the same field.

2.4 Emerging Issues

This section focused on issues that the researcher focused on during literature review. It highlights in summary the works done by other scholars regarding the subject matter. It outlines the findings by other researchers and identifies gaps in the research conducted by other scholars. From these findings, the researcher closes gaps that these researchers did not address regarding the subject matter in the Zambian context.

Table 2: Emerging issues and gaps

SL No	AUTHOR(S)	ARTICLE	RESULTS	GAPS
01.	Zandi, M. M. (2016). South Africa	Challenges faced in the supplying of materials	SCM has been fully employed across all spheres of government and customized policies developed as required by the SCM policy.	-Does not address procurement in food reserve agency setup
02.	(FAO, 2016)	Agriculture and food insecurity risk management in Africa	-supply chain efficiency and food security	-Does not address delivery times of raw materials.
03.	(FAO, 2015).	Regional Overview of Food Insecurity	Supply chain integration regionally	-Supplier failure not addressed in this study.
04.	Cizmeci, 2012. United States of America	The importance of nutrition for the development of a nation cannot be overemphasized. According to the Global Nutrition Report of 2015, Malnutrition has the potential to threaten the world's post-2015 development ambitions.	restructuring and closer integration of supplier networks to achieve efficiency gains, delegating greater design and production responsibility to major suppliers through strategic supplier partnerships along with having key suppliers evolve greater system and subsystem integration	-Does not address effects of supply chain and suggest any solutions relative to Zambia challenges faced at FRA.

			capabilities	
05.	BIS, 2016. United Kingdom.	UK Food Supply Chain Study.	-There is no consolidated source of information assessing both the structure of the UK food supply chain and the views and opinions of key members of the supply chain	-Does not address effects of delayed material supply and consequences of supply chain disturbance.
06.	Suleiman, 2015. Tanzania	Adoption of E-procurement and Value Addition: Tanzanian context.	Improved cost saving. Ease and quick procuring of items. Reduced corruption	-Does not address supply chain challenges with farmers using a manual procurement system.

2.5 Chapter Summary

This chapter has looked at causes and effects of suppliers' failure to meet orders on time. A case of Food Reserve Agency. Key things to consider are the barriers to the supply chain system FRA and the bridges. The global, African, Regional and local perspectives provided insights into the supply chain managements across various industries. Lead times and exchange losses have to be taken into account for various suppliers who import from different locations outside the country. The chapter also looked at various literatures by other scholars in the supply chain of different materials across various industries.

CHAPTER THREE

THEORETICAL AND CONCEPTUAL FRAMEWORK

3.1 Introduction

In this chapter we discuss the theoretical literature review as a part of literature review. The objectives it attempted to achieve and the research questions it intended to answer. The theory informing the study and a conceptual framework showing the relationship between variables involved in the study are also part of this introductory chapter.

3.2 Theoretical Framework

Theoretical literature review is very cardinal as it plays the fundamental role of unveiling the theory, or theories, that underpin the paper argument, or, if there are no such theoretical background, which is the related extant knowledge. It sets the limits of discussion, and defines and clarifies the main concepts that will be used in the empirical sections. A substantive and thorough literature review is the basis for any good research project (Boote, 2005) and a well-crafted literature review section provides the theoretical foundation that is required to support any argument of contribution. Theories are systems of concepts that explain facts and provide stories as to how phenomena work the way that they do (Boer et al., 2015) and the first task of a literature review is to reveal which theories are used in the paper´s argument.

3.3 The Theory of Constraints

Dr. Eliyahu Goldratt conceived the Theory of Constraints (TOC), and introduced it to a wide audience through his bestselling 1984 novel, “The Goal”. Since then, TOC has continued to evolve and develop, and today it is a significant factor within the world of management best practices. One of the appealing characteristics of the Theory of Constraints is that it inherently prioritizes improvement activities. The top priority is always the current constraint. In environments where there is an urgent need to improve, TOC offers a highly focused methodology for creating rapid improvement. The Theory of Constraints is a methodology for identifying the most important limiting factor (i.e. constraint) that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor. In manufacturing, the constraint is often referred to as a bottleneck.

This Theory takes a scientific approach to improvement. It hypothesizes that every complex system, including manufacturing processes, consists of multiple linked activities, one of which acts as a constraint upon the entire system (i.e. the constraint activity is the "weakest link in the chain").

Since the objective of every company is to make a profit – both in the short term and in the long term. The Theory of Constraints provides a powerful set of tools for helping to achieve that goal, including:

- The Five Focusing Steps (a methodology for identifying and eliminating constraints)
- The Thinking Processes (tools for analyzing and resolving problems)
- Throughput accounting (a method for measuring performance and guiding management decisions).

This theory is very relevant to this study as it is focused not only on identification of factors or constrains but also provides a thinking process towards resolving the problems. It will be applied to the study of causes and effects suppliers failure to supply and deliver orders on time at FRA. It is hoped that the theory of constraint will help the researcher identify the constraints that FRA suppliers face in their mandate to deliver orders on time (Cervero, Influences of built environment on the Agricultural economy, 2009).

3.4 Theory of Triple Constraints

According to Thelbone, projects are generally undertaken because they are part of the plans to meet business needs and charter organizations to new levels of performance. Projects are however constrained by conflicting demands and competing priorities within the project environment. Neglecting to manage these constraints accurately and effectively may be sufficient to condemn a project even if all other project management activities are performed to a high standard of excellence. The aim of this paper is to improve the interpretation of the triple constraint and its dynamics and indicate how this may advance the delivery of project success. An integrated model is proposed to facilitate the strategic management of the triple constraint trade-offs as function of the project higher purpose. The triple constraint is a critical project management concept that originates from the basis for undertaking a project and provides direction for framing the project. The triple constraint constitutes one of the primary building blocks of the project plan and is paramount to the monitoring and controlling process group. Although the triple constraint theme has various interpretations,

the literature shows a general agreement. That project scope, time and cost comprise of the three key triple constraint variables (Thelbone, 2009). Project time addresses the scheduling and duration of the project, cost addresses the budget and resources of the project, and scope addresses the requirements and work of the project (Burns, 2003).

A time-constrained project is bounded by the completion agenda, whereas a cost-constrained project is bounded by the scheduling of expenditure. Scope-constrained projects are bounded by the performance criteria of the deliverables. Project quality constitutes an integral dimension of project management and is supported by the triple constraint. The project management triangle is a useful model to illustrate the consequences of change on the triple constraint to key project stakeholders. The triangle reflects the fact that the three constraints are interrelated and involve trade-offs – one side of the triangle cannot be changed without impacting the others. Project quality takes root in all three variables of the triple constraint and is affected by balancing the three factors. It may easily be argued that triple constraint affairs reside at the kernel of the most essential determination surrounding projects (Thelbone, 2009).

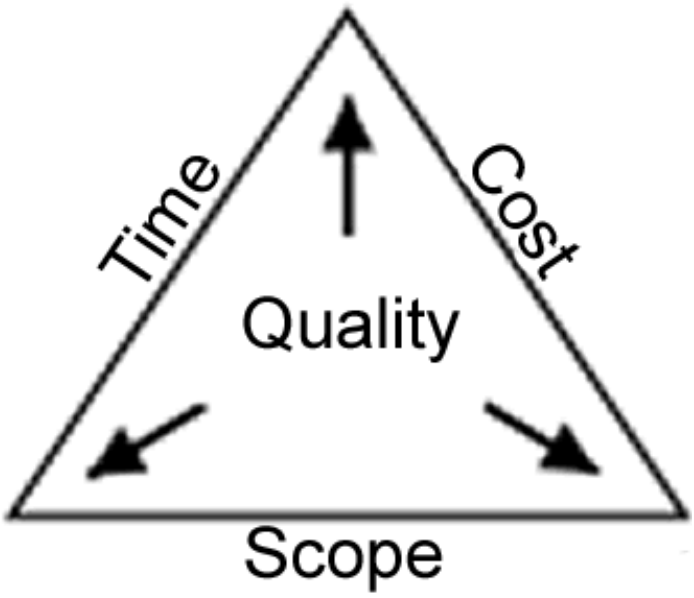

Figure 3: Project Management Triangle

3.5 Theory of five performance objectives

Operational performance objectives are the areas of operation that a company tries to improve, in a bid to meet its corporate strategy. After defining its corporate strategy, a

company will identify the relevant operational performance objectives to measure and configure the environment that will enable the objectives to be accomplished. According to Andy Neely, author of the book "Business Performance Measurement: Unifying Theory and Integrating Practice," there are five main operational performance objectives: speed, quality, costs, flexibility, and dependability (CRS, 2011).

3.5.1 The Objective of Speed

The objective of speed measures how fast a company can deliver its products and generates sales quotes. This objective will be concerned with such issues as the time that it takes to manufacture and process one or more products of the company or the time that it takes to research a new product and develop it (Antón, 2013).

At its most basic, speed indicates the time between the beginning of an operations process and its end. It is an elapsed time. This may relate to externally obvious events: for example, from the time when the customer requests a product or service, to the time when the customer receives it. Or it may be used internally in the operation: for example, the time between when material enters an operation and when it leaves fully processed. As far as operations strategy is concerned we are usually interested in the former. Part of this elapsed time may be the actual time to 'produce the product or service' (the 'core' processing time). It may also include the time to clarify a customer's exact needs (for example, designing a product or service), the 'queuing' times before operations resources become available, and after the core processing, the time to deliver, transport and/or install the product or service. Figure2.3 illustrates some of the significant 'process' times which signify the steps in customer response for two operations – a hospital and a software producer. One issue for these organisations' operations is how to define the speed of delivery. Clearly, limiting it to the elapsed time taken by the core process (though this is the part they can most directly control) is inadequate. From the customers' view the total process starts when they become aware that they may need the product or service and ends when they are completely satisfied with its 'installation'.

Some may even argue that, given the need continually to engage the customer in other revenue-generating activities such as maintenance or improvement, the process never ENDS (Antón, 2013).

3.5.2 Quality of a Product

Typically, quality is considered to measure how well a product conforms to certain specifications. However, it's more than that, according to Andy Neely. It's also how desirable the features of the product are; how reliable the product is; how durable it is; how easily it can be serviced; how well it performs its intended function; and, how much the customers believe in its value. All of these are relevant measures of quality (ibid).

Many definitions of quality refer to the 'specification' of a product or service, usually meaning high specification; as in 'the Mercedes-Benz S Class is at the quality end of the market.' Quality can also mean appropriate specification, meaning that the products and services are 'fit for purpose'; they do what they are supposed to do. 'Fit for purpose' quality includes two concepts that are far more usefully treated separately. One is the level of the product or services specification; the other is whether the operation achieves conformance to that specification. Specification quality is also a multidimensional issue. We needed to use several aspects of specification in the automobile example above, even to reach a crude indication of what type of car is being produced. So any product or service needs to use several dimensions of specification to define its nature. These dimensions can be separated into 'hard' and 'soft' aspects of specification quality. Hard dimensions are those concerned with the evident and largely objective aspects of the product or service. Soft dimensions are associated with aspects of personal interaction between customers and the product (or more usually) service. Table 2.2 identifies some hard and soft dimensions of specification quality, though each list will change depending on the type of product or service being considered.4

Conformance quality is more a concern of the operation itself. It refers to the operation's ability to produce goods and services to their defined specification reliably and consistently. This is not always a simple matter of yes it can, or no it cannot. Rather the issue is often a matter of how closely the operation can achieve the product or service specification consistently. Here there is a difference between hard and soft dimensions of specification. Generally the conformance to soft dimensions of quality is more difficult to measure and more difficult to achieve.

This is largely because soft dimensions, being related to interpersonal interaction, depend on the response of individual customers relating with individual staff (CRS, 2011).

3.5.3 Variation in Costs

This objective looks at how much variation there is in the unit cost of a product as measured by changes in a variety of factors, including the volume and the variety of the products. Products that feature a greater variety tend to sport lower volumes and higher unit costs and vice versa. Ultimately, this affects the price of the product, the costs of producing it, and the profits to be obtained from that product (Angelin, 2016). Cost is here treated last, not because it is the least important performance objective, but because it is the most important. To companies that compete directly on price, cost clearly will be their major performance objective. The lower the cost of producing their products and services, the lower the price to their customers can be. Yet even companies that compete on things other than price will be interested in keeping their costs low. Other things being equal, every euro, dollar or yen removed from an operation's cost base is a further euro, dollar or yen added to its profits. Not surprisingly, low cost is a universally attractive objective. Here we are taking a broad definition of 'cost' as it applies in operations strategy. In this broad definition, cost is any financial input to the operation that enables it to produce its products and services. Conventionally, these financial inputs can be divided into three categories:

(i) Operating expenditure – the financial inputs to the operation needed to fund the ongoing production of products and services. It includes expenditure on labour, materials, rent, energy, etc. Usually the sum of all these expenditures is divided by the output from the operation (number of units produced, customers served, packages carried, etc.) to give the operation's 'unit cost'.

(ii) Capital expenditure – the financial inputs to the operation that fund the acquisition of the 'facilities' that produce its products and services. It includes the money invested in land, buildings, machinery, vehicles, etc. Usually the funding for facilities is in the form of a lump sum 'outflow' investment followed by a series of smaller inflows of finance, in the form of either additional revenue or cost savings. Most methods of investment analysis are based on some form of comparison between the size, timing and risks associated with the outflow and its consequent inflows of cash.

(iii) Working capital – the financial inputs needed to fund the time difference between regular outflows and inflows of cash. In most operations, payments must be made on the various types of operating expenditure that are necessary to produce goods and services before payment can be obtained from customers. Thus funds are needed to bridge the time

difference between payment out and payment received. The length of this time difference, and therefore the extent of the money required to fund it, is influenced largely by two processes – the process that handles the day-to-day financial transactions of the business, and the operations process itself which produces the goods and services. The faster the financial process can get payment from customers and the more it can negotiate credit delays to its suppliers, the shorter the gap between money going out and money coming in, and the less working capital is required. Similarly, the faster the operations process can move materials through the operation, the shorter the gap between obtaining the materials and having products and services ready for sale. This argument may also apply to information processing or even customer processing operations if operating expenditure is associated with the information or customers entering and progressing through the operation process (BIS, 2016).

