

**AN ASSESSMENT OF THE IMPACT OF AGRICULTURAL INPUT SUBSIDIES ON
HOUSEHOLD FOOD PRODUCTION . A CASE OF MAIZE PRODUCTION IN
ZAKA DISTRICT**

**A dissertation submitted in partial fulfilment of the requirements for the Master of
Science Degree in Food Security and Sustainable Agriculture
(Production)**

Bindura University of Science Education



**Faculty of Agriculture and Environmental Science
Department of Agricultural Economics, Education and Extension**

**JAMES MASIMBA
B192611B**

DR.E.ZIVENGE

JULY 2021

RELEASE FORM

Name of Candidate: JAMES MASIMBA

Reg Number: B192611B

Degree: Master of Science Degree in Food Security and Sustainable Agriculture

Project Title: An Assessment of The impact of Government input subsidies on household food production. A case of maize production in Zaka district

Permission is hereby granted to **Bindura University of Science Education Library** to produce a single copy of this dissertation and lend such copy for private, scholarly or scientific research only.

Signed.....

Permanent Address: 6226 Southview Extension, Gweru.

APPROVAL FORM

The undersigned certified that they have supervised and recommended to Bindura University of Science Education for acceptance of dissertation entitled '**An Assessment of The impact of Government input subsidies on household food production. A case of maize production in Zaka district**' submitted in partial fulfillment of a Master of Science Degree in Food Security and Sustainable Agriculture.

Name of supervisor: Dr. E. ZIVENGE

Signature:

Date:

DECLARATION

I hereby declare that the research project entitled “**An Assessment of The impact of Government input subsidies on household food production. A case of maize production in Zaka district**” submitted to Bindura University of Science Education, Department of Agricultural Economics, Education and Extension is arecordof an original work done by me under the guidance and supervision of DR.E.ZIVENGE and this work is submitted in partial fulfilment of the requirements for the award of a Master of Science Degree in Food Security and Sustainable Agriculture. The results embodied in this thesis have not been submitted to any University or Institute for the award of any degree or diploma.

Author: JAMES MSIMBA

Reg Number: B192611B

Signature:

Date:.....

DEDICATION

To God, Almighty, who gave me the strength and courage to keep striving for excellence and the nerve to continue fighting my inner wars, had it not been you, I would have not made it this far.

ACKNOWLEDGEMENTS

My exceptional appreciation and gratitude is directed to my supervisor, Dr. E ZIVENGE for his invaluable support, inspiration and scholarly guidance.

ABSTRACT

The government Input Subsidy Programme in Zimbabwe has received national recognition for improving the national food security but however limited information is available on the effect of this programme on household food production. There is need for a better understanding particularly to the outcomes of these kind of programmes since their impact on food production at household level remains vague. This study employed descriptive statistics to determine farmers opinion on the interrelationships that exist between variables that either determine access to input subsidy or increase production among the 100 randomly chosen households, (52 beneficiaries and 48 non-beneficiaries). The study also evaluated factors affecting access to input subsidies. Results from the Probit regression model showed that only 3 variables were significant thus only land size, household size and education can be used to explain access to inputs subsidies. Variables like age, income and gender were not statistically significant therefor have limited influence in explaining access to input subsidies in Zaka district.

The study also assessed the contribution of agricultural input subsidies on household food production. Results of the multiple regression model indicated that only 2 variables were significant therefor only access to credit and land size can be used to explain changes in crop yield in Zaka district. Variables like education, age, income were not statistically significant therefor has limited influence in explaining changes in crop yield in Zaka district. However, the severity of household food insecurity is a cause for concern as a greater percentage of the population was noted to be food insecure due to low yields. The impact therefor for the input incentive initiative is not the same at national level and at household level given the high percentage of food insecure households noted from this study. Hence, study aims to study impact of this programme on household food production to see if the input support program on its own guarantee increased yields or not or guarantee food security at a household level or not.

LIST OF ACRONYMS AND ABBREVIATIONS

(FAO)	Food and Agriculture Organization
(GDP)	Gross Domestic Product
(IMF)	International Monetary Fund
(MDG)	Millennium Development Goal
(GMB)	Grain Marketing Board
(NGO)	Non Governmental Organisations
(IIED)	International Institute For Enviroment And Development
(ISP)	Input Support Program
(HFS)	Household Food Security

TABLE OF CONTENTS

Contents

RELEASE FORM.....	ii
APPROVAL FORM.....	iii
DECLARATION.....	iv
DEDICATION.....	v
ACKNOWLEDGEMENTS.....	vi
ABSTRACT.....	vii
LIST OF ACRONYMS AND ABBREVIATIONS.....	viii
TABLE OF CONTENTS.....	ix
LIST OF TABLES.....	xi
LIST OF FIGURES.....	xii
LIST OF APPENDICES.....	xiii
CHAPTER ONE.....	1
1.1 Background of the Study.....	1
1.2 Statement of the problem.....	2
1.3 Objectives of the study.....	3
1.4 Research Questions.....	3
1.5 Significance of the Study.....	4
1.6 Limitations of the study.....	4
1.1 REFFERENCES.....	5
CHAPTER 2: LITERATURE REVIEW.....	6
2.1 Introduction.....	6
2.2 INPUT SUBSIDIES IN AFRICA: AN OVERVIEW.....	6
2.3 Conceptual Framework.....	17
2.4 SUMMARY OF LITERATURE REVIEW.....	18
2.5 REFFERENCES.....	20
CHAPTER THREE:.....	22
RESEARCH METHODOLOGY.....	22
3.1 Introduction.....	22
3.2 Study Area.....	22
3.3 Research Design.....	23
3.4 Sampling Procedure.....	24

3.5 Data Collection Procedure	24
3.6 Data Analysis Procedure	26
3.7 Ethical consideration.....	26
3.8 Summary	27
3.9 REFFERENCES	28
CHAPTER FOUR: RESULTS AND DISCUSSION	29
Abstract	29
4.1 Introduction.....	29
4.2 Material and Methods	29
CHAPTER 5	32
Abstract.....	32
5.1 Introduction.....	32
5.2 Material and Methods	32
5.2.1 Univariate probit model.....	32
5.6 Conclusion	37
5.7 REFFERENCE	37
CHAPTER SIX.....	38
Abstract.....	38
6.1 Introduction.....	38
6.2 Material and Methods	38
6.3 Presentation of results and discussion.....	38
6.4 Conclusion	40
6.5 Limitations to data collection.....	40
6.6 Summary of Findings.....	41
6.7 Conclusion	43
CHAPTER 7:	44
CONCLUSION AND RECOMMENDATIONS.....	44
7.1 Introduction.....	44
7.2 Research Summary	44
7.3 Conclusions.....	44
7.4 Policy Implications And Recommendations.....	45
7.5 Areas Of Further Research.....	46
Annexes	48

LIST OF TABLES

Table 1.....	30
Table 2.....	30
Table 3.....	31
Table 4.....	31

LIST OF FIGURES

Figure 1 Conceptual framework.....	18
---	----

LIST OF APPENDICES

Annexes A	Test for Multicollinearity.....	48
Annexea B	Probit Regression for determinants of access to government input subsidies.....	48
Annexes C	Multiple regression for factors influencing access to input subsidies.....	49
Annexes D	Marginal Effects.....	49
Annexes E	Questionnaire.....	50

CHAPTER ONE

1.1 Background of the Study

Agriculture is the principal factor for economic development, growth and expansion of countries worldwide. Talking of Africa, nearly one fifth of the region's Gross Domestic Product (GDP) is generated from Agricultural sectors. Agriculture again to add more, has been contributing nearly half the continent's overall exports. Research has shown that two thirds of Africa's populace resides in the countryside and a significant percentage of these occupants take farming as one of their major and fundamental livelihood activity (World Bank Development Indicators, 2014). Millennium Development Goals (MDGs) have to date been adopted as one key strategy for poverty reduction, and it's now a concept being implemented in a number of countries, especially in rural populaces that hinge on farming and other agriculture-related activities (IFAD, 2005). Regardless of the importance of agriculture specifically to our local economy, the rural areas have been a major concern to most African governments as they are continuously having high occurrences of hunger and poverty, particularly Africa and Southern Asia.

Recently developing nations have realised the resurgence of subsidy policies, that are focused on reducing the amount payable for farm inputs as per farmer's needs .The practise of improved subsidized farm inputs in farming has always been associated with favourable outcomes which including; augmented harvests with subsequent improved availability of food leading to improved food security echelons ,a higher level of market participation, which is shown by the increment in the amount of farm produces sold by small-scale farmers, which result in increased income levels, as well as reduced market participation on food crop purchasers which converts to improved household income reserves.. Reports by the International Monetary Fund (IMF) indicted that food subsidies' upscaling was executed by twenty two countries in 2008. The stance by the different governments to turn into subsidies was meant to safeguard against food insecurity and improve income generating activities in agriculture (Sibande, 2016) In an attempt to intensify production and augment food security for the rural people, the Zimbabwean government set apart a fund for the agriculture input support programme with the objective of ensuring household food security. However all this was consistent to the inception of the year 2000 land reform programme which reallocated land to the local peasant farmers. The Input Support Initiative is designed to give farmers

free and subsidized inputs in order to stimulate production primarily for cereals ,maize and sugar beans. The thrust of the programme is to improve food security and incomes for decent livelihoods in rural households . All the eight provinces of Zimbabwe are beneficiaries of the land reform programme and inputs are distributed in accordance to precise needs of a particular agro-ecological zone . According to Farmers Unions in Zimbabwe (2014) Nationwide the agricultural input support initiative has profited 1.6 million households. Annually, each household gets 10kgs maize seed, 50kgs compound D, 50kgs ammonium nitrate and 50kgs lime fertilizers . Semi-arid regions which are known to obtain very low rainfall echelons get 5kgs per household of maize seed. This motivated farmers and has significantly increased input usage for improved crop yields among the different farmers. Nevertheless in Zimbabwe achieving better food security status is still a dream as the agriculture input subsidies program is still yet to accomplished its intended goals in terms of increasing yields, enhancing food security as well as attaining more produces in each field (Mehmet, 2016)

1.2 Statement of the problem

Poverty and malnutrition are the main challenges facing children and women in rural areas of the developing countries. Poverty is characterized by food insecurity, as a result of poor access to clean food, water, and malnutrition as a result of low caloric consumption and consuming same diets every day. Access, use of sophisticated varieties of farming inputs is proving to be one key element necessary to improve crop yields as well as improving agricultural productivity (World Bank, 2014). Barricades to access , availability , and use are key constraints to various smallholder farming households in Africa,Zimbabwe included. In compliance to the Abuja Declaration, Zimbabwe decided to upsurge efforts on subsidizing inputs for production of essential crops (maize) by playing a supportive role for smallholder farmers to access inputs through the input support program. Zimbabwe in the past years provided innumerable input support programmes to many farmers around the country in an attempt to mitigate food insecurity as well as encouraging economic growth. Most of the times ,input support programmes are designed to mitigate food insecurity as well as production restraints met by all farmers resettled under the land reform programme, old resettled farmers and communal farmers . These programs usually support the production of maize most of the time. These agricultural input subsidies include input subsidies, mainly fertilizer and seed, for maize, wheat, small grains, Credit default coverage under Command Agriculture;. Regardless of this massive backing, The 2019 Zimbabwe Vulnerability

Assessment Committee indicated that estimates of 5.5 million countryside citizens are food insecure, with 3.8 million people in serious need of assistance. Why is the nation having such a large number of people who are food insecure? Is it because of the procedures used in input distribution as we all know the provision of agricultural input subsidies has been facing some challenges and problems which include inputs diversion, the cost involved, late distributions of the inputs, corruption, politics, insufficient inputs received to mention a few. Recognizing these evident issues within the program, this study targets to evaluate the impact of input incentives on smallholder farmers, particularly with regards to increasing household food production levels which in turn transmit to food security

1.3 Objectives of the study

The objective of this study is to analyse the impact of government agricultural input support programme in enhancing household food security in Zaka district.

