FACTORS INFLUENCING ACCESS TO SUBSIDIZED FERTILIZER BY MAIZE FARMERS IN KESSES SUB-COUNTY, UASIN GISHU COUNTY, KENYA

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A research thesis report submitted in partial fulfilment part of the requirement for the award of a Master of Arts degree in project planning and management part of the University of Nairobi.

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DECLARATION

This research project report is my original work and has not been illustrated for award of a degree in the University of Nairobi or any other university.

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This research project report has been submitted with my approval as university supervisor.

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DEDICATION

I dedicate this research project report to my late mother Hannah Jeruto Kosgey and my father Reuben Kosgey for their financial and moral support during the entire study period.

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ACRONYMS AND ABBREVIATIONS

ASDS	Agricultural Sector Development Strategy
CAN	Calcium Ammonium Nitrate
DADO	Sub-County Agriculture Department office
DAO	Sub-County Agricultural Officer
FAO	Food and Agriculture Organization
FISP	Farm Input Subsidy Programme
IMF	International Monetary Fund
MOA	Ministry of Agriculture
NACOSTI	National Commission for Science, Technology and Innovation
NAIVS	National Agricultural Input Voucher Scheme
NCPB	National Cereals and Produce Board
NPK	Nitrogen-Phosphorus-Potassium
OPV	Open Pollinated Variety
SSA	Sub-Saharan Africa
SSP	Sulphate of Ammonia
UN	United Nations

ABSTRACT

For Sub Saharan Africa (SSA) to attain its agricultural potential, it must broaden its small-scale agricultural productivity through better access to yield-enhancing technologies. In recent past, fertilizer subsidy programmes have been reestablished across SSA to improve production of staple foods like maize; however production still delays after that of other states part of the world posing a threat to food security. This study established the factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-county, Uasin Gishu County, Kenya. The objectives part of the study were; to establish how targeting strategy of intended beneficiaries, awareness strategy on the fertilizer subsidy programme , distribution strategy and price strategy of subsidized fertilizer influence maize production in Kesses Sub-County, Uasin Gishu County, Kenya. The study theory of production formed the theoretical framework part of the study. The research adopted descriptive survey design and the target population was 22,400 small scale maize farmers, Sub-County Agricultural officer, National Cereals and Produce Board officer. A sample size of 393 small scale maize farmers was sampled using simple random sampling. Purposive sampling was used to select Sub-County Agricultural officer and NCPB officer. Questionnaires and interview schedule was used to collect data and was tested for validity and reliability during pilot study prior to actual data collection. Data was analysed using descriptive statistics and inferential statistics aided by Statistical Package for Social Sciences (SPSS) and was illustrated by use of frequency distribution and percentages. It is expected that the research findings was of benefit to the National and County governments to implement effectively fertiliser subsidy programmes to revitalize maize production in the country and ensure sustainable food production. The study further resolved that the accessibility of fertilizer unbiased after harvest when farm households tranquil have respectable cash flow had a bigger impact on fertilizer use than a situation in which fertilizer was only available at planting time. The study concluded that some part of the factors that influence the efficiency in targeting part of the beneficiaries were poor mode of advertising and bribery/corruption. Subsidized fertilizer is timely available and there was equal number of respondents when it comes to matters related to distance. From the findings the scholar recommends that the Kenya cereal board should put in place access strategic place in order to enhance delivery of subsidized, fertilizer influence Small scale Maize Productivity and Production. It also recommends that government efforts should be directed to improving of distribution mechanisms to ensure sustained availability of fertilizer to farmers at the right time and amount. Finally the study recommended that distribution strategy of subsidized fertilizer should be improved to help farmers access to subsidized fertilizer. The study suggested that further studies be conducted on factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya. The study suggested that a research should be done on how farmers targeting strategy influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya. The researcher suggested that study should be done on farmer's awareness strategy on the fertilizer subsidy programme influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya. The researcher suggested that study should be done on how the distribution strategy of subsidized fertilizer influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya

CHAPTER ONE

INTRODUCTION TO THE STUDY

Agricultural yield in Sub-Saharan Africa (SSA) lags last that of other states part of the world causing a serious threat to food sustainability (Akpan, et al., 2012).Plea for food is predictable to surge by 20 % by the year 2030 and hunger remains a threat to 795 million people majorly from developing nations between 2014 and 2016 which translates to 13% part of the region's populace (FAO, 2015). 2030 UN Agenda for Sustainable Development has acknowledged the need to eradicating hunger and enhancing food security. The main Agenda is to "ensure sustainable food production" and "double agricultural productivity through access to productive resources and inputs, knowledge, financial services, markets and opportunities for value addition by 2030". The UN Report: World Economic Condition and Forecasts 2016 (New York, 2016), notes that many countries pursue policies and strategies for ensuring food security, which comprise subsidies for production of food crops. According to Mwangi, W. (1995) from 21st century, the populace of SSA is projected to propagate at a proportion of more than 3 % per annum, although food manufacture will probably develop at a level of 2 % or less. He recommends that to bridge the gap, intensive crop production based on modern technologies comprising use of fertilizers will boost food production.

Agricultural input subsidies' strategies were initiated and enacted in Asia and SSA in the 1960s to 1980s.The subsidies remained later withdrawn in reaction to World Bank and IMF enforced fundamental modification programmes in the 1990's. In modern years, large-scale input support programmes have been re-introduced across SSA in countries like Malawi, Nigeria, Zambia, Tanzania, Kenya, Ghana and Uganda. The Malawian government founded the coming back to enormous scale Agricultural subsidies in 1998

as soon as it underway issuing free fertilizer before stopping related programmes in the initial 1990's. The Nigerian government had ceased fertilizer procurement and distribution in 1997 and was revived in 1999. Zambian government in the year 2000 established the Food Security Pack that distributed fertilizer and seeds to farmers. The Tanzanian government revived fertilizer subsidy in 2003 through the voucher-based system. In 2006, Kenya started a subsidized fertilizer initiative which was under a State agency's distribution system (NCPB) with stores all over the country. In 2008, the regime of Ghana started a state voucher centered fertilizer subsidy (Banful, A.2009).

Many countries subsidize fertilizers to improve agricultural production, enhance the nation's food security and alleviate poverty in countryside.Fertilizer subsidy programmes are part of a strategies adopted by African nations to enhance food security and cushion farmers from input price hikes (AU, 2006).It was during the Fertilizer summit in Abuja in 2006, African countries came up with the Abuja Assertion which acknowledged the fact that fertilizer is precarious for realising an African Green Insurgency in the wake of growing population and deteriorating soil productiveness. The African governments pledged to increase fertilizer use in order to ensure food security and poverty alleviation. The 2006 Abuja Declaration committed Africa to accomplish 50Kg/Ha of crop nutrient application by 2015 (Abuja Declaration, 2006).

Fertilizer subsidy programmes aims at attaining long term food security in Sub-Saharan Africa; however, the use of fertilizer in SSA is relatively lower than in other developing regions. (Ariga& Jayne). Part of Asia is believed to in front line encouraging improved usage of fertilizer and focus on substantial growths in yields (Morris et al., 2007).The ultimate objective of subsidizing fertilizer is to develop the well-existence of households and food security. Maize is part of the main staple food and a critical constituent of food

security worldwide. Maize (*Zea mays*) is one part of the leading approved crop grown globally and is produced at latitudes stretching from 58° N to 42° S. Universally, maize is grown on 130 million hectares per annum, translating to 35% part of the crop making. North America tops in the sphere in standings of capacity, trailed by Asia, Africa and Latin America. Maize tremendously grew in status in Africa since its institution to the region. Sileshiet. al. (2009), Maize is today a basic yield (Byerlee et al. 1994, Smale 1995) providing nearly part of the calories used up by African states. Maize books for extra 60% part of the reaped zone in Malawi, Zimbabwe and Zambia, and is leading in both countries of Kenya and Tanzania (Smale and Jayne 2003). According to Rosegrant, et al (2008), at the future year 2050 the claim for maize is predictable to be twice in the emerging states because of increased demand for food, need for livestock and poultry feeds. The re-establishment of input subsidies in sub-Saharan Africa is presumed to lift right to use and adoption of fertilizers; growth production and increase the welfare of maize farmers.

In Kenya maize is fully-grown in nearly all agro-ecological sectors and consumption on average per year is between 30-34 million bags (2.7-3.0 metric tonnes) (FAO, 2004). Maize production frequently does not meet the consumption due to the declining soil fertility and thus rise in maize production will be influenced by produce enhancement. Although mineral fertilizer can lead to boosting of soil fertility, majority of small scale farmers in rural areas use small quantities or none and this is accredited to international fertilizer prices which have increased over the years (Mwangi 1999).

The Kenyan government established fertilizer subsidy programme in 2007/2008 and currently it is being implemented nationwide. Uasin Gishu County remains one part of the country's grain basket and has a high potential for maize production. When maize

production falls in this region, then Kenya faces acute food insecurity, and this is the current situation as people are facing starvation. Majority of beneficiaries of fertilizer subsidy are found in Kesses, Sub-county- Uasin Gishu County. Therefore this research sought to investigate factors which have influenced access to fertilizer by maize in Kesses Sub-county, Uasin Gishu County, Kenya

1.1 Statement part of the Problem

Fertilizer subsidy programmes have notably boosted food making in other illustrated sections part of the world, even though in Africa outcomes are varied. (Kwao P. 2014).The influence of fertilizer subsidies on production is a very controversial issue. Kenyan government allocate a very big proportion of its national budget on fertilizer subsidy yet food security is still big challenge. In the 2015/2016 fiscal year, the Kenyan government set aside 4.9 billion shillings for the national subsidy fertilizer programme. Under the programme, 50kg bag of DAP was sold at kshs.1800 down from shs.4500, CAN and Urea at ksh.1500 and Sulphate of Ammonia (SSP) at 1300 from ksh 4000. (Andae, G., 2015).