3.5.4 Flexibility in Operations

Flexible operations are operations that can configure the product lines to deal with various requirements and to also adjust these product lines quickly to new requirements. The latter is also closely related to the speed objective. A company should be able to produce different quality product varieties and also adapt its operations to suit different market conditions and delivery schedules (Bell, 2001).

The word 'flexibility' means two different things. One dictionary definition has flexibility meaning the 'ability to be bent'. It is a useful concept that translates into operational terms as the ability to adopt different states – take up different positions or do different things. So one operation is more flexible than another if it can do more things – exhibit a wide range of abilities. For example, it might be able to produce a greater variety of products or services, or operate at different output levels. Yet the range of things an operation can do does not totally describe its flexibility. The same word is also used to mean the ease with which it can move between its possible states. An operation that moves quickly, smoothly and cheaply from doing one thing to doing another should be considered more flexible than one that can achieve the same change only at greater cost and/or organisational disruption. Both the cost and time of making a change are the 'friction' elements of flexibility.

They define the response of the system – the condition of making the change. In fact, for most types of flexibility, time is a good indicator of cost and disruption, so response flexibility can usually be measured in terms of time. So the first distinction to make is between range flexibility – how much the operation can be changed; and response flexibility

– how fast the operation can be changed. The next distinction is between the way we describe the flexibility of a whole operation and the flexibility of the individual resources which, together, make up the system. Total operations flexibility is best visualised by treating the operation as a 'black box' and considering the types of flexibility that would contribute to its competitiveness. For example:

● *Product or service flexibility* – the ability to introduce and produce novel products or services or to modify existing ones;

●*Mix flexibility* – the ability to change the variety of products or services being produced by the operation within a given time period;

● *Volume flexibility* – the ability to change the level of the operation's aggregated output;

● *Delivery flexibility* – the ability to change planned or assumed delivery dates. Each of these types of total operations flexibility has its range and response components (Bell, 2001).

3.5.5 Dependability of Operational Performance

This operational performance objective measures how dependable the company is when it comes to timely delivery of products to its customers, in accordance with planned prices and costs. The product's ability to function in an intended way consistently over a reasonable period of time is also a measure of its dependability (BIS, 2016).

The term 'dependability' here is used to mean keeping delivery promises – honouring the delivery time given to the customer. It is the other half of total delivery performance along with delivery speed. The two performance objectives are often linked in some way. For example, theoretically, one could achieve high dependability merely by quoting long delivery times: in which case the difference between the expected delivery time and the time quoted to the customer is being used as an insurance against lack of dependability within the operation. However, companies that try to absorb poor dependability inside long lead-times can finish up being poor at both. There are two reasons for this. First, delivery times tend to expand to fill the time available.

Attempting to discipline an operation to achieve delivery in two weeks when three are available is unambitious and allows the operation to relax its efforts to use all the available time. Second, long delivery times are often a result of slow internal response, high work-in-progress, and large amounts of nonviable- added time. All of these can cause confusion,

complexity and lack of control, which are the root causes of poor dependability. Good dependability can often be helped by fast throughput, rather than hindered by it. In principle, dependability is a straightforward concept: Dependability 5 due delivery time 2 actual delivery time. When delivery is on time, the equation should equal zero. Positive means it is early and negative means it is late. What, though, is the meaning of 'due time'? It could be the time originally requested by the customer or the time quoted by the operation. Also, there can be a difference between the delivery time scheduled by operations and that promised to the customer. Delivery times can also be changed, sometimes by customers, but more often by the operation. If the customer wants a new delivery time, should that be used to calculate delivery performance? Or if the operation has to reschedule delivery, should the changed delivery time be used? It is not uncommon in some circumstances to find four or five arguable due times for each order. Nor is the actual delivery time without its complications. When, for example, should the product or service be considered to have been delivered? Here we are facing a similar issue to that posed when considering speed. Delivery could be when the product or service is produced, when the customer receives it, when it is working, or when they are fully comfortable with it. Then there is the problem of what is late. Should delivery to the promised minute, hour, day, week or even month be counted as on time? (Alderman, 2012)

3.6 Conceptual Framework

The conceptual framework below emphasizes the link between the causes and effects of failure to deliver goods on time. From the diagram, it is eminent that if the effects of this failure to deliver goods on time is not addressed the Food reserve Agency will be inefficient in its operations. The diagram also shows that what causes the suppliers not to deliver on time should be understood if the problem of failure to meet orders on time is to be addressed.

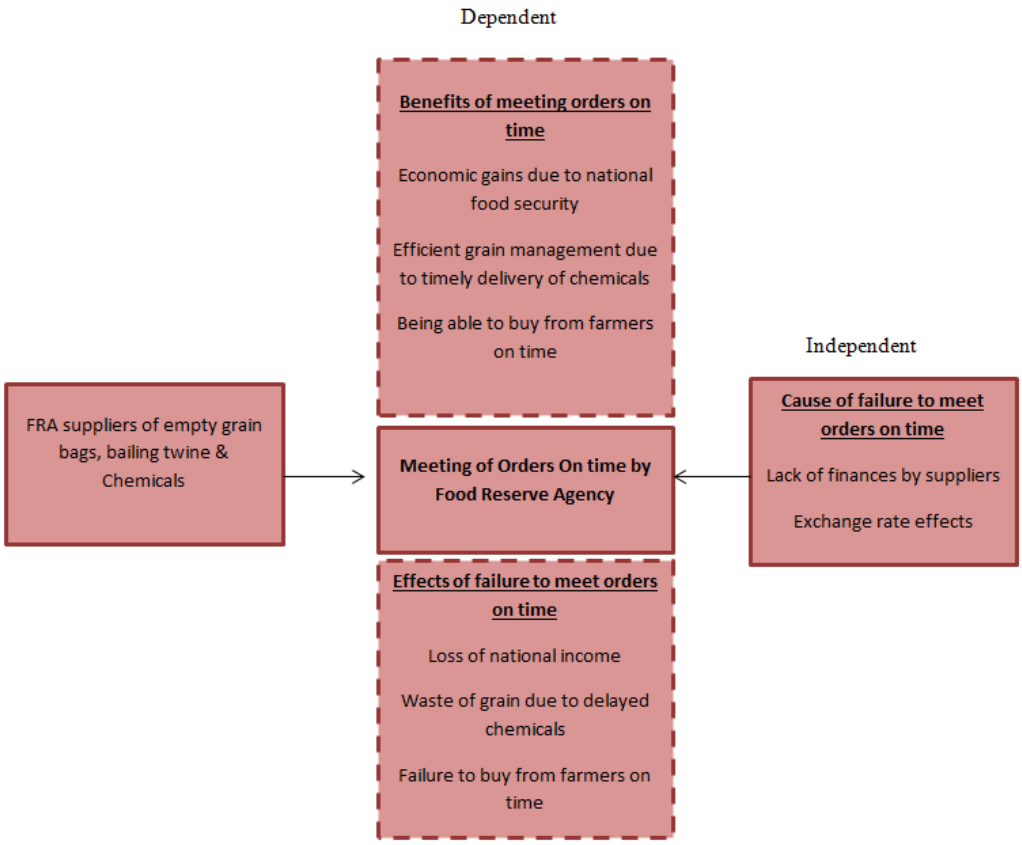

Figure 4: Conceptual Framework (Source, Author)

The figure above gives the relationship that exists between the independent and dependent variable. The independent variable impacts the meeting of orders on time when there is lack of finance and exchange rate effects. These are the causes of failure by suppliers to meet orders on time. If addressed these affect the dependent variable positively by resulting in economic gains due to national food security, efficient grain management due to on time delivery of chemicals and ability to buy grain to farmers on time by FRA. If the independent variable is left unaddressed then this results in failure to meet orders on time. This leads to loss of national income, waste of grain due to delayed chemicals and failure to buy grain from farmers on time among others.

3.7 Chapter Summary

This chapter focused on the theoretical and conceptual framework of the research work. The Chapter delved deep into theoretical review. It touched on a number of theories which included but not limited to theory of constraints and theory of triple constraints. It gave more enlightened information on those theories and also provided the conceptual framework for the study at hand.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

Research methodology presented in this chapter is a technique used to structure a study and to gather and analyze information in a systematic fashion (Pilot et al., 2010). It outlines the research design, study population, sample selection, data collection tools and techniques to be used in the study and ethical considerations. This section discusses the aforementioned items in relation to the research topic.

4.2 Research Philosophy

A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analyzed and used. The term epistemology (what is known to be true) as opposed to doxology (what is believed to be true) encompasses the various philosophies of research approach. The purpose of science, then, is the process of transforming things believed into things known: doxa to episteme. Two major research philosophies have been identified in the Western tradition of science, namely positivist (sometimes called scientific) and interpretivist. Positivists believe that reality is stable and can be observed and described from an objective viewpoint (Levin, 1988), i.e. without interfering with the phenomena being studied. They contend that phenomena should be isolated and that observations should be repeatable. This often involves manipulation of reality with variations in only a single independent variable so as to identify regularities in, and to form relationships between, some of the constituent elements of the social world. This study discussed the four different research philosophies.

4.2.1 Ontology

Ontology in business research can be defined as "the science or study of being" and it deals with the nature of reality. Ontology is a system of belief that reflects an interpretation by an individual about what constitutes a fact. In other words, ontology is associated with a central question of whether social entities should be perceived as objective or subjective. Accordingly, objectivism (or positivism) and subjectivism (or Constructionist) can be specified as two important aspects of ontology (Dudovskiy, 2018).

The researcher adopted the constructivism view which rejects the idea that objective 'truth' exists and is waiting to be discovered. Instead, 'truth', or meaning, arises in and out of our engagement with the realities in our world.

That is, a ‘real world’ does not pre-exist independently of human activity or symbolic language. The value of constructionist research is in generating contextual understandings of a defined topic or problem. Constructionist helped the researcher in choice of research design, epistemology among other so as to fully understand the subject matter. This was chosen due to the fact that the researcher wished to find out the facts relating to the subject matter. This has an influence on the epistemology as it will also utilize constructionist epistemology.

4.2.2 Epistemology

This is research philosophies which ask a question, what can we know? What can we be sure of? How do we get beyond mere opinions to justify what we know? This refers to the knowledge of science that deals with the nature, sources and scope or limitation of knowledge of that particular reality.

The constructionist epistemology was adopted based on the ontology of the study. The argument here is that science is concerned with the prediction and explanation of observable phenomena. This being the case, then it makes it relevant that the current study understands and explains the observable phenomena in the causes as effects of supplier’s failure to deliver orders on time at FRA.

4.2.3 Phenomenology

Phenomenology is an approach to qualitative research that focuses on the commonality of a lived experience within a particular group. The fundamental goal of the approach is to arrive at a description of the nature of the particular phenomenon (Creswell, 2013). Through this process the researcher may construct the universal meaning of the event, situation or experience and arrive at a more profound understanding of the phenomenon.

This was used in the study to understand the problems FRA is having while addressing national food security. It helped the researcher define the problem statement and the research background. With these defined the researcher was able to define objectives of the research.

4.2.4 **Axiology**

Axiology is the study of the nature of value and valuation, and of the kinds of things that are valuable. Specifically, axiology is engaged with assessment of the role of researcher’s own value on all stages of the process. In simple terms, axiology focuses on what do you value in your research. This is important because this affects how one conducts research and what one value in their research findings.

This was important to the researcher who wishes to understand what causes delays of failure to deliver orders on time by suppliers to FRA. This was used in coming up with the aims of the research in investigating challenges on supplier failure to deliver materials to FRA.

4.3 Research Design

This study employed both quantitative and qualitative research designs for collecting, analyzing, interpreting, and reporting data. The qualitative aspect of the study design was employed in this research because the research topic is subjective and of a philosophical nature. This is a systematic subjective approach used to describe life experiences and give them meaning. Qualitative aspect was used in describing the data generated in the research and the design and use of the questionnaire to generate data. Also the size of the sample is justifies the use of qualitative research design.

This study employed this design so as to gain insights into the relationships existing between the variables. The data generated through qualitative approach was analyzed quantitatively through the use of statistics to show trends and relationship in the data. This resulted a more pictorial way of analyzing information.

4.4 Population

In this study, the population comprised of all suppliers to FRA of crop marketing requisites, farmers who sell crops to FRA and FRA staff in the various departments was the target population.

4.5 Sample Size

According to (Ploeg, 1999) qualitative research is generally based on non-probability and purposive sampling, in this study, purposive sampling was used. The goal or purpose for selecting specific study units is to have the one that will yield the most relevant plentiful data.

The sample size to determine the number of respondents was calculated based on Yamane's formula (Polit and Hungler, 2010) coined by Yamane, 1967.

The respondents were randomly selected to participate in the study to give a non-zero chance of having a biased population and generalization cannot be put to doubt.

The researcher adopted a sample size using purposive sampling method with a 95% confidence level and with ±5% precision:

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

Where:

N= the size of population

n=the desired sample size.

e=the error of 5 percentage points

Calculation

Population frame =92

$$n = \frac{92}{[1 + 92 (0.05^2)]}$$

$$n = \frac{92}{[1 + 92 (0.0025)]}$$

$$n = \frac{92}{1.23}$$

$$n = \mathbf{75}$$

n = 75 Total number of respondents.

Therefore, a sample of 75 respondents was drawn which consisted of suppliers of crop marketing materials (20) to FRA between 2015 and 2018, farmers who sell crops to FRA (20), Food Reserve Agency staff members (20). Out of the said sample, only 60 responded However, when saturation is reached i.e. until data begins to repeat itself/no new data emerges before reaching the projected sample size the researcher will stop because qualitative is not about representation but representativeness (Suleiman, 2015).

4.6 Sampling Techniques

Purposive sampling is also known as judgmental, selective, or subjective sampling. This study adopted purposive sampling as the technique to be used to sample the respondents to be included in the analysis. The intuition is that the study has specific target group of suppliers and FRA officials.