1.3.1 Main Objective

Is to assess the extent to which agricultural input subsidies are contributing to household food production.

1.3.2 Specific Objectives

- (i) To determine farmer's perceptions on the interrelationships that exist between variables that either determines access to input subsidy or increase yields.
- (ii) To determine the factors affecting access to agricultural input subsidy of farmers.
- (iii) To assess the contribution of agricultural input subsidies on household food production?

1.4 Research Questions

- (i) What are farmer's perceptions on the interrelationships that exist between variables that either determines access to input subsidy or increase yields?
- (ii) What factors affect access to agricultural input subsidy on the yields of Zaka farmers?
- (iii) What is the effect of access to an agricultural input subsidy on household food production?

1.5 Significance of the Study

Despite huge interventions by the Government specifically to the agricultural sector, through the introduction of the input support agenda which is meant to boost overall production among farmers. Research has revealed that majority of studies done so far on government input support programme have concentrated more on the cost and sustainability aspect of this program and failed to dwell much on the efficacy of this programme in enhancing household production which in turn transmit to food security. Consequently, a total understanding of the program's impact in ensuring household level food security is very critical and so much needed for redesigning and repackaging of this program such that going forward, its efficacy in addressing household food insecurity in a well-managed and sustainable manner is well acknowledged.

1.6 Limitations of the study

Data collection exercise in a politically volatile atmosphere like the one in Zaka requires a strong and deep appreciation of the atmosphere the field work will be done and, adequate groundwork in face of challenges to come, before engaging in any field work. Gaining access to a politically charged atmosphere like Zaka needs go-ahead and permission from a broader range of porters inclusive of the local political chain of command before carrying out any field work, something not really important in other areas. As a mountainous area data collection was affected by poor transport networks, roads, and telecommunication networks.

1.1 REFFERENCES

IFAD,(2005). Achieving the Millennium Development Goals: Rural Investment and Enabling Policy.Panel Discussion Paper IFAD Governing Council – Twenty-Eighth Session 16-17 February 2005

Mehmet T.E.,(2016).Effects of Agricultural Input Subsidies in Turkey Case of Ivrindi District. Ghent University (Belgium), Agro campus Ouest (France), Humboldt University of Berlin (Germany)

Sibande L. Chanthenda(2016). Essays on The Impact of Farm Input Subsidies on Farm Households in Malawi, University of Kent.

World Bank. (2014). Agribusiness Indicators: Tanzania. Retrieved 01 03, 2015, from The World Bank:

Zimbabwe Farmers Union Summit 2005 Annual Report.

Zimbabwe Vulnerability Assessment Committee 2019 Annual report.

CHAPTER 2: LITERATURE REVIEW.

2.1 Introduction.

From time immemorial to date agricultural production in developing nations particularly Africa has been very low and this has seen a lot of countries adopting a free or subsidized input support programmes in the bid to improve food security levels in the country. World Bank (2010) indicated that input support programmes plays a vital role in improving usage of inputs necessary for increased Agricultural production thereby accelerating the alleviation of poverty among rural agrarians. Takeshima and Lim Lee (2012), defined a subsidy as a payment made from public funds that lowers the price a buyer pays for a good or service below the price at which it is provided by the seller.” This happened in Asia, they made fertilizers and other inputs affordable and available at very cheap prices (Fan et al. 2004). According to Future Directions (FD) (2013) subsidies also make food available at household level through the imposition of a floor price for farm products. Issues concerning food security have now risen top of the agenda worldwide in the bid to feed the current projected 9 billion people on planet earth (Godfray et al. 2010). This has now forced subsidies to form a greater part of policy instruments especially in Africa where governments now use them to guarantee food security in their respective countries. Livelihoods mostly in in the countryside are mostly dependent on agriculture with an estimated number of 70% people deriving their livelihoods from agriculture in Zimbabwe Mano et al, (2000). Being the prime source of employment, the well needed rural economy's economic health and long-term viability is fundamental for the sake of the people's well-being and the nation at higher levels FAO (2010). Majority of the poorest people on the planet live in rural areas and rely on farming for their wages and livelihoods, whether as farmers or agricultural laborers. Rukuni (2000) and it is in this view therefore that this sector is regarded as one area that is very delicate and not to be neglected at all.

2.2 INPUT SUBSIDIES IN AFRICA: AN OVERVIEW

The move by the World Bank together with the IMF stated by Ricker-Gilbert et al. (2013) of banning input subsidies shows that there had been a general consensus that these are not an effective way to overcome food insecurity, or more so, achieve rural development in the developing world. However, food security has become a global challenge as Godfray et al. (2010) states that governments have taken steps to bringing input incentives back, as a

solution to food insecurity which in some countries, have become the norm every growing season.

African Union member states sat in Abuja in 2006, to come up with what was termed the Abuja Declaration, the first African Fertilizer Summit which chiefly stipulated that signatory countries should by 2015, use at least 50kg/ha of mineral fertilizers on their soils, to improve its fertility and increase agricultural productivity for African countries (OPCDAAD 2007). This came, as part of the many responses to such calls as the one made by the then United Nations secretary general, Kofi Anan in 2004, for a “uniquely African green revolution” (FAO 2008). Many African governments have used subsidies to promote both development and food security, with seven African countries investing an average of 2 billion US dollars in subsidizing inputs., a statistic that represents a significant amount of most African countries' governmental spending (Ricker-Gilbert et al. 2013). Africa, having the least fertiliser use averaged at 8kg/ha, has indeed taken to subsidising inputs and farmers are being encouraged to utilize more inputs while also guaranteeing food security. Input costs, particularly fertilisers and seed, are generally high in Africa, owing to high transaction costs caused by weak transportation systems in these nations, making them exorbitant beyond the reach of an average farmer. (Dorward & Chirwa 2011). Governments of countries thus implement subsidies due to fear that food insecurity might become a problem resulting in poor crop productivity due to low use of chiefly mineral fertilisers and seeds as stated by Dorward et al. (2008), and as Balter & Hansen (2012) states, fear over dependency on imports. The use of subsidies in Sub Saharan Africa thus can also be viewed as an instrument for governments to help their farmers to produce more for less. However, literature reveals that some input subsidy programmes proved to be expensive, result in distortion of markets and would benefit the wrong people in the end (Dorward & Chirwa 2011). In trying to correct this, “smart” subsidies have been suggested, which were to harness the favourable effects at the lowest possible costs (Baltzer & Hansen 2012).

Smart subsidies, are a concept which many of the African countries subsidizing inputs have tried to adopt to overcome the shortfalls of what were known as “universal” subsidies (Ricker Gilbert et al. 2013). These were the norm in the 1970's before there were phased out following the structural adjustments programs of the International Monetary Fund (IMF) and the World Bank which discouraged universal subsidies based on what their high costs with reduced benefits (Ricker-Gilbert et al. 2013). Subsidizing inputs using “Smart” subsidies is achieved by better administration, program planning and targeting amongst others, such that

the intended beneficiaries benefit and make the most of what is given. Universal subsidies, which are typical of the Indian subsidies, as the name suggests, are universal, typically in a country everyone benefits and in the end, there is a vast room for mismanagement and thus lower returns than anticipated (Ricker-Gilbert et al. 2013). Malawi, Zambia and Ghana are some countries that have tried to adopt smart subsidies, with Tanzania also joining the forum introducing a subsidy programme smaller than Zambian subsidy but larger than the Malawian subsidy (Baltzer & Hansen 2012). The scope of each input subsidy programme varies with the country in which it is being implemented as well as the outcome, targeting and the exit strategy (government's intention to have recipients graduate from the program) with similarities existing in some areas amongst countries as Baltzer and Hansen (2012)

2.2.1 The role of Input Support Programmes

Adequate farming inputs have a key role in increasing the yield of many crops. The African Union heads of state gathering in Abuja fully acknowledged this. As a result, the Abuja Declaration was endorsed, recommending that member states adopt ways to boost fertilizer usage from an average of a 20kg to a 50kg. The meeting of African chiefs of state to discuss boosting fertilizer use by farmers in their respective countries highlighted the importance of agricultural inputs in enhancing production. This was due to low input utilization in African countries, particularly in sub-Saharan Africa, where fertilizer usage fell short of international requirements Wiggins and Brooks, (2010). It was hoped that by using these inputs, agricultural production would grow. These inputs were designed to help poor rural households improve their agricultural development. There is solid evidence that agricultural inputs increase yield significantly and that they are necessary for long-term intensive agriculture without degrading soil fertility Crawford et al, (2006) This is accomplished by cultivating crops such as millet and sorghum, which have lesser yield potential but nevertheless offer significant production responses when seen through the lens of integrated soil fertility management Poulton and Dorward, (2008). The input support effort is also important for soil fertility management, which keeps the soil fertile and prevents it from being exhausted. Increased crop output, improved rural incomes, and long-term maize production will all be benefits enjoyed from maintaining good soil fertility. Smallholder farmers can build productive and financial assets through the program, and after a few years of excess harvests, they may be able to finance full-priced inputs with their own money. This shows how the input assistance program will help farmers become more self-sufficient since

the programme will help in enhancing rural incomes. Input support programmes play a significant role by encouraging national and household food security.

The input support program is in line with MDG #1, which calls for the eradication of severe poverty and hunger, as well as control of productive resources, to contribute directly to the reduction of rural poverty and hunger. Though the input assistance program is designed to boost production, it also promotes food security in households and the country as a whole. The Comprehensive African Agricultural Programme FAO (2009), emphasizes the prominence of input programs in achieving food security, stating that people in Africa, particularly in rural areas, are food insecure due to a shortage of agricultural inputs as well as the effects of weather on crops as a result of climate change. CAADP praised the input program for boosting food security by providing inputs that are adaptable to changing weather patterns, despite the fact that most African countries have yet to completely implement the new breed of seeds.

Agricultural input programs are also vital in effectively increasing land and labor production and driving down food staples prices, which raises the real incomes of a significant number of poor consumers as well as poor farmers. This increases demand for locally produced non-staple foods such as horticulture and animal products, as well as nonfarm goods and services, driving up labor demand and salaries in the area. Simultaneously, boosting staple crop output can free up resources for non-staple foods such as horticulture and animal products, as well as non-farm commodities and services. These growth multipliers were crucial in propelling the economy forward. In Asia Hazell and Rosegrant (2000), and need to be given far more weight in impact analyses of input programs; in particular, agricultural inputs affecting food prices and impoverished consumers or net buyers deserve more attention. It also requires implementation of subsidies over a longer period, to achieve structural change rather than short term productivity gains. Input support programmes also play a major role in increasing rural incomes amongst the beneficiaries of the programme. This is attributable to higher crop yield as a result of the assistance provided. Increased crop production will assist majority of the recipients obtain surpluses, which they may sell in marketplaces to generate revenue, so improving rural livelihoods. Increased creation of rural incomes is critical since it generates a better society for most rural areas, eradicating the reliance syndrome that most rural people have embraced. This is due to the fact that people will be able to plan ahead of time for good manufacturing outputs and also have better livelihoods because they will be more

informed about the issues that need to be addressed . The Tanzanian input program , for example, raised productivity, allowing most farmers to sell surplus and purchase items that improved their incomes . The majority of smallholders were able to provide social services such as health care and education for their children while also supporting their family with their earnings.