Studies from different countries suggests that subsidy programmes have increased levels of fertilizer use and lead to increase in yields, but according to Druilhe and Hurle, (2012), success part of the programmes depends on the implementation process. Implementation part of the programme in Kenya is faced with poor design, lack of monitoring and evaluation which leads to inefficiencies and ineffectiveness (Kwao, P.2014).

The main role part of the fertilizer subsidy program is aimed at improving availability and affordability of fertilizer for small-scale poor farmers, majorly those living below the

poverty line. The amount of subsidized fertilizer in Kenya has caused communal fears due to inadequate supply, mainly during planting seasons, delayed deliveries, and intended beneficiaries not having an easy access to fertilizer, some farmers cannot afford the fertilizer though the prices that have been subsidized and complains of diversion part of the fertilizer for commercial trade. Though there are subsidized fertilizers maize farmers still traveling long distances to get the fertilizers as well as corrupt officials. The challenges that farmers have experienced has made them apply fertilizer in little quantities and some have opted not to use. Therefore, this study will investigate the factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya.

1.2 Purpose part of the Study

The research is aimed at investigating factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya

1.3 Objectives part of the Study

The objectives to the research were:

1. To establish how farmers targeting strategy influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya
2. To establish farmers awareness strategy on the fertilizer subsidy programme influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya
3. To determine how the distribution strategy of subsidized fertilizer influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya

4. To assess the extent to which price strategy of subsidized fertilizer influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya

1.4 Research questions

The research questions were:

1) How do farmers targeting strategy influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya?

2) How aware are the farmers on access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya?

3) To what extent does the distribution strategy influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya?

4) To what extent does the price strategy influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya?

1.5 Significance part of the Study

The outcomes and recommendations from the research would benefit the National andCounty governments to implement effectively policies that can revitalize maize production. The findings will also provide information relevant for evaluating Kenya's fertiliser subsidy programme in line with its objectives and lastly, the findings would add to the present literature on the fertiliser subsidy available in the country and thus will deliver a front case for auxiliary study on maize production concerns particularly amongst small scale agronomists.

1.6 Basic Assumptions part of the study

The research was guided by assumption that the participants were available, cooperate and give required information willingly and honestly. The researcher assumed that the sample rep would be sufficient replica part of the entire study population.

1.7 Delimitations part of the Study

The scope of the study is Kesses Sub-County, Uasin Gishu County and was confined on the factors influencing access to subsidized fertilizer subsidy by maize farmers. It focused on how targeting part of the intended beneficiaries, awareness, distribution and cost part of the subsidized influences maize production. The study involved small scale maize farmers, Sub-County Agricultural officer (DAO) and 1 NCPB officer in Kesses sub-county, Uasin Gishu County. The study relied on use of questionnaire and interview guide in collecting data.

1.8 Limitations part of the Study

Best & Khan (2008), define limitations as the conditions beyond the influence part of the researcher that may restrain the scope part of the study. The remoteness and long distance part of the study area could cause mobility and time problem during data collection. The researcher overcame this by starting the data collection exercise on time.

1.9 Definitions of Significant terms to the study

Fertilizer; Refers to a chemical material added to the soil or land to boost its fertility.

Subsidy: Subsidy is a policy tool applied to care explicit sector or socio-economic individuals of an economy and can be in custom of straight or unintended cash.

Production; denotes to the yields acquired from the usage of inputs.

Distribution; supplying of subsidized fertilizer to the targeted farmers

Cost of subsidized Fertilizer; refers to the price at which farmers buy the subsidized fertilizer

Targeting; refers to selection part of the intended beneficiaries in the subsidized fertilizer programme

Awareness; is the ability to know or understand the fertilizer subsidy programme

Small scale farmers: Farmers having less than 5 acres of land for cultivating maize.

Strategy; denotes to a technique or blue print selected to get to the anticipated future

1.10 Organization part of the study

The research is organised into five chapters. Chapter one covers the background information part of the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, basic assumptions, limitations and delimitations and definition of significant terms used in the study. Chapter two covers past or previous studies in the same field, framework part of theoretical and conceptual, and the knowledge gap identified. Chapter three covers the following under

research methodology; target population, research design, data collection instruments, sample size determination formula, testing of instruments, collection of data, and data analysis, and ethical considerations to the study. Chapter four covers data analysis, interpretation and presentation of the findings. Chapter five outlines study summary of findings, recommendations, conclusion and other suggestions for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The current chapter reviews relevant literature review cornered to the theme part of the study. The literature reviewed in this chapter is in connection with the research objectives part of the study. The chapter also outline frameworks for conceptual and theoretical explaining the themes part of the study.

2.2 The Concept of Fertilizer Subsidy

Subsidies are master plan used by governments to aid some selected sectors part of their economy. They are established to stimulate development in particular trades, enhance the attractiveness of local productions and resuscitate ailing trades (Bergström, 2000). Fertilizer subsidies can be applicable in several terms; it could be time at which the subsidy is functional whether to the agriculturalist, dealer or local fertilizer producer. It could be in the arrangement part of the subsidy, or in what manner it is issued (cash payment, voucher, lowered market price, subsidy in transport); it couldalso be in the form of direct or indirect cash transfers (Holden & Lunduka, 2012; Baird et al., 2009), or tax waiver (Gruber & Levitt, 2000) and can target establishments, trades or personalities. Subsidies normally have impacts on the wellbeing of targeted benefactors, businesses, government disbursements and the whole economy. Fertilizer subsidy programmes are some of strategies embraced by African regimes to alleviate effects of worldwide food and input price increment on agriculturalists (AU, 2006).

Even though input subsidies are productive tools for boost production has over time been contested (Ellis, 1992, Sachs, 2003, Crawford *et al.*, 2006, Fan *et al.*, 2007). The

arguments in support part of the input subsidies include; increase accessibility to inputs by the rural small scale farmers, increased yields, enhanced food security, poverty alleviation and growth part of the economy.Kotschi J, (2015) said that governments established fertilizer subsidy to improve production in agriculture, boost the country's food condition and reduction in poverty in rural areas, increase the application of fertilizer by small scale farmers, subsidies are intended to profit farms that have less liquidness, limited resources and no accessibility to agronomic credit. Subsidies are critical in boosting or increasing production of medium scale and large farms. Subsidies also targets to stabilize prices of fertilizer for farmers when there is uncertainty in prices. Fertilizer subsidy also aims at restoring improving soil fertility since fertilizers enhance the source of nutrients and humus to the soil and minimize soilerosion. The arguments opposing the input subsidies say that they require huge costs, benefits elites and rich farmers instead part of the poor farmers and can cause market imbalance and prevent private market development.

2.3 The Concept of Fertilizer Subsidy in Sub-Saharan Africa

Subsidies are part of the leading constituent of agricultural improvement tactics in SSA between the 1960s and 1980s. Subsidies were later removed as a result of World Bank and IMF levied fundamental alteration programs in the 1990s. Recently, comprehensive input subsidy programmes have been re-established across SSA and they have accelerated since the first African Fertilizer Summit in Abuja, Nigeria in 2006 (Abuja Declaration, 2006). Re-introduction part of the subsidies is accredited to perennial food scarcity witnessed in most developed states in SSA and rising in food price encounter from 2003, monitored by the universal food price crunch in 2008 (FAO, 2011). Re-introduction of larger input subsidy programmes was rooted on the presumption that past faults in implementing the programs have been pin pointed and can be rectified. Current

efforts have remained modified as “smart subsidies” for the reason that they are believed to depend on new establishments and improvised execution approaches that can revitalize private sector expansion and more precisely target projected recipients. In recent years countries like Malawi, Zambia, Tanzania and Kenya have had great interest on fertilizer subsidy policies in encouraging fertilizer use and improving agricultural productivity.

Malawi has successfully implemented subsidy programme that has led to increase in food production (Denning et. al 2009). The Malawi régime established a large Farm Input Subsidy Program (FISP) in the2005/2006 financial year and it majorly targeted maize production. The government established an innovative targeted input voucher program where it issued vouchers to specific selected farmers, who then redeemed them as a security for purchasing fertilizer at a reduced price (Ricker & Jayne, 2010). Each selected household under the FISP for 2012/2013 financial year was to buy 100 kg of subsidized fertilizer (50 kg bag of NPK and 50 kg bag of Urea); one packet of better-quality maize seed (5 kg hybrid or 8 kg Open Pollinated Variety (OPV)); and one legume pack.(Lonester, C.H.2016).