According to Mertens (1998), sampling refers to "the selection of a smaller group of participants from a large population to participate in a particular study". The population of this research comprises FRA staff, farmers and suppliers to FRA. To select a viable, smaller research population without sacrificing the validity a sampling process should be used to determine the number of research participants. Corbetta (2003) explains sampling as "a procedure for choosing a limited number of cases from a population by applying specific criteria.

4.7 Data Collection Method

Secondary data was collected from FRA headquarters. Specifically, annual reports and bulletins were sourced. Additionally, structured questionnaires were used to collect data. An in-depth interview is a one to one data collection method that involves an interviewer and interviewee discussing specific topics in-depth (Hennink et al., 2011). The reason for employing a questionnaire is that it allows respondents the freedom to express their views in their own terms thus providing reliable comparable qualitative data as well as standard for the comparability of results which is good for quantitative data (Walsh and Wigens, 2003).

4.7.1 Questionnaire survey

Questionnaires are frequently used in quantitative marketing social research. This study adopted the questionnaire as a means through which different view and opinions regarding the causes and effects of failure by suppliers to deliver orders on time can be obtained. As discussed above it is one of the reliable and scientific ways of collecting data.

4.8 Data Analysis Methods

Data analysis is the most crucial part of this research. Data will analyse and summarize collected data. It involves the interpretation of data gathered through the use of analytical and logical reasoning to determine patterns, relationships or trends. It will be done through the use of tables and graphs alongside qualitative analysis.

4.8.1 Document Analysis

Data was analysed using a Statistical Package for Social Scientists (SPSS version 22) and Microsoft Excel 2016. It was then presented in form of charts, table and graphs. Specifically, pie charts and bar charts were used. Means and standard deviations were obtained to have a clearer and statistical understanding of the data in question.

4.9 Ethical consideration

Prior approval was sought from the University of Zambia Ethics Committee. Informed consent was also obtained from participants before the administration of the Research Questionnaires. Ethics are important in all walks of life. In this study ethical consideration were very important in order to get the desired conclusion of the study without prejudice. One of the key elements in this study was honest and objectivity in the way data was collected and analysed with no room for biasness. Integrity, openness, honesty and confidentiality of the responses by the respondents were assured.

4.9.1 Confidentiality

This was handled by not publishing information submitted by the respondents. There was no section in the questionnaire that asked the respondents to fill in their personal details. The respondents were also assured of privacy of any information given during the research. This was adhered to up to now and only the researcher analyzed the data from the questionnaire.

4.9.2 Information consent and privacy

As described in the Belmont Report (2005), informed consent allows for the confirmation of autonomy among all research participants. Informed consent, usually in the form of a document signed by the subject, relays all pertinent and relevant research information, such as risks and benefits, to the potential subject, allowing him or her to make an informed decision regarding participation. Subsequently, the participant is given the opportunity to withdraw from the research or experiment at any time and for any (or no) reason. This process is a basic legal and ethical standard by which all research must abide. This study ensured that the participants were protected by ensuring that participants are fully informed and therefore may freely choose to participate in the study. It gave participants adequate time to ask questions of the researcher, receive clear answers, and reflect on this information before choosing to participate.

4.9.3 Plagiarism

The study is purely my work. All published and unpublished material, whether in manuscript, printed or electronic form, used in this study have been duly acknowledge and cited appropriately. It was implemented during the literature review in chapter two and chapter one.

4.9.4 Transparency

Transparency is an essential foundation for rule-governed and intersubjective valid social science research, in that it permits scholars to assess research and to speak to one another. It is also a precondition for any other advances in social science method, theory and data collection. This was exercised by being explicit, clear, and open about the methods and procedures used in the study.

4.10 Chapter Summary

This chapter discussed the research methodology employed in the study. Both quantitative and qualitative approaches were used in this study since it involved asking the respondents for information using structured questionnaires. A qualitative approach was employed to collect and analyze data. A total of 60 valid questionnaires were collected and analyzed out of the 75 that were distributed to respondents. The sample included suppliers of crop marketing materials (20), farmers who sell crops to FRA (20), and FRA members of staff (20). Data was analyzed using SPSS and Microsoft excel**.**

CHAPTER FIVE

PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

5.1 Introduction

The data from the questionnaires was collected and coded using SPSS and excel then checked for uniformity, consistency and accuracy. This chapter presents data in form of tables and figures as collected from the respondents.

The chapter is broken down into three sections FRA STAFF, FARMERS and SUPPLIERS OF REQUISITE MATERIALS. To facilitate meaningful data analysis and interpretation of the findings, information on bio data of respondents has been included. The report sheds light on the *Causes and effects of suppliers' failure to meet orders on time. A case of Food Reserve Agency* and seeks to understand, from all participants, the challenges encountered and suggested solutions. The research objectives are listed in chapter one section 1.4.2 on page 6.

5.1.1 Response rate

During the process of collecting data, questionnaires were specifically addressed to farmers, FRA staff and suppliers.

Table 3: Response rate

Number of Questionnaires Given Out	**Number of Questionnaires Answered**	**Number of Questionnaires Not Answered**
75	60	15
100%	80%	20%

The response rate of 80% questionnaires was exciting and was representative of the sample size. In addition, the interviews were conducted with a lot of respondents to supplement the responses where clarity was needed.

5.2 SECTION ONE: FRA STAFF

20 questionnaires were distributed and collected from the FRA staff. That represents 100% response rate from the staff members. This section tackled to a greater extent objective number one to establish effects of suppliers failing to meet orders on time to FRA. This can be seen from section 5.2.6 to 5.2.10

5.2.1 What is your gender?

Out of the 20 respondents 12 where male while the balance 8 were female. There was a blend of both gender in the survey based on the available respondents at the time of distribution.

5.2.2 What was your age range at your last birthday?

Table 4: Age of respondents

Age	Frequency	%
25 – 29 years	3	15
30 – 34 years	1	5
Above 34 years	16	80

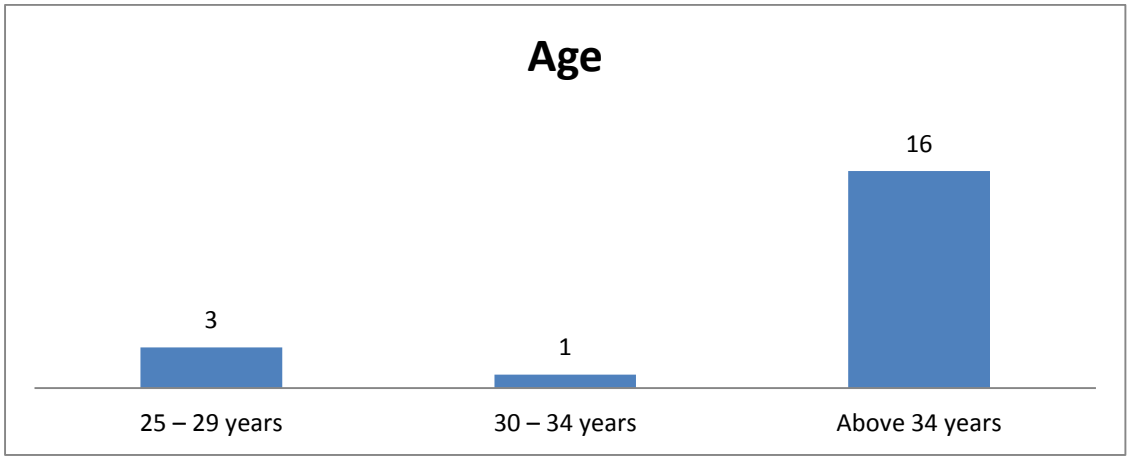

Figure 5: Age of respondents

From the 20 respondents received about 16 of them were above 34 years of age, only 1 was between 30-34years and finally 3 are between 25-29 years. Table 3 above and graph show this information.

5.2.3 What is your education level?

Table 5: Education Level

Education Level	Frequency	%
Grade 9 and below	1	5
Grade 10 – 12	1	5
College level	5	25
University level	13	65

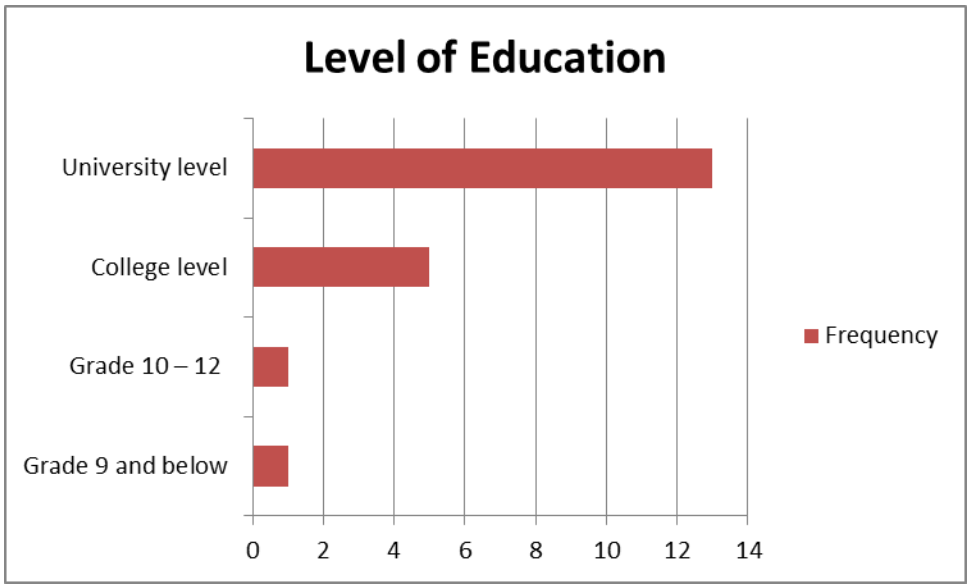

Figure 6: Education level

From the respondents of 20 received, 13 have attained at least a University degree. This number represents about 65% of the sample size. About 5 have attained a decent college education; this represents 25% of the sample population. The rest have attained at most grade 12 education. The table and graph in figure 6. gives an illustration of this information**:**

5.2.4 How long have you been working for FRA?

Table 6: Length of service

Length of service	Frequency	%
5 years and below	3	15
6 – 10 years	13	65
11 – 15 years	4	20

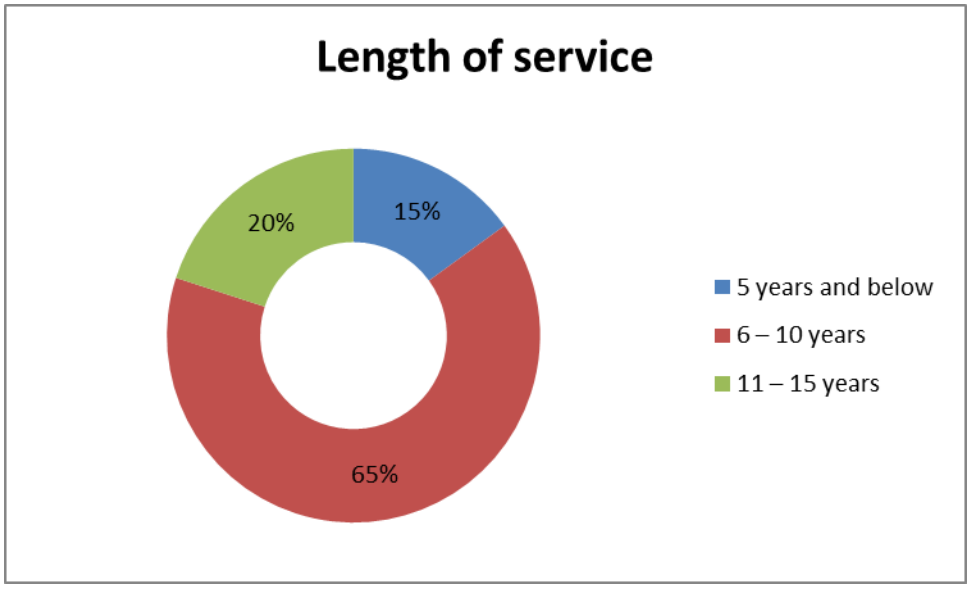

Figure 7: Length of service

The intent of this question was to assess the credibility of the information given, it intended to seek if the respondents had been in the Agency long enough to understand its dynamics. About 65% of the respondents representing 13 employees have been there between 6-10 years while 20% had been there for over 10 years.