2.2.2 Factors affecting the effectiveness of the input support programme

Various methodologies were used to assess the contribution of the input assistance program in improving rural incomes and maize production sustainably . It's worth noting that studies evaluating the impact of input support programs , particularly on the African continent , have a tendency to limit the relevance of the data . However Other external factors influence the success of input assistance programs in raising maize output among smallholder farmers , in addition to factors in the sustainable rural livelihoods framework . These factors include climate change , which has had a significant impact on the agricultural industry due to changes in weather patterns ; and land degradation , which has impacted soil fertility and crop output. The agriculture sector in Zimbabwe is currently suffering major output issues. MoF (2011). Production has dropped dramatically in recent years, and the country is no longer self-sufficient . The country's main crop, maize , has seen a sharp drop in production , putting many rural farmers' livelihoods in jeopardy. Climate change, frequent droughts , lack of automation, poor seed types, and inadequate training are just a few of the issues that farmers face. However, access to inputs has remained a hot topic in terms of being cited as the main cause of low production . The agricultural sector has suffered as a result of prohibitive input prices, with many rural farmers unable to afford most inputs, particularly fertilizers. The agricultural sector has suffered as a result of prohibitive input prices , with many rural farmers unable to afford most inputs , particularly fertilizers .

Several issues have been highlighted in previous studies as limiting the input support program's ability to improve productivity. Growth with equity is one of the primary criteria, according to FAO (2010), because agricultural inputs that target the correct group to profit from the program means of production will be fully realized by all farmers , including smallholders . The program should start with the most vulnerable populations and work its way up to those who don't require as much assistance with inputs. This will aid in the development of all people equitably, without excluding any group from economic

development and improvement circle. Increased rural incomes will be realized since the initiative will address one important problem of targeting, ensuring growth with equity. According to some academics, achieving national grain self-sufficiency will necessitate focusing the program on the most productive households, which may be slightly less impoverished. However, these may deceive the program's genuine purpose of raising productivity among the poorest smallholder farmers, who are the program's primary beneficiaries., a study by Chibwana (2010), According to the report, the inputs were disproportionately given to households with greater land, assets, and male heads of households. Vouchers were less likely to be awarded to the most needy and female-headed families.

2.2.3 Physical and Social Structure

Physical and social infrastructure, such as road conditions, telephone and mobile phone service, extension service, and so on, have all been recognized as playing a role in rural development and farm production. Jacoby (2000) The study looked at the benefits of rural roads to rural farm households and found that providing road access to markets would result in significant gains in farm earnings. Distance to the nearest motorable road and access to extension services had beneficial effects on maize productivity in Zimbabwe, according to the findings. Infrastructure development would aid in the delivery of inputs, ensuring that they reach farmers in time for planting. Because there will be communication between farmers and input suppliers, the availability of the aforesaid variables will aid in increasing maize production. The existence of decent roads in the places where inputs are to be received is an extra benefit to getting inputs on time. Good roads facilitate the delivery of inputs, as opposed to bad roads, which impede the timely delivery of inputs.

2.2.4 Financial Constraints

Financial constraints within the government can also have an impact on the purchase of agriculture inputs, which can be costly for the government. Due to the country's economic woes, the government of Zimbabwe is unable to acquire enough inputs to help every smallholder farmer. Financial restrictions in the economy have resulted in food insecurity among most smallholder farmers, since exorbitant input prices have resulted in a reduction in maize production. Because of their low incomes, the majority of smallholder farmers in the country are unable to purchase inputs. As a result, maize production has decreased as

inputs arrive late in the planting season. For yields, the order in which inputs are used is critical. Farms with financial constraints may not be able to maximize output. .

2.2.5 Distribution of Inputs

Another overlapping aspect that influences Africa's development ambitions is resource distribution. This can also be ascribed to the input support program, in which the unequal distribution of these inputs has left most smallholder farmers behind in terms of increasing productivity. The distribution of inputs must be done in a fair way, with the group in need of assistance receiving priority before well-off farmers. In Ghana, for example, the input program rewarded politically connected farmers while leaving out many peasant farmers who desperately needed inputs. This demonstrates that distribution is a problem that has harmed the input support program's efficacy because the distribution of these inputs has not been done in a fair manner that allows every farmer to produce. Achieving equitable distribution will continue to be a challenge.

2.2.6 Corruption

Another issue affecting the allocation of inputs to farmers is corruption. Corruption has been a key source of underdevelopment in most African countries, and it has remained unaddressed, resulting in less development in other sectors that have lagged behind. In other nations, the input program has not been implemented in a transparent manner. The program's outcomes have revealed a poor performance of the program's exercise, with inputs redirected to fit political objectives rather than addressing the actual problem on the ground. When resources are redirected to serve political goals, the distribution of these inputs becomes skewed, with some people receiving less than others. The input assistance program in Ghana is a good example. Informally, input distribution between districts was based on hazy concepts of "farmers' needs." Banful (2010), on the other hand, claims that the actual regional allocation of inputs was more directly tied to political issues than to efficiency or equity considerations.

He precisely demonstrates that districts that the incumbent party lost in the last election in 2004 received more vouchers than districts that the incumbent party won. Furthermore, the amount of vouchers allotted to a district rises in proportion to the district's vote margin. Corruption can also be seen as a situation in which farmers do not receive all of the obtainable resources. The Ghana input assistance program, for example, had

vouchers that were supposed to be handed to farmers but were not available. According to Yawson et al. (2010), the government had planned to produce 600,000 vouchers in 2008, each redeemable for a predetermined rebate on one 50 kg bag of fertilizer, but in the end, more than 1.1 million vouchers were printed, with fewer than half of them being redeemed. The causes for the overabundance of vouchers and the resulting low redemption rate are not totally clear. Nevertheless, it seems that a lack of precise criteria for distributing vouchers, as well as general ambiguity about how many vouchers were available in each region, resulted in an initial shortage of vouchers during the vital late summer months, when fertilizers are applied most efficiently.

2.2.7 Climate Change

Natural disasters have also hampered the input support program's efficacy. Donald Brown et al. (2009) wrote in an IIED report about climate change in Zimbabwe that the effects of climate change have been documented, including rainfall variability and extreme occurrences. Due to the poor's reliance on rain-fed agriculture, these conditions, together with warning trends, are projected to make land increasingly marginal for agriculture, posing a threat to their economy and livelihoods. The effects of climate change are having a negative influence on the input support program, as its effectiveness in increasing rural incomes through higher production is being questioned.

Despite the fact that the Sub-Saharan region increased its usage of inputs to improve production, climate change has reduced the program's effectiveness due to harsh weather conditions that are unfavorable to agriculture. Rain patterns have changed as a result of climate change, particularly in the sub-Saharan region. In the Sub-Saharan African region, countries such as Malawi, Zambia, and Zimbabwe have recognized the value of an input assistance program to help smallholder farmers increase their agricultural production. However, the region experiences a particularly harsh rainy season, with shifts in the onset of rains, an increase in the frequency and intensity of heavy rainfall events, an increase in the proportion of low rainfall years, a decrease in low intensity rainfall events, and an increase in the frequency and intensity of mi-season dry spells Ungani (2009). Furthermore, extreme weather occurrences like as tropical cyclones and drought have become more common and intense Mutasa (2008). This clearly demonstrates the negative effects of climate change on the input support program, which is intended to increase production and improve rural livelihoods. Rainfall is a critical component of

production , but as a result of climate change, it has become a rare resource for farmers, who are unable to afford other techniques such as irrigation due to poor revenues. This is especially evident among smallholder farmers, who are particularly exposed to climate change's effects .

2.2.8 Review of empirical studies

While there is a large corpus of empirical research on input support programs in rich and developing nations Bravo-Ureta et al (1993), few studies focus on African agriculture , particularly Zimbabwe Chirwa (2003). These studies show how these programs were implemented and how they influenced maize production while also increasing food security and rural lives. Other studies , on the other hand, indicate how beneficial the program was and how it failed due to reasons beyond human control , such as poor rainfall . Other issues include political meddling, corruption, and a lack of focus on the primary beneficiaries.

In most developing nations, input assistance programs have been a key instrument for raising agricultural production. Many governments have responded by implementing free or subsidized input programs, which have helped smallholder ifarmers overcome production limits and increase output. Input programs, according to the World Bank (2010), are crucial in improving the use of necessary inputs, which are critical in increasing output and thus food security for many rural farmers.

Kibarra (2005) conducted a research in Nigeria to assess the impact of input support programs on enhancing food security through improved production through the support program . The government gave subsidized inputs to smallholder farmers , which resulted in a 49 percent rise in maize production. Furthermore, farm incomes increased by 35%. The beneficiaries' food security improved, with most households able to eat three meals each day, while others reported only eating two meals per day. Families ate more healthful meals as a result of the program . The study made recommendations for improving the targeting of input beneficiaries in order to prevent inputs from being taken by the incorrect persons. As a result, the study considers targeting to be a critical factor to examine because it will allow the less fortunate to participate in agriculture's means of production . Targeting will also allow for a balanced output in agriculture production , thereby making nations more prosperous. . Targeting will also promote equity specifically at the poorest smallholder farmers .

Pan et al (2011) looked at the efficiency of the government's input assistance programs in Tanzania. This was in response to the country's high food and fertilizer prices during the 2007//2008 period. The study was founded on the notion of efficiency, which entails high productivity and the long-term sustainability of intensive agriculture without depleting soil fertility. The study also featured the concept of equality, in which significant resources were diverted to benefit the less-poor with strong political ties, however it did not entirely target the genuine individuals in need of assistance. Despite the lack of transparency in the targeting criteria, the program was able to improve the recipients' national and household food security. Because most farmers took their supplies to the market, crop production grew dramatically and rural incomes increased. As a result, products on the market have become more affordable. The input support program boosted both family and national food security. However, because the program was only executed for a brief time, the concept of long-term production was not explored.

According to a study conducted by Yawson et al. (2010) in Ghana, the agricultural input assistance program boosts agricultural production. The concept of efficiency was applied in the research. Despite the fact that the initiative was implemented as an emergency measure to alleviate the country's severe effects of high fertilizer prices, it generated positive benefits. Despite the fact that the program was only in place for a short time, it was able to improve national and household food security in the country, with maize production increasing by 58 percent and rice production increasing by 30 percent. This was a huge increase in crop output that resulted in food security, and the farmers in Ghana were quite pleased with the program's outcomes. However, according to the authors, there was little attempt to target the poorest households, and the initiative appears to have helped large fertilizer importers in particular. The problem of targeting to achieve equity remains unaddressed, with the program primarily targeting the incorrect demographics.

Chinsinga (2010) found a significant favorable impact on the usage of agricultural inputs, agricultural production, and food production in Malawi. According to Chibwana et al. (2010), the initiative raised recipient farmers' maize yields by 57%. Farmers transferred acreage from alternative food crops like cassava or sweet potato to maize as a result of the government input scheme. Malawi's input program was one of the most effective in boosting national and family food security. According to official estimates, national

maize harvests climbed by around 1 million tonnes in 2005/06, reaching more over 2 million tonnes in 2008/09. Even for impoverished non-beneficiaries, evidence from focus group discussions revealed that rural real wages increased continuously over the length of the agricultural input subsidy program. As maize production rose among beneficiaries, households' reliance on off-farm work decreased, and more jobs became available for non-beneficiaries and landless poor. According to the study's authors, determining how powerful or broad such effects were, as well as the extent to which stated reductions in poverty rates may be attributable to the agricultural input subsidy program, is difficult. The Malawi agricultural input assistance program had a significant impact on productivity and output, but it was extremely expensive, failed to reach the most disadvantaged households, and its long-term viability is in doubt.

According to Chirwa (2010), the input support program was successful in raising maize production among smallholder farmers in Hwedza. Among the recipients of the input support program, the program was able to boost maize production. The rise in production was significant, resulting in greater food security for the recipients. The majority of the beneficiaries produced 0.7 tonnes per hectare, up from 0.4 tonnes per hectare prior to the government's assistance. However, food security was not fully realized because the majority of the recipients could only afford two meals per day, while others could only afford one. This was due to the fact that not all farmers received the maximum benefit from the scheme. Other crops were harmed by bad weather, and others reported fertilizer was in insufficient supply, with some farmers receiving fertilizer late, compromising maximum productivity. The analysis ignores the program's targeting criteria, which meant that not all smallholder farmers profited from it. The majority of small-scale farmers did not receive the specific inputs they needed. Three homes were given a 50kg bag of fertilizer and two were given a 10kg bag of maize seed to split. This, however, included the yields of many farmers who did not receive the projected outputs from the input program, while other smallholder farmers merely produced enough to feed their families.