Zambia started Fertilizer Support Programme (FSP) in 2002 and the targeted farmers were eligible to 8 x 50kg bags of fertilizer and a 20kg bag of hybrid maize seeds. In the year 2009, the government decreased the magnitude part of the effort folder by 50% to surge the total of farmers beleaguered and the programme label was improved to Farm Inputs Support Programme (FISP). The financial allocation to the program and number of beneficiaries has been on the rise leading to improved fertilizer usage and maize production. The execution part of the programme has stared at delays in delivering part

of the fertilizer to farmers and this has been linked to government budgetary procedures and program administration. (Kapembwa et. al 2015)

Tanzania has effected a number of input subsidy programs in recent years. Ensuing the pulling out of subsidies in the 1990s, the fertilizer transport subsidies were on the go in 2003 with the aim of enabling fertilizer access in secluded part of the state. The result was; increased in use of fertilizer however the implementation faced some challenges which included; late delivery of fertilizer because the subsidies relied on political good will and price controls were ineffective at farm level. The Nationwide Agricultural Input Voucher Structure (NAIVS) was instituted in 2008 to encourage fertilizer use, cushion rising cost of fertilizer and reduce food prices (Minot, 2009). Notwithstanding part of the introduction of subsidy, around 12 % of farmers use mineral fertilizers (AFAP, 2012). Fertilizers in Tanzania are majorly used in the production of maize more than any other crops estimating 75 %of consumption, where 25 % are applied in the cash crops like tobacco, tea and cotton (URT, 2008)

In Kenya's fertilizer marketplace was free up in the 1990s when price and market ceilings, licensing organizations, import licenses and quotas were lifted. Enactment of reforms steered to growth in the markets by the private sector. The rapid increase in fertilizer use after the liberalization was because part of the government retaining a stable fertilizer policy by eradicating import licensing quotas, foreign exchange reins and not introducing market reservations over and done with the establishment of large-scale subsidy programs until the year 2007. Fertilizer subsidy supply Chains in the country include; Government of Kenya imports fertilizer through State agency's distribution system (NCPB). NCPB stores in the entire country target all farmers at subsidized prices with no use of vouchers. Private importers securing straight from global suppliers and

supply them to their individual dispersal or wholesale stores who transport the products to agro-dealers from whom growers purchase fertilizers. The government uses the chain to enact its targeted subsidy program using vouchers, which are redeemed by selected farmers at retail/dealer stores across the country. The enactment of this subsidy through the private sector channels (smart subsidy) was used to mitigate negative effects on private sector investments. (IFDC, 2012)

2.4Strategies on Beneficiaries of Subsidized Fertilizer and Maize Production

Steering is lone part of the crucial component part of the efficacy part of the subsidy programme and in attaining efficacy in supply usage (Chirwa et. al 2011).Basurto, et. al. (2015) states that targeting of subsidized inputs to many farmers' remains a crucial and sensitive issue. To perform this effectively, the first action is to accurately identify those who should be eligible; who is genuinely needy. Dorward, A. (2009) says that the proficiency of a subsidy programme is sufficiently increased by aiming definite farmers, e,g those farmers who would otherwise use very less or no inputs at all as a consequence of credit market or information breakdown and those who will rise their input application significantly because part of the subsidy.

(Chirwa et. al 2011) asserts that efficiency of a targeting subsidy programme is dependent on the magnitude where faults of enclosure and prohibiting are reduced in the assortment of farmers. Coady et al. (2002) says that mistakes of annexation (leakage) happen after the well off or unpremeditated farmers are registered in the subsidy programme while an error of exclusion (under coverage) is when the underprivileged or envisioned farmers are not enrolled in the subsidy programme. Dorward, A. (2009) states that the issuance of subsidized agricultural inputs in the middle of various classifications of people is dependent on the relations of recognized basis shaping intra community

targeting and geographical targeting. Costs incurred in geographical targeting are lesser than intra-community targeting. Efficiency of leveling methods is rooted on political, social and social factors. Pursuing may cause partisan pressure, through the corresponding intimidations illustrated by topographical and intra-community directing also relying on nationwide, local, and native political, social and social factors. Targeting also tip to tributary markets for produce someplace beneficiaries sell subsidized inputs to non-beneficiaries. The critical economic, wellbeing, political and fairness questions related to targeting shows that targeting principles and process devour to be restraint by political threats and viability (at nationwide, provincial and communal levels), by programme aim and through the viability and charges part of the targeting exercise. To hand may be debate for complete or zone targeting that distributes little amounts of inputs to all farmers or households in a country or area (Dorward, A. 2009)

Shively & Ricker (2013) stress that during the implementation of agricultural Input subsidies in the 2007/08 and 2008/09 agricultural seasons in Malawi, the scale for selecting farmers included; beneficiaries had to be Malawians with ownership of land that was being farmed, growers that remained legitimate occupants part of their villages, only a single beneficiary was entitled per household and consideration was given to susceptible individuals, mainly families that remained either womanly or child-headed.

Imoru & Ayamga (2015) in their study on effects of subsidy on Fertilizer on its usage in the Northern Region of Ghana, findings showed that fertilizer dispersal under subsidy program in the 2013/2014 agriculture spell employed coupon based system where eligibility to ascertain the nationality of farmers was ascertained by a farmer owning a voter's identification card or National Health Insurance Scheme card. The beneficiary was to be recognized by extension agent in the zone. A farm size fact was mandatory to

govern the amount part of the fertilizer a recruited farmer could secure at the funded price. Farmers who contented all these requirements were supplied with the coupon affirming the amount of subsidized fertilizer to cash in at the fertilizer retail shop at any period subsidized fertilizer was accessible. The extreme amount of fertilizer endorsed for a farmer beneath the program was 15 bags (10 bags of NPK and 5 bags of NHSO4).

In Malawi, fertilizer subsidy beneficiaries comprise the poor small-scale farmers and the targets are the vulnerable category including the old, HIV infected women-headed households, child-headed households, and orphan headed households and physically disabled headed households.Basurto, et al. (2015). According to Chirwa et al. (2010), the identification of farmers part of the subsidized fertilizer programme in Malawi begin with the government which roll out national farmer registration census, then the national government allots vouchers to Sub-County's, in every Sub-County, the Sub County Agriculture Department office (SCADO) allocates vouchers to different villages then at the village level, a list of all eligible farmers is prepared by the chiefs and then SCADO ensures distribution is done, as the listed farmers have to display their voter registration cards to obtain the vouchers and redeem them at retail stores.

2.5 Farmer's Awareness strategy on the Fertilizer Subsidy Programme and Maize Production

Gerstenmier, A., (2015), says that given the profitability of better usage of fertilizer by Africa's small scale growers and the chance to counter declining yields, there is an urgent need for creation of awareness of existing technologies. He credited limited awareness on the application of fertilizers to the fewer numbers of public extension officers in many African countries.Kwao, P. **(**2014**)** states that farmers should be made aware part of the fertilizer subsidy programmes on media such as radio television

stations, newspapers and through extension services of different operational areas at the start of every subsidy period.(Kelly, V. et al., 2003) points out that awareness creation has remained vital to the feat of several agricultural input ingenuities. They regard awareness creation as a critical step in creating a strong ultimatum for agricultural inputs and increasing the speed of input uptake.

Level of information and knowledge promote the application of new technologies. Since farmers learn more on a particular technology, they change their perception and are very likely to adopt (Hiebert, 1974). (Feder*et al.*, 1985) stress that extension services and level of farmers' education enables the adoption. Adoption is also determined by informal social networks (Foster and Rosenzweig, 1995). In India farmer's profitability on new technology rises with the number of neighbors who use it. Findings by Kwao, P. **(**2014**)** on Procurement Encounters in the rolling out of Fertilizer Subsidy Programme in Ashanti Area show that there was limited public education regarding the fertilizer subsidy programme. Most farmers were not aware when the subsidy program had begun, when it was to end and the price part of the subsidized fertilizer and this affected buying part of the input by the farmers. (Malhotra, K., 2013) suggested that farmers have a duty to evidently be cognisant part of the exit strategy part of the subsidy program so they can be ready to continue applying the inputs once the subsidy is withdrawn. In the study conducted by Kudi*et al*. (2011) on Factors inducing acceptance judgements of maize farmers in Nigeria, farmers' responsiveness has important effect on the amount of agreement of any agricultural invention and inventiveness.

Survey on National Agricultural Input Voucher Structure(NAIVS) in Tanzania , aimed to find out farmers awareness level on the programme, findings showedhigh level of general awareness and knowledge part of the programme while about part of the

respondents were not conscious part of the programmes eligibility criteria applied and this affected maize production.

2.6 Distribution strategy of Subsidized Fertilizer and Maize Production

The distribution system of subsidized fertilizer is very complicated and thoroughly regulated, therefore supervision and monitoring is very necessary to enhance distribution of fertilizer down to the village level is successful. Otitoju,& Ochimana (2016) points out that distribution should not only be run by the state government but also through local government agricultural departments and village extension agents. They further assert that if the supply channel look after not factor in the concern of accessibility and convenience of fertilizer at the right time then farmers will not use fertilizer for crop production when it is delivered late.

Physical unavailability or lateness of delivery affects the use of fertilizer by the farmers. (Kwao, P.2014). (Kapembwa et. al 2015), points out that delayed delivery of Agricultural input part of the subsidy programmes is a rampant issue in SSA. They argue that if fertilizer is adequately applied late, it does not impart optimally to crop yields. On their study on; does late provision of subsidized fertilizer affect small scale maize production and making in Zambia, showed that farmers who said that they were provided with fertilizer late had a decrease in maize yields keeping other elements constant. Late distribution of subsidized fertilizer can upset governments' aim of increasing fertilizer use and refining production amid small scale maize farmers. Implementation part of the fertilizer subsidy programme faces deferrals in the conveyance part of the fertilizer to targeted farmers and this has been caused by

government budgetary processes and programme administration. (Kapembwa et. al 2015)

Duflo, Kremer & Robinson (2011) in their study on Bumping Farmers to Use Fertilizer: Model and Investigational Confirmation from Kenya, findings show that the ease of use of fertilizer immediately after harvest when farmers still have sufficient cash flow had a greater influence on fertilizer usage than an instance where the fertilizer was only available during planting time.