5.2.5 What department or Unit do you belong to within FRA?

Table 7: Department

Department	Frequency	%
Procurement & Supplies Unit	3	15
Food Reserve & Marketing	7	35
Human Resources Unit	3	15
Finance department	2	10
Others	5	25

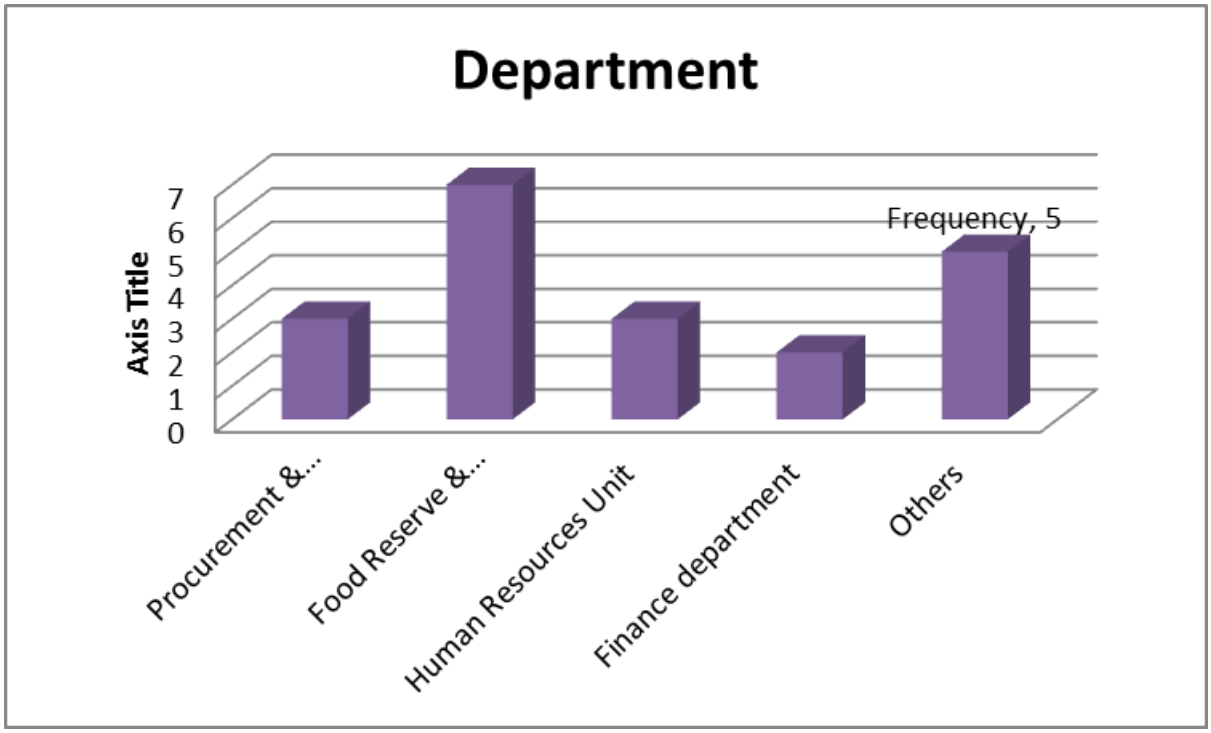

Figure 8: Department

The respondents from FRA were well spread across departments. 3 came from procurement and supplies unit. The Food Reserve and Marketing had 7 respondents. Human resources unit had 3 as well while finance and other units had 2 and 5 respectively. This represents a well spread distribution to almost the entire organisation and hence gives confidence on unbiased data collected.

5.2.6 What do you think are the major challenges that Suppliers face in supplying crop marketing requisites to FRA?

Table 8: Challenges faced by suppliers.

Challenges faced by suppliers	Frequency	%
Lack of capital	5	25
Lack of capacity to supply in bulk	13	65
Failure to plan execution by supplier	2	10

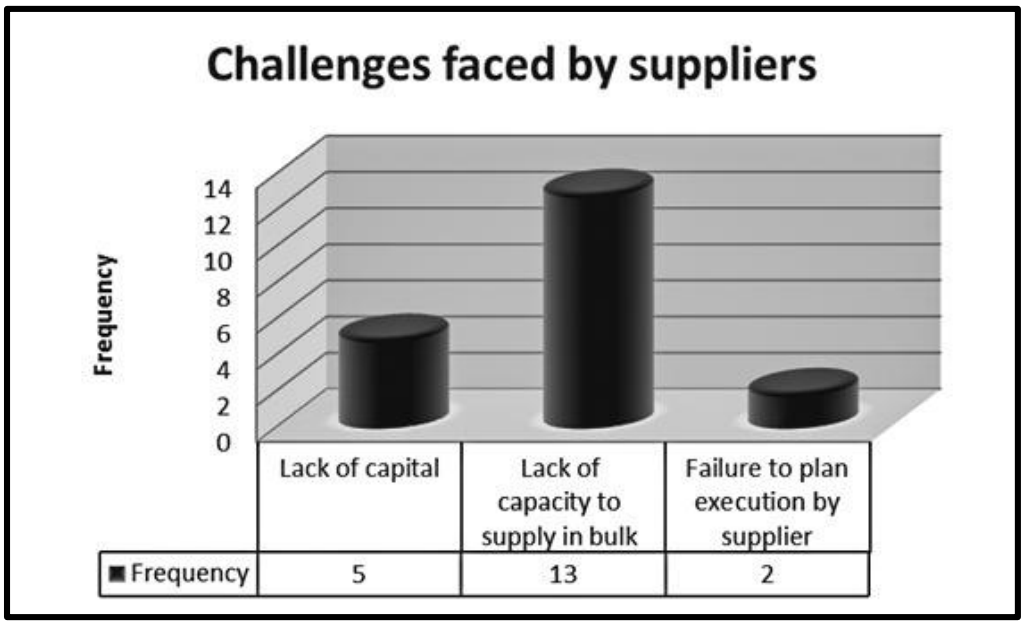

Figure 9: Challenges faced by suppliers.

Lack of capacity is the major challenge suppliers' face. This is evidenced by 13 respondents attesting to it representing 65% of the respondents. Lack of capital and failure to plan execution by supplier had 5 and 2 respondents respectively as a challenge suppliers faced.

5.2.7 How much are you affected by Suppliers not meeting orders for crop marketing requisites on time?

Table 9: Effects of suppliers failure

Effects of suppliers delay	Frequency	%
Very much	11	55
Much	7	35
Average	2	10
Low	0	0
Very low	0	0

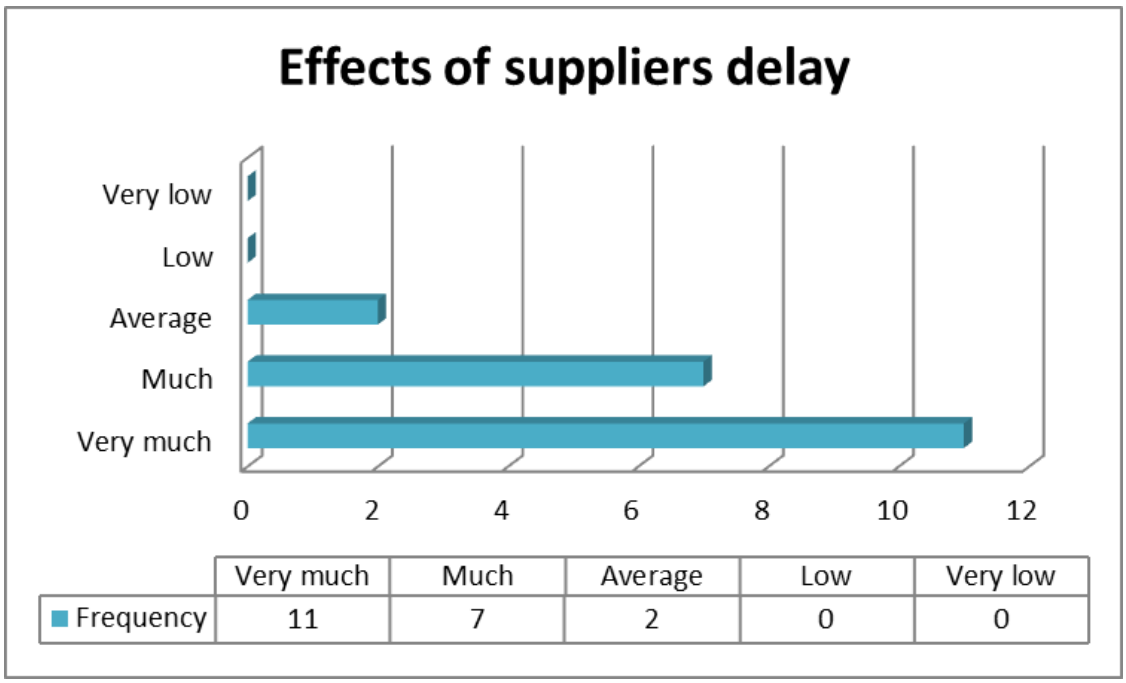

Figure 10: Effects of supplier failure.

Of the 20 respondents 11 expressed to be Very much affected by the suppliers not meeting orders while 7 agreed to be much affected and 2 to be average in terms of the effect. None showed low effects to the delay.

5.2.8 What are the effects of failure by suppliers to meet orders on time on your department?

Table 10: Effects of supplier failure on departments

Effects of failure by suppliers	Frequency	%
Affects our planning	3	15
Affects national food security if grain target is not met	8	40
It affects the operations of the organization	9	45

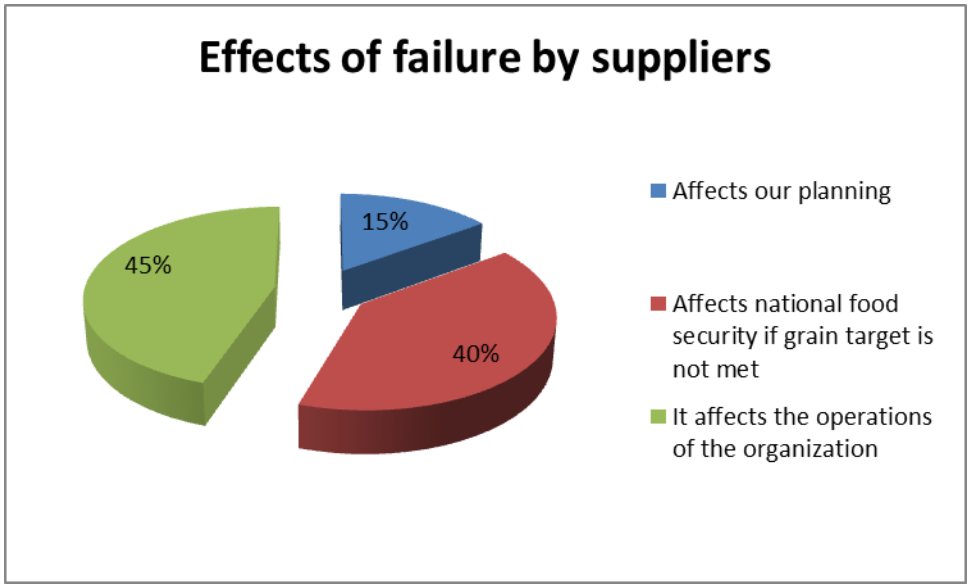

Figure 11: Effects of supplier failure on departments

Failure by suppliers to meet orders on time has a huge effect on the organisational operation, 9 of the respondents attested to this. Of the 20 respondents 8 showed that this delay affects national food security while 3 affects planning.

5.2.9 What challenges do you face when receiving crop marketing requisites from suppliers?

Table 11: Challenges faced when receiving requisites

Challenges faced when receiving requisites	Frequency	%
Delayed delivery of orders	8	40
Failure to execute contract by suppliers	4	20
Delivery of poor quality materials	8	40

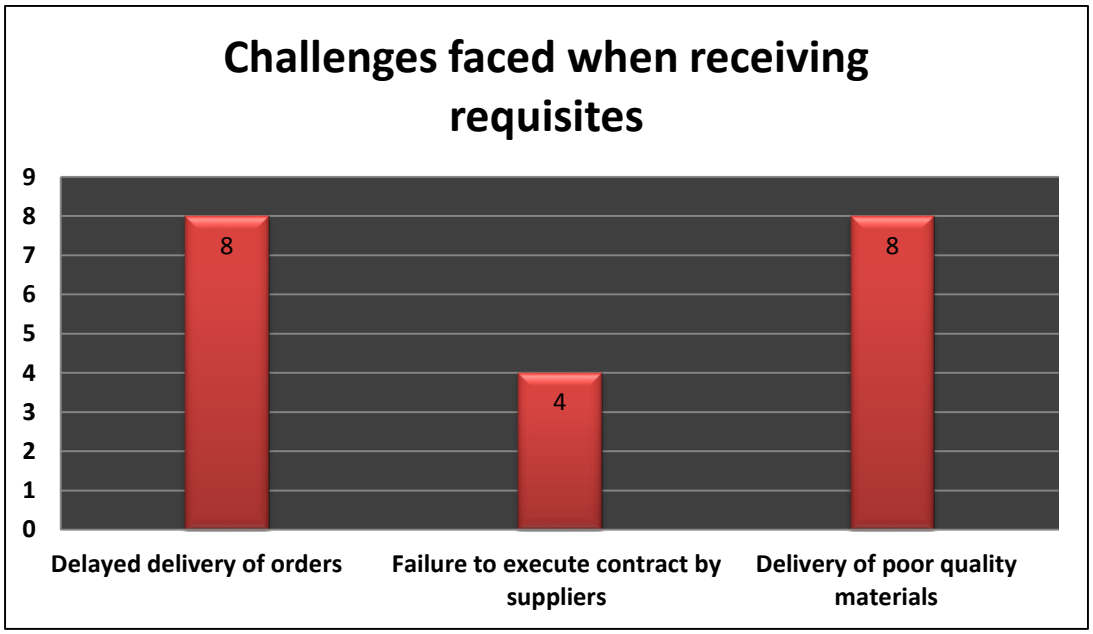

Figure 12: Table 10: Challenges faced when receiving requisites

Most suppliers delay delivery of orders as 8 respondents of the 20 sampled agreed to this. A further 8 also expressed delivery of poor quality materials as a challenge they faced. While, the remaining 6 cited failure to execute contracts by suppliers as a main challenge. They are many factors that might affect suppliers in failure to deliver one of them being exchange losses due to fluctuating exchange rates of the dollar.