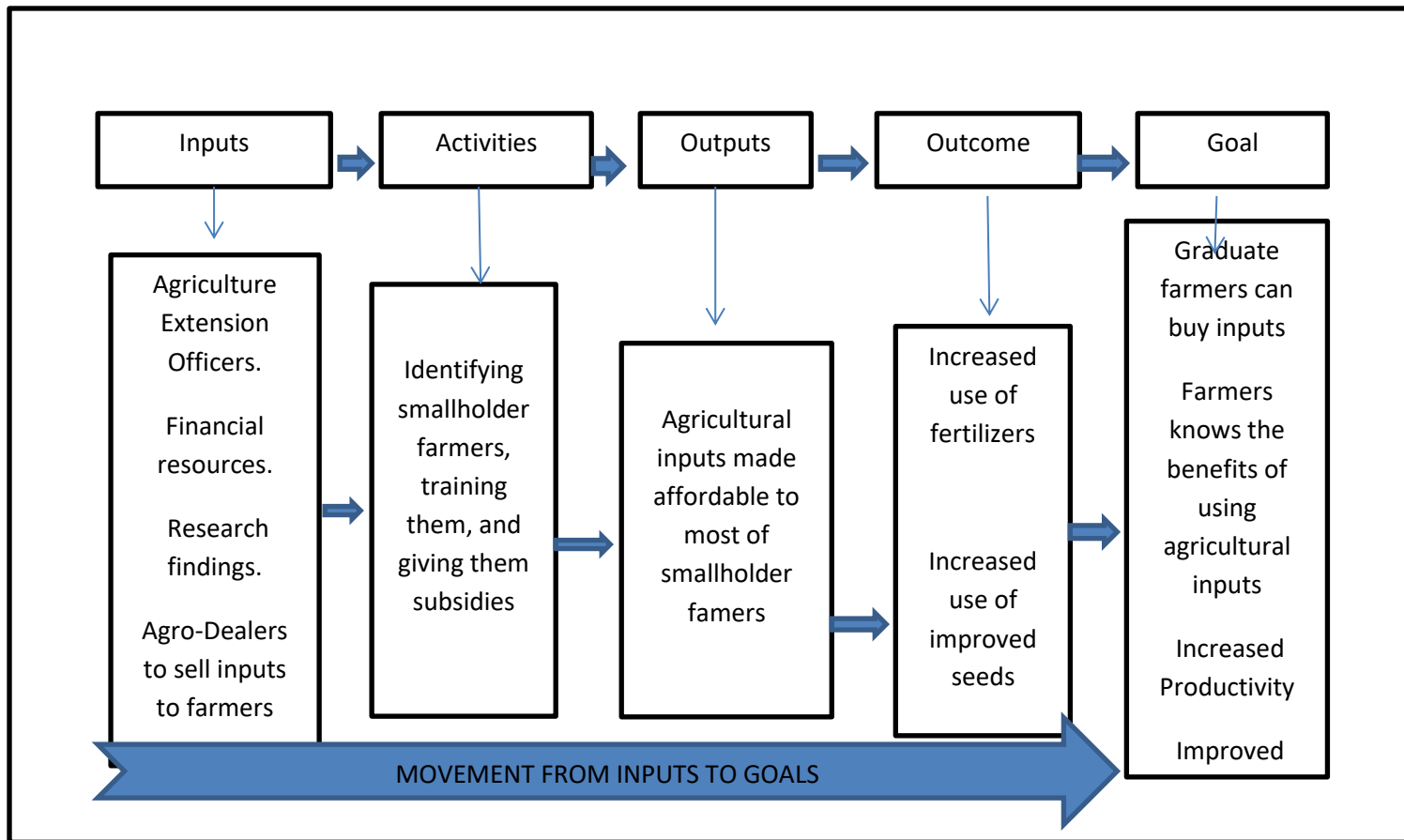
Mudzonga and Chigwada (2009) analyzed the input support program's performance in the Hwedza area as well. The yields achieved after the inputs were applied to smallholder farmers were the focus of this study. The findings clearly demonstrated that the initiative failed to increase maize yield among smallholder farmers. The rise in maize production was not as large as the program's goal suggested. The program's role to promoting food security, on the other hand, has not been completely realized. This is due to the program's inefficiency,

which jeopardizes farmers' ability to produce their full yield. The findings of the investigation revealed that the government's inputs were disseminated late and even to the wrong persons. Other farmers have complained that they did not receive the full package promised by the government in past seasons. Despite the fact that farmers were able to harvest something, the corn they received is insufficient to last them through the next farming season.

2.3 Conceptual Framework

A conceptual framework is a scholar's viewpoint on the issue he/she intends to investigate. It acts as a guide for the research to be able to fully explain relationships among variables. Researchers however have a leeway to adopt already existing frameworks with adjustments if there is any need. However in this study, a logical model will be adopted. A logic model is defined as a planning tool useful for clarification as well as graphically displaying what a specific project wishes to achieve and impact (Fitzpatrick, Sanders, & Worthen, 2011). Low productivity among smallholder farmers facilitated the development of such frameworks and this formed the basis for the introduction of SMART subsidies in many African nations. The condition was further worsened by the rise in input and food prices. In the bid to address this, African leaders decided to embrace subsidy approaches that escalates the uptake of fertilizers among others. Subsidies facilitated agricultural inputs to be affordable to many farmers with the objective that through the use of the improved seed and fertiliser, productivity will also increase, food security improved, farmers welfare improved and empower farmers to be self-dependent. Therefore This framework's theory is that if farmers obtain and utilise subsidised inputs, they will enhance maize yields and output, allowing them to raise crop revenue and reduce poverty. The program provides a subsidy for upgraded inputs (fertilizers and enhanced maize seed). The framework is depicted in a simplified form in the diagram below.

Figure. 1



2.4 SUMMARY OF LITERATURE REVIEW

With the world population increasing, and expected to reach 9 billion by the year 2020, issues of food security have become pivotal more so in the developing world. Governments in the developing world, especially in Sub-Saharan Africa, have taken to subsidizing agricultural inputs, as a way to increase fertilizer and hybrid maize seed use in these countries and above all, increase food security. Input subsidies makes agricultural inputs affordable for the peasant farmer, who then manages to produce more, for his family and probably produce surplus for sale. In countries like Malawi, this surplus can have economic value at a national level, increasing the Gross Domestic Product (GDP) and thus causing a positive economic impact in such countries. The chief advantage of input subsidies is the increased food security. Increased incomes which increase accessibility to net consumers of maize, who are labourers on other people's farms are also worthy causes of input subsidies. However, the cost of input subsidies, compared to the returns made to public investments, are a major

concern and the failure of proper targeting as well as proper exit strategies, makes these more costly, such that the cost to the benefits do not become feasible. Proper management and implementation, as well as the existence of a proper exit strategy are then a necessity, for the benefits of input subsidies to be harnessed at a reduced cost which makes subsidies, a worthy policy instrument for improved food security. Literature does not give however, the direct link between input subsidies and food security, especially at a household level. This remains a gap of knowledge, which needs to be filled.

2.4.1 CONCLUSION

It is clear from what has been raised that with no doubt, input subsidies increase the yields of maize, a symbol of food security in many nations world over. The issue lies in whether or not input subsidies are a necessary evil, given their costs and benefits (Dorward & Chirwa 2011). Indeed, when it comes to improving the food security of any country, they have proven to be worthwhile. However, the cost issues still lie as a weapon in the hands of critics. It is astonishing however, how literature points out the need for countries to follow smart subsidies to harness the benefits of input subsidies, and how countries try but follow just part of what is required. It leaves room for improvement of either the principles of smart subsidies themselves, or how the implementers of subsidies within countries implement their programs. In addition, Ricker Gilbert et al. 2013 notes that there may be need for governments to consider if the benefit to subsidizing is worth the expense of scarce public resources which are invested in it which could have otherwise been allocated to other uses. The advantage of implementing subsidies with the world population increasing and requiring food as stated by Godfray et al. (2010) seems worthwhile, and thus eliminating disadvantages seems the best option. However, whether or not input subsidies should continue as policy instruments is a matter of opinion and lies on who is viewing the effectiveness of the subsidies

2.5 REFERENCES

- Baltzer K and Hansen H (2012). Agricultural input subsidies in Sub-Saharan Africa. Ministry of Foreign Affairs, Denmark.
- Bravo-Ureta, B.E., Pinheiro, A.E., (1993). Technical, Economic and Allocative Efficiency in peasant farming: evidence from the Dominican Republic. *Dev. Economics*
- Banful, Afua Branoah, (2010b). Old Problems in the New Solutions? IFPRI Discussion Paper, 01002, Washington D.C., IFPRI.
- Crawford, E. W., T. S. Jayne and V. A. Kelly (2006). Alternative approaches for promoting fertilizer use in Africa. *Agriculture and Rural Development Discussion Paper 22*. Washington, DC, World Bank.
- Chirwa, E.F. (2003), Sources of Technical Efficiency among Smallholder Maize farmers in Southern Malawi. University of Malawi, Chancellor College, Department of Economics
- Chibwana C, Fisher M, Jumbe C, Masters W A and Shively G (2010). Measuring the Impacts of Malawi's farm input subsidy program. Available at SSRN 1860867.
- Chinsinga, Belssings (2010), Seeds and subsidies: The political economy of input programmes in Malawi, *IDS Bulletin* 42(4), and Institute of Development Studies
- Dorward A and Chirwa E (2011). The Malawi Agricultural Input Subsidy Programme: 2005-6 to 2008-9. *International Journal of Agricultural Sustainability (IJAS)*, 9 (1).
- Dorward A, Chirwa E, Kelly V, Jayne T, Slater R and Boughton D (2008). "Evaluation of the Malawi inputs subsidy programme
- Food and Agriculture Organization, (2009). *The State of Food Insecurity in the World, 2008* FAO, Rome.
- Food and Agricultural Organisation, 2010 FAO/WFP Crop and Food Security Assessment Mission to Zimbabwe.
- Fitzpatrick, J. L., Sanders, J. R., & Worthen, B. R. (2011). *Program Evaluation: Alternative Approaches and Practical Guidelines* (4th ed.). Boston
- Future Direction (FD) International (2013). Food and Farm Subsidies in the Global food system. <http://www.futuredirections.org.au/publications/food-and-water-crises/1362-food-and-farm-subsidies-in-the-global-food-system.html> (Accessed 2014 April 15).
- Godfray H C J, Beddington J R, Crute IR, Haddad L, Lawrence D, Muir J F and Toulmin C (2010). Food security: the challenge of feeding 9 billion people. *Science*, 327(5967), 812-818
- Hazell, P. and M. Rosegrant (2000). *Rural Asia: Beyond the Green Revolution*, OUP/ ADB.
- Jacoby H. (2000), Access to Markets and the Benefits of Rural Roads. *Economic Journal* 110

Kibaara,B.(2005).Technical Efficiency in Kenya's Maize Production: The Stochastic Frontier Approach.

Mutasa, C., (2008). Evidence of climate change in Zimbabwe. Paper presented at the Climate Change Awareness and Dialogue Workshop for Mashonaland Central and Mashonaland West Provinces, Zimbabwe, 29-30 September, 2008.

Mudzonga, E. and Chigwada, T. (2009) Agriculture Future Scenarios for Southern Africa A Case Study of Zimbabwe's Food Security, International Institute for Sustainable Development (IISD)

Ministry of Finance, (2011) Mid Term Fiscal Policy, 2011, Presented to the parliament in June 2011

Poulton , C. and A. Dorward (2008). Getting agricultural moving: role of the state in increasing staple food crop productivity with special reference to coordination, input subsidies, credit and price stabilization. Paper prepared for AGRA Policy Workshop, Nairobi, Kenya, and June 23– 25, 2008.