Kapembwaet.et.al (2015) in their study; Does Late Delivery of Subsidized Fertilizer influence Smallholder Maize Output and Production? found out that late provision of inputs pretentious crop production due to interruptions in usage of fertilizer. They suggest that one technique that regime can safeguard apt distribution of FISP inputs is by means of electronic voucher (e-voucher) scheme. They further suggest that if the e-voucher coupons can be delivered two to three months earlier the jerk part of the farming period this can offer farmers suitable time to obtain inputs from the local agro-dealers in eagerness for planting season.

Martey et.al (2013) in their study on Fertilizer Adoption and Use Concentration among Smallholder Farmers in Northern Ghana: A Case Study part of the AGRA Soil Health proposal found out that expanse to agricultural office or entree to response shops is integral in fertilizer adoption and use quantity which in turn can have impact on crop yields.

In Nigeria, the federal state and the local government take part in the procurement and supply of subsidized fertilizer. The association part of the federal government in the

fertilizer delivery dates back to 1976, as it aimed to safeguard suitable and apt fertilizer supply to farmers. (Obisesan, Akinlade & Fajimi, 2013). In Kenya, the supply and delivery of subsidized fertilizer is government-driven. The government of Kenya procures and distribute fertilizer through the National Cereals Produce Board (NCPB). It imports and distributes through its chain of stores or depots across the country at subsidized prices (IFDC, 2012)

Welime, (2014) in the study on the Consequence of Fertilizer Price Subsidies on Fertilizer Use in Kabuyefwe Location of Bungoma County suggested that Government endeavor should be aimed at improving the distribution channels to maintain constant accessibility part of the fertilizer to farmers at the correct phase and amount.

2.7 Pricing strategy of Subsidized Fertilizer and Maize Production

Fertilizer prices can negatively or positively influence maize yields; if the price reduces farmers are likely to purchase more fertilizer for use prominent to increased harvests and if the price rises farmers buy a reduced amount of fertilizer, consequently use less and as a result get less output. (Simiyu, 2014).Ellis (1992) stress that supplying fertilizer to farmers at a subsidized level reduces the input output price ratio such that we will expect this price change to trigger farmers to use more fertilizer and rise the production function since the input/output price ratio gets flatter when the subsidy is implemented.

Dorward A. (2009) states that credit challenge is one part of the main reason why there is limited use of fertilizer. In developing countries like Kenya, though the cost of fertilizer has been subsidized, the cost still remains expensive for the smallholder farmers. In Kenya, low fertilizer use among minor growers is as a consequence of poor credit and yet the price for the subsidized fertilizer is high because of exorbitant price of importation, conveyance and poor delivery channels. Fertilizer usage in Kenya is around

a third part of the near used in India and a section part of the amounts castoff in Indonesia (Republic of Kenya 2004).

Farmers generally are motivated to purchase fertilizer if they regard their venture profitable with limited risks. (Kimani*et al*., 2004) states that adoption of any new technology is dependent on whether the farmers are certain of profits on their investments. According to (Foster and Rosenzweig, 2010), adoption behavior depends on the net gain or profitability by the farmer, including all costs of using the new technology. (Feder, 1980, Zilberman & Just, 1984, Lee, 2005,) points out that, economic incentives; labor and price affect adoption behavior.

2.8 Theoretical Framework

A theoretical framework is an assortment of unified ideas instituted on philosophies. It accounts for or describes circumstances. The study was founded on the theory of production. Theory of production in reference was propounded by Cobb Douglas and Paul Douglas in 1928. The theory of production defines and forecasts the association between inputs used in the production procedure and the ensuing output as outlined by a production function. Production functions direct the extreme output (Q) that a given firm can achieve for each unique grouping of efforts. Assuming that there are two inputs; labour and technology and thus the production function as;

$$Q = f\ (\text{Labour, Technology})$$

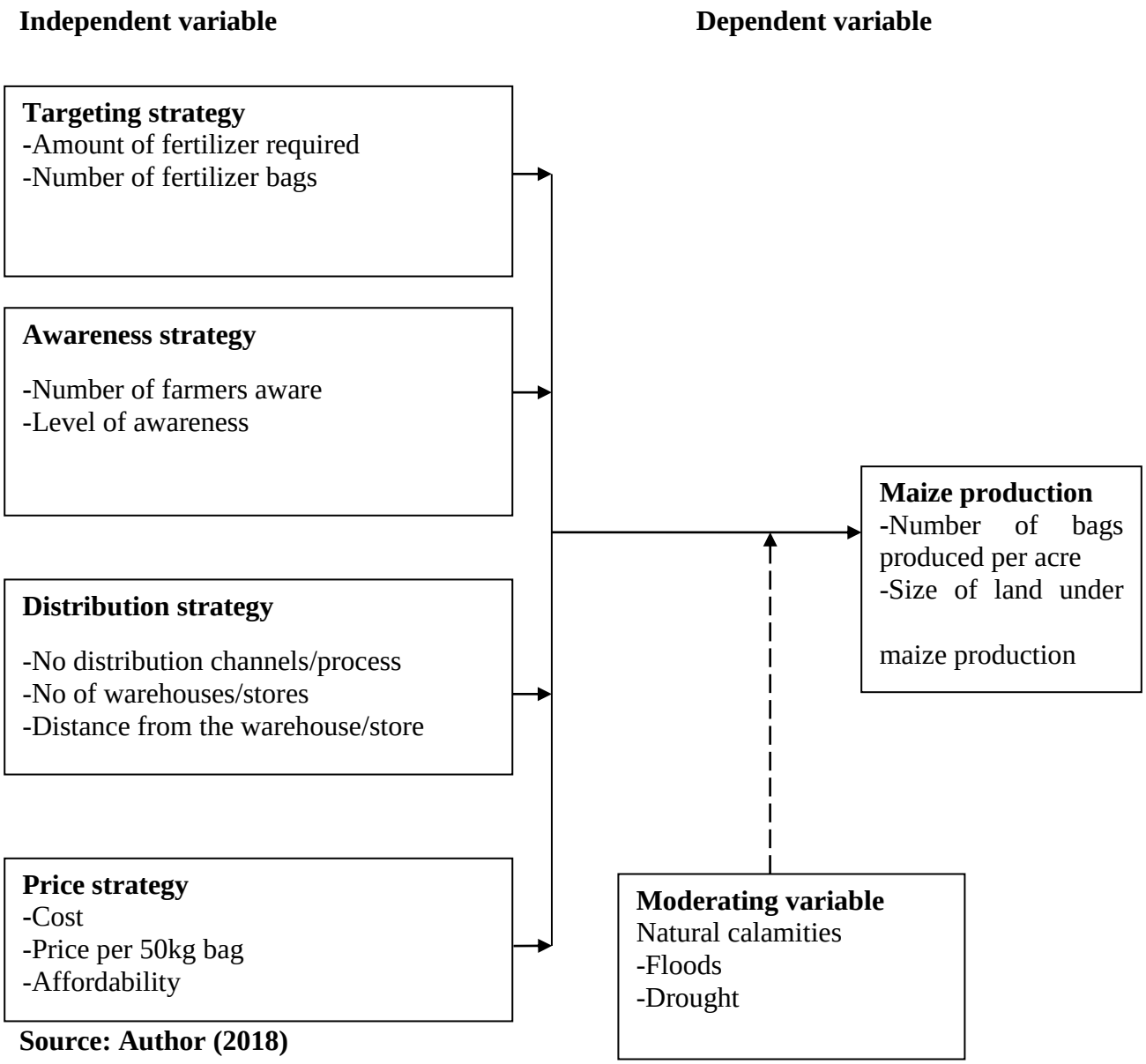
Where Q= Output and f= function of production

This equation shapes that the amount of output is dependent on the amounts part of the two inputs labour and technology (subsidized fertilizer in this study). The production function describes the total harvest that a household can obtain given constant conditions

such as the weather pattern with specific amount of farm labour and fertilizer applied. (Brue, 2005), states that when fertilizers are applied at required quantities, they shift the manufacture of maize skyward. The theory of production relates to this study in the sense that maize production levels will depend on the quantity of fertilizer applied. When less fertilizer is used, it is assumed that the production will be low, but with the introduction part of the fertilizer subsidized programme there is an assumption that there will be increased quantities of fertilizer use resulting into a shift in the production of maize upward. In this study, efficiency in targeting of intended farmers, awareness on the subsidy programme, distribution process and the cost part of the subsidized will have an impact on the quantity of fertilizer used and it is assumed that the factors will influence maize production.

2.9 Conceptual Framework

According to Mugenda and Mugenda (2003) a conceptual framework provides a diagrammatic relationship between the variables of interest in a particular study. The variables defines how the association is outlined or forecasted to be which is further measured by the use of study indicators. The conceptual framework for the current study is illustrated in Figure 2



Source: Author (2018)

Figure 2.1: Conceptual framework

Independent variables are; targeting the intended beneficiaries, awareness on fertilizer subsidized programme, distribution and price of subsidized fertilizer. The dependent variable is maize production and the moderating variables are natural calamities (floods and drought). The association amongst the independent and dependent variables could be influenced by the moderating variables which will not be measured in the study.