5.2.10 What performance objective affects FRA when orders are not met on time?

Table 12: Performance objective affecting FRA when orders are not met on time

Performance objective affecting FRA when orders are not met on time	Frequency	%
Quality of crop marketing requisites	6	30
Speed of deliveries from suppliers	8	40
Dependability of suppliers	4	20
Flexibility of suppliers	0	0
Cost of crop marketing requisites	2	10

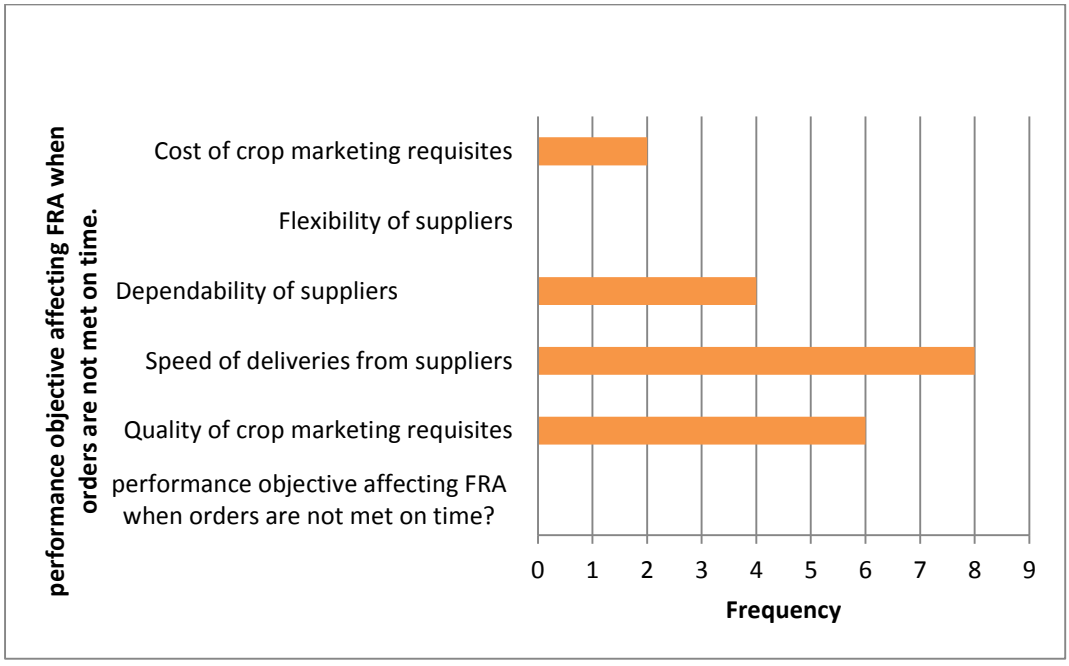

Figure 13: Performance objective affecting FRA when orders are not met on time

Some performance objectives are affected when orders are not met at FRA. The speed of deliveries from suppliers had about 8 respondents. Quality of crop marketing requisites had 6 out of 20 while dependability of suppliers had 4 and finally the cost of crop marketing requisites had 2.

5.2.11 What do you suggest should be done to mitigate the challenges related to delayed or poor deliveries of crop marketing requisites?

Table 13: Objective responses.

Questionnaire number	Response	Frequency	%
1.	Strengthening engagements with selected suppliers during the process of sourcing and delivering. They must come up with a way of clearing grain bag suppliers timely so as to attract reputable companies to participate in their grain bag tenders.	2	10
2.	There is need to source directly from manufacturers locally and internationally	4	20
3.	FRA should consider setting up its own manufacturing plant for the empty grain bags. It can be done through the government with assistance from other institutions (e.g. IDC that acquired a milling plant and they can set up a plant to manufacture grain bags for both FRA and milling plant continuously.) Some form of backward integration.	1	5
4.	The bulk nature and high cost of crop marketing requisites requires a good cash flow by suppliers. FRA must consider having a funding model for requisites even in form of a third party such as banks with reasonable commission	3	15
5.	Suppliers should build their financial capacity to enable them to take up the bulk orders	2	10

6.	Suppliers must carry out due diligence of manufacturers they engage abroad to ensure right quality of bags is manufactured. This will help prevent loses as they deliver.	3	15
7.	National food security is critical and ZPPA must consider waiving certain restrictions so that certain requisites are treated as those of security nature.	2	10
8.	A robust resource mobilization strategy to enable the agency to pay on time.	3	15
Total		**20**	**100%**

5.3 SECTION TWO: FARMERS SECTION

25 questionnaires were distributed and 20 collected from the FARMERS. That represents 80% response rate from FARMERS. This enough sample size to aid in data analysis.

5.3.1 What is your gender?

Table 14: Gender of respondents

Gender of respondents	Frequency	%
Male	14	70
Female	6	30

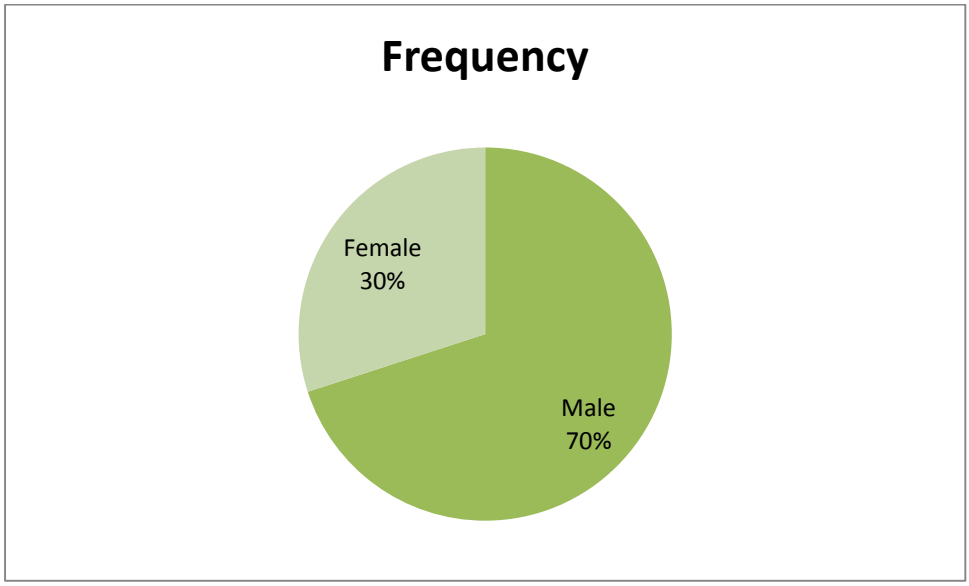

Figure 14: Gender

Out of the 20 respondents 14 where male while the balance 6 were female. There was a blend of both gender in the survey based on the available respondents at the time of distribution.

5.3.2 What was your age range at your last birthday?

Table 15: Age of respondents

Age of respondents	Frequency	%
25 – 29 years	2	10
30 – 34 years	7	35
Above 34 years	11	55

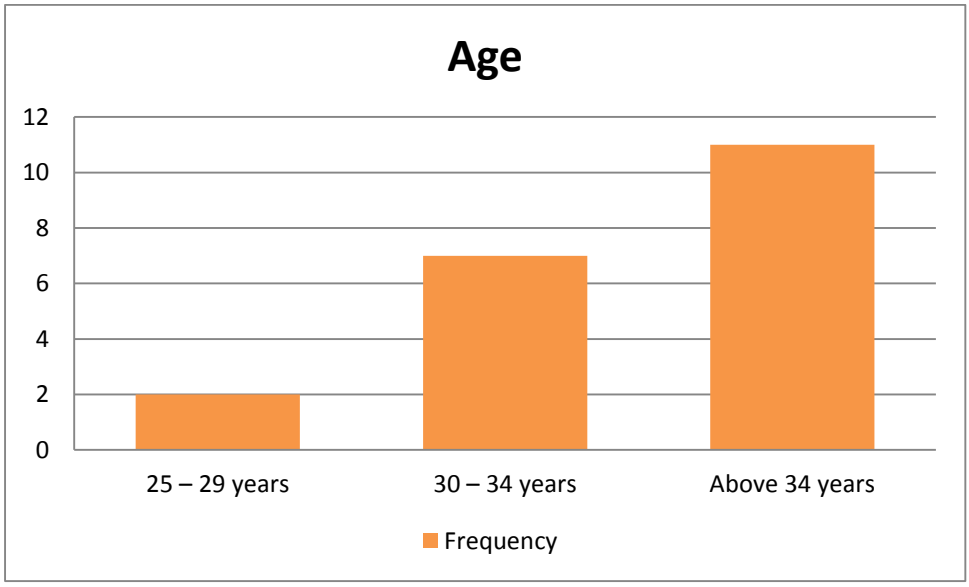

Figure 15: Age of respondents

From the 20 respondents received about 11 of them are above 34 years of age, about 7 are between 30-34years and finally 3 are between 25-29 years.

5.3.3 What is your education level?

Table 16: Education Level

Education Level	Frequency	%
Grade 10 – 12	7	35
College level	10	50
University level	3	15

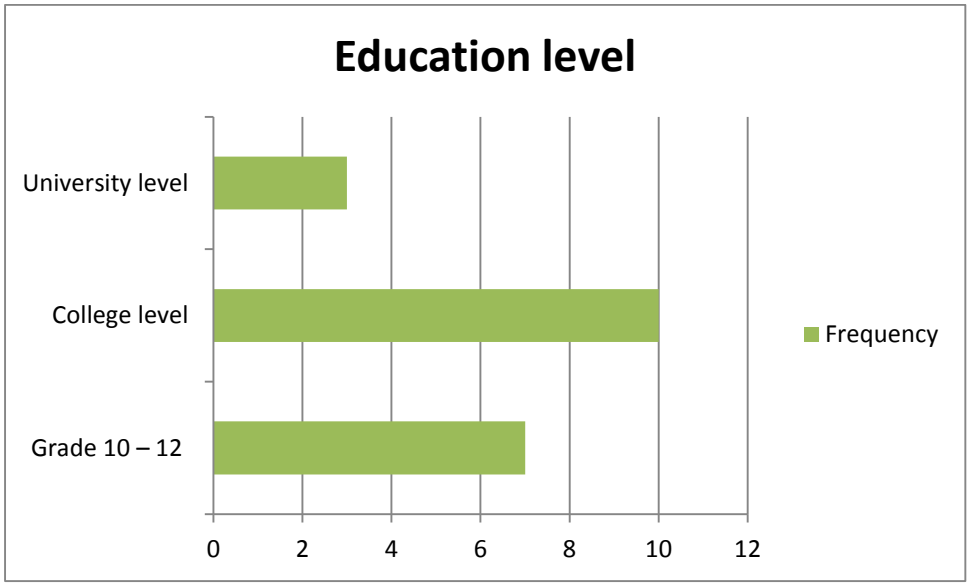

Figure 16: Education Level

From the respondents of 20 received 3 have attained at least a University degree. This number represents about 15% of the sample size. About 10 have attained a decent college education; this represents 50% of the sample population. The rest have attained at most grade 12 educations.

5.3.4 How long have you been a farmer?

Table 17: Length of farming

Length of farming	Frequency	%
5 years and below	2	10
6 – 10 years	5	25
11 – 15 years	5	25
16 years and above	9	45

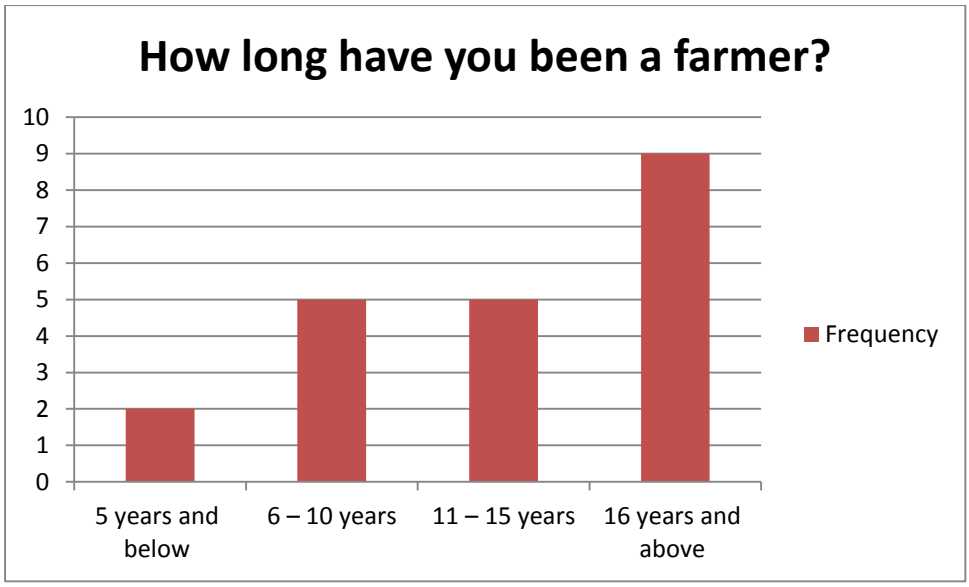

Figure 17: Length of farming

From the sample of 20, majority have been farmers for over 5 years. About 90% of that population have been in farming that long with 5% below 5 years in farming.

5.3.5 What crop do you usually supply to FRA?

Table 18: Crops supplied to FRA

Crops supplied to FRA	Frequency	%
maize	20	100
soya beans	6	30
paddy rice	2	10

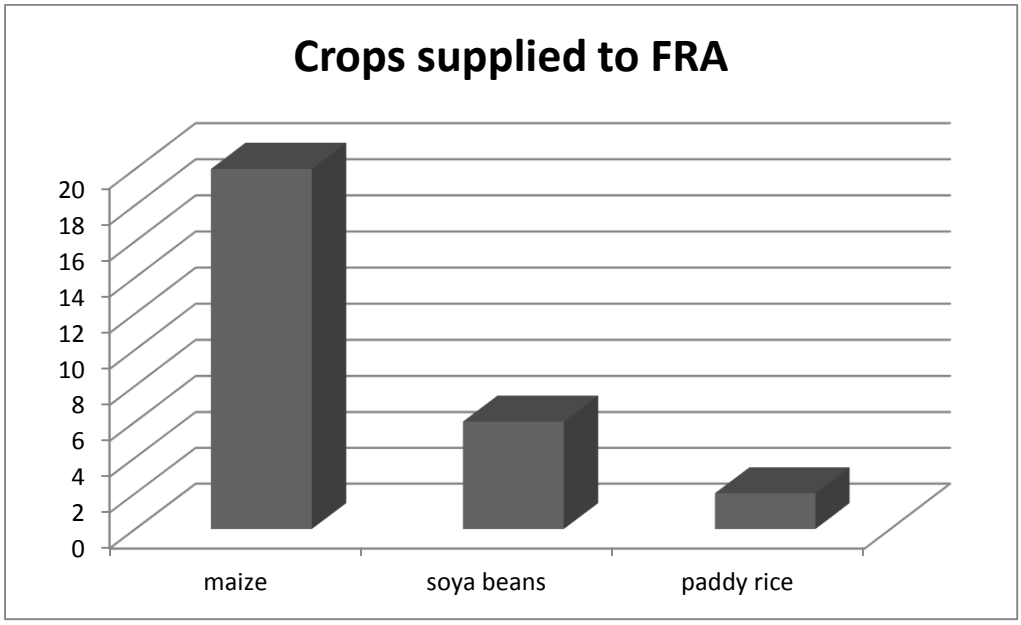

Figure 18: Crops supplied to FRA

Of the 20 respondents, most of them supply more than one crop. This can be seen by 20 supplying maize and some of them also supplying both maize and paddy rice. Most supply maize. This is so, probably due to the fact that it has a high demand as the staple item in the diet.