Ricker-Gilbert J, Jayne T and Shively G (2013). Addressing the “wicked problem” of input subsidy programs in Africa. *Applied Economic Perspectives and Policy*, 35(2), 322- 340.

Rukuni, M., (2000) „Land Reform In Zimbabwe: Dimensions of a Reformed Structure“ in *Land Reform in Zimbabwe: Constraints and Prospects*, ed. Bowyer-Bower and C. Stoneman, Ashgate Publishing Ltd, England.

Takeshima H and Lim Lee H (2012). Agricultural inputs subsidy and their developmental impact: Conventional wisdom

Wiggins, Steve and Jonathan Brooks (2010) *The Use of Input Subsidies in Developing Countries*. Paris, OECD

World Bank, (2010).*Getting the Zimbabwean agriculture moving again*. Washington DC, USA..

Yawson, David O., Frederick A. Armah, Ernest K.A. Afrifaamd Samuel K.N. Dadzie (2010). Ghana's Fertilizer Subsidy Policy: Early Field Lessons from Farmers in the Central Region.*Journal of Sustainable Development in Africa* 12(3), pp.191-203

CHAPTER THREE:

RESEARCH METHODOLOGY

3.1 Introduction

This chapter's goal is to lay out the study's methodology. The chapter begins with a description of the research site, followed by an explanation of the research design and how data was obtained. The analytical framework for analyzing the study findings, as well as the data kinds and sources required, is also developed here. The sample processes and equipment used in data collecting are also outlined in this chapter. Finally, the study considers potential limitations that could affect model results, as well as how to mitigate them.

3.2 Study Area

Zaka district is typically a small-scale farming area. It is a semi-arid, mountainous area with rainfall averages of 6–750 mm/year and poor soils in general. The key economic activity in this area is farming but on a small scale specifically for family consumption although one may sell extra produce to get cash and crops grown includes maize, sweet potatoes, groundnuts,. Population density is approximately 65 persons/km², This is unusually high for a hilly region where subsistence farming is the primary source of income. It is the rural district with the highest population density in Masvingo province and a large number of NGO's operate in this area as the area is very vulnerable to hunger and drought. Big rivers that flow through include Chivaka, Chiredzi, Murerezi, Mukwasine. Smaller rivers include Mungwezi, Nyamidzi, Rupiri, Chiredzana, Benzi, and Nyatare. The district has one of the biggest lakes in Zimbabwe, Manjirenji.

Four of the thirty four wards in Zaka were used as a case study. The wards were of interest because of their significant contribution in maize production to the district and have the most productive arable lands in the province. These wards are beneficiaries of the input support programme targeting smallholder farmers. Zaka district is endowed with a variety of natural resources, in terms of soils, vegetation and terrain. Apart from farming activities, the district is also well known of its richness in other insect based value chains like Harurwa, Ngozha, and other fruit trees.

3.3 Research Design

Burkingham and Saunders define a research design as a plan or guide for data collection and interpretation that includes a set of rules that allow the researcher to conceptualize and investigate the problem under investigation (2004). For this reason, a comprehensive strategy was employed. The explanatory approach was used for the procedures and methods of gathering data. This enabled the researcher to fully understand the effectiveness of the government input support programme in promoting food security in rural areas and sustainable maize production among smallholder farmers. The explanatory method was adopted so that it would give clear justification of the impact of the input support programme on increase in maize production thus promoting food security. The research was subjective towards a field work approach. It enabled the researcher to have a clear insight of things on the ground pertaining to the study. It gave the researcher a closer interaction with the respondents giving out information for the study.

3.3.1 Research Methodology

Research methodology is a systematic way of responding to research questions using realistic data, Strauss (2001). It also serves as a crucial channel of helping the researcher relate with the participants of the study. The research methodology employed assisted the researcher to be ethical and sensitive to the issues under study. Research methodology is a systematic way of valuing the research problem. Qualitative and quantitative are the two common approaches in research methodology. The study employed both qualitative and quantitative approach. The use of both approaches is known as triangulation. Triangulation employs both quantitative and qualitative techniques, methods language and concepts into a single study Johnson (2004).the use of both the quantitative and qualitative help in complementing each other during the collection of data. Triangulation involves the use of questioners, interviews and focus groups to collect data. Triangulation provides data with background thereby complementing collection and analysis of the data. Triangulation method employs the strength of both the qualitative and quantities methods to provide a broader view of the subject under study. The approach expands the research study in a way that is not possible with a single approach.

The process of providing statistical analysis of a research study together with examination builds the study with comprehensive results that are more likely to bring a difference. This then shows how it can be effective since under this study there is assessment of a certain

criteria that also requires statistical information for its validity to the body of knowledge. The challenge of triangulation lies in the corresponding part when using the two methods. You should not copy the processes when using them in the collection of data. Coping data methods makes the costs of gathering data be doubled and vast delay in coming up with the most pertinent data as there will be needed for selection. The use of triangulation helped the researcher to examine the effectiveness of the government input support programme in promoting food security and sustainable maize production through increased production. The researcher collects in-depth information using the qualitative approach to answer some questions, and numerical information using the quantitative approach to answer other ones, Creswell says (2013).

3.4 Sampling Procedure

The most popular sampling designs are probability sampling, which is classified as simple, random, systematic, and stratified, and non-probability sampling, which is classified as convenience sampling, purposive sampling, and quota sampling. The probability sampling method was used in this study because it ensures that each respondent has an equal chance of being chosen. The advantages of probability sampling methods over non-probability sampling methods are numerous. The most prevalent benefit is that it completely eliminates prejudice in interviewee selection. The researchers purposefully chose four wards in the area with a high percentage of smallholder farmers who benefited from the input support program for their research. The wards were chosen such that they were not too far apart in order to save money on transportation, reduce enumerator monitoring stress, and account for differences in climate and soil types. Wards were sampled with the assistance of Zaka AGRITEX officers who have a better awareness of the district's farmer distribution. A total of 100 smallholder farmers were included in the study, 13 of whom were participants in input programs and 12 of whom were not. The study randomly selected 13 farmers who benefited from the 2019/2020 input support program and 12 farmers who did not in each ward. Respondents in this study were household heads, except when he or she was unavailable, in which case sons or daughters who are familiar with the household's farming operations may be substituted.

3.5 Data Collection Procedure

Smallholder farmers in this district were given a standardized questionnaire to fill out. The main benefit of employing a questionnaire is that the interview will be structured and the same questions will be answered, reducing the bias that can be introduced by unstructured

interviews. In this district, smallholder farmers were given a standardized questionnaire to complete. The main benefit of employing a questionnaire is that the interview will be structured and the same questions will be answered, reducing the element of bias that can be introduced by unstructured interviews. Two AGRITEX extension officers based at AGRITEX, Zaka offices were enumerators responsible for administering the questionnaire to the sampled farmers. Questionnaires are used to gather data from people who are knowledgeable about a topic. These questionnaires are a set of questions that collect simple behavioral data on how people react to various issues. The questionnaire assessed whether smallholder farmers benefited from the input support program, which resulted in higher maize output, hence promoting national and household food security. Smallholder farmers in Zaka will reply to whether the input program is effective in increasing maize production, making the data collection instrument relevant to the research topic.

The responders were given a questionnaire that included both open-ended and closed-ended questions. Open-ended questions allowed respondents to express their personal views on the topic, providing the researcher with a foundation for collecting qualitative data. Closed-ended questions made it easier for the researcher to analyze the responses. The major advantage of using a questionnaire is that the interview will be structured and the same questions will be asked reducing the element of bias induced by informal interviews. The main benefit of using a questionnaire is that the interview will be structured and the same questions will be asked each time, reducing the element of bias that can be introduced by informal interviews. Questionnaires lack direct communication with the respondents and this will lead to data being misrepresented and will lead to inaccurate findings some times. Some respondents may give information that is inaccurate so as to please the researcher.

3.5.1 Data types and sources

The study used both primary and secondary data. The reason of employing both secondary and primary data was to get a full insight of the input support programme on how it has boosted production among smallholder farmers. The main sources of secondary data were ZIMSTAT publications, World Bank Publications, FAOSTAT, the Ministry of Agriculture Department of Economics and Markets and the Grain Marketing Board (GMB). Data on maize production, area planted, yield and some rainfall figures were obtained from the Ministry of Agriculture (crop assessment reports). Secondary data collected included national financial allocation on input support programmes, number of farmers supported, national

maize production statistics etc. Primary data was obtained through a survey conducted in Zaka district. The survey used a questionnaire that was administered to beneficiaries and non-beneficiaries of input support programme. Data types necessary for evaluating the impact of input support programme were; demographic structure of households, amount and access to inputs, area of maize planted with the inputs, quantity of maize harvested, income from maize sales, perception of input programmes.

3.5.2 Target Population

A target population is viewed as any group of individuals that have one or more characteristics in common that is of interest to the researcher Khan (1999). The Study focused mainly on smallholder farmers in Zaka district benefitting from the input support programme. The research also included appointments with AGRITEX officers of the district to get an insight of how the input support programme has managed to boost maize production within the district. These AGRITEX officers helped with statistics on maize production within the past years. Questioners were administered to smallholder farmers in the district, village heads were also included in the research exercise so that they could give information of how the input programme has managed to improve the livelihoods of the families within the village area they head. The diversification of the population was necessary in this research study so as to get different views about the study thus getting a balanced view about the effectiveness of the input support programme in promoting food security and sustainable maize production.

3.6 Data Analysis Procedure

Data will be analysed using Statistical Package for Social Sciences (SPSS) version 22 at 0.95 confidence interval (i.e. at $\alpha = 0.05$). For meaningful comparison, standardization of figures involving acreage and yield will done, also descriptive values of means and standard deviation will be used to describe the data obtained in the study.

3.7 Ethical consideration

Given the nature of this project, there are certain ethical considerations that were taken into consideration. In the first instance, all participants were treated with respect and courtesy. A strategy of 'informed consent' was adopted, with the aim and methods of the research being made clear to all participants. The confidentiality and anonymity of individual respondents was assured, and consent sought for the interviews audio-recorded. The researcher kept his integrity, in data collection and analysis, to serve the institution and the country.

3.8 Summary

Information was collected from participants by means of a survey technique. This study seeks to assess the impact of government agricultural input subsidies in enhancing household food production in Zaka. Qualitative and quantitative techniques were employed in this study together with ex post facto research design. Ex post facto research is “a type of research that attempts to determine the causal effect, or the consequences of, differences that exist in groups of individuals or situations” (Ary, Jacobs, Sorensen, & Walker, 2014, p. 676). Patten (2014) acknowledged two features of ex post facto: “researchers observe and describe some current condition”, and “researchers look to the past to try to identify the possible cause(s). Looking at these features in light of this study: the current condition that was observed are farmers’ productivity, food security, use of improved agricultural inputs, effects of input subsidies on food security and farmers’ gratification to how the program has performed; and looking into the past involves assessing ‘how input subsidies have impacted household food security in Zaka?’.

3.9 REFERENCES

Ary, D., Jacobs, L. C., Sorensen, C., & Walker, D. A. (2014). Introduction to Research in Education (9th ed.). (L. Ganster, Ed.) Belmont, California, USA: Wadsworth.

Patten, M. L. (2014). Understanding Research Methods: An Overview of the Essentials (9th ed.). (D. Dobies, Ed.) Glendale, California, USA: Pyczak Publishing.

Johnson R B and Onwuegbuzie A J (2004). Mixed methods research: A research paradigm whose time has come. Educational researcher, 33(7), 14-26.

Creswell, J.W. (2013) Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. 4th Edition, SAGE Publications, Inc., London.