2.10 Research Gap

In the recent past, many countries in SSA; like Malawi, Ghana, Tanzania and Kenya have increased budgetary allocation for fertilizer subsidy programmes and yet very few studies have been done to document in detail its influence on maize production. Therefore this study intend to fill pertinent knowledge gaps by provides proof to reply whether the input subsidies are effective for increasing productivity of maize or not. This study will focus on how targeting strategy, awareness strategy, distribution and cost strategy of subsidized fertilizer influences maize production.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section presents the study methodology that was employed to achieve the intended results. It outlines the study design, targeted population, method used to obtain the sample and the sampling procedures, tools for collecting data and method of testing research instruments. The section further outlines the procedure of collecting data, analysing data, ethical considerations and operationalization of study variables.

3.2 Research Design

Descriptive survey design was employed in the study. The design attempts to define features of a specific phenomenon, condition, of an individual or a group (Kothari 2004). It involves studying a situation as it is, in an attempt to explain why the situation is the way it is (Wierman, 1999). The researcher considered it as the most appropriate in investigating the factors influencing access to subsidized fertilizer by maize farmers since it permits gathering of information on a large population and allows generalization of results from the sample to the larger target population, it is also an approach that allows collecting both qualitative and quantitative data. It is relatively quick and cheaper considering the researcher's limited resources.

3.3 Target Population

Target population is the population to which a scholar needs to take a broad view to obtain information of a study (Kothari, 2008).This study targeted two key informants; Sub-County Agricultural Officer,1 NCPB officer and 22,400 small scale maize farmers

in Kesses Sub-County (Cheptiret Kipchamo, Tarakwa and Tulwet Chuiyat wards) as illustrated in table 3.1

Table 3.1: Target Population (Small scale farmers in each ward)

Ward	Target Population
Cheptiret Kipchamo	5300
Tarakwa	7500
Tulwet Chuiyat	9600
Total	**22400**

Source; Kenya National Bureau of Statistics

3.4 Sample Size and Technique

3.4.1. Sample size

A sample size represents part of the target population selected statistically to represent the entire population (Kothari, 2014). Sample size for this study was calculated using simplified Yamane formula (1967:886) below. At 95% confidence level and 5% error is assumed

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

Where;

n = Sample size

N = Population size (22400)

e = Sampling error

Sample size for the respondents

$$n = \frac{22400}{1+22400(\,0.05)^2}$$

Sample size for small scale maize farmers; 393 respondents.

3.4.2 Sample prediction

Table 3.2: Proportionate Sampling of Small scale maize farmers

Strata (Ward)	Target	Sampling procedure	Sample
Cheptiret Kipchamo	5300	5300/22400*393	93
Tarakwa	7500	7500/22400*393	132
Tulwet Chuiyat	9600	9600/22400*393	168
Total	**22400**	**22400/22400*393**	**393**

The researcher employed stratified sampling to ensure representation of respondents from each ward. Small scale maize farmers were selected through Simple Random Sampling from each ward. Through purposive sampling, the researcher selectedSub-County Agricultural Officer and 1 NCPB officers to participate in the study. Purposive sampling technique was employed in our study. Purposive sampling is a non-probability sampling method that selects respondents based on certain criteria (Mugenda, Mugenda, 2003).

3.5 Research Instruments

Questionnaire was used to collect quantitative data from small-scale maize farmers. Kombo & Tromp (2006) defines a questionnaire to be a research tool that gathers comprehensive data within a short time period. Interview schedule was used to collect qualitative data from the Sub-County Agricultural officer and NCPB officer. According Ong'ondo*et al* (2011) interviews are used to obtain a wide range of responses from the targeted group in order to scope the magnitude of question to be answered comprehensively.

3.5.1 Pilot Study

Orodho, (2004), opines that pilot study is a useful process forming part of the actual study used for designing and testing of research instruments. According to Mugenda and Mugenda (2003), pilot study permits the investigator to consolidate suggestions made by the respondents to improve the questionnaire and also evaluate the methods of analysis, if they are appropriate or not. He states that a pilot scope of between 1% and 10% is deliberated suitable. The researcher employed a sample size of 3% (12 respondents), and the pre-testing was done in Ngenyilel location within Uasin Gishu County. The researcher chose the location as it has a cereals depot in Kipkaren.

3.5.2 Validation of Research Instruments

Validity is well-defined as the suitability, meaningfulness and correctness and part of the explicit insinuations which are carefully chosen on study outcomes (Frankel &Wallen, 2008). The overall notion of validity is the point to which a test processes what it entitlements, or significances, to be assessing (Brown, 1996). In this study the researcher ensured content validity of the instruments. Kothari (2004) describes content validity as the degree to which a quantifying tool delivers adequate reporting part of the topic under study. The research instruments were given to the supervisor, classmates and specialists in research who observed at the measuring method and analysis of definite parts (objectives) enclosed by the study. Pilot study was used to determine accuracy, clarity and suitability part of the instruments. Based on the pilot study results, rectifications and modifications were made to the research instruments. Final instruments used for data collection put into consideration the contribution of made.

3.5.3 Reliability ofthe Research Instruments

Gay, (1987) describe reliability as the magnitude in which a research tool is expected to provide answers consistently. Split half technique and correlation statistical methods were used to test reliability. It comprises of counting two-halves of a test distinctly for each item and then scheming a correlation coefficient for the double sets part of the marks.The researcher prefers split-half technique because it was simple to use, time and cost effective. The researcher used SPSS to compute Spearman rank correlation coefficient. As per Mbwesa (2006), the range of correlation that is accepted for the study should be above 0.6, in that case instruments with values above that are reliable enough to collect data.

3.6 Data Collection Procedures

Research permit was obtained from NACOSTI, letter of introduction from the University and consent from the MOA. An introductory letter was enclosed together with the questionnaire to inform the participants on the significance part of the information that they provided and assure them confidentiality. The researcher then contacted NCPB officer and Sub-County Agricultural Officer to set up appointments for interviews. Then the researcher administered the questionnaires to the farmers in the selected wards.

3.7 Data Analysis Techniques

The process of data analysis presents a useful stage where collected data are converted statistically to useful information's (Mugenda, 2003). Data was cleaned to ensure completeness before it coded and entered into Statistical Package for the Social Sciences (SPSS) version 20. Descriptive statistics and inferential statistics were the two methods used to analyse data. Inferential statistics were used to define the magnitude part of the

association amongst the independent variables and the dependent variable. Results were illustrated using frequency distribution, tables, percentages and chi-square.

3.8 Ethical Considerations

The researcher upheld ethical issues in the study and this included; obtaining consent from National Commission for Science, Technology and Innovation (NACOSTI), permission from the MOA and University of Nairobi. The researcher obtained informed consent from the participants and assured them of anonymity and confidentiality.

Table 3.3: Operationalization of Variables Table

Objective	Variable	Measuring Indicators	Data collection methods	Scale	Method of data analysis
To establish how the targeting strategy part of the beneficiaries of subsidized fertilizer influences access to subsidized fertilizer	**Independent** Targeting part of the intended beneficiaries	-Targeted beneficiaries -Targeting criteria -Factors affecting targeting approaches	Questionnaire and interview guide	Nominal Ordinal	-Descriptive analysis -Inferential analysis
To find out how awareness strategy on the fertilizer subsidy programme influences access to subsidized fertilizer	**Independent** Awareness strategy on the fertilizer subsidy programme	- Avenues for creating awareness -Period part of the subsidy program (when it starts and when it will end) -Cost part of the subsidized fertilizer	Questionnaire and interview guide	Nominal Ordinal	-Descriptive analysis -Inferential analysis
To establish how the distribution strategy influences access to subsidized fertilizer	**Independent** Distribution of subsidized fertilizer	-Distribution channels -No of warehouses -distance from the warehouse	Questionnaire and interview guide	Nominal Ordinal	-Descriptive analysis -Inferential analysis
To establish how price strategy of subsidized fertilizer influences access to subsidized fertilizer	**Independent** Cost of subsidized fertilizer	-Price -Affordability -Profitability	Questionnaire and interview guide	Nominal Ordinal	-Descriptive analysis -Inferential analysis

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.0 INTRODUCTION

This section focuses on the findings obtained statistically using the methods of analysis. Data collected was illustrated and analysed as per research objectives with an aim of answering research questions stated in chapter one.

4.1 Response rate

The study issued 393questionnaires of which 393 were collected back, correctly filled which represented a response rate of 100% which was considered adequate to provide reliable information on factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya. Massey and Tourangeau (2013) were in opinion that a higher response rate is a good ingredient in eliminating biasness during estimation and provide reliable findings.

4.2 Demographic Information

This part provides the demographic information of the respondents. It helps to build a profile part of the respondents in response to their Ward, Gender, Age bracket, Marital status, Level of education, occupation and size of land in which they cultivate maize. The study outcomes are illustrated in the subsequent tables and figures.

4.2.1: Ward part of the respondents

The research wanted to establish the ward location of the study respondents. Study outcomes were illustrated in table 4.1.