5.3.6 Have you ever been inconvenienced at satellite depots due to lack of crop marketing requisites?

Table 19: Inconveniences at satellite depots

Inconveniences at satellite depots	Frequency	%
Yes	15	75
No	5	25

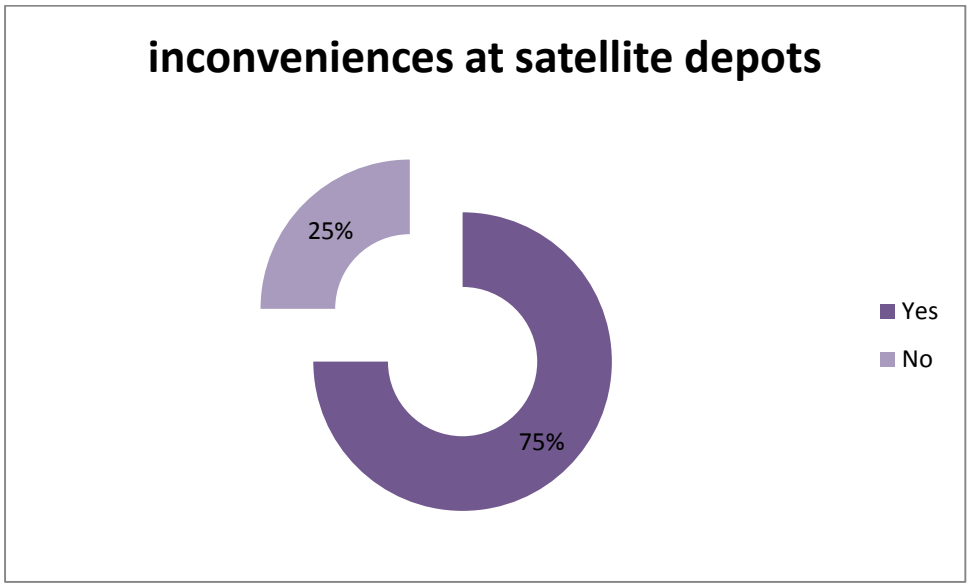

Figure 19: Inconveniences at satellite depots

Most of the respondents said yes to being inconvenienced at satellite depots due to lack of crop marketing requisites. 15 said YES while the remainder 5 said No to the inconvenience. Such has effects on the efficiency of the organisation.

5.3.7 How much are you affected by FRA not delivering crop marketing requisites on time?

Table 20: Effects of delayed delivery of requisites to farmers

Effects of delayed delivery of crop marketing requisites to farmers	Frequency	%
Very much	4	20
Much	8	40
Average	4	20
Low	2	10
Very low	2	10

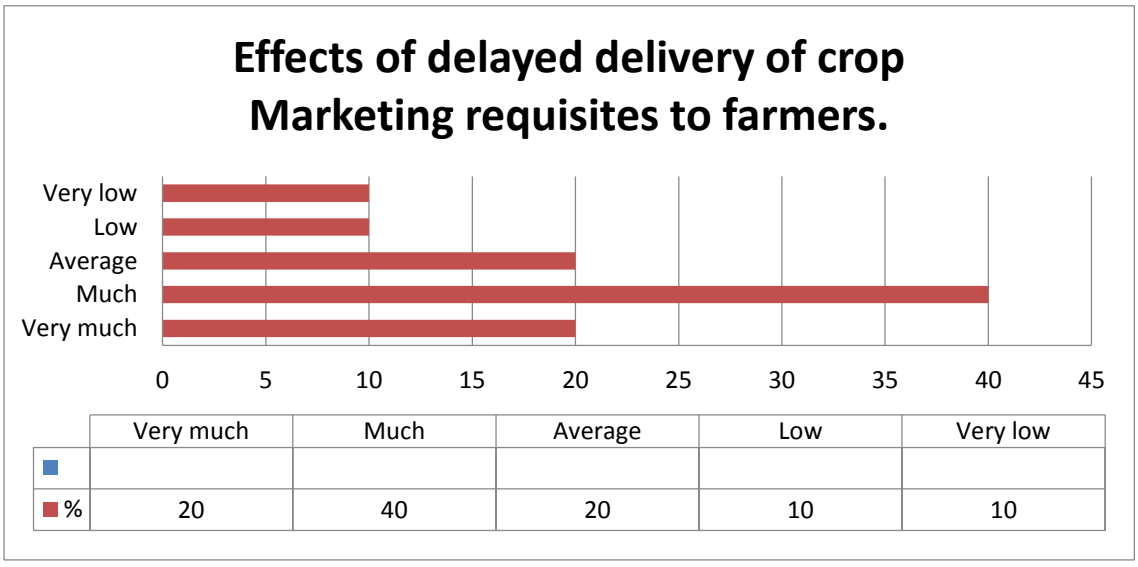

Figure 20: Effects of suppliers by FRA to farmers

This question was specifically intended to address objective number three which looked at the delivery times of crop marketing requisites. To establish effects of late delivery of marketing requisites at FRA as this also will in turn affect delivery to farmers long-term. Of the 20 respondents 4 expressed to be Very much affected by the suppliers not meeting orders while 8 agreed to be much affected and 4 to be average in terms of the effect. But 2 showed Low and Very low effect by FRA not delivering on time.

5.3.8 What do you think needs to be done to mitigate the challenges related to delayed supply of crop marketing materials?

Table 21: Mitigate challenge due to delayed crop marketing requisites

Challenge due to delayed crop marketing materials	Frequency	%
Timely delivery of materials	12	60
Timely release of funding	8	40

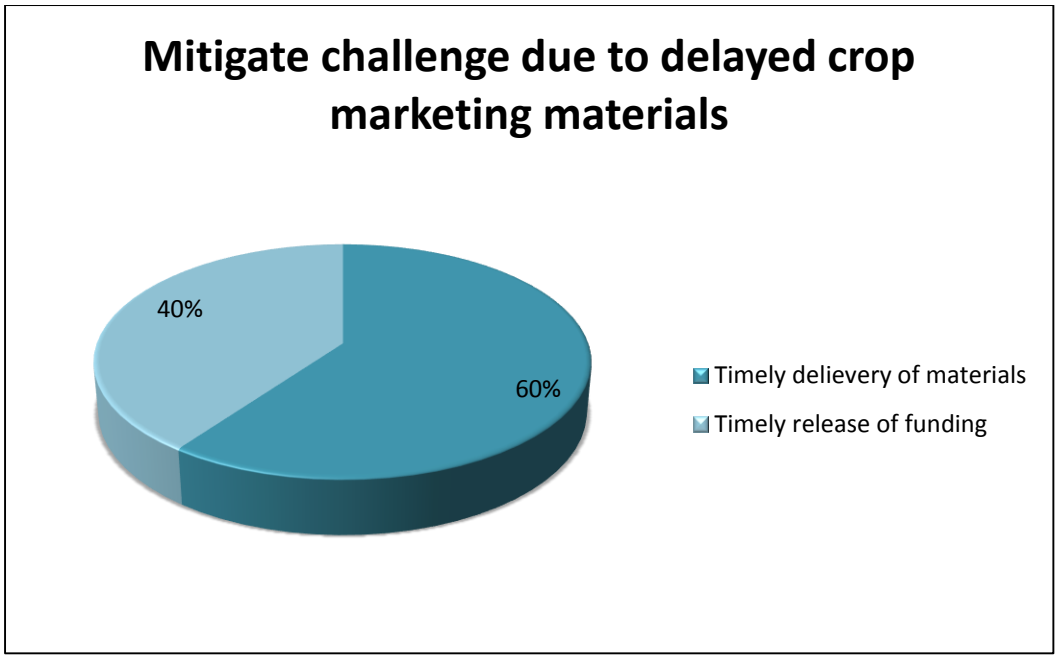

Figure 21: Mitigate challenge due to delayed crop marketing requisites

The short interval controls to mitigate challenges of delayed crop marketing materials. About 12 of the farmers agreed to timely delivery while 8 agreed to timely funding as measures to curb the delay.

5.4 SECTION THREE: SUPPLIERS

In Total 30 questionnaires were distributed to suppliers. Only 20 questionnaires where received the rest were not filled in.

5.4.1 What is your gender?

Table 22: Gender of respondents

Gender of respondents	Frequency	%
Male	17	85
Female	3	15

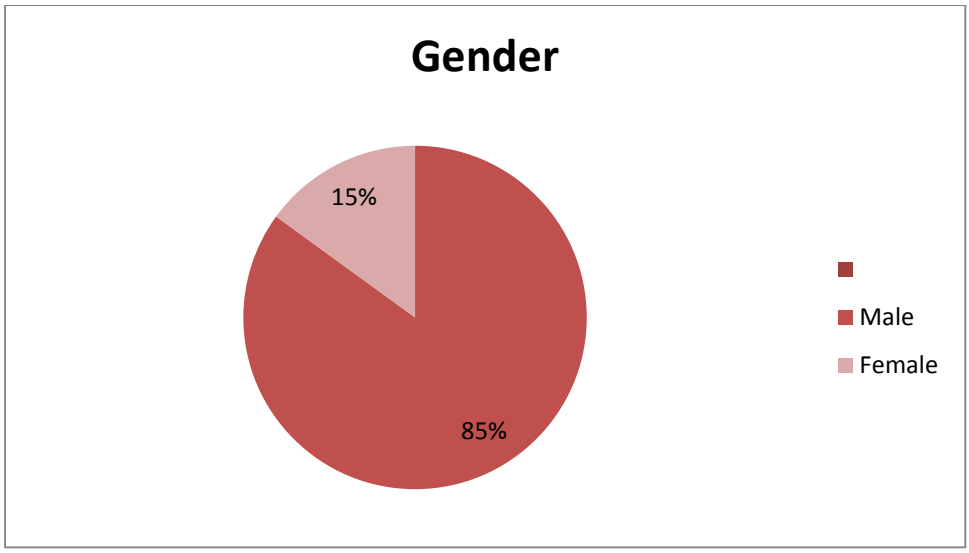

Figure 22: Gender

Out of the 20 respondents 17 where male while the balance 3 were female. There is a near gender balance from the participants. The table and graph above gives a pictorial view of this information using a pie chart:

5.4.2 What was your age range at your last birthday?

Table 23: Age of respondents

Age	Frequency	%
25 – 29 years	2	10
30 – 34 years	3	15
Above 34 years	15	65

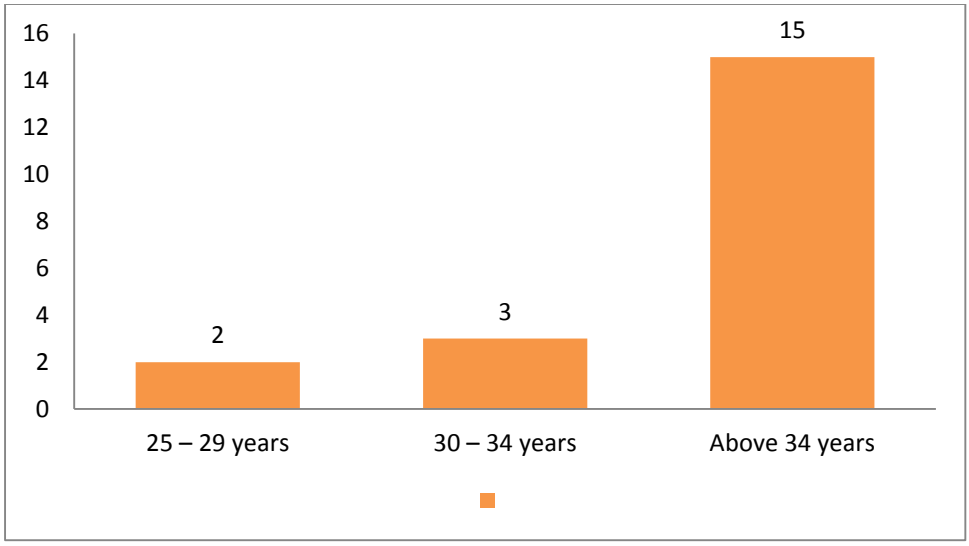

Figure 23: Age of respondents

From the 20 respondents received about 15 of them are above 34 years of age, only 3 is between 30-34years and finally 2 are between 25-29 years.

5.4.3 What is your education level?

Table 24: Education Level

Education Level	Frequency	%
Grade 10 – 12	3	15
College level	5	25
University level	12	60

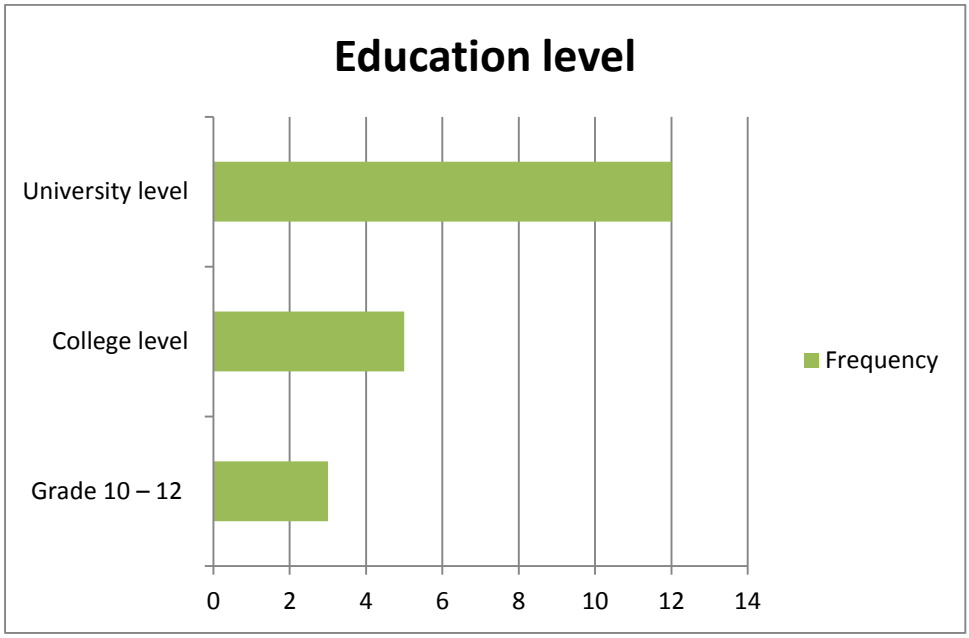

Figure 24: Education level

From the respondents of 20 received 12 have attained at least a University degree. This number represents about 60% of the sample size. About 5 have attained a decent college education; this represents 25% of the sample population. The rest have attained at most grade 12 educations.