Alan Buckingham, Peter Saunders The survey methods workbook: from design to analysis (Polity Press, 2004)

Khan et al,1999. Pakistan J. Biol. Sci., 2 (2): 347-349

Strauss, A. & Corbin, J. (1998).Basics of qualitative research: Techniques and procedures for developing grounded theory (2nd ed.). London: Sage

Strauss, A. (2001).Basics of qualitative research: Techniques and procedures for developing grounded theory (2nd ed.). London: Sage

CHAPTER FOUR: RESULTS AND DISCUSSION

Abstract

The overall goal of this study was to analyse the impact of the government's agricultural input support program on improving household food security in Zaka. The research was led by a set of objectives and research questions. Refer to Chapter 3 for a description of the study area, research design, sample technique, data gathering procedures, and data analysis procedure. (Research methodology) from item 3.2 to 3.6

4.1 Introduction

The outcomes of a research conducted among smallholder farmers in Zaka district are presented in this chapter. The facts will be analyzed in this chapter to answer the hypothesis posed in the first chapter.. The chapter starts with the analytical framework used in this study and the chapter will proceed by analysing the results of the study derived using the probit and multiple regression.

4.2 Material and Methods

Survey techniques were employed to collect data where a structured questionnaire was administered to 100 participants (52 who received inputs and 48 who did not receive the inputs) to extract primary data that was used for analysis. The methodological approach that this thesis hinges on is a two-fold. The main methods used in this thesis can be categorized as qualitative and quantitative methods of data collection. This mixed-methods approach allowed for an exploratory approach to building frameworks around elements that are found to be crucial in the input subsidy program. Crucially, the methods used in this thesis are each appropriate to operationalize the perspectives used to address specific research questions in this study

4.2.1 Analytical framework

To answer the 1st objective which is to determine farmer's perceptions on the inter-relationships that exists how the input subsidy program functions in Zaka district the study adopted the use of descriptive statistics where primary data collected from questionnaires was used to assess the relationship between access to input subsidy and variables like gender, crop yield, income and land size

Objective 1

To determine farmer's perception on the interrelationships that exist between variables that either determines access to input subsidy or increase yields

Presentation of results and discussion

Descriptive statistics

Access to input subsidy and Gender

Table 1: Access to input subsidy and Gender

Access to input subsidy	Female	Male	Total
Not access	38	25	63%
Access	15	22	37%
Total	53	47	100
Likelihood ratio chi2	Pr =0.055		

The study showed that 37% of the respondents have access and 63% are not, of the 37% , 22% are males and 15% are females. The likelihood ratio chi2 of 0.055 shows that there is a significance association between access to input subsidy and gender.

Table 2: Access to input subsidy and crop yield

Access	High yield	Low yield	Total
No access	16	47	63%
Access	20	17	37%
Total	36	64	100
Log likelihood ratio	0.004		

The results show that 37% of the household members have access to input subsidy and 63% do not .The households with high yield were 64% and 36% have low yield. The log likelihood ratio of 0.004 means that there is a significance association between input access and crop yield.

Table 3: Crop yield and Income

	Observation	Mean
Income	100	145.12
Crop yield	100	37
Log likelihood ratio	0.024	

The results show that crop yield and income have significance association with the log likelihood ratio of 0.024. Meaning that income has an effect on crop yield and only those who earn income can produce more yield.

Table 4: crop yield and Land size

	Observations	Mean
Crop yield	100	37
Land size	100	4.99
Log likelihood	0.002	

The results show that land size and crop yield statistically significant with probabilities of 0.011 and 0.002 for both Pearson and the likelihood ratio chi2 respectively meaning that all those households with large land size in hectares can produce more yield.

CHAPTER 5

Abstract

The general objective of this research was to analyse the impact of government agricultural input support programme in enhancing household food security in Zaka district. The study was guided by objectives and set research questions. For description of study area, research design, sampling procedure, data collection procedures and data analysis procedure please refer to Chapter 3 (Research methodology) from item 3.2 to 3.6

5.1 Introduction

To answer the second objective which is to assess the factors affecting access to input subsidies in Zaka district the study adopted the univariate probit model where primary data collected from questionnaires was used. The dependent variable is a binary choice variable thus the random utility theory was applied. For analysis Stata version 16 will be used. The univariate probit model is explained below

5.2 Material and Methods

Survey techniques were adopted in this study where a structured questionnaire was administered to 100 participants (52 who received inputs and 48 who did not receive the inputs) to extract primary data that was used for analysis. The methodological approach that this thesis hinges on is a two-fold. The main methods used in this thesis can be categorized as qualitative and quantitative methods of data collection. This mixed-methods approach allows for an exploratory approach to building frameworks around elements that are found to be crucial in the input subsidy program. Crucially, the methods used in this thesis are each appropriate to operationalize the perspectives used to address specific research questions in this study

Presentation of results and discussion

5.2.1 Univariate probit model

The endogenous variable in the study is access to government input subsidy. This endogenous variable is determined by a vector of covariates. These covariates are assumed to

exhibit interdependence and some correlation of error terms under a normal distribution. Thus the two binary latent variable equations according to Greene 2012 are given by;

$$\text{access}_i = \chi_1 \beta_1 + \varepsilon_{1i}$$

Where access_i , represent access to government input subsidies, χ_1 to χ_2 are vectors of independent variables, β_1 and β_2 are vectors of parameters and ε_1 and ε_2 are correlated error terms.

Assuming that access to inputs or credit can be jointly determined by the vectors of independent variables, the probability be included in the likelihood function is given by:

$$\text{pr}(\text{access}_i = 1)$$

$$\text{Factors} = \text{pr}(\varepsilon_{1i} \leq \beta_1 \chi_1, \varepsilon_{2i} \leq \beta_2 \chi_2)$$

Where ϕ is the bivariate normal density function

Probit model

a) Objective 2:

To analyze the factors affecting access to government input subsidies in Zaka district. Rural households in the model are both producers and consumers of the crops they produce and they use family labour for production. Thus they will have to incorporate consumption and production decision of the farming household. Household make decisions on the hectare to grow the crop and time they spent in the production of crops.

In the study the researcher estimated the probit function and used it to correct the error term in each regression model. The function will be given by:

$$Y^* = \alpha Z + \mu \quad \dots \dots \dots \quad (i)$$

Where Y^* is the underlying index reflecting the likelihood of participating in the crop diversification, Z is a matrix of variables. The production and consumption benefits of participating in the crop diversification practice will be given by the following function:

$$Y_{1ip} = X_{1ip} \beta_1 + \varepsilon_{1ip} \text{ if } p_{ip} = 1$$

for households who participated in the crop diversification practice and for non- participants the equation is given by:

$$Y_{0ip} = X_{0ip} \beta_0 + \varepsilon_{0ip}$$

$\varepsilon_{ip}, \varepsilon_{0ip}, u_{ip}$ - are error terms

Y_{1i} - for the household who accessed input subsidies

Y_{0i} - for non- participants

X_{1i} - vector of explanatory variables

β_1, β_0 - specific parameter vectors

v_{1p} - vector of explanatory variables assumed to explain the probability of participating. Given these parameters the set equation will be given by;

$P_{ip} = 1(V_{ip} \gamma + u_{ip}, 0)$ where p is the latent variable determining the different groups that applies.

The conditional expectation for participants is given by:

$$E(Y_{1ip} / \chi_{ip}, P_{ip} = 1) = \chi_{ip} \beta_1 + \vartheta_1 \lambda_1(V_{ip} \gamma) \quad \dots \dots \dots (ii)$$

And for non- participants is given as :

$$E(Y_{0ip} / \chi_{ip}, P_{ip} = 0) = \chi_{ip} \beta_0 + \vartheta_0 \lambda_0(V_{ip} \gamma) \quad \dots \dots \dots (iii)$$

Where: $\lambda_i = \phi(v_{ip}\gamma) / \varphi(v_{ip}\gamma)$

ϕ -probability density function

φ - Cumulative density function

ϑ - Covariance of the error terms.

Maximum Likelihood Estimation

According to Gujarati, (2004) the principle of maximum likelihood (ML) estimation is confined to probit models because of its non-linear nature. It is used to estimate the parameters of interest in the model. The LR follows a χ^2 distribution with degrees of freedom equal to the number of explanatory variables. The Hypothesis is stated as follows:

H₀: All slope coefficients are simultaneously equal to zero.

H₁: All slope coefficients are not simultaneously equal to zero.

Decision criteria: If the p-value is 1 accept the null hypothesis and reject otherwise and accept the alternative hypothesis.

Multicollinearity

Multicollinearity measures the degree of dependence amongst the explanatory variables in a model, which if high would result in large variances and covariances in estimators, thus making precise estimation difficult. The researcher will carry out the multicollinearity test using the pairwise correlations. If the correlation is less than 0.8 it is acceptable, and if it's above the problem is severe and needs a remedy.

Multicollinearity Test Results

Table 5: Multicollinearity test results

	Access to credit	Household size	education	Age	Land size	Gender	Income
Access to credit	1.0000						
H size	-0.6286	1.0000					
Education	-0.3318	0.2212	1.0000				
Age	-0.0842	0.2221	0.1451	1.0000			
Land size	-0.4843	0.5205	0.4061	0.1977	1.0000		
Gender	0.1913	-0.2074	-0.2813	0.0522	-0.1693	1.0000	
income	0.1465	-0.1477	-0.3130	0.2064	-0.2011	0.2340	1.0000

Gujarati (2004) states that multicollinearity is the existence of a linear relationship amongst explanatory variables and the test is carried under the null hypothesis that the explanatory variables are correlated against the alternative that there is zero correlation. A correlation matrix was used to detect the presence of multicollinearity. A correlation matrix of greater than 0.8 shows that there is a high correlation between the two variables. In this study the results in the table below show that all pairwise correlation coefficients are less than 0.8 meaning that all the variables are not correlated. The highest correlation takes the value of 0.6592 between land size and crop diversification meaning it has a positive relationship. Therefore we reject the null hypothesis and conclude the data do not suffer from multicollinearity see appendix A for the full set of results.

Probit results

Table 6: Determinants of access to input subsidies

Access to gvt input subsidies	Coefficient	Standard error	Z score	P value
Household size	-1.024935	.20644826	-4.05	0.000***
Age	0.17791	.0283057	-1.62	0.530
Education	-1.114681	.6210558	0.61	0.073*
Land size	-0.2807798	.1084084	-2.65	0.010**
Income	-0.0001357	.001583	-0.40	0.932
Gender	-0.2029746	.503575	-0.09	0.687
Constant	7.150306	1.886284	0.03	0.000***
Prob>chi2	0.0000			
Pseudo R ²	0.6227			
Log pseudo likelihood	-18.8832			

Note: *- significant at 10%, **- significant at 5 % and *** – significant at 1%

The results provide the estimates for the probit model for the factors affecting access to input subsidies. The pseudo R² was 0.6227 meaning that about 62.27% of the likelihood of household accessing inputs is strongly explained by the independent variables used in the study and the remainder is captured by the disturbance term.

Estimated model

$$\text{Access} = 7.150306 \text{ constant} + (-1.024935) \text{ education} + (0.17791) \text{ age} + (0.11) \text{ gender}$$

-1.114681 education - 0.2807798 land size - 0.0001357 income - 0.2029746 gender
 (0.62) (0.11) (0.02) (0.50)
 $R^2 = 0.6227$

The variable household size has a negative effect on access to government input subsidies. The coefficient -1.024935 means that if there is a unit increase in household size the access to input subsidies will decrease by -1.024935 as explained by the results. The p-value of 0.000 means that the variable is significant at 1% significance level.

The variable age was found to be positively related to the household access to subsidies. The coefficient of 0.17791 means that a unit increases in age will lead improved probability of accessing government input subsidies by 0.17791 as explained from the results. The P-value of 0.530 means the variable is not statistically significant. This was contrary to Sikwela (2011) who found out in his study that there is a negative relationship between age and access to subsidies hence food security; he said an increase in household age will lead to a decrease in the level of food security.