Table 4.1 Ward part of the Respondents

Ward	Frequency	Percent
Cheptiret Kipchamo	93	22
Tarakwa	132	38
Tulwet Chuiyat	168	40
Total	**393**	**100**

According to the research findings 93(22%) part of the respondents were from Cheptiret Kipchamo, 132(38%) from Tarakwa and the remaining 168(40%) from Tulwet Chuiyat. The outcome showed a large proportion part of the respondents were from Tulwet Chuiyat zone showing that maize farmers in Tulwet Chuiyat zone are well informed on subsidized fertilizer hence high uptake.

4.2.2 Gender part of the respondents

The researcher sought to establish the distribution per gender of the respondents. The study outcomes are illustrated in table 4.2.

Table 4.2 Gender part of the Respondents

Gender	Frequency	Percent
Male	314	80
Female	79	20
Total	**393**	**100**

According to the research findings 314(80%) to be male while 79(20%) to be female gender. The findings showed a significant large number of respondents were male. The research indicate that maize farming in Kesses Sub-County is view as a male dominated

field as indicated by the finding whereby 80% of maize farmers receiving subsidized fertilizer are male.

4.2.2 Age bracket part of the respondents

The study sought to establish the age bracket of the respondents, the results are shown on table 4.3

Table 4.3 Age bracket

Age	Frequency	Percent
20 - 30 years	31	8
30-40 years	113	29
40-50 years	196	50
Over 51 year	83	21
Total	**393**	**100**

Table 4.3 above shows 31(8%)part of the respondents were aged sandwiched between20 - 30 years, 113(29%) were aged between 30-40 years, 196(50%) were aged between 40-50 years while the rest 83(21%) were above 51 years. Thefindingshowthat popular number part of the respondents were of aged sandwiched between40-50 years hence understands factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya. The study indicate that most part of the maize farmers are elderly people as indicated that more than 70% part of the participants are over 40 years, hence more need to be done to encourage youth on maize farming.

4.2.3 Marital status part of the respondents

The study sought to establish marital status among respondents in order to significantly indicate level of responsibility in understanding research questions, the results are shown on table 4.4.

Table 4.4: Marital status part of the respondents

Marital status	Frequency	Percent
Single	38	10
Married	275	70
Widows	59	15
Divorced	20	5
Total	**393**	**100**

According to the research findings 38(10%) part of the respondents were single, 275(70%) married, 59(15%) widows and the remaining 20(5%) were divorced. The findings showed that majority part of the participant were married. The results proved statistically that most part of the participants in access to subsidized fertilizer in Kesses Sub-County are married as indicated by the statistical value of 70%.

4.2.4 Level of education

The study also sought to determine respondent's education level. The level of education of the respondents point out how fit they responded to the set questions on factors influencing access to subsidized fertilizer by maize farmers In Kesses Sub-County, Uasin Gishu County, Kenya. The response are shown on table 4.5.

Table 4.5 Education level

Education Level	Frequency	Percent
None	62	16
Adult education	51	13
Primary	77	20
Secondary	154	40
College/University	39	10
Total	**393**	**100**

The finding shows the education level part of the respondents, the findings shows that 62(16%) had no education, 51(13%) had adult education, 77(20%) had Primary education, 154(40%) had Secondary education and the remaining 39(10%) had College/University level. The findings showed that a large number part of the participant had level of education (secondary) hence understand on factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya and furthermore knows the importance of maize farming in the area.

4.2.5: Occupation part of the respondents

The study sought to establish the Occupation of the respondents. Table 4.6 shows the results of the analysis

Table 4.6: Occupation part of the respondents

Occupation part of the respondents	Frequency	Percent
Farmer	228	58
Civil servant	134	29
Business person	16	4
Managerial position	66	17
Total	**393**	**100**

The findings shows that 228(58%)part of the respondents were 134(29%) were civil servant, 16(4%) were business person while the remaining 66(17%) were had managerial position. The results indicate a significant large number of respondents were far hence have knowledge on factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya. The respondents furthers knows the importance of subsidized fertilizer in maize farmers as it is their daily practice in the area.

4.2.6: Size of land in which the respondent cultivate maize

The study did want to establish the size of land for which the respondent cultivates maize part of the respondents the selected respondents. The response part of the respondents were sorted and illustrated in table 4.7.

Table 4.7 Size of land in which the respondent cultivate maize

Size of land	Frequency	Percent
0-5 acres	228	58
5-10 acres	114	29
10 and above acres	82	21
Total	**393**	**100**

The findings shows that 228(58%) part of the respondents cultivated 0-5 acres, 114(29%) cultivated 5-10 acres and the remaining 82(21%) had10 and above acres. The results indicate a significant large number of respondents cultivated5-10 acres. As it is opined by the ministry of Agriculture that for high production large scale have to be practice in maize farming, it is also experience in Kesses Sub-County where by a large number of respondents228(58%) 0-5 acres of land used in maize farm cultivation have.

4.3 Targeting strategy part of the maize farmers

The study did want to find out Targeting strategy part of the maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya.

4.3.1: Opinion access or attempt to participate in the fertilizer subsidy programme

The study did want to find out if the respondents have access or attempt to participate in the fertilizer subsidy programme. Table 4.8 shows the results of the analysis

Table 4.8: Opinion access or attempt to participate in the fertilizer subsidy programme

Opinion	Frequency	Percent
Yes	389	99
No	4	1
Total	**393**	**100**

From the research findings 389 (99%) the respondents had access or attempt to take part in the fertilizer subsidy programme and were equally selected through enrolment from ministry of agriculture. The few 4(1%) had now information about subsidy fertilizer programme indicating that the area is will informed about distribution of subsidized fertilizer in the area and there is a good access to subsidy fertilizer.

4.3.2: Opinion on selection criteria

The study did want to find out opinion on selection criteria. The response part of the respondents were sorted and illustrated in table 4.9.

Table 4.9: Opinion on selection criteria

Opinion	Frequency	Percent
Very satisfied	244	62
Satisfied	79	20
Not satisfied	70	18
Total	**393**	**100**

The findings shows that 244(62%) of the respondents were very satisfied, 79(20%) were satisfied and the remaining 70(18%) were not satisfied. The finding shows that a significant large number of study participants were very satisfied. Some part of the factors that influence the efficiency in targeting part of the beneficiaries were poor mode of advertising and bribery/corruption.

4.4.0 Farmer's Awareness strategy on the Fertilizer Subsidy Programme

The study did want to find out Farmer's Awareness strategy on the Fertilizer Subsidy Programme in Kesses Sub-County, Uasin Gishu County, Kenya.

4.4.1 Awareness of a programme in the ward

The study did want to find out if farmers are aware of a programme in the ward that provides small scale maize farmers with fertilizer at a subsidized price. The response part of the respondents were sorted and illustrated in table 4.10.

Table 4.10: Awareness of a programme in the ward

Awareness	Frequency	Percent
Aware	314	80
Not aware	79	20
Total	**393**	**100**

The finding shows that 314(80%)part of the respondents were aware and the remaining 79(20%)part of the respondents were not aware of a programme in the ward that provides small scale maize farmers with fertilizer at a subsidized. The results indicate a significant large number of respondents were aware of a programme in the ward that provides small scale maize farmers with fertilizer at a subsidized.

4.4.2: Awareness part of the eligibility criteria to be included in the programme

The study did want to find out if farmers are aware part of the eligibility criteria to be included in the programme. The response part of the respondents were sorted and illustrated in table 4.11.

Table 4.11 Awareness part of the eligibility criteria to be included in the programme

Awareness	Frequency	Percent
Yes	294	75
No	99	25
Total	**393**	**100**

The findings shows that 294(75%) of the respondents were aware and the remaining 99(25%) of the respondents were not aware of the eligibility criteria to be included in the programme. The results indicated a significant large number of respondents were aware of the eligibility criteria to be included in the programme as almost all of them were from the area and were well informed about the qualification.

4.4.3: Knowledge on how to meet the criteria for inclusion

The study did want to find out if farmers have knowledge on how to meet the criteria for inclusion. Table 4.12 shows the results of the analysis.

Table 4:12 Knowledge on how to meet the criteria for inclusion

Knowledge	Frequency	Percent
Had knowledge	236	60%
Had no knowledge	157	40
Total	**393**	**100**

The finding shows that 236(60%) of the respondents had knowledge on how to meet the criteria for inclusion and the remaining 157(40%) of the respondents had no knowledge. The results indicated a significant large number of respondents had knowledge on how to meet the criteria for inclusion and the process was free and fair for any one.

4.4.4: Awareness part of the fertilizer subsidy period; when it starts and when it ends

The study did want to find out if farmers are aware part of the fertilizer subsidy period; when it starts and when it ends. The response part of the respondents were sorted and illustrated in table 4:13.

Table 4.13: Awareness part of the fertilizer subsidy period; when it starts and when it ends

Awareness	Frequency	Percent
Yes	267	68
No	126	32
Total	**393**	**100**

The finding shows that 267(68%) part of the respondents were aware and the remaining 126(32%) part of the respondents were not aware part of the fertilizer subsidy period; when it starts and when it ends. The results indicate a significant large number of respondents were aware part of the fertilizer subsidy period; when it starts and when it ends.

4.4.5: Awareness part of the price at which the subsidized fertilizer is supplied

The study did want to find out if farmers are aware part of the price at which the subsidized fertilizer is supplied. The response part of the respondents were sorted and illustrated in table 4:14.