5.4.4 What major item do you usually supply to FRA?

Table 25: Supplies to FRA

Supply items	Frequency	%
Chemicals	7	35
Empty grain bags	15	65
Bailing Twine	6	30
Others	3	15

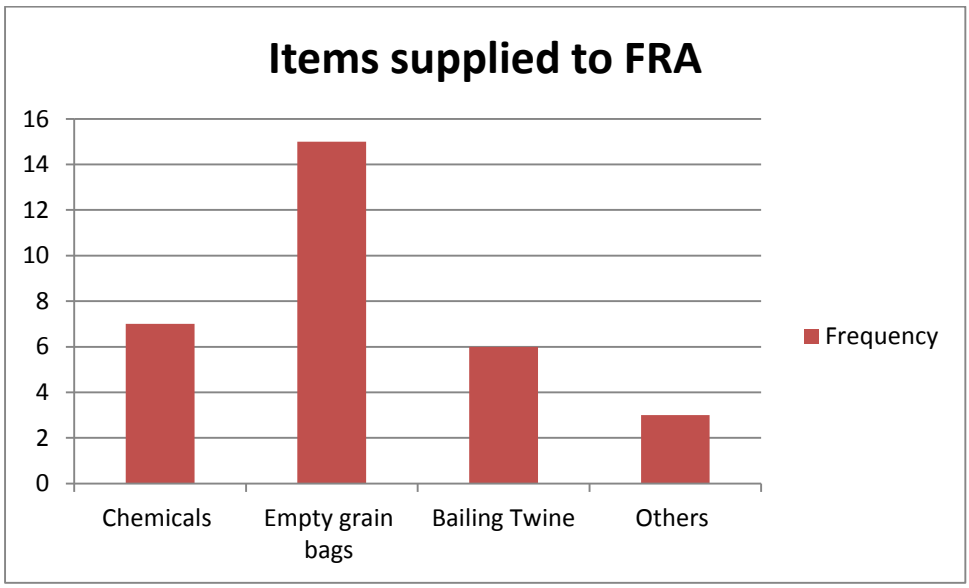

Figure 25: Supplies to FRA

The products supplied range from chemicals, empty grain bags, bailing twine and other items. Most suppliers supply more than one item. From the respondents, majority supply empty grain bags as shown in the table above with 15 suppliers. Chemicals had 7 suppliers supplying while the remainder was shared between bailing twine and other items.

5.4.5 What kind of a supplier are you?

Table 26: Types of suppliers

Type of supplier	Frequency	%
Manufacturer	5	25
Trader	15	75

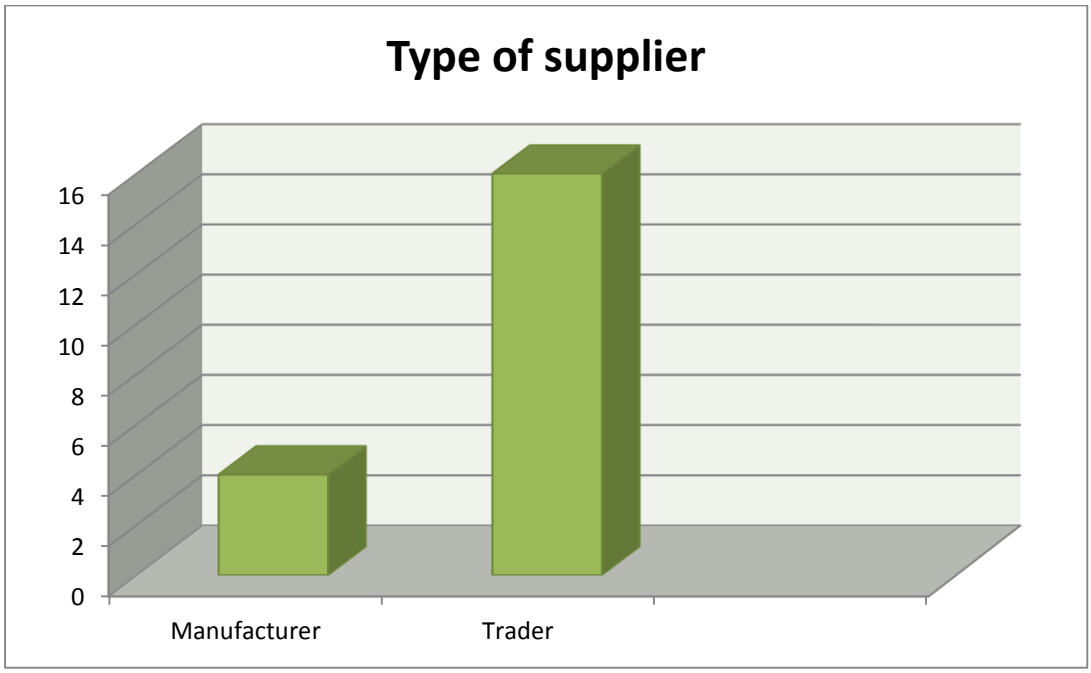

Figure 26: Types of suppliers

Majority of suppliers are traders. Over 75% are traders with the remaining 25% being manufacturers. The table and graph above shows this information. The number of manufacturers are unable to meet demand and it's key to encourage new entrants into the industry to improve supply of the raw materials and to manufacture.

5.4.6 How long have you been in the industry?

Table 27: Years in supply industry

Years in supply industry	Frequency	%
5 years and below	2	10
6 – 10 years	6	30
11 – 15 years	6	30
16 years and above	6	30

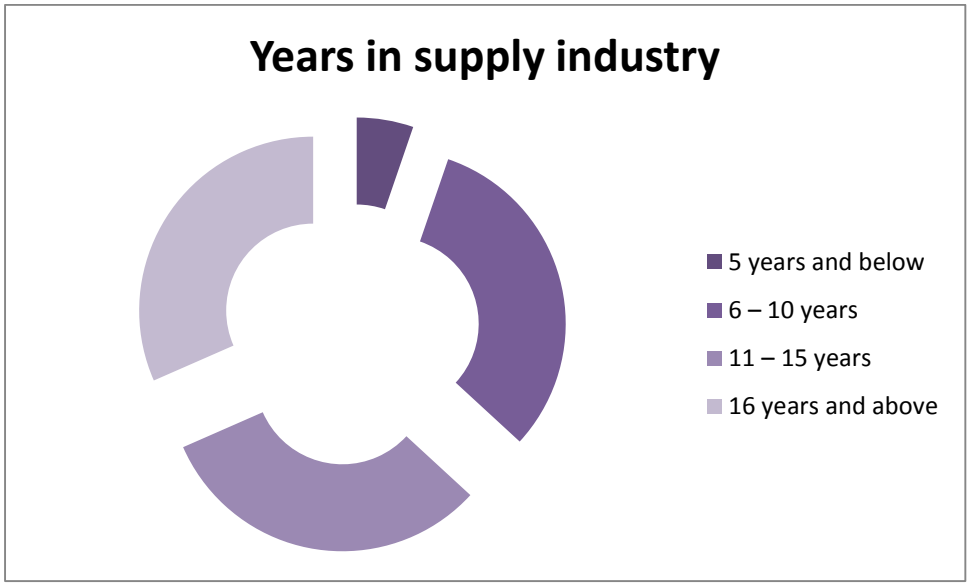

Figure 27: Years in supply industry

In the table and figure above it can be seen that most of the respondents have been supplying FRA for many years. About 10% are below 5 years in the business, 30% range between 6-10years, and another 30% of the respondents range between 11-15 years while the remaining 30% have been suppliers for over 16years. This presents a rich knowledge base presented by the respondents as they have been at the forefront in witnessing the dynamics that have transition within FRA over the years and they can directly relate to the happenings as mostly, if not always, they have been involved in a given supply period.

5.4.7 What procurement method, used by FRA do you participate in?

Table 28: Procurement method

Procurement methods	Frequency	%
Open National Bidding	19	76
Selective Bidding	6	24
Direct Bidding	0	0

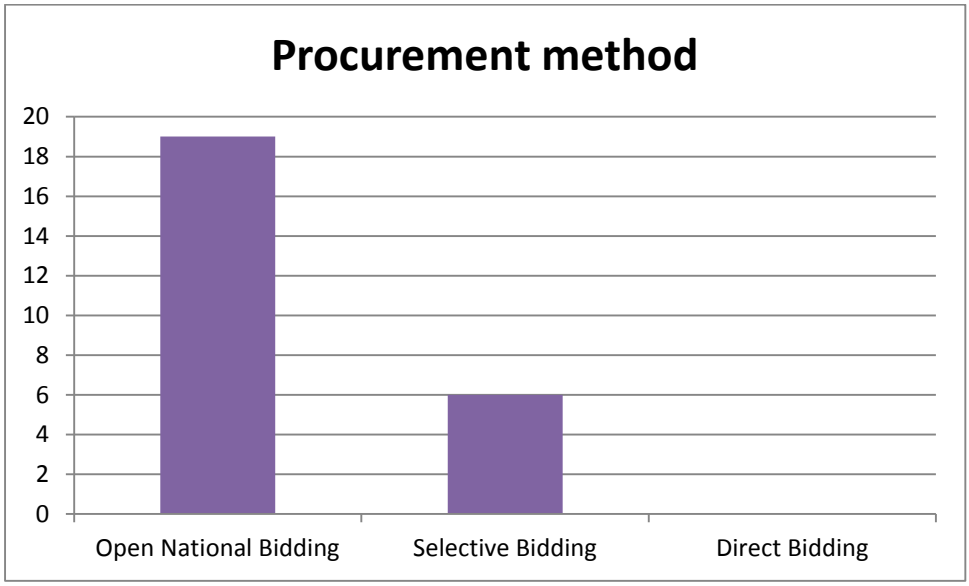

Figure 28: Procurement method

This section was meant to address objective number four which looked at the tender processes at FRA. From the outcome of this question, which sought to discover the type of bidding FRA employs in its tender process. About 76% stated the use of open national bidding and 24% stated the use of selective bidding process in the award of contracts. The reason the latter method is used by FRA is for thorough assessment of supplier capacity and to attract a lot of suppliers to competitively bid and offer best value for money. This is in a quest to avoid unplanned delays in delivery of goods and services which, in the long-term, might affect its service delivery efficiency.

5.4.8 How many times have you been awarded a contract by FRA in the last 4 years?

Table 29: Supply contracts

Supply contracts past 4 years	Frequency	%
One	7	37
Twice	6	31.5
More than twice	6	31.5

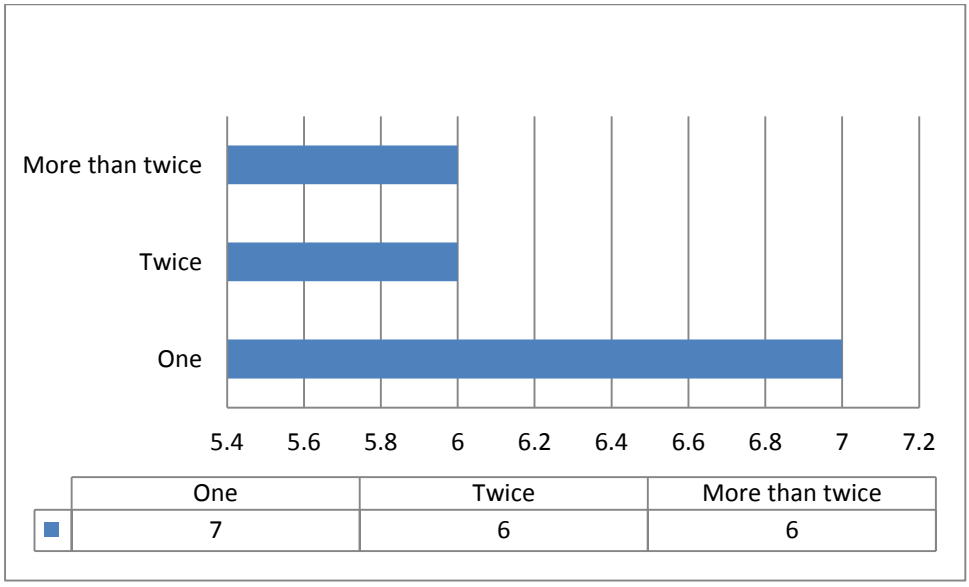

Figure 29: Supply contracts

The intent of this question was to assess the award of contracts for the past four years to a given supplier to see how consistent they have been and diagnose any issues arising. From the finding 37% of the respondents have only been awarded once while 31.5% have been awarded about twice with the same time and the remaining 31.5% have been awarded more than twice. This raises question on the ability of the given suppliers to supply as majority have only been given a single contract in four years.

5.5 Chapter Summary

Chapter five focused on the presentation of results that were collected. It presented the results in three sections A, B and C. The section were divided into Section A for FRA staff, Section B for farmer and Section C for suppliers. The sections addressed the objectives in their order of presentation from one to four.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Introduction

This chapter will be the final chapter of this research study. It will seek to address the summary of findings. It will give the findings based on all the given objectives in the study and show the findings therein. It will have the conclusion of the research. Recommendations will be suggested based on the authors findings and finally suggest areas for further study in areas where they identified a knowledge gap or an opportunity to enhance the knowledge base in this subject.