There is a negative relationship between education and household input subsidies access. This means that a unit increase in the education level has led to the decrease in the household accessing inputs by coefficient of -1.114681. This shows that the variable education level is significant in explaining access to input subsidies. These results are contrary to those of Ajani (2006) who found out that education is a factor that has a positive impact on access to input subsidies as educated households have a good production and good purchasing nutritional decision. Theory says that an increase in education will lead to an improvement in access to input subsidies, contrary to the results that show that education has a negative effect on access to government input subsidies.

Land size has a negative relationship on access to input subsidies. The coefficient of -0.2807798 shows that a unit increase in land size will lead to a decrease of -0.280779 in access to input subsidies. The p-value of 0.010 means that value is not significant at 5% significance level. An increase in land size does not certainly lead to increased access to government input subsidies. Farmers can maximize their output by making efficient use of resources, thus increase in land size has no effect on access to input subsidies.

Income of households has a negative effect on access to input subsidies. The coefficient of -0.0001357 shows that a unit increase in household income will increase access to input subsidies by -0.0001357. The p-value of 0.932 shows that the variable is insignificant. This shows that income was statistically insignificant in explaining access to input subsidies. The results contradict what literature which says, that an increase in household income leads to changes in access to input.

Gender has a negative effect on access to credit by households. The confident interval of -0.2029746 shows that a unit increases in gender will lead to -0.2029746 decreases in the access to inputs or credit. The p-value of 0.687 means that the value is not significant at all levels. This results show that women are food insecure than man and this is so because

women are vulnerable to malnutrition especially lactating mothers who will be nursing their babies.

5.6 Conclusion

From the results it can be noted that only 3 variables are significant thus only land size, household size and education can be used to explain access to inputs subsidies. Variables like age, income and gender are not statistically significant therefor have limited influence in explaining access to input subsidies in zaka district.

5.7 REFFERENCE

Angel, Ajani (2006) Handbook of Methodological Approaches to Community-based Research.

Gujarati, D.N. (2004) Basic Econometrics. 4th Edition, McGraw-Hill Companies.

Sikwela (2011) Effects of input credit on smallholder farmers' output and income: Evidence from Northern Ghana

CHAPTER SIX

Abstract

The general objective of this research was to analyse the impact of government agricultural input support programme in enhancing household food security in Zaka district. The study was guided by objectives and set research questions. For description of study area, research design, sampling procedure, data collection procedures and data analysis procedure please refer to Chapter 3 (Research methodology) from item 3.2 to 3.6

6.1 Introduction

The main aim of this chapter is to assess the contribution of input subsidy on household food production where household food production will be measured in terms of crop yield and access to inputs subsidy will be a dummy variable (binary).the same data set was used and results were estimated using Stata version 16.

6.2 Material and Methods

Survey techniques were adopted in this study where a structured questionnaire was administered to 100 participants (52 who received inputs and 48 who did not receive the inputs) to extract primary data that was used for analysis. The methodological approach that this thesis hinges on is a two-fold. The main methods used in this thesis can be categorized as qualitative and quantitative methods of data collection. This mixed-methods approach allows for an exploratory approach to building frameworks around elements that are found to be crucial in the input subsidy program. Crucially, the methods used in this thesis are each appropriate to operationalize the perspectives used to address specific research questions in this study

6.3 Presentation of results and discussion

Analytical framework

For the purposes of multiple regression the Cobb Douglas production function framework was adopted. According to this framework output is a function of different independent factors of production and in this case output will be measured in terms of crop yield

Thus:

$$Y_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + e$$

Where Y_1 = crop yield measured in tonnes

X_1 = access to inputs subsidy

X_2 = household size: continuous variable representing the number of people in the family.

X_3 = Age of the household head: continuous variable representing the age of the household head.

X_4 = Household head's education: Dummy variable which represents either the household head attended formal or informal education.

X_5 = Land size: continuous variable which representing the size of the land in hectares.

X_6 = Income: continuous variable which represents the income earned by the household head.

X_7 = Gender: dummy variable for the sex of household head 1 if male and 0 if female.

e = error term

Multiple Regression Estimation

To assess the contribution of access to input subsidies on household food production the multiple regression technique was adopted and the results are as follows

Multiple regressions for factors influencing crop production

Table 7: Multiple regression for factors influencing crop production

Crop yield	Coefficient	Standard error	Z values	P values
Access to inputs	0.04613047	0.04954119	0.093	0.0352**
Education	0.2273971	0.4922141	0.46	0.644
Age	0.0060019	0.0283377	0.21	0.832
Land size	0.4092112	0.093725	4.37	0.000***
Income	-0.0012038	0.0013018	-0.96	0.355
Pseudo R ²	0.7385			
Prob >chi2	0.0000			

Note: *significant at 10%, **significant at 5 % and *** significant at 1%

The table above shows the results of the estimates in which the crop yield was set as the dependent variable and the other variables as dependent variables.

The model is analyzed according to Pseudo R² which is 0.73 85 meaning about 73.85% of the likelihood of household diversifying (production)their crops is strongly explained by the independent variables used in the study and the remainder is captured by the disturbance term.

Access to input subsidies have a positive effect on yield. The results show a coefficient of 0.04613047 which means that a unit increase in access to inputs or credit will lead to an increase in crop yield by 0.04613047 tonnes. The mean difference between farmers who have access to input subsidies and those that do not have access to input subsidies is 4.613047

tonnes. The p-value of 0.0352 means that the variable is significant at all levels. This shows that the variable access to inputs or credit is explaining the crop yield. Access to input subsidies are the only variable which is significantly statistic in explaining crop diversification because for households to grow a variety of crops they have to own a large land size.

Land size has a positive effect on yield. The results show a coefficient of 0.4092112 which means that a unit increase in land size will lead to an increase in crop yield by 0.4092112. The p-value of 0.000 means that the variable is significant at all levels. This shows that the variable land size is explaining the crop yield. Land size is the only variable which is significantly statistic in explaining crop diversification (production) because for households to grow a variety of crops they have to own a large land size.

6.4 Conclusion

From the results it can be noted that only 2 variables are significant therefor only access to credit and land size can be used to explain changes in crop yield in Zaka district. Variables like education, age, income are not statistically significant therefor has limited influence in explaining changes in crop yield in Zaka district.

6.5 Limitations to data collection

This study was constrained in terms of accuracy, availability and accessibility on the primary data needed to create accurate measures of level of input support, maize production and rural incomes. Firstly, farmers had problems in recalling all activities that happen on the farm accurately. This had a negative implication on the accurate measures of maize production, incomes obtained from agriculture and amount sold to the markets. Farmers were not willing to share other relevant information that might be regarded as sensitive resulting in under reporting or over reporting on the various activities. This problem was minimized by fully explaining to every respondent the purpose of the study and by ensuring maximum confidentiality of the obtained information. The study was also constrained in terms of the resources required to undertake studies of this kind. Empirically, larger samples are said to be better off in coming up with meaningful conclusions about a study and to offer powerful prescriptions that inform policy. However, the study attempted to achieve the desired goals given limited resources and also ensured collection of quality data through adequate probing on each and every question.

6.6 Summary of Findings

Question 1

What are farmers' opinions on the interrelationships that exist between variables that either determines access to input subsidy or increase yields?

Access to input subsidy and Gender

The study showed that 37% of the respondents have access and 63% are not, of the 37% , 22% are males and 15% are females. The likelihood ratio chi2 of 0.055 shows that there is a significance association between access to input subsidy and gender. Basing on the above statistics and various opinions from farmers women have little access than man simply because women still do not have land rights and culturally they are not allowed to contest against man hence when the inputs are distributed the playing ground is not even and women will always remain the disadvantaged group regardless of them being the majority in terms composition of rural farmers and that's why food insecurity remains the talk of the day to date.

Access to input subsidy and crop yield

The results show that 37% of the household members have access to input subsidy and 63% do not .The households with high yield were 64% and 36% have low yield. The log likelihood ratio of 0.004 means that there is a significance association between input access and crop yield. Basing on the above statistics and opinions from farmers the effect of access to inputs is clearly shown as more people who have access to inputs are part of those that had high yields meaning that when one has access to inputs probably he/she is left with extra money to invest or buy the other necessary inputs like herbicides etc ,and this definitely increases the probability of them getting high yields

Crop yield and Income

The results show that crop yield and income have significance association with the log likelihood ratio of 0.024. Meaning that income has an effect on crop yield and only those who earn income can produce more yields. This is so because money answers everything from purchase of inputs to production and those that have better financial muscles will always remain resilient to all the uncertainties of the agricultural sector hence better yields

Crop yield and Land size

The results show that land size and crop yield are statistically significant with probabilities of 0.011 and 0.002 for both Pearson and the likelihood ratio chi2 respectively meaning that all those households with large land size in hectares can produce more yield. Taking in to consideration that Zaka is a mountainous area, many households have just a small or limited

farming land hence this greatly affect production and only those that have large farming lands can produce better yields.

Question 2: factors affect access to agricultural input subsidy on the yields of Zaka farmers?

The variable age was found to be positively related to the household access to subsidies. The coefficient of 0.17791 means that a unit increases in age will lead improved probability of accessing government input subsidies by 0.17791 as explained from the results. Basing on the above statistics and opinions from farmers this is very true as the elderly always get 1st preference and special treatment in benefiting from all the packages that are distributed in their areas. This was contrary to Sikwela (2011) who found out in his study that there is a negative relationship between age and access to subsidies hence food security; he said an increase in household age will lead to a decrease in the level of food security.

This was also noted as one of the reason for the decline of general productivity levels in the district as most of the elderly who are always benefiting are no longer strong enough to work day in-day out in the fields.

However From the results it can be noted that only 3 variables are significant thus only land size, household size and education can be used to explain access to inputs subsidies. Variables like age, income and gender are not statistically significant therefor have limited influence in explaining access to input subsidies in zaka district.

Question 3: the effect of access to an agricultural input subsidy on household food production?

Access to input subsidies have a positive effect on yield. The results show a coefficient of 0.04613047 which means that a unit increase in access to inputs or will lead to an increase in crop yield by 0.04613047 tonnes. The mean difference between farmers who have access to input subsidies and those that do not have access to input subsidies is 4.613047 tonnes. The p-value of 0.0352 means that the variable is significant at all levels. This shows that the variable access to inputs is explaining the crop yield. Access to input subsidies is the only variable which is significantly statistic in explaining and increasing crop production.

Land size has a positive effect on yield. The results show a coefficient of 0.4092112 which means that a unit increase in land size will lead to an increase in crop yield by 0.4092112. The p-value of 0.000 means that the variable is significant at all levels. This shows that the variable land size is explaining the crop yield. Land size is the only variable which is significantly statistic in explaining crop production because for households to grow a variety of crops or increase production of a certain crop they have to own a large land size.

From the results it can be noted that only 2 variables are significant therefor only access to credit and land size can be used to explain changes in crop yield in Zaka district. Variables

like education, age, income are not statistically significant therefore has limited influence in explaining changes in crop yield in Zaka district.

6.7 Conclusion

This chapter presented descriptive and empirical results of the research. The statistical properties of all the variables encompassed in the model. The probit regression results showed that there was a relationship as it showed a high Pseudo R^2 . The results also show that food security as measured by yield is not explained only by access to input subsidies but with other significant variables. Therefore the results answers the research questions outlined previously that there is a positive association between crop diversification (production) and access to inputs

CHAPTER 7:

CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

Chapter 6 summarizes the key findings of this study and further suggest recommendations as well as areas for further study. Firstly, the chapter present a summary of the objectives of the study, and major findings from the study. Conclusions and policy recommendations suggestions drawn from the study analysis were outlined.