Table 4:14 Awareness part of the price at which the subsidized fertilizer is supplied

Awareness	**Frequency**	**Percent**
Yes	342	87
No	126	32
Total	**393**	**100**

The finding shows that 342(87%) part of the respondents were aware and the remaining 126(32%) part of the respondents were not aware part of the price at which the subsidized fertilizer is supplied. The results indicate a significant large number of respondents were aware part of the price at which the subsidized fertilizer is supplied.

4.4.6: Rate the awareness strategy part of the fertilizer subsidy programme

The study did want to find out the rate of awareness strategy part of the fertilizer subsidy programme. The response part of the respondents were sorted and illustrated in table 4.15.

Table 4.15 Rate the awareness strategy part of the fertilizer subsidy programme

Rate the awareness strategy part of the fertilizer subsidy programme	Frequency	Percent
Very good	114	29
Good	189	48
Poor	79	21
Very poor	39	10
Total	**393**	**100**

The findings show that 114(29%) part of the respondents rate it very good, 189(48%) rate it good, 79(21%) rate it poor and the remaining 39(10%) rate it very poor. The finding shows that majority part of the respondents' rate awareness strategy part of the fertilizer subsidy programme as good.

4.5.0 Distribution strategy of Subsidized Fertilizer

The study did want to find out distribution strategy of Subsidized Fertilizer in Kesses Sub-County, Uasin Gishu County, Kenya.

4.5.1 Who supplies the subsidized fertilizer?

The study did want to find out who supplies the subsidized fertilizer to farmers. The response part of the respondents were sorted and illustrated in table 4.16.

Table 4.16: Who supplies the subsidized fertilizer

Awareness	**Frequency**	**Percent**
NCPB	279	71%
No idea	83	21%
Total	**393**	**100**

The findings show that 279(71%)part of the respondents know that NCPB supplies the subsidized fertilizer while the remaining 83(21%) have no idea. The results indicate a significant large number of respondents know that NCPB supplies the subsidized fertilizer.

4.5.2: Accessibility of subsidized fertilizer

The study did want to find out how accessible the subsidized fertilizer is. The response part of the respondents were sorted and illustrated in table 4.17.

Table 4.17Accessibility of subsidized fertilizer

Accessibility of subsidized fertilizer	Frequency	Per cent
Very accessible	153	39
Accessible	187	48
Difficult	83	21
Total	**393**	**100**

The findings show that 153(39%) part of the respondents rate it very accessible, 187(48%) rate it accessible and the remaining 83(21%) rate it difficult. The results indicate a significant large number of respondents rate it accessibility of subsidized fertilizer accessible.

4.5.3: Timely,is the subsidized fertilizer available

The study did want to find out how timely is the subsidized fertilizer available. The response part of the respondents were sorted and illustrated in table 4.18.

Table 4.18: Timely is the subsidized fertilizer available.

Awareness	Frequency	Percent
Timely	279	71%
Not timely	83	21%
Total	**393**	**100**

The findings show that 275(70%) part of the respondents say subsidized fertilizer is timely available while the remaining 118(30%) oppose it. The results indicate a significant large number of respondents say subsidized fertilizer is timely available.

4.5.4: Distance from the distributing warehouse

The study did want to find out the distance from the distributing warehouse. The response part of the respondents were sorted and illustrated in table 4.19.

Table 4.19: Distance from the distributing warehouse

Distance	**Frequency**	**Percent**
Short	196	49
Long	197	51
Total	**393**	**100**

The findings show that 196(49%) part of the respondents say it is short while the remaining 197(51%) says its long distance. The finding shows that there was equal number of respondents when it comes to matters related to distance.

4.5.5: Quantity of subsidized fertilizer respondents needed

The study did want to find out if the respondents get the right quantity of subsidized fertilizer. The response part of the respondents were sorted and illustrated in table 4.20.

Table 4.20: Quantity of subsidized fertilizer respondents needed

Quantity	Frequency	Percent
Short	163	67
Long	130	33
Total	**393**	**100**

The finding shows that 163(67%) part of the respondents agreed that they get the right quantity of subsidized fertilizer and the remaining 130(33%) disagreed. The finding shows that majority agreed that they get the right quantity of subsidized fertilizer.

4.6 Price strategy of subsidized fertilizer and maize production

The study did want to find out price strategy of subsidized fertilizer and maize production in Kesses Sub-County, Uasin Gishu County, Kenya.

4.6.1 Price of buy 50kg bag

The study did want to find out price of buy 50kg bag. The response part of the respondents were sorted and illustrated in table 4.21.

Table 4.21: Price of buy 50kg bag

Rate the awareness strategy part of the fertilizer subsidy programme	Percent
DAP 1500-3500 Kshs	48
Urea 1500-3500 Kshs	29
CAN 1500-3500 Kshs	21
Sulphate of Ammonia (SSP) 1500-3500 Kshs	10
Total	**100**

The findings shows that 48 % part of the respondents buy DAP, 29% use Urea, 21% buy CAN and the remaining 10% buy Sulphate of Ammonia (SSP). The results indicate a significant large number of respondents buy DAP 50kg bag at between 1500-3500 Kshs.

4.6.2. Rate price of subsidized fertilizer

The study did want to find out the rate price of subsidized fertilizer. The response part of the respondents were sorted and illustrated in table 4.22.

Table 4.22 Rate price of subsidized fertilizer

Rate price of subsidized fertilizer	Frequency	Percent
Affordable	236	60
Not affordable	157	40
Total	**393**	**100**

The findings show that 236(60%) part of the respondents rate it affordable and the remaining 157(40%) rate price of subsidized fertilizer not affordable. The finding shows that majority part of the respondents' rate price of subsidized fertilizer affordable.

4.6.3. Application part of the fertilizer will increase your profit after harvest

The study did want to find out if application part of the fertilizer will increase your profit after harvest. The response part of the respondents were sorted and illustrated in table 4.23.

Table 4.23: Application part of the fertilizer will increase your profit after harvest

Application	**Frequency**	**Percent**
Yes	275	70
No	118	30
Total	**393**	**100**

The finding shows that 275(70%) part of the respondents agreed that application part of the fertilizer will increase your profit after harvest and the remaining 118(30%) disagreed. The finding shows that majority agreed that application part of the fertilizer will increase your profit after harvest.

4.6.4: Rate the fertilizer subsidy programme

The study did want to find out rate the fertilizer subsidy programme. The response part of the respondents were sorted and illustrated in table 4.24.

Table 4.24 Rate the fertilizer subsidy programme

Ratethe fertilizer subsidy programme	**Frequency**	**Percent**
Very good	188	48
Good	83	21
Poor	114	29
Very poor	39	10
Total	**393**	**100**

The findings show that 188(48%) part of the respondents rate it very good, 83(21%) rate it good, 114(29%) rate it poor and the remaining 39(10%) rate it very poor. The results indicate a significant large number of respondents rate the fertilizer subsidy programme it good.

CHAPTER FIVE

5.1 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter summarizes the research findings based on the research hypothesis of the topic under study, the conclusions and recommendations that can be considered to be explored in the future. The main objective of the research was to determine the Effect of Integral Relationships on Supply Chain Agility in Cosmetics Manufacturing Firms in the County Government of Nairobi, Kenya.

5.2 General background information

This subdivision represents the demographic information part of the respondents which are organized in section of Ward, Gender, Age bracket, Marital status, Level of education, occupation and size of land in which they cultivate maize. Information's on the part of the respondents are vivacious to this research. They offer a foundation for advance inquiry portion of the definite study objectives and their outcomes using descriptive statistics, frequency tables, and percentages. Demographic investigation is vital subsequently demographic issues sway respondent's social, economic and political conduct hence they are tools in investigation of study objectives.

5.3 Demographic Information

The outcome showed a large proportion part of the respondents were from Tulwet Chuiyat zone showing that maize farmers in Tulwet Chuiyat zone are well informed on subsidized fertilizer hence high uptake. A large number of the participants in the study were of male gender. The research indicate that maize farming in Kesses Sub-County is view as a male dominated field as indicated by the finding whereby 80% of maize farmers receiving subsidized fertilizer are male.

Thefindingshow that a significant number of respondents were of aged between 40-50 years hence understands factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya. The research indicate that most part of the maize farmers are elderly people as indicated that more than 70% part of the participants are over 40 years, hence more need to be done to encourage youth on maize farming. The findings indicate that most part of the participants in access to subsidized fertilizer in Kesses Sub-County are married as indicated that 70% part of the respondents were married.

The findings showed that a large number participant had secondary education hence understand on factors influencing access to subsidized fertilizer by maize farmers In Kesses Sub-County, Uasin Gishu County, Kenya and furthermore know the importance of maize farming in the area. A large number of respondents were far hence have knowledge on factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya. The respondents furthers knows the importance of subsidized fertilizer in maize farmers as it is their daily practice in the area.

As it is opined by the ministry of Agriculture that for high production large scale have to be practice in maize farming, it is also experience in Kesses Sub-County where by a large number of respondents 228(58%) 0-5 acres of land used in maize farm cultivation have.

5.4. Objective part of the study

5.4.1Targeting strategy part of the maize farmers

The study did want to find out targeting strategy part of the maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya from the research findings 99% the respondents had access or attempt to take part in the fertilizer subsidy programme and were equally selected through enrolment from ministry of agriculture and the few 1% had now information about fertilizer subsidy programme. A large number of respondents

were very satisfied and some part of the factors that influence the efficiency in targeting part of the beneficiaries were poor mode of advertising and bribery/corruption.