6.2 Summary of findings

Objective number one (1) from section 1.4.2 sought to establish the effects of suppliers meeting orders to FRA on time. There were some gaps in literature reviewed from Zandi in 2015 in section 2.4. The researcher never addressed the delay by suppliers in a food reserve agency setup. Hence the need to address the gap. This was accomplished through use of questionnaire to gain insight into the effects from the end users.

The delay by suppliers to supply FRA has negative effects on planning, national food security and also it affects negatively on organizational efficiency. From Table 9 above, about 55% of FRA staff claimed to be Very much affected by the delay while 35% and 10% stated they were affected much and average respectively.

Objective number two (2) sought to find measures to improve delivery. This from the literature reviewed from FAO in 2016 never addressed the delivery times by suppliers among other gaps. This was accomplished through the use of purposive sampling using questionnaire to the target population. A number of suggestions were suggested by respondents which would foster efficiency. FRA should consider setting up its own manufacturing plant for the empty grain bags. It can be done through the government with assistance from other institutions (e.g. IDC that acquired a milling plant and they can set up a plant to manufacture grain bags for both FRA and milling plant continuously.) Some form of backward integration. Furthermore, timely delivery of crop marketing materials can be a step in the right direction in addressing challenges that arise due to that delay. Table 21 above shows that 60% sited the delayed delivery as an area of improvement while 40% also stated

delayed funding to be a major setback. If these can be addressed, this could be a step in the right direction in ending the issues of delayed supply.

The delivery time problem was addressed by objective number three (3) from section 1.4.2. This gap was identified in literature review section 2.4 under emerging issues from a report by BIS in the United Kingdom in 2016. The paper never addressed delivery delay of materials to food reserve agency. Questionnaires were used with specific question to investigate the effects this brings. The delivery times of materials presented a pain point to farmers. According to Table 19 above, 75% of the respondents claimed to have been delayed at depots by FRA in the delivery of marketing requisites; this is not a good sign as in the long-term, if left unaddressed can affect participation by farmers in selling their crop hence threatening food security in the nation.

Suleiman (2015) in their paper on eProcurement in the public sector had gaps in addressing challenges in bidding processes. This gave rise to objective number 4 in this report. Objective four (4) from section 1.4.2 sought to investigate tender processing of supplying materials to FRA. The use of purposive sampling through use of questionnaires was utilized in addressing this question. The tender processing mostly employed by FRA is open National bidding. From the outcome of the question, which sought to discover the type of bidding FRA employs in its tender process. As Table 28 above shows, about 76% stated they used open national bidding and 24% stated they used selective bidding process in the award of contracts. Probably the reason the latter method is used by FRA is it within the boundaries of guided by the Public Procurement act, 2008 (Act No.12, 2008). The selective bidding process is used in the event that there are time constraints due to non-delivery or non fulfilment of orders. Usually these quantities are small compared to those subject to open bidding.

6.3 Conclusion

It can be concluded that the effects of suppliers' failure to supply and deliver orders on time have been established. The question addressed most of the possible causes and effects. Some of the reasons for failure were lack of capital, lack of capacity for bulk supply and failure to plan execution by suppliers. Delayed delivery of orders and failure to execute contracts timely by suppliers resulting in delivery of poor quality material were some of the effects identified during data analysis.

As shown by Table 19 above, over 75% of the farmers have been inconvenienced at the FRA depots and only about 25% claimed they were never inconvenienced. Majority of the suppliers at FRA are traders as opposed to manufacturers who represented about 25% of the suppliers. Most of the suppliers have been supplying FRA for more than 5years. FRA employs mainly the open national bidding process in its award of tenders as guided by the Public Procurement act, 2008 (Act No.12, 2008).

When suppliers do not meet orders FRA is affected in a number of ways. Some of the areas of concerns were quality of crop marketing requisites, speed of deliveries from suppliers, dependability of suppliers, flexibility of suppliers and cost of the crop marketing requisites.

Based on information in Table 17, over 75% of farmers have been farming for over half a decade hence presenting a wealth of knowledge both in the supply and value chain of crops they supply to FRA. And according to Table 29 about 63% of the suppliers have been awarded supply contracts more than twice.

If the above challenges can be mitigated it can to some extent guarantee some smoothness in the supply chain and timely delivery of orders by suppliers. The issues of capital can be mitigated through the signing of MOU for order financing between banks and suppliers with FRA acting as the guarantor for security so that the bank issues loans to those companies FRA has committed to offer long-term supply contracts with them.

And also issues of exchange rates has to be addressed since, more often than not, suppliers obtain their supplies outside Zambia. Hence, a rise in local manufacturing can address some lead time related issues. Encouraging many participants must also be an area of focus for FRA in conjunction with governments.

6.4 Recommendations

Based on the research findings attained in the analysis of field research, the author is inclined to make the following recommendations:

i. The bulk nature and high cost of crop marketing requisites requires a good cash flow by suppliers. FRA must consider having a funding model for requisites even in form of a third party such as banks with reasonable commission.
ii. There is need to source directly from manufacturers locally and internationally.
iii. Order financing agreements can help mitigate issues of lack of capital.
iv. There is need to review contracts with suppliers to draw a line of best fit that will give a win-win situation for both the suppliers and the buyers. Debt, payment plans, quality and delivery times have to be reviewed so as to create a good working relationship with suppliers. There is also need for adherence to the service level agreement by either party.
v. The government may need to offer incentives to enable more local players to enter the manufacturing sector of these materials including raw materials.
vi. Strengthening engagements with selected suppliers during the process of sourcing and delivering. They must come up with a way of clearing grain bag suppliers timely so as to attract reputable companies to participate in their grain bag tenders.
vii. There is need to consider rehabilitation of Grain silos including investment in constructing new ones in various regions to reduce on use of crop marketing requisites when purchasing crop.
viii. National food security is critical and ZPPA must consider waiving certain restrictions so that certain requisites are treated as those of security nature.
ix. A robust resource mobilization strategy to enable the agency to pay on time.

6.5 Areas of further study

The researcher further recommends other possible areas of research to add to the body of knowledge as follows:

i. Use of the CIPS procurement model by FRA.

ii. Assessment on how to improve efficiency in procurement using other models.

6.7 Chapter Summary

The chapter was meant to give conclusion and recommendation. The chapter had an introduction that gave a bird's eye view of the chapter. This chapter presented a logical sequence of the findings in order of the way the objectives were outlined. A conclusion of finding was made in this section. The section also had recommendation to FRA based on the

findings from the research. The recommendation were structured to help improve FRA service delivery and ensure food security. Areas of further study were also recommended by the researcher based on gaps and challenges faced while conducting the research.

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APPENDIX

THE UNIVERSITY OF ZAMBIA
Graduate School of Business

Questionnaire no. (.....)

CONFIDENTIAL

APPENDIX 1: QUESTIONNAIRE FOR RESPONDENTS

Causes and effects of suppliers' failure to meet orders on time. A case of Food Reserve Agency

Dear respondent,

I am a Student from The University of Zambia researching On Causes and effects of suppliers' failure to meet orders on time. A case of Food Reserve Agency**.** This is in Partial fulfilment for the award of my Master Science Operations, Projects and Supply Chain Management.

The questionnaire is intended to help me collect information that is needed for analysis. Be assured that the information you give will be treated with high level of anonymity and confidentiality, and shall only be used for academic purposes. However I ask that you provide correct and accurate

information to the best of your knowledge as your views are paramount for the completion of this study.

Do not write your name, unless you want to.

Please tick in the appropriate bracket and write down appropriate responses, where necessary, as you answer the questions.

SECTION A **OFFICIAL USE ONLY**

1. What is your gender?
   a) Male [ ]
   b) Female [ ]

2. What was your age range at your last birthday?
   a) 20 – 24 years [ ]
   b) 25 – 29 years [ ]
   c) 30 – 34 years [ ]
   d) Above 34 [ ]

3. What is your education level?
   a) Grade 9 and below [ ]
   b) Grade 10 – 12 [ ]
   c) College level [ ]
   d) University level [ ]
   e) Never been to school [ ]

4. How long have you been a farmer?
   a) 5 years and below [ ]
   b) 6 – 10 years [ ]
   c) 11 – 15 years [ ]
   d) 16 years and above [ ]

5. What crop do you usually supply to FRA?
   a) Maize [ ]
   b) Soya beans [ ]
   c) Paddy rice [ ]

d) Others specify..... [ ]

6. Have you ever been inconvenienced at satellite depots due lack of crop marketing requisites?

a) Yes [ ]

b) No [ ]

7. If yes, which crop marketing requisite has not been readily available?

a) Empty grain bags [ ]

b) Twine [ ]

c) Other Specify .....

8. How much are you affected by FRA not delivering crop marketing requisites on time?

a) Very much [ ]

b) Much [ ]

c) Average [ ]

d) Low [ ]

e) Very low [ ]

8. What do you think needs to be done to mitigate the challenges related to delayed supply of crop marketing materials?

a) Timely delivery of materials [ ]

b) Timely release of funding [ ]

c) Other specify..... [ ]

THE UNIVERSITY OF ZAMBIA

Graduate School of Business

Questionnaire no. (.....)

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Do not write your name, unless you want to.

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   c) 30 – 34 years [ ]
   d) Above 34 [ ]

3. What is your education level?

   a) Grade 9 and below [ ]
   b) Grade 10 – 12 [ ]
   c) College level [ ]
   d) University level [ ]
   e) Never been to school [ ]

4. What major item do you usually supply to FRA?

   a) Chemicals [ ]
   b) Empty grain bags [ ]
   c) Bailing Twine [ ]
   d) Others specify..... [ ]

5. What kind of a supplier are you?
   a) Manufacturer [ ]
   b) Trader [ ]

6. How long have you been in the industry?
   a) 5 years and below [ ]

b) 6 – 10 years [ ]

c) 11 – 15 years [ ]

d) 16 years and above [ ]

7. What procurement method used by FRA do you participate in?

a) Open National Bidding [ ]

b) Selective Bidding [ ]

c) Direct Bidding [ ]

d) Other Specify .....

8. How many times have you been awarded a contract by FRA in the last 4 years?

a) One [ ]

b) Twice [ ]

c) More than twice [ ]

9. What are some of the challenges you face in supplying materials to FRA?

a) Lack of finances [ ]

b) Short delivery periods [ ]

c) Fluctuation of foreign exchange [ ]

d) Other specify .....

10. What makes you not to meet orders on time?

a) Lack of capacity [ ]

b) Delays in approvals [ ]

c) Delays in Payments [ ]

d) Other specify .....

11. What enablers would make FRA to perform better in future?

a) Having running contracts with suppliers [ ]

b) Timely release of funding [ ]

c) Making prompt payments to suppliers [ ]

d) Other Specify .....

THE UNIVERSITY OF ZAMBIA

Graduate School of Business

Questionnaire for no. (.....)

CONFIDENTIAL

APPENDIX 1: QUESTIONNAIRE FOR FOOD RESERVE AGENCY STAFF

Causes and effects of suppliers' failure to meet orders on time. A case of Food Reserve Agency

Dear respondent,

I am a Student from The University of Zambia researching On Causes and effects of suppliers' failure to meet orders on time (crop marketing requisites): A case of Food Reserve Agency. This is in Partial fulfilment for the award of my Master of Science in Operations, Projects and Supply Chain Management.

The questionnaire is intended to help me collect information that is needed for analysis. Be assured that the information you give will be treated with high level of anonymity and confidentiality, and shall only be used for academic purposes. However I ask that you provide correct and accurate information to the best of your knowledge as your views are paramount for the completion of this study.

Do not write your name, unless you want to.

Please tick in the appropriate bracket and write down appropriate responses, where necessary, as you answer the questions.

SECTION A **OFFICIAL USE**

1. What is your gender?
   a) Male [ ]
   b) Female [ ]

2. What was your age range at your last birthday?
   a) 20 – 24 years [ ]
   b) 25 – 29 years [ ]
   c) 30 – 34 years [ ]
   d) Above 34 [ ]

3. What is your education level?
   a) Grade 9 and below [ ]
   b) Grade 10 – 12 [ ]
   c) College level [ ]
   d) University level [ ]
   e) Never been to school [ ]

4. How long have you been working for FRA?
   a) 5 years and below [ ]
   b) 6 – 10 years [ ]
   c) 11 – 15 years [ ]
   d) 16 years and above [ ]

5. What department or Unit do you belong to within FRA?
   a) Procurement & Supplies Unit [ ]
   b) Food Reserve & Marketing [ ]
   c) Human Resources Unit [ ]

d) Finance department [ ]

e) Others specify..... [ ]

6. What do you think are the major challenges that Suppliers face in supplying crop marketing requisites to FRA?

a) Lack of capital [ ]

b) Lack of capacity to supply in bulk [ ]

c) Failure to plan execution by supplier [ ]

d) Other specify .....

7. How much are you affected by Suppliers not meeting orders for crop marketing requisites on time?

f) Very much [ ]

g) Much [ ]

h) Average [ ]

i) Low [ ]

j) Very Low [ ]

8. What are the effects of failure by suppliers to meet orders on time on your department?

a) Affects our planning [ ]

b) Affects national food security if grain target is not met [ ]

c) It affects the operations of the organization [ ]

d) Others specify.....

9. What challenges do you face when receiving crop marketing requisites from suppliers?

a) Delayed delivery of orders [ ]

b) Failure to execute contract by suppliers [ ]

c) Delivery of poor quality materials [ ]

d) Others Specify

.....

10. What performance objective affects FRA when orders are not met on time?

a) Quality of crop marketing requisites [ ]
b) Speed of deliveries from suppliers [ ]
c) Dependability of suppliers [ ]
d) Flexibility of suppliers [ ]
e) Cost of crop marketing requisites [ ]

11. What do you suggest should be done to mitigate the challenges related to delayed or poor deliveries of crop marketing requisites?

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THANK YOU FOR COMPLETING THIS QUESTIONNAIRE