7.2 RESEARCH SUMMARY

The main objective of this study was to determine the household level impact of the Farm Input Subsidy Programme of Zimbabwe on the household food security status of smallholder Households in Zaka. The study had three specific objectives. Firstly, the study aimed to determine farmers' perceptions on how the agricultural input subsidy program functions? The second objective was to determine the effect of agricultural input subsidy on the yields of farmers. Lastly the third objective was to assess the contribution of agricultural input subsidies on household food security?. Data acquired from a sample of 100 smallholder farmers from Zaka district was analysed using econometric and descriptive techniques. The multicollinearity test was mainly used to test for association between variables, whilst the Probit model was used to identify the factors affecting access to input subsidy. The multiple regression model was used to determine the effect of selected variables on the maize productivity and yields of 2020 (thus translating to food security). Chapter 4,5 and 6 presents the major findings of the study.

7.3 CONCLUSIONS

The key findings for this study with respect to Zaka are that the input subsidy program implemented in this area had a noticeable positive impact specifically on household food security as well as maize productivity. However, a noticeable number of households is still regarded as food insecure as the district continue to be in the crisis zone according to the Zimbabwe food security research desk 2020, with some farmers now resorting to the collection and selling of insect based protein sources like Harurwa and ngozha . Consequently, it therefor appears that the input support programme failed at this stage to completely eliminate food insecurity. The positive impact identified under this study reveals a decrease in terms of severity of food insecurity than elimination per se. With close to 8

years of implementation of this programme specifically with respect to maize productivity and food security, there is still more room for improvement as the full intended goals still remain a dream to date.

With respect to the targeting criteria used on input subsidy programmes, we all know its importance in determining whether inputs are received by the intended beneficiaries. Results from this study indicated that targeting at district level is extremely politicized and households with better political connections get the inputs first. This means the inputs are in most cases not reaching to the intended recipients who sometimes then sale the inputs to non-beneficiaries at very cheap prices.

Further scrutiny of this study however indicated that non beneficiaries had better maize yields compared to the beneficiaries primarily for the reason that inputs from the subsidy programme routinely arrive late most of the time after rains have already started and the inputs basically come in small portions than expected. History has shown that once farmers are chosen to be benefiting from this input subsidy programme, there is a tendency of them waiting for the arrival of inputs and never put any effort to purchase their own personal farming inputs. This late arrival of inputs affects their yields as the effective production period would have gone.

Scholars from all over the continent have reported this program to be very expensive hence the verdict to improve and move forward with the programme depends on whether the much needed positive impact is worth the input or otherwise shift to better options.

7.4 POLICY IMPLICATIONS AND RECOMMENDATIONS

With the results obtained, the study recommends the following:

- All other policy instruments especially from the agricultural sector must be set and implemented to work in harmony together with the input subsidy program, for example investing in research and development, creation of employment, in addition to the input subsidy program.

Recommendations to the government

- Bylaws are needed to govern the whole process of delivering input subsidies to smallholder farmers. These bylaws in a way will surely enhance responsibility as well as accountability to the beneficiaries who are the farmers, government personnel who oversee the operations of the input subsidy program, and the agro-dealers who supply inputs. The bylaws must plainly state penalties to those that are caught mis-using any component of this program.
- Subsidies ought to be provided in order to support the crops which are purely farmers' choice. The Government should not impose a particular crop to farmers through subsidy but rather through agro-ecological zone, climate, and farmers preferences. Guidelines must state the prime purpose of subsidies; for example we assume the intentions are to improve food security levels then farmers should at least be given a degree of freedom to choose any food crop suitable to their respective agro-ecological zone.
- There is also the need of creating a databank of farmers with their respective areas of land they own. This will then serve as control mechanism in determining the amount of inputs to be given to each farmer. To enhance it further, extension services should also be enriched by building the capacity of extension employees for them to be able to run around overseeing and making sure that all the inputs acquired are used as intended and applied in recommended rates.
- Monitoring and Evaluation: Government at the district level should establish a database of beneficiaries and farming inputs provided for harmonization. The database should then contain all the information and all the records on operational areas, including what each and every provider is doing, and the names of all the beneficiaries. This piece of information should then be used to track performance of the programs and give guidance to future programmes.

7.5 AREAS OF FURTHER RESEARCH

- (i). Conducting a study similar to this, however using a bigger sample size to assess the effects of climate change on farmer's attitudes towards agriculture in areas where input subsidies programs are dominant.
- (ii). Conducting a research that strives to study government interventions that contradict the universal recommended agricultural practices. One of the intervention is this input subsidy

program that support cultivation of maize for three consecutive years. Being sequential in its operations makes farmers fail to follow the good recommended practices such as crop rotation which are well known to restore all the much needed nutrients in the soil and naturally controls pest and diseases.

(iii). Conduct research to facilitate establishment of groups that are responsive to input subsidy program interventions in terms of technology adoption, increased productivity, improved standards of living, increased incomes and adopting farming as business.

C: Multiple regression for factors influencing access to inputs.

```

regression                               Number of obs   =    75
                                           Wald chi2(7)    =   39.24
                                           Prob > chi2     =  0.0000
Log pseudo-likelihood = -18.8832          Pseudo R2      =  0.6227

```

	thresh	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
cropdiversity		1.118288	.6312363	1.77	0.076	-.1189124	2.355488
hsize		-1.024935	.2064826	-4.96	0.000	-1.429634	-.6202367
education		-1.114681	.6210558	-1.79	0.073	-2.331928	.1025659
age		.017791	.0283057	0.63	0.530	-.0376871	.0732692
landsize		-.2807798	.1084084	-2.59	0.010	-.4932563	-.0683032
gender1		-.2029746	.503575	-0.40	0.687	-1.189963	.7840142
tincome		-.0001357	.001583	-0.09	0.932	-.0032383	.0029669
_cons		7.150306	1.886284	3.79	0.000	3.453256	10.84735

D: Marginal effects

```

Marginal effects after probit
y = Pr(thresh) (predict)
= .20122523

```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
cropdiversity*	.2825429	.14808	1.91	0.056	-.007679	.572765	.6
hsize	-.2879969	.07112	-4.05	0.000	-.42738	-.148614	5.82667
education	-.3132147	.1929	-1.62	0.104	-.691289	.06486	1.69333
age	.0049991	.00821	0.61	0.542	-.011087	.021085	33.8
landsize	-.0788964	.02974	-2.65	0.008	-.137192	-.020601	4.58
gender1*	-.0566824	.14344	-0.40	0.693	-.337822	.224457	.466667
tincome	-.0000381	.00044	-0.09	0.932	-.000909	.000833	145.133

(*) dy/dx is for discrete change of dummy variable from 0 to 1

E. Questionnaire

The information captured in this questionnaire is strictly confidential and will be used for research purposes only. The findings of this research will help inform policy for food security through facilitated improved crop productivity. Respondents can choose not to answer questions - answers are voluntary. The respondent should be the household head (directly involved in the farming practices of the household) residing in Zaka District.

Date of survey.....

Name of enumerator.....

Name of District.....Ward.....

Name of Respondent ...

Section A: Household Demographics and Socio economic assessment

1. Gender of household head.....Female (0) Male (1)

2. Marital status of household head ... Female (0) Male (1) Single (0) Married (1)

Widow (2)

Age of the household head.....

3. Household structure

Gender	total	<12	12<18 (0)	19 to 25 (1)	26 to 40 (2)	41 to 70 (3)	>70 (4)
Male							
Female							
Total							

4. What is the educational level of head of household?

None (0)

Primary (1)

Secondary (2)

Tertiary (3)

5. How many years of farming experience does the family have?

<2 (0)

2-6years (1)

6-12years (2)

>12years (3)

6. What is your main source of income?

Sales of surplus produce(0)

Sales of cash crops..... (1)

Remittances..... (2)

Livestock and products sales (3)

Other (Specify)(4)

7. How much do you earn in a typical month from the following?

Sales of surplus produce (0).....

Sales of cash crops (1).....

Remittances (2).....

Livestock and products sales (3).....

Other (Specify)(4).....

8. What assets does your household own?

No (0)

Yes (1)

Physical assets

Cattle

- Goats
- Cultivator
- Harrow
- Wheelbarrow
- Ox-drawn plough
- Hoes

Section B: Farm Characteristics

1. What is the size of the land that you own?
.....
2. What is the size of the land area available for cultivation?
.....
3. What is the size of land normally cultivated in regular growing seasons
.....
4. What is the size of land used for maize cultivation in the 2019/20 growing season?
.....
5. What other cash crops did you grow?
.....

Section C1: Input subsidy (Beneficiaries only)

1. Since 2013, have you changed the cropping area that you use for maize?

No (0)
Yes (1)

If yes, indicate the changes over the years?

YEAR	2013	2014	2015	2016	2017	2018	2019	2020
Area planted (ha)maize								

3. Since 2013, have you changed the cropping area that you use for any other crop.....
4. Did you receive any fertilizer through the FISP?

No (0)
Yes (1)

If answer is the affirmative, ask question 5 and 6, if not, proceed to question 7.
5. How many bags of fertilizer did you receive for your household in the 2019/20 growing season through the FISP?
.....
6. How many bags of this fertilizer did you use for your household during the 2019/20 growing season?
.....
7. Did you receive any hybrid maize seed?

No (0)
Yes (1)

If answer is the affirmative, ask question 8 and 9, if not, proceed to question 10.
8. If yes, how many 2kg bags of hybrid maize seed did you receive for your farm?
.....

9. How many 2kg bags of hybrid maize seed did you plant on your farm?

10. Other than applying the inputs on the farm, what else did you use the farming inputs for?

Sold inputs to other people (0)	
Shared inputs with neighbours and relatives (1)	
Traded inputs for other goods (2)	
Other (Specify) (3)	

15. Please indicate the years you received inputs and the quantities received from the year

Year	2016	2017	2018	2019	2020
Number of fertilizer bags received					
Number of bags of hybrid seed received					

Section C2- Input Subsidy (Non-beneficiaries only)

1. Are there any changes in the way you use fertilizer since the implementation of the programme?

No (0) Yes (1)

2. If yes, indicate the changes you made?

3. Are there any changes in the way you use maize hybrid since the implementation of the programme?

No (0) Yes (1)

4. If yes, indicate the changes you made?

5. Are you using fertilizer in your fields?

No (0) Yes (1)

6. If yes, did you use fertilizers before the implementation of the programme?

No (0) Yes (1)

7. Are you using maize hybrid seed in your field?

No (0) Yes (1)

8. If yes, did you use maize hybrid seed before the implementation of the programme?

No (0) Yes (1)

Section C-Input Subsidy (Universal questions)

1. How would you rate the distribution of inputs in terms of timeliness in this programme?

Bad 
 Good

Extremely	Quite	slightly	slightly	quite	extremely
-----------	-------	----------	----------	-------	-----------

2. How would you rate the distribution of inputs in terms of fairness in this programme?

Bad 
 Good

Extremely	Quite	slightly	slightly	quite	extremely
-----------	-------	----------	----------	-------	-----------

3. Do you think there is anything that needs improvement? No (0) Yes (1)

b) If yes , what?

.....

4. What are your perceptions about the input support programme on the sustainability of future maize production?

Section D: Agronomic practices and yields

1. How often do you get in contact with your extension officers and/or other technical advisers?

.....

2. Do you practice crop rotation?

No (0) Yes (1)

a) If yes, briefly describe your rotation?

.....

3. Do you add manure to the soil?

No (0) Yes (1)

5b) and if so, how many wheelbarrows do you normally add?.....

4. Since the implementation of the programme, are there any changes you have made as to how you try to improve your soil fertility?

No (0) Yes (1)

b) If yes to 8, please indicate the change below:

Common practice before Practice after

.....

5. How do control your pests and diseases

Biologically (0) Chemically (1)

6. How many bags of maize in bags did you harvest in the last growing season?

Biologically	Chemically	
--------------	------------	--

b)

Size of bags used for harvesting

50kg..... 100kg

7. What is the average yield in bags you get since the implementation of the programme on the same area of land you cultivated in the 2019/2020 growing season?

b) Size of bags used

50kg.....100kg.....

8. How many bags of maize would you usually get before the implementation of the programme?

b) Size of bags used

50kg100kg.....

9. Did you have enough to eat till the next growing season?

No (0)

Yes (1)