5.4.2Farmer's Awareness strategy on the Fertilizer Subsidy Programme.

The finding shows that 80% part of the respondents were aware and the remaining 20% part of the respondents was not aware of a programme in the ward that provides small scale maize farmers with fertilizer at a subsidized. A large number of respondents were aware part of the eligibility criteria to be included in the programme, had knowledge on how to meet the criteria for inclusion, were aware part of the fertilizer subsidy period; when it starts and when it ends, a good number of respondents were aware of the price at which the subsidized fertilizer is supplied.

5.4.3. Distribution strategy of Subsidized Fertilizer

The results indicate a significant large number of respondents know that NCPB supplies the subsidized fertilizer and rate it accessible.

The finding further shows that a large number of respondents say subsidized fertilizer is timely available and there was equal number of respondents when it comes to matters related to distance. Finally the finding shows that majority agreed that they get the right quantity of subsidized fertilizer.

5.4.4Price strategy of subsidized fertilizer and maize production

The results indicate a significant large number of respondents buy DAP 50kg bag at between 1500-3500 Ksh and rate price of subsidized fertilizer affordable. The finding shows that majority agreed that application part of the fertilizer will increase your profit after harvest and finally the results indicate a significant large number of respondents rate the fertilizer subsidy programme it good.

5.5 Conclusion for further studies

Having analysed the data and the findings the researcher came up with the following conclusions as possible remedial measures to be taken by maize farmers. The study concluded that distribution system of subsidized fertilizer is very complicated and highly regulated system, therefore monitoring and supervision is very instrumental to ensure distribution of fertilizer down to the village is effective .It's also concluded that they regard creating awareness as a precarious step in forming an actual petition for agricultural inputs and in hastening the rate of input adoption.

The study further concluded that the availability of fertilizer just after harvesting when farmers still have big cash-flow had a better influence on fertilizer usage than a condition in which fertilizer was merely accessible at planting period.

The study concluded that approximately part of the elements that affect the effectiveness in targeting part of the beneficiaries was poor means of advertising and bribery/corruption. Subsidized fertilizer is timely available and there was equal number of respondents when it comes to matters related to distance.

Finally, the study concluded that twilight provision of inputs influence yield produce due to delays in application of fertilizer. They suggested that one approach is for the government to develop a delivery of FISP inputs from end to end using an electronic voucher (e-voucher) system.

5.6 Recommendation for further studies

From the findings the researcher recommends that the Kenya cereal board should put in place access strategic in order to enhance provision of subsidized fertilizer influence Smallholder Maize Production and outputs. It also recommends that government efforts

should be directed to improving of distribution channels to guarantee constant accessibility of fertilizer to farmers at the right time and amount.

Finally the studies recommend that distribution strategy of subsidized fertilizer should be improved to help farmers access the subsidized fertilizer.

5.7 Suggestion for further studies

The study researcher suggested that future studies be done on factors influencing access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya.

Further suggestions are that a research should be done on how farmers targeting strategy influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya

The researcher suggested that study should be done on farmer's awareness strategy on the fertilizer subsidy programme influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya

The researcher suggested that study should be done on how the distribution strategy of subsidized fertilizer influences access to subsidized fertilizer by maize farmers in Kesses Sub-County, Uasin Gishu County, Kenya

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APPENDICES

APPENDIX I: LETTER OF TRANSMITTAL

Nicholas Kipyego Siele
P.o Box 4900

Eldoret

Dear Sir/Madam,

REF: REQUEST FOR PARTICIPATION IN RESEARCH STUDY

I am a student of University of Nairobi undertaking a Master of Arts Degree in Project report Planning and Management. I am conducting an academic research on effects of fertilizer subsidy programme on maize production in Kesses Sub-county, Uasin Gishu County, Kenya.

You have been selected to be part of the study and I am requesting for your support and cooperation in answering the questions. I assure you that the information that you will provide will be treated with confidentiality. Thank you for your cooperation.

Yours faithfully,

Nicholas Kipyego Siele

L50/82583/2015

0724-45-45-74

APPENDIX II: QUESTIONNAIRE FOR THE SMALL SCALE MAIZE FARMERS

Instructions

Please answer all questions in the relevant sections honestly and exhaustively. Please tick where applicable (√)

Section A: Background Information (please tick appropriately)

(a) Ward……..

(b) Gender Male () Female ()

(c) Age bracket 20 - 30 years () 30-40 years () 40-50 years()

Over 51 years ()

(d) Marital status Single () Married ()

Widowed () Divorced/Separated ()

(e) Level of education

None () Adult education () Primary ()

Secondary () College/University ()

(f) What is your occupation?.....

(g) What is the size of land in which you cultivate maize?……..

Section A: Targeting strategy part of the maize farmers

1. Did you have access or did you attempt to participate in the fertilizer subsidy programme? Yes ( ) No ( )

a. If yes how were you selected? .....

b.If No, what do you think prevented you from participating?

.....

2. Are you satisfied with the selection criteria part of the beneficiaries?

Very satisfied () Satisfied () Not satisfied ()

3. What are some part of the factors that influence the efficiency in targeting part of the beneficiaries?

.....

.....

Section B: Farmer's Awareness strategy on the Fertilizer Subsidy Programme

4. Are you aware of a programme in your ward that provides small scale maize farmers with fertilizer at a subsidized price? Yes () No ()

5. Are you aware part of the eligibility criteria to be included in the programme? Yes ( ) No ()

6. Do you know if you meet the criteria for inclusion? Yes () No ()

7. Are you aware part of the fertilizer subsidy period; when it starts and when it ends?

Yes () No ()

8. Are you aware part of the price at which the subsidized fertilizer is supplied? Yes ( ) No ()

9. How will you rate the awareness strategy part of the fertilizer subsidy programme?

Very good () Good ( ) Poor() Very poor ( )

Section C: Distribution strategy of Subsidized Fertilizer

10. Who supplies the subsidized fertilizer to you?.....

11.How accessible is the subsidized fertilizer? Very accessible () Accessible () Difficult()

12. How timely is the subsidized fertilizer available to you? Timely () Not timely ()

13. What is the distance from the distributing warehouse? Short () Long ()

14. Did you get the quantity of subsidized fertilizer you needed? Yes () No()

If No, why?.....

Section D: Price strategy of subsidized fertilizer and maize production

15. What price did you buy 50kg bag of;

DAP..... Urea.....

CAN..... Sulphate of Ammonia (SSP).....

16. How will you rate the price of subsidized fertilizer? Affordable ()Not affordable()

17. Do you think application part of the fertilizer will increase your profit after harvest?

Yes () No ()

If No, why?.....

18. How will you rate the fertilizer subsidy programme?

Very good () Good () Poor()Very poor()

19. Give recommendations for the improvement part of the

programme.....

.....

APPENDIX III: INTERVIEW GUIDE FOR SUB-COUNTY AGRICULTURAL OFFICER

1. Are you involved in the selection part of the beneficiaries?
2. Explain the criteria used in selecting the beneficiaries to participate in the fertilizer subsidy programme.
3. Do you think the subsidized fertilizer reaches the targeted beneficiaries?
4. How does the county government create awareness on the fertilizer subsidy programme in the sub-county?
5. Do you have a specific period in the year in which you distribute the subsidized fertilizer to maize farmers?
6. What is the quantity of subsidized fertilizer supplied in Kesses sub-county in 2015/ 2016 financial year?
7. What is the channel of distribution part of the subsidized fertilizer?
8. How do you ensure that the fertilizer reaches the farmers on time?
9. Are you involved in the monitoring and supervision part of the subsidized fertilizer?
10. What are some part of the challenges influencing procurement and distribution part of the subsidized fertilizer?
11. Do you think the price part of the fertilizer is affordable to the small scale farmers?
12. Give recommendations on how to improve on the efficiency and effectiveness part of the fertilizer subsidy programme.

APPENDIX IV: INTERVIEW GUIDE FOR NCPB OFFICER

1. Do you think the subsidized fertilizer reaches the targeted beneficiaries?
2. Are you involved in creating awareness on the fertilizer subsidy programme in the sub-county?
3. Do you have a specific period in the year in which you distribute the subsidized fertilizer to maize farmers?
4. How do you distribute the subsidized fertilizer to farmers?
5. Is the depot accessible enough to the targeted beneficiaries?
6. Do you think beneficiaries get the subsidized fertilizer on time for planting season?
7. Who is involved in the monitoring and supervision part of the distribution part of the fertilizer?
8. What are some part of the factors influencing procurement and distribution part of the subsidized fertilizer?
9. How will you rate the level of fertilizer distributed to farmers in the last 2 years?
10. Give recommendations on how NCPB can improve on the efficiency and effectiveness part of the fertilizer subsidy programme.

APPENDIX V: WORK PLAN

2017-2018							
ACTIVITY	**DEC**	**JAN**	**FEB**	**MARCH**	**APRIL**	**MAY**	**JUNE**
Development of research project							
Literature Review							
Project report Submission and							
Pilot study							
Data collection							
Data analysis/ Report writing							
Project report submission and							
Final submission part of thesis							

APPENDIX VI: BUDGET

No.	ACTIVITY	AMOUNT
1.	Stationery	3,000
2.	Secretarial services	15,000
3.	Communication/Transport	7,000
4.	Subsistence	3,000
5.	Pilot study/Data collection/Data analysis	15,000
6.	Miscellaneous	5,000
	Total	**48,000**